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Contact:

The Managing Editor
Dyslexia Association of Singapore
1 Jurong West Central 2
#05-01, Jurong Point
Singapore 648886

Email: editor@das.org.sg

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Editorial Comment

Angela J. Fawcett

It is a very great pleasure to publish the third issue of this new journal, the Asian Pacific Journal of Developmental Differences, which is published by the Dyslexia Association of Singapore (DAS). The response to the previous two issues has been extremely gratifying, and we intend to maintain these high standards in this issue and forthcoming issues. We have now amassed an even stronger editorial board, and I am grateful for the support of the academics and professionals involved.

In this issue we present seven articles, the majority of which are drawn from the Asian context. The first two articles in this issue are experimental studies that investigate the impact of a range of manipulations on outcomes for children at risk of dyslexia.

The first article in this section from Kevin Chung at the Hong Kong Institute of Education represents a highly innovative approach to measuring the skills of poor and adequate readers of Chinese. The approach adopted involved measuring performance across a broad range of skills in 78 children, including poor readers and matched controls. Interestingly, executive skills, in this case self-regulation measured by a test of inhibition, the Heads-Toes-Knees-Shoulders task. In this novel test, children are required to inhibit a command to touch their head and instead touch their toes. This measure of self-regulation accounts for unique variance in reading comprehension after controlling for age and IQ. This may be either a causal factor or a consequence of difficulties in learning to read in Chinese. It would be extremely interesting to use tests of this type in evaluating readers in English, because it is clear that executive skills of this type contribute to readiness to read.

The second article by Thomas Sim and colleagues from DAS focuses on the importance of early intervention for children at risk of dyslexia. In this study, 56 children aged five to six undertook structured multi-sensory intervention over periods ranging from 10 to 70 weeks. The results indicated strong improvement in all aspects of the skills targeted, and revealed effect sizes that surpassed the majority of the findings from the National Reading panel meta-analysis in 2001. Moreover, the improvements included striking increments in reading, which is notoriously hard to improve even when phonological skills are remediated. These are important results and highlight the need for continued provision of specialised support at this age level, in order to prevent reading failure and the

subsequent damage to self-esteem and potential.

The next three articles in this issue address important issues in terms of professionalism and teacher training. The article by Barbara Pavey considers the recent and ongoing changes in pedagogy embedded in the UK Dyslexia Friendly approach, which moves away from viewing dyslexia as a deficit, towards viewing this as a difference. This approach is compared with the US Universal Design for instruction that views diversity as the norm. Pavey notes the overlaps between these two approaches and considers the advantage of these for the Asian context.

In a complementary article, the implications of these approaches are considered within Asia. Siew Hui Li addresses the importance of the development of professionalisation and professionalism in Singapore, as an example of an Asian country where these concerns have not yet been fully addressed. The article emphasises the need for ethical and competent professionals who continue to develop, recognising the role that DAS has already played in bringing this to fruition.

The final article in this section from Chee Soon Weng, Zachary Walker and Kara Rosenblatt considers approaches to dyslexia in Singapore in terms of special needs teachers. In this article, the authors undertake a review of the attitudes of special education teachers towards the inclusion of SEN students in mainstream schools, which has been implemented over the past 10 years. The questionnaire study was undertaken with 38 teachers and established that they were generally positive towards the concept of inclusion and were prepared to accommodate the needs of these students within the mainstream classroom. However, the fact that some teachers were still uncomfortable with inclusion suggests that further research and support is needed to facilitate this endeavour.

The next article in this issue of the journal from Nicole Chua, addresses the impact of morphological intervention for a group of older children who have failed to achieve the expected benefit from the traditional Orton-Gillingham approach to intervention. In this case study of three boys a mixed methodology was used to evaluate the effectiveness of morphological training in improving the spelling skills and self-esteem of adolescents with learning differences. The results showed a positive effect overall, with particular advantages in terms of attitude, which support the introduction of morphology earlier for children who continue to struggle in secondary school.

Finally, the last article in this issue by Neil Alexander-Passe addresses the important issue of self-esteem and dyslexia in adults. Using mixed methods, the article considers perceptions of success in 29 dyslexic adults, a percentage of whom have suffered from depression. Following a strong empirical review of the area, the author demonstrates that, although 65 percent of the sample felt themselves to be successful, there is a gender imbalance, with more males than females feeling unsuccessful and linking this to strong feelings of inadequacy. These

attributions can be found in dyslexic men including those who would be perceived as successful by the outside world in terms of achieving a University degree. These are important findings and suggest that early failure can have permanent effects on the wellbeing of children. This article has strong implications for teachers and parents for how we support our dyslexic children and the particular need to bolster the self-esteem of boys who are failing.

We hope that you find the current issue interesting and that you will consider the APJDD as an appropriate vehicle for submitting your own research. The journal continues to be available for free access and can be downloaded from:

www.das.org.sg/publications/research-journal

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Behavioural self-regulation and its contribution to reading among Chinese poor readers

Kevin K. H. Chung [1*]

1 *The Hong Kong Institute of Education*

Abstract

This study investigated to which behavioural self-regulation and language skills could discriminate Hong Kong Chinese poor from adequate readers. A total of 78 Chinese first graders with 39 poor readers and 39 adequate readers participated and they were matched on age, parents' education levels and nonverbal intelligence (IQ). The two groups were tested on the measures of behavioral self-regulation (the Head-Toes -Knees-Shoulders; HTKS), vocabulary definition, phonological awareness, morphological construction, rapid digit naming, and sentence comprehension. Results showed that the poor readers performed less well than the adequate readers in all cognitive-linguistic and reading comprehension measures. Among these measures, the HTKS, morphological construction, and rapid digit naming showed the greatest power in discriminating poor and adequate readers. Self-regulation skills accounted for significant amount of unique variance in reading comprehension after controlling for the effects of age and IQ. Together, these findings highlight the potential importance of the process of learning to read in Chinese for shaping one's self-regulation skills.

Keywords: Behavioural self-regulation, phonological awareness, morphological awareness, rapid digit naming, and poor readers

Introduction

Although most children develop reading proficiency with appropriate education, some individuals may fail to acquire reading skills. Estimates indicate that between 5-10% of the school population may suffer from reading difficulties (e.g., Shaywitz, Shaywitz, Fletcher, Escobar, 1990). Reading acquisition is regarded as

* *Correspondence to:*
Kevin K. H. Chung, Department of Early Childhood Education, The Hong Kong Institute of Education, 10 Lo Ping Road, Tai Po, NT, HONG KONG SAR China. E-mail: kevin@ied.edu.hk

a multifaceted process and relies on the development of different cognitive-linguistic skills. Extensive research has investigated deficits in decoding skills, e.g., phonological awareness, letter-sound knowledge, rapid naming that may lead to reading problems (Goswami & Bryant, 1990; Storch & Whitehurst, 2002). More recently, behavioral self-regulation has been put forward as another important skill for reading acquisition (e.g., McClelland, et al., 2014; von Suchodoletz, 2013).

Self-regulation refers to the capacity of individuals to apply cognitive skills like cognitive flexibility (or attention), working memory, and inhibitory control to behavior. However, at the same time, deficits in these skills can be the possible cause of reading difficulties. So far fewer attempts have been made to examine the relationships between self-regulation and other cognitive-linguistic skills in explaining individual differences in reading given that reading is viewed as the execution and integration of multiple cognitive-linguistic skills (Kendeou & Trevors, 2012; van den Broek & Espin, 2012). This is consistent with the simple view of reading (Gough & Tunmer, 1986; Hoover & Gough, 1990; Shaywitz, 2003) which posits that decoding, e.g. phonological skills, is coupled with a broad range of cognitive-linguistic skills. Thus, the present study is to investigate the contributions of cognitive-linguistic skills: self-regulation, phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming in distinguishing between poor readers and competent readers of Chinese and to examine their contributions to reading comprehension.

Self-regulation skills

Although behavioral self-regulation skills can be viewed as an individual's capability to regulate emotion, cognition, and behavior (Calkins, 2007), these skills are defined as the behavioral manifestation of the integration of cognitive flexibility, working memory, and inhibitory control (Wanless, McClelland, Tominey, & Acock, 2011). These self-regulation skills, which may stem from executive functioning, have been found to be associated with academic achievement (McClelland, Acock, & Morrison, 2006; Ponitz, McClelland, Matthews, & Morrison, 2009). For example, previous studies (e.g., Blair & Razza, 2007) have found that the ability to focus attention has a strong influence on children's academic outcomes. Cognitive flexibility often involves processes of shifting attention between sets of tasks or rules without distraction (Diamond, 2006).

Similarly, working memory, which refers to the capacity of an individual to hold and manipulate information over a short period of time (Baddeley, 2000), plays a vital role in the storage of information into long-term memory and the acquisition of reading-related skills. Working memory has been linked to the individual's reading attainment and has been found to make significant contributions to word reading and reading comprehension (Engel de Abreu & Gathercole, 2012; Swanson & Berninger, 1995). Individual differences in inhibitory control also explain variability in academic achievement (e.g., Clark, Pritchard, & Woodward, 2010). Inhibitory control often includes the ability to focus attention and suppress irrelevant information in order to

act appropriately (Diamond, 2006; Moutier, Plagne-Cayeux, Melot, & Houdé, 2006). Given that reading involves multiple cognitive-linguistic skills, self-regulation skills can be considered to be essential for reading acquisition and failure. Indeed, recent studies (e.g., Chung & McBride-Chang, 2011; Peng, Sha, & Beilei, 2013) have found that both components of working memory and inhibitory control uniquely predict reading variability in Chinese. Because Chinese orthography has many different graphic units and orthographic rules, and because thousands of characters and cognitive-linguistic skills are required to be learned (Chung & McBride-Chang, 2011), children may take all their elementary school years to learn and acquire these units, rules, knowledge, and skills to read Chinese. At the same time, however, children who fall behind in their development of self-regulation skills or exhibit poor self-regulation skills, are at greater risk of reading difficulties. Perhaps poor self-regulation skills are also linked to weaknesses in other previously established cognitive-linguistic skills, namely phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming. This may in turn affect reading performance in poor readers. However, neither the present research on English nor studies on Chinese have examined such self-regulation skills in relation to other previously established cognitive-linguistic skills in explaining reading. Poor self-regulation may be another marker for children with reading difficulties. Thus, the measure of self-regulation skills was included in the present study.

Phonological skills

Phonological awareness, which includes the ability to recognize spoken words, break down the words into sound units, and reflect upon and manipulate these units, has been recognized as an important predictor of children's reading achievement in English and Chinese as it facilitates awareness of the relationship between the sound and the printed word (Gottardo, Stanovich & Siegel, 1996; Muter & Snowling, 1998). Previous studies concede that phonological awareness is a good predictor of word reading and reading comprehension, and is causally related to reading outcomes (e.g., Blachman, 1997; Muter & Snowling, 1998; Vellutino, Fletcher, Snowling, & Scanlon, 2004). Across a variety of languages, phonological awareness skills tend to develop by advancing from larger units of sound e.g., words and syllables to smaller units of sound e.g., onsets, rimes, and phonemes (Lonigan, Burgess, & Anthony, 2000). Because English differs from Chinese in some broad aspects of phonology, in that grapheme–phoneme mapping is involved in English, whereas whole-character to whole-syllable mapping is stressed in Chinese, syllable and onset–rime level awareness tend to be the most important aspect of phonological awareness in Chinese. In Chinese, the syllable is the basic phonological unit of speech, and each syllable can represent a morpheme. Most Chinese characters are ideophonetic compounds consisting of a semantic and a phonetic component (or radical). For example, in a character (such as [dang1] 'lamp'), a semantic radical indicates the semantic category (fire) of the character (as one needed fire to light an oil lamp in

the olden days), whereas the phonetic radical [dang1] 'climb' signifies the sound cues of the character. Such phonetic information tend to be encoded at the syllable and onset–rime level in Chinese rather than being assembled at the phonemic levels as in English. Therefore, Chinese children with reading problems sometimes manifest difficulties in processing phonological information (Ho, Leung, & Cheung, 2011; McBride-Chang, Tong, Shu, Wong, Leung, & Tardif, 2008c). However, other studies of dyslexia have revealed that deficits in phonological awareness are less prominent in Chinese readers (e.g., Chung, Ho, Chan, Tsang, & Lee, 2010, Ho, Chan, Tsang, & Lee, 2002, Shu, McBride-Chang, Wu, & Liu, 2006). Therefore, it is necessary to consider further the influence of phonological skills on children's reading ability. In the present study, we included a measure of phonological awareness as these skills could be used to distinguish between the good and poor readers and to predict reading performance.

Morphological skills

Morphological awareness is another skill that could be used to distinguish between readers of differing ability. Morphological skills include the ability to reflect upon and manipulate morphemes, and apply word formation rules (Carlisle, 1995). Across different languages morphological skills are associated with word reading and reading comprehension in English (e.g., Carlisle, 2000; Deacon & Kirby, 2004; Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003; Roman, Kirby, Parrila, Wade-Woolley, & Deacon, 2009) and in Chinese (e.g., McBride-Chang, Shu, Zhou, Wat, & Wagner, 2003; Wang, Yang, & Chen, 2009). Unlike English, Chinese is a morphosyllabic writing system with a rich morphological structure and many words consist of multiple morphemes by combining different morphemes. More than 75 % of Chinese words are formed through lexical compounding, which is an essential way of forming complex words. Many words may therefore share the same morpheme. For example, 電話/din6 waa2/(tele-phone), 電報/din6 bou3/(tele-graph), 電視/din6 si6/(tele-vision). All of these words sharing the morpheme 電/ din6/(tele) are semantically related as indicated by this morpheme. Also, Chinese contains a vast number of syllables that have more than one homophone, and every syllable has a different meaning (e.g., Packard, 2000; Zhou, Zhuang, & Yu, 2002). For instance, the syllable "san" has different meanings, e.g., [san1] 'new' (新), [san1] 'stretch' (伸), [san1] 'body' (身) and [san1] 'hard' (辛). Consequently, the ability to comprehend and use morphologically complex forms may be particularly vital for reading in Chinese. Indeed, studies on Chinese have found that morphological awareness in the form of lexical compounding is a precursor to reading ability (e.g., Tong, McBride-Chang, Shu, & Wong, 2009) and a reliable discriminator for Chinese children with and without reading difficulties (e.g., McBride-Chang, Lam, Lam, Doo, Wong, & Chow, 2008; Shu et al., 2006). Thus, the present study tested the extent to which morphological awareness could distinguish between the good and poor readers, and predict reading ability.

Vocabulary knowledge

Previous studies have examined the relationship between vocabulary knowledge, particularly the use of oral word definitions and synonyms, and reading acquisition and impairment (e.g. Liu et al., 2010; McBride-Chang & Ho, 2005). For example, research conducted with English readers showed that vocabulary knowledge was a significant correlate of reading performance, and it continued an important predictor after controlling other cognitive-linguistic skills (Landi, 2010; Ouellette, 2006; Ricketts, Nation, & Bishop, 2007; Wise, Sevcil, Morris, Lovett, & Wolf, 2007). A similar association has also been found in Chinese (e.g., Liu et al., 2010; Zhou et al., 2014). Wang, Cheng and Chen (2006) was one of the few studies that investigated oral vocabulary together with phonological awareness, working memory and other reading-related skills. Oral vocabulary was found to be one of the best precursors for word reading in Chinese. Similarly, studies conducted by Greenberg, Pae, Morris, Calhoon, & Nanda (2009) and Liu et al. (2010) found that many poor readers possess poor vocabulary knowledge and tended to fall behind their typically developing peers in vocabulary development. However, these studies have not usually examined such vocabulary knowledge in relation to other cognitive-linguistic skills in explaining variability in reading. Vocabulary knowledge measure was therefore included in the present study.

Rapid naming

Finally, rapid naming is also an important correlate of reading acquisition and impairment across a variety of scripts, including English (Wagner et al., 1997), German (Wimmer, Mayringer, & Landerl, 2000), Dutch (de Jong & van der Leij, 1999) and Chinese (Chung & McBride-Chang, 2011). The most commonly used measure of rapid naming is one in which readers are asked to name a series of stimuli e.g., numbers, letters, colours or objects as quickly as possible. Rapid naming is likely to tap into a number of skills, including phonological processing, involved in accessing and retrieving phonological representations from memory, visual sequencing and symbol processing (e.g., Wagner & Torgesen, 1987; Wolf & Bowers, 1999). Moreover, as noted in a study by Manis, Seidenberg, and Doi (1999), Chinese character recognition is relatively 'arbitrary' and a rapid naming measure may tap into the ability to learn arbitrary links between print and sound. For example, in the rapid digit naming task, phonological codes can be directly derived from visual input i.e., digits thereby tapping into a highly arbitrary print to sound conversion. Chinese may be a writing system that is particularly strongly associated with a rapid naming measure. Previous studies have consistently shown that rapid naming predicts reading development in Chinese from preschool (Chow, McBride-Chang, & Burgess, 2005), continuing to late childhood (Pan, McBride-Chang, Shu, Liu, Zhang, & Li, 2011). It also predicts dyslexia perhaps because Chinese dyslexic readers tend to be less efficient in the naming process involved in arbitrary print to sound conversion and associated with poor quality of phonological representations of speech sounds and poor articulatory speed (Chung, Ho, Chan, Tsang, & Lee, 2011;

Shu, et al., 2006). Thus, in the present study, we extended our investigation to examine rapid naming in relation to the self-regulation and other cognitive-linguistic skills in order to obtain a fuller picture of the importance of rapid naming for reading performance.

The present study

Although the five cognitive-linguistic skills, namely self-regulation, phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming are linked with reading ability, relatively little investigation to date has examined the concurrent influence of multiple skills that may affect reading performance in Chinese readers, particularly in poor readers. The purpose of this study has been twofold and is conducted in Hong Kong with Chinese speaking children in the first grade of primary school. We tested both for group differences in self-regulation and for associations of the four cognitive-linguistic skills with reading comprehension. The first aim of this study was to examine whether poor readers would display difficulties in self-regulation along with problems in phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming. It was anticipated that poor readers would perform less well than the competent readers on tests of the five cognitive-linguistic skills. The second aim was also to examine whether self-regulation would make a contribution to reading performance, sentence comprehension independent of phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming. It was expected that self-regulation could explain unique variance in sentence comprehension beyond these other established cognitive-linguistic skills.

Method

Participants

The children for the present study came from a sample of 210 Hong Kong Chinese -speaking children recruited for a longitudinal study (112 boys, 98 girls) at age 5. The sample was fairly representative of different locations within Hong Kong city. In the present study, seventy-eight first grade students were selected based on the standardized Chinese word reading subtest of the Hong Kong Test of Specific Learning Difficulties in Reading and Writing (HKT-SpLD); Ho, Chan, Tsang & Lee, 2000). Local norms are available from 6 years 1 month to 10 years 6 months. The reliability coefficients of this subtest range from 0.92 to 0.99 across various age groups. Details of this test are further discussed in the Measures section. The HKT-SpLD is commonly used to assess Hong Kong primary school children with literacy difficulties. The children were administered this test at around age 7. Thirty-nine children (22 boys and 17 girls) were selected as poor readers who scored at or below the 25th percentile in the Chinese Word Reading test. Another 39 children (16 boys and 23 girls) with average or above performance who scored at or above the 50th percentile in the test were selected as the control group. In order to control for the possible effects of age, intelligence, and social economic status, the average readers were matched to the poor readers on age, parents' educational level, and nonverbal intelligence (Raven's Standard

Progressive Matrices). Fathers' and mothers' education levels were also gathered based on a 7-point scale ranging 1 (lower than third grade), 2 (fourth to sixth grade education), 3 (junior high school), 4 (senior high school), 5 (some college), 6 (college graduate), and 7 (graduate education). Thus, the children in both poor readers and average readers groups did not differ in age or intelligence or parents' educational level (all Fs<2.83, all ps>.05). No emotional and behavioral problems such as autism or hyperactivity, and uncorrected sensory impairment were reported in either group.

Measures

General Intellectual ability (IQ)

Raven's Standard Progressive Matrices was used to measure the children's nonverbal reasoning ability. This standardized test consisted of five sets of 12 items with a total of 60 items. For each item, participants were asked to select the best option from six or eight alternatives to fill in the missing part of the target matrix. Scoring was based on the local norm established by the Education Department of the Hong Kong Government in 1986.

Word reading

The word reading measure was taken from the Chinese Word Reading subtest of the Hong Kong Test of Specific Learning Difficulties in Reading and Writing (HKT-SpLD) (Ho, Chan, Tsang & Lee, 2000). The HKT-SpLD is a standardized assessment battery developed for Hong Kong primary school children, and items in the Chinese Word Reading task are common two-character words used by Grade 1 to Grade 6 students. The Chinese Word Reading measure consisted of 150 two-character Chinese words arranged in increasing difficulty. In this task, children were asked to read aloud from the beginning of this task and stopped when they failed to read 15 consecutive items. One point was given for each word correctly read. Scoring was based on the established local norm. The reported reliability of this standardized measure among participants with ages ranging from 6 years 1 month to 12 years 6 months was (r = .92 to .99).

Behavioral self-regulation

The Head–Toes–Knees–Shoulders task (HTKS) was used to measure behavioral regulation by tapping in on cognitive flexibility, working memory, and inhibitory control (McClelland & Cameron, 2012). This measure was adapted from studies (e.g., Cameron Ponitz et al., 2008; Cameron Ponitz, et al., 2009; Becker, McClelland, Loprinzi, & Trost, 2014) to assess participants' behavioral regulation. A total of 30 test items and 4 practice items was used. There were two forms of the HTKS which includes Form A with two commands: head–toes commands (e.g., "touch your head" and "touch your toes") and Form B with additional commands: knees–shoulders commands (e.g., "touch your shoulders" and "touch your knees"). Form B, therefore consisted of commands to touch all four body parts. In this task, children were asked to perform the opposite of a response to different oral commands. For example, if the experimenters said, "touch your head," the correct response would be for the children to touch their toes. Children were

asked to respond to these commands as fast as they could. During the practice trials, the experimenters modeled the commands with actions, and feedback was also given. Each item was scored with 0 for an incorrect response (e.g., touching his or her head when requested to touch his or her head), 1 for a self-corrected response (e.g., firstly responding incorrectly, but correcting himself or herself), or 2 for a correct response (e.g., touching his or her toes when asked to touch his or her head). Thus, the total scores ranged from 0 to 60. In order to assess inter-rater reliability, a random sample of children (n = 25) was videotaped whilst being administered the HTKS task. Videotapes were observed and marked by two experimenters who had not administered the HTKS task to the participants. Children's responses were rated by the two experimenters (interrater reliability=0.90), and the Cronbach's alpha of the measure was 0.91.

Phonological awareness

The phonological awareness task was designed similar to the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen & Rashotte, 1999) in that it tapped into different phonological units with increasing difficulty. This measure was used in previous studies (Cheung, Chung, Wong, McBride-Chang, Penney, & Ho, 2010; Chung, McBride-Chang, Cheung, & Wong, 2013). In this task, syllable deletion, onset deletion, and rhyme production were used and were presented orally. For the syllable deletion, there were 15 three-syllable real and 14 pseudoword items. Children were asked to take away either the first, second or third syllable and say aloud what was left. For example, participants were asked to say /hap6/ /coeng3/ /go1/ (合唱歌) without /hap6/ (合). The correct answer is /coeng3/ /go1/ (唱歌). In the onset deletion, 10 real and 12 pseudo one-syllable words were used. Participants were requested to delete the first consonant of each item and say aloud what was left. For example, say /coi3/ (菜) without the initial sound would be /oi3/ (愛). These stimuli strictly measured onset deletion only, rather than phoneme deletion more globally, because in Cantonese there are no consonant clusters and only few final consonants to consider. For the rhyme production, there were 16 items which consisted of three reference syllables sharing the same rhyme and tone on each item. The children were required to come up with and say aloud a Cantonese syllable having the same rhyme and tone as the references. For example, 'say a Chinese syllable which shared the same rhyme and tone as "書" (/syu1/ meaning ''book''). One acceptable answer would be "豬" (/zyu1/ meaning "pig")'. A composite phonological awareness score was calculated by summing the scores from the three tasks. The maximum composite score was 67 and Cronbach's alpha of the measure was 0.86.

Morphological awareness

Morphological construction task was employed to assess morphological awareness, as done in previous work on Cantonese-speaking children (Cheung et al., 2010; Chow, McBride-Chang & Cheung, 2010). This measure was administered at graded difficulty levels. Twenty-seven test items were organized

into five subsets of varying difficulties. For each item, a scenario was presented orally by the experimenter, and the children were asked to construct words for the novel objects or concepts based on the scenarios given. For example, one description was "When someone eats more than is good for, this is called overeat. What could we call when someone drinks excessively?" The target response was overdrink. A target answer was awarded two points, and a partially correct answer was awarded one point. The Cronbach's alpha was 0.82.

Rapid naming

The rapid digit naming task consisted of 8 rows of 5 digits (2, 4, 6, 7, and 9) that were printed on a piece of white A4 sheet (Chung, McBride-Chang, Wong, Cheung, Penny, & Ho, 2008). These digits were arranged in random order. Prior to formal testing, children were asked to name each of the five digits individually to make sure that they could read them. The participants were then asked to name all digits on the sheet from left to right and from top to bottom as accurately and quickly as possible. This test was administered twice in order to obtain a test–retest reliability, and the average time was recorded. The test-retest reliability was 0.91.

Vocabulary knowledge

The vocabulary definition adapted from studies (e.g., Cheung et al., 2010; McBride -Chang et al., 2008) was used to assess participants' vocabulary knowledge. This test comprised 53 vocabulary items. In this task, children were orally presented with a word representing an object or concept and asked to explain or define this word. Each response was scored on a 3-point scale (from 0 to 2) for completeness. For instance, when "teacher" was given to the children, if she or he explained it as 'a person who teaches', two points would be given, whereas if she or he defined it as 'a person at school', one point would be awarded. The test was terminated if the children scored zero on five consecutive items. The Cronbach's alpha for this measure was 0.89.

Reading comprehension

The sentence comprehension was developed and based on the studies (Chik, et al., 2012; Yeung, et al., 2011). There were 14 cloze sentences in which a noun, a verb or an adjective was missing. Children were requested to choose, from four choices, the word that best completed each sentence. The four choices were of the same word class but had different meaning and usage. One point was given for the correct answer in each sentence. The Cronbach's alpha for this measure was 0.81.

Procedure

Head–Toes–Knees–Shoulders task (HTKS), rapid digit naming, morphological construction, vocabulary definition, phonological awareness, and word reading tasks were administered individually except for Raven's Standard Progressive Matrices. The parents' or guardians' consents for students' participation were obtained before testing. The children were given from 2 to 4 practice items for the cognitive-linguistic tasks before the formal testing. All assessments were conducted by trained experimenters.

Results

Group Comparisons of Reading, Behavioural Self-Regulation, and Cognitive-Linguistic Measures

The poor readers were matched with the average readers as control readers as in Table 1 showing the means, standard deviations, ranges, *t* and Cohen's d values for all tests for reading, self-regulation and cognitive-linguistic measures. There were no significant differences in age, parents' educational levels, and Raven's scores as nonverbal intelligence (IQ) between the groups. The effect sizes (Cohen's d; Cohen, 1988) of all significant differences in sentence comprehension, behavioural regulation, and cognitive-linguistic measures between the poor reader group and control group were medium to large, as seen in Table 1. The performance of the poor reader group was significantly lower than the performance of the control group on all the cognitive-linguistic measures: morphological construction [$t(76) = -7.18$, $p < .001$], phonological awareness [$t(76) = -8.37$, $p < .001$], vocabulary definition [$t(76) = -6.04$, $p < .001$], Head-Toes-Knees-Shoulders task [$t(76) = -8.08$, $p < .001$], rapid digit naming [$t(76) = 5.35$, $p < .001$], and sentence comprehension [$t(76) = -10.36$, $p < .001$].

Table 1. Descriptive statistics and t-test results for all measures

Task	Poor Readers (n = 39)			Average Readers (n = 39)				Effect size
	M	SD	Range	M	SD	Range	t	(Cohen's d)
Age	86.49	3.61	79.00 - 94.00	85.77	4.23	79.00 - 96.00	0.81	0.18
Parents' Educational Level	5.72	1.02	4.00 - 7.00	5.92	0.96	4.00 - 7.00	-0.91	-0.20
Nonverbal IQ	29.44	9.63	11.00 - 45.00	29.79	7.81	12.00- 45.00	-0.18	-0.04
Head-Toes-Knees-Shoulders task	26.05	6.61	15.00- 38.00	38.13	6.59	25.00 - 47.00	-8.08	-1.83
Rapid Digit Naming	26.28	6.82	16.42 - 41.12	19.40	4.23	13.74 - 29.62	5.35	1.21
Morphological Construction	10.82	3.90	3.00 - 18.00	18.03	4.91	6.00 - 27.00	-7.18	-1.63
Vocabulary Definition	25.67	4.90	18.00 - 37.00	34.26	7.40	21.00 - 50.00	-6.04	-1.37
Phonological Awareness	20.26	7.53	7.00- 37.00	35.74	8.76	21.00 - 52.00	-8.37	-1.90
Sentence Comprehension	8.10	1.43	5.00 - 10.00	12.05	1.90	8.00 - 14.00	-10.36	-2.35

Distinguishing Between Poor Readers and Average Readers

To examine the extent to which self-regulation and cognitive-linguistic measures could best distinguish the poor and good readers, logistic regression analyses were used to investigate the four cognitive-linguistic and self-regulation measures, taking each area into consideration once. In the logistic regression analyses, age and IQ were entered into the first step. When the five measures were entered simultaneously into the second step, the three final significant predictors were Head-Toes-Knees-Shoulders task $\chi^2(1, N=78) = 28.70$, $p < .001$, morphological construction, $\chi^2(1, N=78) = 12.85$, $p < .001$, and rapid digit naming $\chi^2(1, N=78) = 12.49$, $p < .001$. With these three measures included in the analysis, an overall hit rate was 96.2%, with accuracy rates of both the poor readers group (97.4%) and control group (94.9%) being very similar to one another (see Table 3). The Head-Toes-Knees-Shoulders task, morphological construction, and rapid digit naming were found to be important indicators of poor readers.

Correlations Between Reading, Behavioural Self-Regulation, and Cognitive-Linguistic Measures

Table 2 presents the correlations among performance on the morphological construction, phonological awareness, vocabulary definition, rapid digit naming, and self-regulation, sentence comprehension

Table 2. Logistic regression analyses for distinguishing between poor and good readers (N=78)

Model No. 1 Model / Predictor	$\chi 2$	Nagel-kerke R^2	Correctly identified poor readers	Correctly identified average readers	Overall accuracy	β	Odds ratio	Wald
Forward stepwise	91.20	0.92	97.4%	94.9%	96.2%			
Age						-0.15	0.87	0.65
Nonverbal IQ						-0.13	0.87	1.80
Head-Toes-Knees-Shoulders task						0.47	1.60	6.48*
Morphological Construction						0.56	1.75	7.18**
Rapid Digit Naming						-0.38	0.68	4.80*

***p<0.001, **p<0.01, *p<0.05

Table 3. Correlations among measures after controlling age and IQ

	1	2	3	4	5	6
1.Head-Toes-Knees-Shoulders task	-					
2. Phonological Awareness	0.41***	-				
3. Morphological Construction	0.36**	0.56***	-			
4. Vocabulary Definition	0.26*	0.44***	0.37**	-		
5. Rapid Digit Naming	-0.22	-0.35**	-0.22	-0.36**	-	
6. Sentence Comprehension	0.54***	0.56***	0.58***	0.43***	-0.35**	-

*p<0.05, **p<0.01, ***p<0.001

for the whole sample (n=78) after controlling for age and IQ. Most of the cognitive-linguistic measures (morphological construction, phonological awareness, vocabulary definition, and rapid digit naming) were significantly correlated with each other. Among these measures, the rapid digit naming was not significantly correlated with the morphological construction and self-regulation, possibly due to our relatively small sample size. The self-regulation measure was significantly correlated with the cognitive-linguistic measures (morphological construction, phonological awareness, and vocabulary definition). All the correlations between cognitive-linguistic measures, self-regulation, and sentence comprehension measures were significant.

Predicting Reading from Behavioural Self-Regulation, and Cognitive-Linguistic Measures

As shown in Table 4, hierarchical multiple regression analyses were performed on the combined data from all of the poor and average reader group given that the general patterns of results were similar in both groups, thereby enhancing statistical power. These analyses examine the extent to which the morphological construction, phonological awareness, vocabulary definition, rapid digit naming, and self-regulation measures explained variability in sentence comprehension. In the regression analyses, age and IQ as the control variables were entered in the first step. The measures of the vocabulary definition, rapid digit naming, phonological awareness, morphological

Table 4. Summary of hierarchical multiple regression for variables predicting sentence comprehension from behavioral self-regulation and cognitive-linguistic measures after controls for age and IQ (N=78)

Step	Predictor	R	R^2	ΔR^2	*Final step*		
					B	*SE B*	β
1	Age	.17	.03	.03	-0.05	0.06	-0.07
1	Nonverbal IQ				0.00	0.03	0.01
2	Vocabulary Definition	.46	.21	.18***	0.04	0.03	0.12
3	Rapid Digit Naming	.50	.25	.04*	-0.04	0.04	-0.11
4	Phonological Awareness	.62	.38	.13***	0.04	0.03	0.17
5	Morphological Construction	.68	.47	.08**	0.14	0.05	0.30**
6	Head-Toes-Knees-Shoulders task	.74	.54	.07**	0.09	0.03	0.31**

*p<.05, **p<.01, ***p<.001

construction, and self-regulation were then entered in the second, third, fourth, fifth, and sixth steps. Vocabulary definition, rapid digit naming, phonological awareness, morphological construction, and self-regulation each made unique contribution to sentence comprehension. These significant predictors together accounted for 18.1%, $F(3, 74) = 6.51$, $p < .01$; 4.1%, $F(4, 73) = 6.09$, $p < .001$; 13.3%, $F(5, 72) = 8.96$, $p < .001$; 8.3%, $F(6, 71) = 10.34$, $p < .001$, and 7.3%, $F(7, 70) = 11.72$, $p < .001$ of the variance in sentence comprehension.

Discussion

The present study represents a first attempt to investigate the cognitive-linguistic skills of behavioral self-regulation, phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming in Chinese poor readers. We also examined the relation between these skills and reading comprehension. The children with reading difficulties exhibited significantly impaired performance on the Head–Toes–Knees–Shoulders task (HTKS), phonological awareness, morphological construction, vocabulary definition, rapid digit naming and sentence comprehension measures, relative to the control group who were matched on age, IQ, and parent's education level. In the logistic regression analyses, self-regulation along with rapid

naming and morphological awareness significantly distinguished poor from adequate Chinese readers. Furthermore, self-regulation explained unique variance in reading comprehension beyond phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming. Our findings are consistent with the simple view of reading (Gough & Tunmer, 1986; Hoover & Gough, 1990), which proposes that reading acquisition and impairment may depend on the orchestration of interconnected, cognitive-linguistic skills. These results were further discussed below.

In the present study, self-regulation skills distinguished children with reading difficulties as compared to those without such difficulties. In particular, the poor readers showed pronounced deficits in the area of cognitive flexibility, working memory, and inhibitory control. Deficits in self-regulation skills may be closely linked with their deficits in cognitive-linguistic skills, which are the primary skills required by readers, and with which most poor readers struggle (Ho, Chan, Lee, Tsang, & Luan, 2004; Shu, Meng, & Lai, 2003). As mentioned previously, Chinese orthography has numerous different graphic patterns and orthographic rules, and thousand of characters are required to be learned. For those readers who have not yet fully mastered the process of learning to read, each character may be learned individually as a kind of logograph or unique symbol. This may in turn place extra demands on the individual's cognitive flexibility, working memory, and inhibitory control. Furthermore, many poor readers may have difficulty concentrating on some aspects of linguistic information (e.g., pronunciation and meaning) and suppressing irrelevant information given the vast number of homophones and homographs in Chinese. At the same time, these readers could have problems processing and recalling a large number of characters needed to develop strong character-semantic skills to discriminate different homophones and homographs in order to comprehend meaningful sentences and passage. Consistent with the research study on Chinese children (Chung & McBride-Chang, 2011; Peng et al., 2013), which found that at least both working memory and inhibitory control contribute to reading development and failure, a similar finding was found in our sample of poor readers. Poor self-regulation may be another possible marker for children with reading difficulties and dyslexia.

Phonological skills also discriminated the poor readers from adequate readers in the present study. The results showed that children with reading difficulties performed worse than the competent readers in all the phonological tasks. Thus phonological awareness deficits in the children with reading difficulties may reflect the lesser quality of phonological presentations of morphemes thereby possibly causing some problems in mapping from graphs to syllabic morphemes. As with the previous studies (e.g., Liberman, Shankweiler, & Liberman, 1989; Stanovich & Siegel, 1994), the current results have also shown that phonological awareness uniquely contributes to reading acquisition and impairment in a variety of languages. Deficits in phonological awareness were also found in poor readers and children with dyslexia (e.g., Liu et al., 2010).

Morphological skills in addition to phonological skills consistently distinguished the poor from the adequate readers. As in the previous studies (Chung et al., 2010; McBride-Chang et al., 2008a; McBride-Chang et al., 2008b), the children with reading difficulties in the present study also performed at a lower level than their typically developing peers on the morphological compounding measure. It may be that poor readers have not fully integrated the morphological unit and the structure of a word, so that their representations and organization of morphological units have yet to develop in order to discriminate morphemes, manipulate morphemic structures and generalize morpheme meaning. Consistent with the studies (Chung et al., 2010; Shu et al. 2006; Yeung, Ho, Chan, & Chung, 2014) morphological awareness was the best method to distinguish children with and without reading difficulties and dyslexia.

Apart from morphological skills, the poor readers also exhibited deficits in vocabulary knowledge. The vocabulary definition used in the present study required the children to define or explain the meaning of the words given. Perhaps the poor readers have relatively limited vocabularies or words in their mental lexicon so that they may have difficulty in recognizing and explaining the word meanings and/or understanding the words sufficiently well to be able to apply them in appropriate context. It is equally possible that an impoverished vocabulary may restrain the haste with which words could be mapped to print (e.g., Liu et al., 2010; McBride-Chang, Liu, Wong, Wong, & Shu, 2012). Therefore, collectively, these findings suggest that poor vocabulary knowledge may be an important cognitive indicator of reading difficulties not only for alphabetic languages but also for Chinese (Landi, 2010; Liu et al., 2010; Ouellette, 2006)

The children with reading difficulties in the present study showed significantly lessened performance on the rapid digit naming task relative to the average readers. These findings may reflect difficulties with generally weak phonological representations, less automatic processes of extraction and induction of orthographic patterns, less efficient lexical access and hence mirror one underlying cause of poor reading given that Chinese script has relatively arbitrary associations between print and sound. Deficits in rapid naming seem to suggest that, like those results for dyslexia in alphabetic languages such as English and German (e.g., Snowling, 2000; Wolf, Bowers, & Biddle, 2000), this cognitive deficit may be an impairment in children with reading difficulties and good indicator of dyslexia in Chinese (e.g., Chung et al., 2010; Ho et al., 2004).

In the present study, logistic regression analyses revealed that self-regulation, morphological awareness, and rapid naming were found to be the strongest cognitive-linguistic skills distinguishing poor readers from competent readers. These three skills could adequately be used to predict group membership of poor and average readers with an overall correct classification rate of 97.4%. Furthermore, digit rapid naming, vocabulary knowledge, phonological awareness, morphological awareness, and self-regulation were linked to reading comprehension when all these cognitive-

linguistic skills were included in regression equations, supplying additional evidence of the potential importance of the sentence comprehension. Therefore, perhaps measures of the Head-Toes-Knees-Shoulders task (HTKS), morphological awareness, and rapid digit naming could be considered to be used for screening readers at risk of reading difficulties.

While the present findings provide a broader understanding of cognitive-linguistic skills relative to reading difficulties in Chinese, these results point to several new directions for future research. Given the paucity of studies that investigate the relationships among self-regulation, phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming, additional longitudinal studies are needed to replicate the present findings both at the group and at the individual level. Future studies conducted with a large sample of readers are therefore necessary to examine whether any causal link stands between different cognitive-linguistic skills such as self-regulation, syntactic, discourse, and pragmatic skills, and different degrees of reading difficulties. Moreover, studies with experimental manipulations and longitudinal studies tapping these skills over time relative to different sets of literacy skills such as text writing abilities will be essential for the future.

To conclude, the current study has demonstrated the potential importance of five cognitive-linguistic skills: self-regulation, phonological awareness, morphological awareness, vocabulary knowledge, and rapid naming, and these skills are strong correlates of reading comprehension in children learning to read in Chinese. Our findings also suggest that weaknesses in self-regulation, morphological awareness, and rapid naming are important markers of word reading difficulties among Chinese readers. Such findings may help to develop tools for the diagnosis and teaching strategies of this group of poor readers, and enhance the public awareness of children with reading difficulties.

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Effectiveness of an Early Intervention Programme for Pre-School Children at Risk of Dyslexia in Singapore

Thomas W. T. Sim,[1 & 2*] Wong Kah Lai,[1] Nor Ashraf Bin Samsudin,[1] and Tim Bunn[1]

1 Dyslexia Association of Singapore
2 DAS Academy Ltd, Singapore

Abstract

An investigation of the effectiveness of an early intervention programme for children at risk of dyslexia in Singapore was conducted with 56 children aged five to six years old identified to be at risk of dyslexia. After risk-identification, the children undertook a pre-test of literacy ability that measured alphabet knowledge, phonogram knowledge, sight word knowledge, reading ability, and spelling ability. The children then received intervention in the form of an early intervention programme at the Dyslexia Association of Singapore. After which, the children were post-tested for their literacy ability to measure literacy gains. The results showed that literacy scores at post-test were significantly higher than at pre-test and that overall literacy gain was significantly positively correlated with length of intervention. These results indicated that early intervention was effective and that the longer the intervention the greater the gain in literacy ability.

Keywords: early intervention, kindergarten, preschool, children, dyslexia, at-risk of dyslexia, reading, spelling, Orton-Gillingham, Singapore

There is now considerable evidence from research worldwide that early intervention is the most effective approach to help children with dyslexia and other learning difficulties (Rose, 2009). Research by Torgesen (2001) indicated that one hour of individual intervention at 8 years of age led to an increase of between 0.2 to 0.3 standard score improvements and can lead to improvement of these children to

* *Correspondence to:*
Thomas W. T. Sim, DAS Academy Ltd, 73 Bukit Timah Road, #05-01 Rex House, Singapore, 229832
Email: thomas@dasacademy.org.sg

a typical reading age. Evidence from studies with young children aged 4 and 5 in the UK have shown lasting benefits for early support (Fawcett, Lee, & Nicolson, 2014; Nicolson et al., 1999). Moreover studies from Singapore (See & Poay, 2014) have shown that it is possible to identify pre-school children at risk of failure before the formal age of diagnosis for dyslexia. The Dyslexia Association of Singapore (DAS) runs an early intervention programme (EIP)[1] in literacy for pre-school children younger than seven years old identified as being at risk of dyslexia.

Singapore is a multi-ethnic and multilingual society noted worldwide for its high educational outcomes in international tests such as the OECD's Programme for International Student Assessment (PISA) tests (OECD, 2011). Perhaps part of the reason for Singapore's success in the PISA test is due to its focus on early intervention for children with learning difficulties. One of these early intervention programmes is the Development Support Programme (DSP). A sum of S$30 million was put aside in the Singapore budget in 2011 for this new programme (MOF, 2012). In addition, $4 million has been set aside for the DSP annually. The Ministry for Social and Family Development aims to cater to 2,000 children in the DSP. The DSP provides learning support and therapy interventions to children with mild speech, language and learning delays (MSF, 2013). DAS's EIP aims to supplement the DSP and focuses on literacy development[1]

In Singapore, children start Primary One (P1 for short, the equivalent of Grade 1) in the year that they turn seven years old. Primary education is mandatory. English is the language of instruction for all subjects - math, science, art, etc., except for a second language which is taught in the children's mother tongue. As such, it is expected of young Singaporean children to be equipped with rudimentary English literacy skills prior to starting P1. Most children would have done so by attending two years of kindergarten education. Scarborough (2009) noted that the process of reading acquisition began before elementary school, a case that holds true in the Singapore context. Piasta and Wagner (2010) noted that children who started school with a weak grasp of letter names and sounds would likely have difficulty in learning to read. Singaporean children, at P1, are expected to have attained a certain level of reading, copying and writing ability (e.g. the ability to read and spell the word "neighbourhood"). This presents a significant challenge for children at risk of dyslexia, with specific learning differences and developmental delays in literacy.

There is unanimous agreement that problems with phonological processing are associated with dyslexia and associated reading and spelling difficulties. Research by Byrne (1998) and Hulme et al. (2002) indicate that awareness of individual speech sounds (phonemes) is the skill most crucially related to emergent literacy. The positive impact of phonological awareness training on literacy development was also confirmed by the National Reading Panel's (NRP) (2001) meta-analysis of 96 studies carried out in the United States of

1. *The authors wish to acknowledge that the DAS EIP is generously funded by the National Trade Union Congress (NTUC) OrangeAid initiative.*

America. The NRP (2001) research indicated an improvement on reading (d = 0.53) and spelling (d = 0.59) from early intervention. Phonemic awareness training was also shown to be most effective when associations between sounds and letters are explicitly taught (NRP, 2001). Children's literacy skills can thus be improved with phoneme awareness and phonological skills training and that the benefits are greatest for younger children. Torgesen (1998) argued strongly on the need for early intervention, catching children before they fail/fall. The EIP offered by DAS shares this passionate belief. The programme takes a literal leaf out of Torgesen's research and provides early literacy intervention to preschool children ages five to six at risk of dyslexia, targeting their areas of literacy weakness with a focused contextualised programme.

The Dyslexia Association of Singapore Early Intervention Programme

The DAS early intervention programme (EIP) is based on evidence from research as reviewed. The DAS EIP targets the knowledge and skills required for letter knowledge, phonemic awareness, comprehension, sight words and fine motor skills acquisition within a suggested preschool scope and sequence (see Appendix 1).

Education therapists formulate and devise Individualised Intervention Plans (IIP) for students based on their specific learning needs obtained from Pre-Informal Assessment at the beginning of the first remediation session with the educational therapist. Lessons are delivered in an engaging and simultaneously multisensory manner based on Orton-Gillingham (OG) approach and principles.

The OG approach is a language-based approach where students are explicitly taught the rules, facts and generalisations about the English language. Six principles govern the OG approach:

1. **Language based**
   It encompasses an awareness and appreciation of the features of the English language that includes reading, spelling, writing and learning strategies as appropriate to young learners' developmental needs.

2. **Cognitive**
   It was noted that 85% of the English language can be made predictable with explicit instruction in rules and generalisations that govern its use. This tool enables young learners to read/spell more effectively.

3. **Structured, sequential and cumulative**
   This is especially vital to a dyslexic learner. In order to achieve automaticity, content needs to be taught systematically in a sequential manner. Consistent review of previously taught/learned material fosters retention and enables the learning of new material to "spiral" upwards with each accumulation.

4. **Simultaneously multisensory**
   Through visual, auditory, kinaesthetic and tactile activities, that builds a strong and intense memory connection, young learners are more likely able to "retrace" and

"retrieve" the memory of what-was-taught in previous lesson/session.

5. **Diagnostic-prescriptive**
No two learners are alike. In view of young learners with literacy delay, individualised teaching through IIP (Individualised Intervention Plan) is essential.

6. **Emotionally-sound**
Stress, anxiety and negative emotions can act as an affective filter that comes between learning and what-is-being-taught. Emotionally-sound delivery fosters and promotes learning and acquisition.

The EIP is carried out in three tiers. A Preschool Screening Assessment at the point of admission into programme, intervention by Educational Therapists and a Full Age Psychological Assessment (point of exit of the programme) by our qualified DAS psychologists. Children are grouped according to Assessment results/ Profiles. Each class consists of 2 to 4 children, each having their own IIP. Children who complete the programme and are diagnosed as dyslexic may continue on with DAS in its main literacy programme at Primary One.

Student progress is carefully monitored through observation made during each intervention session as appropriate. Based on the diagnostic-prescriptive nature of the OG principle, education therapists adjust the lesson content for the next session by addressing the areas of uncertainty, weakness and strength. Thereby, shoring up against weaknesses in foundation concepts, addressing gaps in foundation knowledge and leveraging on student achievement and strength, promoting further interest and progress in learning.

Research Questions and Hypotheses

This research aims to evaluate the effectiveness of the DAS EIP programme. The research questions and hypotheses are firstly, does the DAS EIP improve overall literacy ability? And secondly, is the length of intervention correlated to overall Literacy Gain?

It was hypothesised that children at post-test would have significantly higher literacy scores than at pre-test and that there would be a significant positive correlation between length of intervention and overall literacy gain.

Method

Participants

Fifty-six children (37 boys and 19 girls) aged five to six years old were selected for this study. Parents' informed consents were obtained before the research was conducted.

Materials

The literacy score on a Comprehensive Literacy Assessment was used as the pre-test and post-test measure. There were five areas of assessment: alphabet knowledge (ability to sequence the alphabet, write lowercase letters, and write uppercase letters), phonogram knowledge (ability to identify basic consonants and short vowels, i.e. letter to sound correspondence), sight word

knowledge (ability to read sight words), reading ability (ability to read cvc, ccvc, cvcc, and ccvcc words, where c=consonant and v=vowel), and spelling ability (ability to spell cvc, ccvc, cvcc, ccvcc words). Scores were converted into percentages for easy comparison.

Procedure

The children were pre-tested before going on an intensive two-hour per week literacy intervention based on Orton-Gillingham principles (see Appendix 1 for lesson outline). Students were then post-tested to measure their overall gain.

The intervention length ranged from 10 to 70 hours (M = 48.7, SD = 24.0). There was no control group as it was deemed that withholding or delaying intervention was unethical. Instead, as children entered the EIP at different times of the year and hence received differing intervention lengths, a correlation between length of intervention and overall literacy gain was conducted.

Results

There was a significant improvement in Overall Literacy Ability from pre-test (M = 26.44, SD = 16.90) to post-test (M = 51.16, SD = 19.77), $t(55)$ = 12.791, p < .001, Cohen's d = 1.34. In addition, there were significant improvements in all five areas (see Figure 1):

Alphabet Knowledge: pre-test (M = 56.04, SD = 31.34) to post-test (M = 80.43, SD = 21.35), $t(55)$ = 7.519, p < .001, Cohen's d = 0.91;

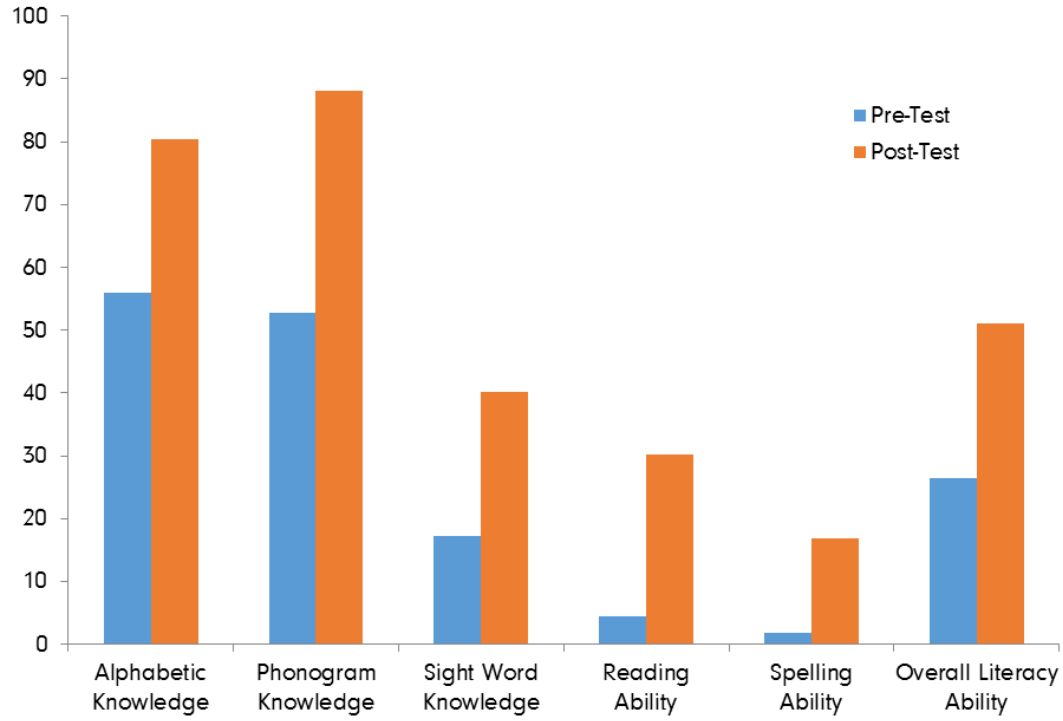

Figure 1. Mean Pre-Test and Post-Test Literacy Scores (in percentages)

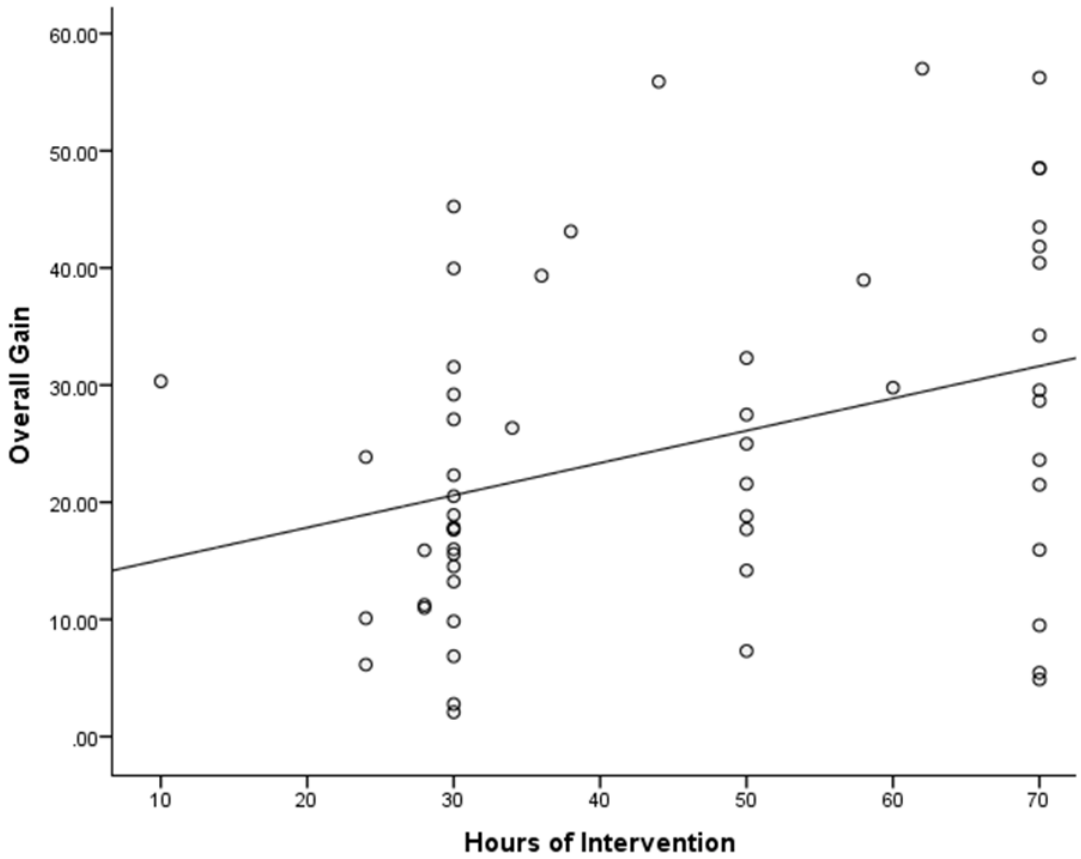

Figure 2. Scatter-Plot of Length of Intervention and Overall Literacy Gain.

Phonogram Knowledge: pre-test (M = 52.68, SD = 34.43) to post-test (M = 88.19, SD = 20.47), $t(55) = 8.661$, $p < .001$, Cohen's $d = 1.25$;

Sight Word Knowledge: pre-test (M = 17.32, SD = 22.69) to post-test (M = 40.14, SD = 30.95), $t(55) = 8.366$, $p < .001$, Cohen's $d = 0.84$;

Reading Ability: pre-test (M = 4.38, SD = 11.60) to post-test (M = 30.27, SD = 31.28), $t(55) = 6.714$, $p < .001$, Cohen's $d = 1.10$; and

Spelling Ability: pre-test (M = 1.79, SD = 5.17) to post-test (M = 16.79, SD = 25.05), $t(55) = 4.790$, $p < .001$, Cohen's $d = 0.83$.

In addition, no child had a lower score at post-test than at pre-test (i.e. all children showed improvement in all five areas and in overall literacy score).

There was a significant positive correlation between Hours of Intervention and Overall Literacy Ability Gain, $r(54) = .347$, $p = .009$. (see Figure 2).

Discussion and Conclusion

The results supported both hypotheses that children at post-test would have significantly higher literacy scores than at pre-test and that there would be a significant positive correlation between length of intervention and overall literacy

gain. These results indicated that the DAS EIP was effective and that the longer the intervention the greater the gain in literacy ability. The results of this research parallel research conducted by Fawcett et al., (2014); Nicolson et al., (1999); and Torgesen (2001).

Fawcett et al.'s (2014) research indicate that children with intervention as little as 15 minute sessions twice weekly for 10 weeks (5 hours in total) would show a good improvement versus a control group. The length of intervention in this research ranged from 10 to 70 hours with all children showing a literacy improvement. The child that received 10 hours of intervention received this intervention over 10 weeks (one Singapore school term), whereas children that received 70 hours of intervention received intervention over 40 weeks (four Singapore school terms comprising one school year). All this seems to indicate that length of intervention may not be as important as frequency of intervention and the effectiveness of sustained intervention versus intensive intervention.

Torgesen (2001) concluded that 70 hours of intervention would be sufficient to return a child to a typical reading age. However, the results of this study supports the idea that any amount of intervention (as low as 10 hours) would be useful to help children at risk of dyslexia. The results also indicate that more hours of intervention would be more effective than lesser hours. However, the lack of a control group limits this conclusion. Ethical considerations suggest that it would be difficult to conduct control group versus intervention group research in this area and that investigating correlations with length of intervention would be a good compromise in terms of scientific knowledge versus ethical concerns.

The effect sizes of the improvement in overall literacy scores achieved by the DAS EIP was $d = 1.34$ with effect sizes of the five individual areas ranging from $d = 0.83$ to $d = 1.25$. An effect size is a statistic used to estimate improvements in intervention studies. This allows for comparisons to be made between different studies, and to assess the magnitudes of improvements resulting from different interventions. An effect size of 0 means that there was no improvement. An effect size of 1 means an improvement of 1 standard deviation. In terms of the statistical significance of effects sizes (expressed as d), $d = 0.20$ is considered low, $d = 0.50$ is moderate and d = 0.80 is high (Cohen, 1988). The NRP's (2001) meta-analysis showed that effect sizes greater than 0.80 were found in only 32% of studies and effect sizes of 2.0 and above were rare (6%). The DAS EIP overall improvement of $d = 1.34$ is thus a very great achievement and the improvements of the five individual areas from $d = 0.83$ to $d = 1.25$ was also remarkable. This in turns validates the effectiveness of the DAS EIP. It is particularly important in this context to highlight the striking and significant improvements in reading ability, with mean score accelerating from 4.38 to 30.27, plus the significant increase in sight word reading. One of the key findings of the National Reading panel was that although intervention improved phonology, it was more difficult to impact on reading ability. It may be seen from these results that the DAS EIP was able to improve not just the phonology but also

the overall literacy ability, including reading and spelling.

Although this study showed that more hours of intervention would be more effective than lesser hours, due to limited resources, it is not feasible to have unlimited hours of intervention for every child. Future research could be focused on whether there was an optimum number of hours of intervention so as to make better use of manpower and other resources available for intervention.

In conclusion, the results provided strong evidence for an OG-based early literacy intervention approach and validates the effectiveness of the DAS Early Literacy Intervention Programme. The scope and sequence used at DAS may thus be useful for adoption by other providers of early intervention programmes.

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Appendix 1.

DAS Preschool Programme - Suggested Lesson Breakdown

Two Hour Lesson

- Story Telling / Oracy
- Card Drill
- New Phonogram/ Letter Formation / Alphabet Sequencing
- Phonic Awareness
- Targeted Words to Read
- Targeted Words to Spell
- Sight Words
- Fine Motor Activity /. Assistive Technology

First Hour Lesson

- Story Telling / Oracy
- Card Drill
- New Phonogram / Letter Formation / Alphabet Sequencing
- Phonic Awareness
- Targeted Words to Read

Second Hour Lesson

- Card Drill
- Sight Word
- Review Phonogram / Letter Formation / Alphabet Sequencing
- Targeted Words to Spell
- Fine Motor Activity . Assistive Technology

DAS Preschool Programme - Suggested Scope and Sequence

Literacy Appreciation	Story Telling, Rhymes	Oracy Curriculum						
Letter Knowledge *a, t, b, l, f, h, p, s, u, m, r, c, w, g, y, v, i, n, d, j, z, qu, o, k, e, x*	Letter Recognition	Letter Formation	Letter Sound	Alphabet Sequence				
Phonemic Awareness	Word Awareness	Syllable Awareness	Phoneme Isolation *B, E, M*	Oral Blending CV, CVC	Oral Blending CVCC *-st, -sk, -sp, -nd, -nt, -lt, -mp, -ft* CCVC *sl, cl, fl, pl, bl, gl, br, cr, dr, fr, pr, tr, gr st, sp, sn, sw, sk, sm sh, th, ch, wh*	Oral Blending *-ng, -nk, Floss, -ck,*	Phoneme Counting	Spelling
Sight Words	Sight Word Curriculum							
Fine Motor Skills	Fine Motor Curriculum	Handwriting Handwriting without tears ®						
*** Comprehension**	Comprehension Curriculum							

Components can be done concurrently according to students' needs.

** Comprehension component to be done for students at advance level.*

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The UK's Dyslexia-friendly Initiative and the USA's Universal Design Movement: Exploring a Possible Kinship

Barbara E. Pavey [1*]

1 Associate Tutor, University College London Institute of Education

Abstract

Within the competing discourses of dyslexia discussion, the pedagogical change represented by the Dyslexia-friendly "turn" is embedded within the sociological context of the social model of disability. Theoretical developments supporting this philosophical and ideological perspective have led to requirements for facilitatory practices in both the UK and USA. This paper compares two key protocols. As a result it is considered that the USA's principles of Universal Design for Instruction (UDI) demonstrate a kinship with the principles governing the UK's Dyslexia-friendly (DF) approach. The paper explores the implications for wider dyslexia research and practice, and concludes by discussing how small scale research arising from the DF approach could contribute to an evidence base in support of the principles of UDI.

Introduction

The UK's Rose report (2009), reviewing the present position regarding dyslexia, states that:

> *Dyslexia is best thought of as a continuum, not a distinct category, and there are no clear cut-off points*
> (Rose, 2009; p. 34).

Dyslexia has for a long time been described as existing as a range, and this characteristic is not contested; Empirical practice also confirms this, recognising that for some children the gaining of literacy skills is a harder task than for others, and progress may be impeded to the point of disability. Consequently, debate has moved perceptions of dyslexia towards a status

[*] *Correspondence to:*
Dr Barbara E. Pavey, Email: PaveyB105@gmail.com

related to regular reading and other literacy acquisition, while continuing to reflect intransigent difficulty. For example Lind et al., investigating the genetic components of dyslexia, state that the condition "[L]ikely represents the low tail of a reading ability distribution in the population" (Lind et al., 2010; p. 1).

While the value of research focused on classical, cognitive, psychological concepts is recognised, social model approaches may support a perspective of difference, moving away from a discourse of deficit. The dynamics of competing views and changing perspectives ensures that this is an exciting time to explore practices intended to support learners who experience dyslexia.

Theorising Dyslexia

Dyslexia theorisation towards the end of the 20th century focused on particular causal constructs, with competing deficit-based views, but with an emerging core concept located within phonological difficulty (see for example Snowling and Stackhouse, 2006). There were difficulties with definition, reflecting the lack of agreement about the actual nature and causes of dyslexia. While debate has continued, inquiry in three key areas has challenged conventional deficit-based accounts; these are: evidence concerning the nature of heritability in the genetic enquiry; evidence concerning brain anatomy derived from brain scanning technology, and evidence concerning differing languages and orthographies. All of these may be considered as on-going enquiries.

There is a sense in which dyslexia will always be concerned with phonological difficulty, because literacy is concerned intrinsically with interpreting visual language in terms of verbal language, and vice versa. While changing technologies have not resolved theoretical issues, they have revealed that there is no simplistic deficit in the sense of a particular culprit configuration in the brain. Research continues, with a focus on the mechanisms (Reid, Fawcett, Manis and Seigel, 2008; Caylak, 2010).

Rose (2009, p. 37) considers the manifestation of dyslexia as related to reduced activation in the langauge centres of the brain. This possibility is also noted by Friederici (2006), who identifies reduced activation in phonological and lexical-semantic processing in the language centres of very young infants, including newborns, correlating with identified language difficulties at the age of four years (Friederici, 2006, p. 947). Research by Silani, Frith, Demonet, Fazio, Perani, Price, Frith, and Paulesu (2005), identifies reduced activation as linked with a reduced volume of grey matter, and as evident in different cultural contexts.

Pedagogically, Reid asserts that what is needed in dyslexia teaching is not something that is functionally different, but rather is an intensification of stimulus, input and rehearsal, varying in "density" and focused according to individual learning needs (Reid, 2005, p. 146). This would have some congruency with a reduced activation account. Established pedagogical beliefs in the efficacy of structured phonological approaches can also be viewed in terms of compensating

for reduced activation rather than for a deficit.

This practitioner-based view of dyslexia could be accommodated by a characteristic of reduced activation overlaid with compensatory, strategic and facilitatory knowledge gained environmentally and over time. It could account also for an awareness that whatever the originating theoretical basis for discussions about dyslexia, the pedagogical input is likely to remain similar. This includes strategies and techniques familiar to dyslexia specialists, but also includes approaches and environmental modifications associated with the DF initiative, and with Universal Design (UD) in its pedagogical context.

The concept of deficit is also challenged by the rights-based view of dyslexia which can be manifested, as Burden and Burdett point out, as "dyslexic pride" (Burden & Burdett, 2005, p. 102). This reflects a perspective of enjoyment and confidence in the different characteristics, traits and abilities which may be part of an individual's personal make-up and which may or may not be part of their dyslexia experience. Such a view celebrates difference, in contrast to the dominant deficit concept embodied in norm-based dyslexia assessment and management.

However, the deficit view remains strong in discussions of dyslexia. It is certainly the case that much dyslexia research has been carried out by pursuing psychological and scientific constructs in which deficit is a fundamental epistemological aspect of the paradigm. There is also a point to be made about people's need to understand, and have a name and consequently an explanation for, the difficulty that they or their children are experiencing.

A Paradigm Split in Discourses of Dyslexia?

Paradice (2001) and Chanock (2007) discuss distinct understandings of the concept of dyslexia, resulting in competing discourses, the major contenders being the medical-psychological view, and the social constructivist view. These are responsible for a paradigm split in discourses of dyslexia, which can result in proponents of one view claiming that the supporters of the alternative are denying fundamental truths about dyslexia.

The social constructivist view proposes a social model of disability. This is a rights-based account most closely associated with the work of Oliver (1986), and takes the view that, in dyslexia as in other disabling characteristics,

> *"While an individual may experience impairments, it is the social situation, both practical and attitudinal, that is disabling"* (Pavey, Meehan and Waugh, 2010, p. 7).

It is this social situation that both the UD and the DF initiative seek to address through modifications, accommodations, and adjustments. These are devised to make the social setting, and by extension the learning setting, more accessible for people who experience dyslexia. It would be possible to accommodate such facilitatory concepts and practices, and still have a prevailing discourse couched in terms of individual deficit; a tacit notion

of deficit may be deeply embedded and difficult to dislodge. In contrast, and in an attempt to change this view, the DF approach insists that dyslexia is a difference, rather than a deficit (MacKay, 2005).

Principles of Dyslexia-Friendly Practice

The DF initiative developed at the same time as the pedagogical application of UD, in a different location (Wales, UK) and with a different function. Both arose at a time of challenges to conventional characterisations of disability, developed from rights-based expectations that had gained strength since the nineteen seventies.

UD might be described as top-down, with a set of principles being extended and applied to pedagogy, whereas in contrast DF pedagogy has had a bottom-up deployment, growing from a small, local application to a national and then international one. Whereas UD's educational application developed in higher education and then expanded into wider curricular contexts, DF began at school level, and then expanded to include all aspects of UK education.

The term "Dyslexia Friendly" originated with Neil MacKay (2001a). In supporting children with dyslexia in ways that enabled them to learn and achieve within the UK National Curriculum, MacKay called on available pedagogical methodologies and adjustments, but also addressed issues of confidence and the development of a whole school ethos. Further, DF practice mandated the development of supportive learning environments.

In Wales, the approach was taken up by Swansea Local Authority as a means both of meeting children's dyslexia needs and of satisfying parents that their children's learning needs were being met, as this had become a problematic issue. Instead of locking up resources within statements of special educational needs (educational contracts between parents, the Local Authority (LA) and a child's school), thereby limiting their availability for other children, the DF initiative put resources directly into schools (BDA, 1999).

The DF approach allowed for a more positive educational climate for the gaining of literacy skills. This involved the LA, the school staff, and governors, working together to provide dyslexia expertise within a school, rather than looking for support from an external specialist team. Subsequently the DF initiative was developed and taken forward by the British Dyslexia Association in Achieving Dyslexia Friendly Schools (BDA, 1999), distributed nationally. The BDA went on to develop the DF quality mark, which supported the LA and its schools in developing an holistic DF ethos (BDA, 2004).

Principles of Universal Design

The UD movement originated in the U.S. in the work of Ron Mace. Mace combined architectural and access principles in championing and providing available accommodations for disabled people (Center for Universal Design, 1997, cited by Zeff, 2007). Subsequently this led to UD principles being applied to functions associated with non-disabled and neurotypical people and

communities, in similar ways to those expected by DF principles.

Zeff (2007, citing Mace, 1998), identifies the principles for UD which were developed by Ron Mace, and articulated further, with his involvement, by the Center for Universal Design (1997). As an architect experiencing a disability, Mace's first concern was for accessibility, but the principles extend their relevance and application into the wider context of education. The seven original principles of UD are those of:

1. Equitable use
2. Flexibility in use
3. Simple and intuitive
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

(Center for Universal Design 1997; Scott, Maguire & Shaw, 2003; Zeff 2007).

Zeff goes on to cite the work of the Center for Applied Special Technology (CAST) in distilling the nine principles into three, termed Universal Design for Learning:

i. Multiple means of representation
ii. Multiple means of expression
iii. Multiple means of engagement

(CAST 2006, cited in Zeff, 2007)

In this encapsulated form can be seen the emergence of similar principles to those embodied in the DF initiative, arising at the same time, but independently (BDA, 1999).

A further development from Canada, through the work of the Teaching Support Services of the University of Guelph, Ontario (Zeff, 2007), established Universal Instructional Design following on from concepts developed by Bowe (Bowe, 2000, cited by Zeff, 2007). Importantly, this work established the principle, confirmed empirically, that:

> *The strategies and techniques they were recommending for faculty to implement for students with disabilities actually benefited all students.*
>
> (Zeff, 2007; p. 31).

This matches closely with the DF principle that good teaching for children who experience special educational needs is good teaching for all (BDA, 1999).

Zeff notes the importance of this work in moving the UD concept towards its pedagogical application, pointing out similar developments at the University of Connecticut in the work of McGuire, Scott, and Shaw. These authors sought to develop a theoretical construct of UD principles applied in the context of diversity in Higher Education (Zeff, 2007, citing McGuire, Scott, and Shaw, 2003).

Their work resulted in nine principles within the construct that they named Universal Design for Instruction (UDI) (Zeff 2007, citing Shaw, Scott and McGuire, 2001) these can be found listed in Table 1. To the original seven principles they added:

- A community of learners - the instructional environment promotes interaction and communication among the students and between

students and faculty

- Instructional climate - instruction is designed to be welcoming and inclusive. High expectations are espoused for all students (Shaw, Scott, and McGuire, 2001).

The authors continue their championing of a pedagogical focus for UD, endorsing its value in developing and promoting inclusion (Scott, McGuire & Shaw, 2003; McGuire, Scott and Shaw, 2006). Noting the level of interest in the UD concept among educators, they state:

> *At a fundamental level, Universal Design has captured and illustrated an elusive element of inclusion: the anticipation and acknowledgement of human diversity as the norm*
> (McGuire, Scott and Shaw, 2006; p. 168).

However, the authors also accept that there are some learners who will need further accommodations and adjustments. Neither the inclusive principle of UDI nor that of the DF approach, precludes the view that some people will need additional specialist input, a view confirmed in the Rose report (2009, p. 86).

McGuire, Scott and Shaw (2006) are concerned to establish the validity and reliability of the UD construct in its pedagogical form, and they put forward an eight-point research agenda. Briefly, they call for research that: considers the validity of the UDI model; investigates how the UDI model can be effectuated in educational settings; considers outcomes for students with and without disabilities; explores the possible impact of variables within learners and within learning settings; investigates whether UDI can reduce the need for specialist intervention; identifies the principles and practices for training practitioners in UDI; investigates the perceptions of stakeholders regarding UDI and finally considers any necessary adjustments to the model that might arise from research. It is the contention of this paper that if congruency can be established between UDI and the DF initiative, then small-scale research carried out in exploring the latter can contribute to empirical understanding of the former.

McGuire and Scott (2002) went on to explore how the principles of UDI could be applied to pedagogy of particular relevance to dyslexic learners, setting this within the context of education in the USA. Focusing on the UK setting, and upon the wider school, FE and HE age ranges, Table 1 lists the UDI principles (Shaw, Scott, and McGuire, 2001) and compares them with published DF guidance.

The context of pedagogy

Much dyslexia research his taken place in English language contexts, so it is understandable that pedagogy which addressed dyslexia and disability would develop in English language settings. However if such initiatives are to be globally applicable and universally useful, they must be considered in the context of other pedagogies.

Hogan (2013) considers Singapore's pedagogical model, comparing it with the English equivalent. He notes the successes of Singapore's pedagogy,

pointing out characteristics which create successful academic outcomes. He also describes a desire for pedagogical reform in Singapore which would encourage a 'knowledge building' economy. Pedagogy of this kind would combine knowledge and innovation in educational practice, with a view to developing and improving economic opportunities, leading to increased prosperity. This accords with Tan's (2010) descriptions of initiatives to broaden Singapore's educational curriculum to allow for the development of creativity and innovation. These characteristics are seen as important for retaining high levels of development and manufacturing achievement.

While acknowledging the range of educational initiatives taking place in Singapore, Hogan identifies four key principles in an established pedagogy: national curriculum coverage; an emphasis on teaching that will lead to good assessment outcomes; professional accountability linked to student outcomes; and the importance of credentials and systems based on merit and achievement. He also describes a pedagogy based on transmission of knowledge to students through talking, using worksheets, and working out examples together as a class. Hogan indicates that practitioners address students in ways that encourage the development of their performance in tasks, rather than opening opportunities for explanation and exploration. Both Hogan (2013) and Tan (2010) suggest that an emphasis on closed questions relates to expectations within the education culture.

To embed innovation in modern educational practice, Tan looks for the development in students of creativity and critical thinking; these are both areas where dyslexic learners can succeed without being constrained by literacy requirements. However, a creative approach is also valuable for educators who seek to meet the heterogenic range of learning manifested by learners who exprience dyslexia. In discussing professionals' creative response to educational challenges, Thomas (2007) speaks of 'inspirational advance' (p. 69) 'serendipitous noticing' and 'creative intuition' (p. 91). Aspects of professional practice such as these can create responsiveness to indiviudal dyslexic learners, but can also inform and make possible the application of UDI/DF principles to existing pedagogies.

Exploring a Possible Kinship

Three mechanisms and checklists (MacKay, 2001b; Mortimore and Dupree, 2008; Pavey, Meehan and Waugh, 2010, developed from Pavey, 2007) were consulted to see how readily DF principles could be matched with Shaw, Scott and McGuire's (2001) nine-point construct of UDI. The comparison showed that MacKay's checklist (2001b; p. 172) is brief, but can be matched to the UDI criteria.

Mortimore and Dupree's audit checklist, developed from MacKay (2004), includes elements of assessment that are not highlighted in the principles, and the UDI focus upon a community of learners may be implied but is not directly identified in Mortimore and Dupree. Pavey, Meehan and Waugh's audit tool allows for a

Table 1: Comparison of Principles of Universal Design for Instruction and Dyslexia-Friendly Principles

Principles of Universal Design for Instruction (Scott, McGuire & Shaw, 2003; p. 375-6, citing Scott, McGuire & Shaw, 2001)	**Principles of Dyslexia-Friendly Practice** (Pavey, Meehan & Waugh, 2010; p. 99–105, developed from Pavey, 2007)
1. Equitable use – instruction is designed to be useful and accessible by people with diverse abilities. Provide the same means of use for all students, identical whenever possible, equivalent when not (Scott, McGuire & Shaw 2003; p. 375).	Input takes account of multi-sensory learning. Multi-sensory inputs are close together in stimuli and in tasks. Practitioners' talk time reduced; board-copying reduced; hand-outs available ahead of teaching.
2. Flexibility in use – instruction is designed to accommodate a wide range of individual abilities. Provide choice in methods of use (Scott, McGuire & Shaw 2003; p. 375).	Learners can use alternative means of recording, e.g. Poster, tape, ICT. Practitioners know and use learners' preferred individual learning styles, and challenge learners to use different learning styles in a manageable way. Practitioners know their own preferred individual learning styles, and challenge themselves to move outside of their own comfort zone.
3. Simple and intuitive –instruction is designed in a straightforward and predictable manner, regardless of the students experience, knowledge, language skills, or current concentration level. Eliminate unnecessary complexity (Scott, McGuire & Shaw 2003; p. 375).	Instructions clear, explanations repeated, timescales and length of work product clearly stated, subject-specific words linked to clear concepts. Input given in small chunks. New concepts are linked to previous concepts. Texts are given ahead of time for practice purposes.
4. Perceptible information – instruction is designed so that the necessary information is communicated effectively to the student, regardless of ambient conditions or the student's sensory abilities (Scott, McGuire & Shaw 2003; p. 375).	Teaching uses diagrams and illustrations, bullet points and lists, colours for identification purposes. Text resources include a font which is clearly distinguishable, in shape and size, with rounded shape and two-story 'a'. Photocopies are clean and clear, text is in small groups, clearly separated. There are frequent headings, shown in bold, separate from the text; off- white or tinted paper is used. Diagrams and illustrations are used and give the same information as, or relate to text, and are situated near to relevant text.

Table 1: Comparison of Principles of Universal Design for Instruction and Dyslexia-Friendly Principles (Cont.)

Principles of Universal Design for Instruction (Scott, McGuire & Shaw, 2003; 375-6, citing Scott, McGuire & Shaw, 2001) (Cont.)	**Principles of Dyslexia-Friendly Practice** (Pavey, Meehan and Waugh, 2010; 99–105) (Cont.)
5. Tolerance for Error – Instruction anticipates variation in individual learning pace and prerequisite skills (Scott, McGuire & Shaw, 2003; p. 375).	Extra time is allowed for learners to finish written work if necessary. Learners' output is judged predominantly on quality and content. Extra time is allowed for learners to finish written work if necessary. Judgements of laziness are avoided.
6. Low physical effort – instruction is designed to minimize non essential physical effort in order to allow maximum attention to learning. Note: this principal does not apply when physical effort is integral to essential requirements of a course (Scott, McGuire & Shaw, 2003; p. 375).	Assessment criteria are clearly stated, including those for alternative formats. Learners' output uses diagrams and illustrations, bullet points and numbered lists. Learners are asked how best they learn, changes in teaching acknowledge what learners say about how best they learn
7. Size and space for approach and use – instruction is designed with a consideration for appropriate size and space for approach, reach, manipulations, and views regardless of a student's body size, posture, mobility, and communication needs (Scott, McGuire & Shaw, 2003; p. 375).	Care is taken so that learners with possible dyslexia see and hear the teacher or lecturer clearly. Learners experiencing possible dyslexia have opportunities to work in a quiet area. Visual displays and pedagogical resources conform to text resource guidelines; learners who request tinted paper may have it.
8. A community of learners – the instructional environment promotes interaction and communication among the students and between students and faculty (Scott, McGuire & Shaw, 2003; p. 376).	Learners are allowed to ask questions. Rewards can be achieved by all the learners in the group.
9. Instructional climate –instruction is designed to be welcoming and inclusive. High expectations are espoused for all students (Scott, McGuire & Shaw, 2003; p. 376).	Learners' reading aloud, or writing on a board, is voluntary. Learning tasks consider and deal with emotional issues; care is taken to protect learners feelings and ensure that they are not teased because of literacy difficulties

closer match through its greater detail (Table 1). Taken together these audit mechanisms demonstrate a high level of congruency with UDI principles. With the establishment of this relationship it is possible to turn to DF research for elucidation of whether or not these shared principles actually aid pedagogical efficacy.

There are a number of small scale projects that have investigated DF effectiveness, primarily within the context of LAs. Authorities that have implemented the DF process report success, using criteria such as falling numbers of statements of special educational needs and greater confidence amongst parents, practitioners and children, that dyslexia needs can be managed (Amos, 2004; MacKay, 2006; O'Brien, 2006).

A further source of data is found in the work of the first tier of the UK's national SEN and Disability Tribunal (SENDIST), which hears parental appeals against decisions made by LAs in resourcing and managing provision for school age children with special educational needs. The Tribunal publishes an annual report about its work, including the nature of learning difficulties and special educational needs with which it has been concerned.

Table 2 shows the special educational need which triggered the majority of the Tribunal's cases registered in each year, and the position of literacy as a cause for concern, including Specific Learning Difficulty (SpLD – a term now frequently overlapped with, although not synonymous with, dyslexia (BPS, 1999). Available reports, for a ten year period running from 1999-2009, show a discernible reduction in the concerns aroused by literacy/SpLD/dyslexia, so that in 2007 the number of Tribunals registered dropped to less than half of the 2001 figure, and the position of literacy/SpLD/dyslexia fell from first to third place. Since then the percentage of appeals registered has remained steady at 16%, superceded usually by autistic spectrum disorders and behavioural, social and emotional difficulties.

It cannot be claimed that this pattern shows the reduction in a need for specialist intervention sought by McGuire, Scott and Shaw (2006). It may mean only that support is reaching learners without recourse to the statementing system. However the Tribunal figures show that parental satisfaction over provision for dyslexia must have increased in order for the number of registered appeals to have fallen, and this has taken place within the same time frame as the spread of the DF initiative. Further research may establish whether or not there is a direct correlation between these two trends in individual LAs.

Since it may be argued that congruency between the principles of UDI and DF principles has been established, it is possible to conclude by examining whether small scale research of DF practices can contribute empirical findings to the research agenda identified by McGuire, Scott and Shaw (2006). It seems reasonable to suggest that:

- The validity of the UDI model may be demonstrated by the efficacy of DF approaches in UK schooling,

Table 2: Appeals registered to the first tier SEN Tribunal (SENDIST)

Tribunal Year	Number of appeals to Tribunal registered for literacy/SpLD	Percentage of total of registed appeals re. literacy/SpLD	Position amongst SEN Concerns, triggering registered appeals to Tribunal
1999-2000 (SEN Tribunal 2000)	932	37.8	1st
2000-2001 (SEN Tribunal 2001)	919	33.7	1st
2001-2002 (SENDIST 2002)	1053	34.5	1st
2002-2003 (SENDIST 2003)	953	26.9	1st
2003-2004 (SENDIST 2004)	678	20.2	1st
2004-2005 (SENDIST 2005)	621	19.3	1st
2005-2006 (SENDIST 2006)	512	15.0	3rd
2006-2007 (SENDIST 2008)	481	16	3rd
2007-08 (SENDIST 2008)	555	16	3rd
2008-09 (Tribunals Service 2009)	474	16	Tied 2nd (with behaviour, emotional and social difficulty)

- Investigation of how the UDI model can be effectuated in educational settings may take a lead from research into the practices and principles of the DF initiative;

- UDI's concern for research regarding outcomes for students with and without disabilities may find corresponding evidence in DF research;

- UDI's interest in exploring the possible impact of variables within learners and within learning settings may relate to research of DF practices;

- Investigation as to whether UDI can reduce the need for specialist intervention could explore DF experience, since this is a key principle;

- The DF initiative could provide experience and impetus for identifying the principles and practices for training practitioners in UDI;

- Research into parental satisfaction regarding DF practices can support investigation of the perceptions of stakeholders regarding UDI;

- Consideration of any necessary adjustments to the UDI model might arise from application of the findings of DF research.

Conclusion

Taking a social constructivist view of dyslexia, this paper compares two key initiatives in the move to develop a pedagogical environment that will benefit dyslexic and other learners. Calling on evidence from small-scale research, it is concluded that the two initiatives bear a kinship.

UDI as a top-down framework, and DF policy as a bottom-up framework, can be seen as sharing constructs, principles and practices. It may be the case that, as DF approaches become absorbed into regular pedagogic practice, the philosophy will continue, embodied in UDI. The ethos of the DF initiative has resulted in an important strengthening of dyslexia knowledge and expertise in UK pedadgogy, and it has also resulted in a changing attitude to dyslexia. This focuses upon difference rather than deficit, and consequently presents a more positive view for people who experience dyslexia.

The challenge of exploring the Universal Design for Instruction theorisation by calling on Dyslexia-friendly experience and data, could provide new opportunities for dyslexia research.

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Educational Therapy in Singapore: Towards Professionalisation and Professionalism

Siew Hui Li, June [1*]

1 DAS Academy, Singapore

Introduction

In Singapore, the term *educational therapist* does not evoke a sense of familiarity or expectedness. This term is used to a lesser extent in Singapore, as compared to the European and American states. The Association of Educational Therapists (AET) had been formed in California in 1979 to formally define educational therapy and to establish principles of practice (Ungerleider & Maslow, 2001). However, the Dyslexia Association of Singapore (DAS) is independent of the AET and has adopted the use of this term only in the recent years, with practitioners previously known as *specialist tutors.* Unfamiliarity with the term *educational therapist*, culturally, can result in uncertainties and ambiguities in its use both within the organisation and in the public domain. The term is also ambiguous; it is not entirely a teacher or tutor who is merely concerned with academic issues nor is it entirely a therapist who is merely concerned with the conscious and unconscious processes of the human mind. Moreover, educational therapy in Singapore is an occupation without statutory regulation; educational therapists are not governed by the Allied Health Professions Act 2011 (Attorney-General's Chambers Singapore, 2013), unlike occupational therapists, physiotherapists and speech-language therapists who are required to be registered allied health professionals to practice in Singapore.

In view of the above, the article aims to explore how professionalism and professionalisation can be developed and sustained in a context where the practice of educational therapy is newly emerging. The article also has implications for the rest of Asia and other countries across the world where professional standards have not yet been established.

* *Correspondence to:*
Siew Hui Li, June, DAS Academy Ltd, 73 Bukit Timah Road, #05-01 Rex House, Singapore 229832
Email: june@dasacademy.edu.sg

The Educational Therapist in Singapore

All educational therapists in the DAS need to have a minimum qualification of a bachelor's degree in any field, as well as sufficient phonemic awareness (sensitivity to the sounds in language). Upon recruitment, they will be trained in a literacy programme that is based on the Orton-Gillingham (OG) approach. Highly systematic and sequential, it has a "multisensory, alphabetic, structured approach to language" (Gillingham & Stillman, 1997), tailored for teaching basic reading, spelling and writing to students with literacy difficulties who often have a diagnosis of dyslexic. In the programme, students are moved systematically in small hierarchical steps through the material - from letter-sound recognition towards the complex and ultimate goal of reading a text. In a typical session, language is broken down into components, mainly, handwriting, phonemic awareness, letter-sound association, syllable types and patterns, spelling rules, and high frequency words.

Apart from the initial training, trainee educational therapists undergo a part-time Specialist Diploma Course in the next 6 to twelve months. Both courses are conducted by the training wing of the DAS, the DAS Academy. Upon completion of the two training courses, a supervised teaching stint, and a mentoring programme, they become full-fledged educational therapists.

All educational therapists can apply to be members of the Register of Educational Therapists (Asia) or RETA, the regulatory board of educational therapists. RETA had been launched in 2012 by the DAS to promote and tighten this occupational group (DAS, 2012).

Singapore's Dyslexia Support Landscape

Singapore's Ministry of Education (MOE) provides DAS with an annual grant to fund their specialised remediation programme for mainstream students (Fu, 2009) and mainstream students enjoy the services at a subsidised rate (DAS, 2013). Hence, a substantial number of dyslexic students turn to the DAS for outside-of-school remediation. However, since 2012, MOE, perhaps in response to the issue of "inadequate support for students with special needs in mainstream schools" (Ministry of Social and Family Development, 2012), has expanded its school-based dyslexia remediation and dyslexia support programme. In 42 schools island wide, allied educators and trained mainstream teachers provide dyslexia remediation for students up to Primary Four within the school (MOE, 2013).

The Heart of Educational Therapy

Before professionalisation and professionalism can be discussed, it is imperative to return to the basics - the heart of educational therapy. In my quest for the answer, I would like to return to the climate in which special education has its root. One of the earliest accounts of special education can be found in the 'Wild Boy of Aveyron' (Itard, 1962; in Gaynor, 1973). In it, Itard documented his attempts to civilize a boy with animal-like instincts, who had been living in the forest for 12 years. He attempted to teach him to speak, communicate emotions, and

read simple words. He did not manage to help him achieve normalcy eventually but many writers such as that of Gaynor (1973) did not view his attempt as a failure at all, for the essence of special education could be extracted from one of the earliest recorded scientific account of a child with serious neurological, emotional and educational handicaps.

> 'In order to achieve the smallest success, Itard had to accept the totality of Victor (wild boy), his fluidity, his life pattern... Education must be in harmony with all the dynamic nature of life' (Lieberman, 1982, p. 568).

While consulting the principles espoused by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) which Singapore has ratified on 30 November 2012 (National Council of Social Services, n.d.), I have observed similarities between those principles and what has been learnt from Itard. The above quote is closely captured in the two of the eight principles espoused by the UNCRPD (UNICEF, 2008):

(d) Respect for differences and accepting people with disabilities as part of human diversity.

(h) Respect for the evolving capacity of children with disabilities and their right to preserve their identity

This overlap signifies that the essence of special education has not changed much over the years; in fact, the soul of special education has been retained. This is very much assuring and comforting. To summarise and describe how things *ought to be* in educational therapy I would like to draw on Herbert Simon's instrumentalist theory of design (Simon, 1996). The idea of 'designing without final goals' (p. 163) is consistent with the term 'bounded rationality' (Simon, 1997) which takes into account the cognitive limitations of the decision maker and his inability to foretell or determine the future. It is the ability to recognise that the function of design goals is to motivate activity which in turn will generate new goals and can be illustrated by Simon's analogy of oil painting in Simon (1996):

> 'In oil painting every new spot of pigment laid on the canvas creates some kind of pattern that provides a continuing source of new ideas to the painter. The painting process is a process of cyclical interaction between the painter and canvas in which current goals lead to new applications of paint, while the gradually changing pattern suggests new goals.' (p. 163).

Consistent with the essence of educational therapy described in the account of the 'Wild Boy of Averyron' above, the practice of educational therapy ought to take on a 'fluid, constructivist and reflective' design (Chua, 2008, p. 66) and ought not to be fixated on the end goal. Fixation on the end goal tend to neglect the student's natural grain and his life pattern - his unique strengths, his habits, his fluctuating emotions, motivation and self-esteem, and new areas of needs during the therapy process, all of which can interfere grossly with learning when not addressed. The educational therapist should allow this current information to inform the moving

of the client from one level of learning and functioning to the next, and be attentive to new pedagogies for new goals. In doing this, I am not advocating a departure from a systematically planned and evaluated approach referred to by Poon, Conway and Khaw (2008) as the Assessment, Planning, Implementation and Evaluation (APIE) Cycle. I am suggesting that within the structure of the APIE cycle, we must remain open to a reactive approach to intervention and an intervention characterised by an attitude of openness to new goals or learning needs that arise along the way. March's (1994, p. 262) technology of foolishness is at work here because the conventional and rational practice of strict adherence and rigidity to the initial goal has been abandoned, allowing an attitude of playfulness towards intervention. This reactive approach to intervention is possible with an APIE cycle being completed in a term of 10 weeks for each client (i.e. four cycles in a year), instead of implementing just one APIE cycle per client per year. That will allow therapy to be sensitive to the client's evolving needs and an intervention that is well prescribed.

A strong treatment alliance comprising of the client, the client's family and allied professionals (Ficksman & Adelizzi, 2010) is another factor that contributes towards a reactive approach. A tightly knitted alliance will ensure that information pertaining to client is well coordinated and communicated between all parties. An educational therapist, in a utopian setting, should possess a sense of openness, playfulness and sensitivity, all of which will translate to an excellent level of competency and discretion.

Towards Professionalisation

Now that there is an understanding of what an educational therapist *ought to be*, I will now examine the existing infrastructure and offer some thoughts on how professionalisation of the practice can be done.

Evetts (2005) argued for a shift away from the concept of professionalisation towards the concept of professionalism. Despite that, I would like to propose that there is a space for professionalisation in the practice of educational therapy because the practice is newly emerging in Singapore and could do with standardisation of the education, training and qualification to allow practitioners to gain professional status and recognition (Brint, 2001). Previously perceived negatively and pessimistically as a mean by practitioners to pursue, develop and maintain the closure of the occupational group for their self interests (Abbott, 1988; as cited in Evetts, 2011), I would like to suggest that professionalisation is relevant and necessary to develop the practice of educational therapy.

Professionalisation can be done at the level of an organisation such as RETA, which was launched in 2012 to promote and tighten the occupational group of educational therapists (DAS, 2012).

RETA has a noble aim. According to Dr. Thomas Sim, the Executive Director of the DAS academy (DAS, 2012):

> 'RETA aims to be the pioneering body in endorsing the professional status of qualified practitioners in the field of specific learning differences so parents

with children in need of assistance will have a ready resource and more importantly, a trusted one. RETA will raise the awareness and reputation of educational therapists in the region, and the community will benefit.' (p. 1)

In view of the above, it will be appropriate for this regulatory organisation to have a set of code of professional ethics that educational therapists could turn to for guidance. Ethical codes are essential for indicating what is to be expected for newcomers, and the absence of these, communicates ambiguity and creates confusion.

To safeguard the standards of educational therapists, the regulatory organisation also has to maintain a minimum educational qualification or a minimum language requirement especially since the therapists will be remediating clients' language ability. In the same vein, she will have to ensure that her members have a minimum level of teaching ability, possibly through a fulfilment of a supervised teaching stint.

Currently, RETA provides an online platform for the parents to access qualified help for their dyslexic child. List of "qualified" educational therapists is accessible from the website. Thus, she has the utmost responsibility to ensure members have adequate experience to deal with issues faced by a dyslexic child by standardising the *education, training and qualification* of practitioners. In so doing, RETA can raise the entry bar of the occupation and bring professionalisation to scale.

Towards Professionalism

Having discussed the role of professionalisation, I will now move my discussion towards professionalism – an increasingly extensively used concept in a wide range of occupations and workplaces which has strong implications on trust, discretion and competence (Evetts, 2006). There are two different forms of professionalism in knowledge-based work: organisational professionalism and occupational professionalism (Evetts, 2013). Organisational professionalism is being imposed 'from above' using hierarchical structures of responsibility to promote change and impose standards (Evetts, 2011, p. 407), while occupational professionalism allows practitioners to exercise their own autonomy and discretion in decision-making that is grounded in their education, training, organizational identities and work cultures, with the appeal to professionalism operating 'from within' the occupational group (Evetts, 2011, p. 408). I will argue that the latter is more valued than the former since professionalism is always associated with individuals and never with the organisation (Svensson, 2006).

In line with the aim to 'develop, deliver and grow, a comprehensive and holistic range of programmes to meet the needs of students and demand from parents' (DAS, 2014), remediation has been expanded to areas other than language and literacy and should achieve greater relevance for students in mainstream schools. Committees have been formed to generate standardised and well structured curriculums for

different areas - English literacy, Chinese literacy, Mathematics and Study Skills. This is laudable move that reflects organisational professionalism - educational therapy is progressing towards the multi-dimensional model described by Ficksman and Adelizzi (2009), in Ficksman and Adelizzi (2010) which states the various domains of responsibilities of an educational therapist. Moreover, curriculums can also be important in ensuring consistent and quality services are provided by practicing professionals and can be seen as a form of organisational professionalism. In the current situation, however, we must remain mindful of issues surrounding *discretion and competence* which are central to the theme of "professionalism".

Discretion

While practicing standardised and highly structured curriculum, the educational therapists must not forget to exercise *'autonomy and discretionary judgement and assessment'* (Evetts, 2013, p. 787). It is crucial that educational therapists be taught 'fidelity with flexibility' to allow them work flexibly within the constraints of the essential pivot points (Coleman, Gallagher & Job, 2012, p. 34).

While doing therapy work, the therapist must continue to embrace the totality and fluidity of the client (just like Itard's intervention with the wild boy), to use the curriculum flexibly to address the needs of the client who must remain as the focus so as to pursue a 'fluid, constructivist and reflective' design (Chua, 2009b, p. 66).

Competence

With the multi-dimensional model of educational therapy advocated by Ficksman and Adelizzi (2009) which contains the domains of perception, socio-cultural context, development, memory, deep learning, language, executive function, autonomy, behaviour, temperament, emotion and empathy (in Ficksman and Adelizzi, 2010), as well as the need for educational therapists to be trained in an additional domain of their choice other than in literacy (known as dual specialisation), the DAS has invested tremendously in staff development in recent years. Indeed, she must continue to do so to raise competent therapists who have knowledge and skills across all the domains to provide a holistic remediation.

Conclusion

In this article, I have described the climate of educational therapy in Singapore, and have illustrated how DAS has moved this relatively new profession towards professionalisation and professionalism. While doing so, I have also highlighted areas which we must remain mindful of. With educational therapists who are qualified, competent and discerning , the young clients will receive the help that they need to overcome their learning barriers. This is an urgent call, because once the window of opportunity is missed, they will, like the wild boy of Aveyron, resist the treatment given, retreat into their forest of deep darkness and remain forever in their labyrinth of hopelessness.

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Special Education Teachers' Attitudes toward Including Students with SEN in Mainstream Primary Schools in Singapore

Chee Soon Weng, [1] Zachary M. Walker, [1] and Kara Rosenblatt [2]

1 National Institute of Education, Singapore
2 University of South Florida St. Petersburg, USA

Abstract

Singapore, one of the world's leaders in education, began including students with special educational needs in mainstream primary schools in 2004. Although teachers' attitudes towards inclusion are well documented in other parts of the world, there is a paucity of research on inclusion in Singapore. This lack of research limits the ability of teachers and teacher educators in understanding the barriers that exist and how to overcome them. The goal of the present study was to examine special education teachers' attitudes toward inclusive classrooms in mainstream primary schools in Singapore. Participants were thirty-eight special education teachers with at least one year of experience working with students with special education needs in mainstream classrooms. Data were collected using the Multidimensional Attitudes Toward Inclusive Education Scale. The overall findings indicated that, while additional research needs to be completed, participants' in this initial study have positive attitudes towards inclusion in mainstream classrooms and are willing to make adaptations to the curriculum to accommodate students with special educational needs in their classrooms.

Keywords: teacher attitudes, inclusive education, survey design, MATIES

According to the most recent McKinsey Report (2010), Singapore is one of the world's best performing educational systems. Singaporean students consistently show strong performance on international assessments, such as the

* *Correspondence to:*
Chee Soon Weng, Curriculum Planning Officer, English Language (Primary), Curriculum Planning and Development Division STELLAR Centre, 136 Cairnhill Road Singapore 229722 Email: chee_soon_weng@moe.gov.s g

Program for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS) (Snart, 2011). As an educational leader in Southeast Asia and the world, Singapore can also help lead the way in the policy and practice of educating students with disabilities. Traditionally, Singapore has not included the majority of students with disabilities in mainstream schools. However, the process of how students with disabilities are educated in Singapore is changing.

Singapore's History of Education

The Singapore educational system has evolved significantly since 1965. In the 1960's and 1970's, the country focused on the provision of basic literacy for the masses. By the early 1980s, Singapore had grown into a Newly-Industrialized Economy. The socio-economic revolution in Singapore led to a focus on an efficiency-driven education, in which students attended schools based on their perceived aptitudes and abilities. By the 1990s, the system evolved into an educational system that designed curriculum and instruction to support the creativity and capacity for innovation in students. During this period, schools were separated into two main categories, mainstream and special schools. Mainstream schools fall under the direct purview of the Ministry of Education (MOE) and serve typically developing students. Special schools, for students with varying disabilities, or special educational needs (SEN), are primarily managed by voluntary welfare organizations (VWO) and are supported by the National Council of Social Services (NCSS) and MOE. The current educational movement is the result of leadership changes, legislative reform and economic development that has resulted in a fundamental reorganization of the educational system.

In 2004, Prime Minister Lee Hsien Loong decreed "all communities will progress and no one will be left behind...We must also have a place in our hearts and our lives for the disabled, who are our brothers and sisters too" (Lee, 2004). The Prime Minister's decree prompted a change from the traditional mindset that fostered restricted learning environments for students with SEN and ushered in a new era and new learning opportunities for students with SEN in Singapore (Nonis, 2006). To set the changes in motion, several initiatives were introduced that would ensure better support for students with SEN in mainstream classrooms and would lead to an increased awareness about inclusive education in Singapore. One of the legislative measures provided additional support for students with SEN studying in mainstream primary and secondary schools in Singapore through the Teacher Trained in Special Needs programme (TSNs) (Ministry of Education, 2004). The TSNs programme provided training initiatives for 10% of the existing mainstream primary teachers and 20% of the existing mainstream secondary teachers to become teachers trained in special needs (TSNs). Together with the deployment of Allied Educators (Learning and Behavioural Support) (AED/LBS), the TSNs and AED/LBS support students with mild special needs (dyslexia, autism spectrum disorders, and Attention Deficit Hyperactive Disorder) studying in mainstream schools (MOE, 2014).

Inclusive education in schools.

Inclusive education is not an entirely new concept for researchers or practitioners. The inclusion of all students in the mainstream setting focuses on the importance of providing equal opportunities for every student, regardless of the disability or disabilities that he or she may have. Foreman (2001) stated that inclusion usually involves educating students with, or who are at-risk for, learning disabilities in the same educational setting as their non-disabled peers. Commonly termed "mainstreaming" in Singapore, inclusive education means adapting a school's policies and practices to better meet all students' needs. A nation and school-wide collaborative approach is necessary in which special education (SPED) forms a subset of the general education framework with an emphasis on collaboration with both professionals and families of students with SEN (Brownell, Ross, Colon, & McCallum, 2005). In order for mainstreaming to become a reality, Moore (2009) stated that individual prejudices against persons with disabilities have to be eradicated. It is imperative that policymakers recognize the impact teachers' perceptions and attitudes can have on student achievement, behavior, and self-esteem (Brophy & Good, 1974). Teachers are critical in helping influence the success or failure of inclusion efforts.

Inclusion versus segregation

Arguments for inclusion in mainstream schools

Advocates for inclusion have long argued that students with SEN can and should be educated in mainstream classrooms, if there are provisions for supplementary teaching aids and services (Lipsky & Gartner, 1989). Several studies conducted on mainstreaming have found no negative effects on the quality of education received by both students with SEN and their mainstream peers. Instead, Barnard, Prior, and Porter (2000) found that mainstreaming was beneficial to students with SEN in all areas of learning including cognitive, social, and emotional domains. For example, McDonnell et al. (2003) examined the effect of inclusion on 14 students with developmental disabilities and found that 13 of the 14 students' performance in mathematics and reading improved. Additionally, Wang's (2009) study found that not only did the academic scores of students with SEN who studied in a mainstream school increase, but the social skills and personal development skills improved as well. Therefore, as opposed to students who learn in a separate classroom, students with SEN who study in a mainstream school are more likely to have academically challenging curricula and, may achieve greater social skills and increased self-esteem (Moore & Keefe, 2004).

Several studies have found that students without disabilities also benefit socially from inclusion practices. Benefits include an increase in the quality of social interactions amongst students with and without SEN, an increased understanding, acceptance, and tolerance of differences of students with SEN (Salend & Duhaney, 1999). These findings are supported by research by Smoot's 2004 study with 61 students with mild intellectual disability

and 286 general education peers. Smoot found that when the students with mild intellectual disabilities spend more time in the regular classroom, their mainstream peers also learn to accept their differences. Further, Krank, Moon, and Render (2002) found that discipline referrals declined for both groups of students when learning in inclusive environments.

The view that inclusion is beneficial to both students with and without SEN is further supported by research examining the relationship between mainstream students' academic achievement and inclusion in general schools in England (Farrell, Dyson, Polat, Hutchesan, & Gallannaugh, 2007). Farrell and colleagues (2007) addressed the concerns of many stakeholders, teachers, and parents on the impact inclusion has on achievement among students without disabilities. Results revealed that inclusion had no negative impact on the overall achievement and performance of students without disabilities. In a study by Jordan, Schwartz, and McGhie-Richmond (2009), the researchers reported that there were no negative changes to academic achievement scores of students without SEN when they received instruction with their peers with disabilities. Research on reading achievement conducted by Schmidt, Rozendal, and Greenman (2002) showed that while nearly all of the students classified with learning disabilities made a 1-month gain or more for each month they participated in the study, their mainstream peers also showed a significant improvement in their reading scores in inclusive classrooms. These studies support the view that provisions for inclusive education can be beneficial for students with or without special educational needs.

Arguments against inclusion in mainstream schools

Despite several studies supporting the notion of inclusion in schools, there are also arguments against educating students with SEN in mainstream classrooms. Jenkinson (1997) argued that students with SEN should be educated in special schools designed to cater to the social, emotional and behavioural difficulties that they would face in mainstream classrooms. Newman and Roberts (1996) also suggested that students with SEN learning in mainstream classrooms have been subjects of benevolent yet misguided attempts from teachers when providing support. This is particularly evident when such attempts at inclusion are influenced by stereotypical images of disability (Moore, 2009). These stereotypes occur when teachers do not have a good understanding of students with SEN, student needs, and the skills needed to support these students in mainstream classrooms.

When teachers and peers harbor negative images of disability, it can lead to marginalization and exclusion for students with SEN in mainstream schools and they may experience humiliation, bullying, and a loss of self-esteem. This occurs even more frequently when attention focuses on a student removed from the class to receive special support (Cigman, 2007). The stigma of carrying the label of a "student with SEN" has resulted in instances where a student will

try to hide evidence of their disability for fear of being ostracized or bullied by their peers in schools (Moore & Keefe, 2004).

Having children with SEN in a mainstream classroom may also add stress to both teachers and parents. Wong (2002), examined students with SEN in general schools in Hong Kong, and found that academic requirements were a great burden for students, their teachers and their parents. Specifically, Hong Kong's curriculum is "notoriously rigid and burdensome even for ordinary students." (Wong, 2002, p. 89). Therefore, children with SEN who commonly present problems with poor concentration, limited comprehension, and inadequate graphomotor skills are not likely capable of keeping up with rigid classroom instruction. As a result, Wong suggested that teachers use specific inclusion strategies, such as curriculum-based instruction and measurement, cooperative learning, and individualized teaching, to meet the needs and demands of students with specific disabilities (Fuchs & Fuchs, 1994). However, such a differentiated approach might also add on additional stress to the mainstream educational system, particularly in the area of resource allocation.

Finally, teachers have also expressed concerns about handling behaviors of students with SEN and the effect this has on the academic achievement and behavior of other students in the classroom (Nonis, 2006; Ford, 2007). Classroom management can be a great concern for most teachers since, while many of them can identify with the behaviors of students with SEN, many teachers are unable to understand the root causes of these behaviors. This is especially true as behaviors can vary from child to child. This makes classroom management more difficult for teachers due to a lack of understanding regarding the unique learning and socio-emotional needs among students with SEN (Chia, 2001).

Teachers' attitudes toward inclusion

Research has shown that classroom teachers have a very strong influence on the implementation and success of inclusion (Lambe & Bones, 2006; Mitchell & Hedge, 2007; Soodak, Podell, & Lehman, 1998; Watnick & Sacks, 2006). Buell, Hallam, Gamell-McCormick, and Scheer (1999) established that teachers' attitudes toward inclusion are critical for influencing their aptitude for educating students with SEN. Kamens, Loprete, and Slostate (2002) also found that educational choices and teaching behaviors are influenced by teachers' attitudes towards inclusion. Therefore, it is crucial that teachers adopt appropriate and positive attitudes toward inclusion in their classrooms, as these attitudes can determine successful daily teaching practices (Subban & Sharma, 2006). When working with students with special needs, effective inclusive practices depend on the beliefs of teachers about the nature of disabilities as well as their own roles and responsibilities (Jordan, Schwartz, & Ghie-Richmond, 2009).

If educators hold positive attitudes toward inclusive education, this may allow (and encourage) practices that will guarantee successful inclusion of students with SEN (Hobbs & Westing, 1998;

Wilczenski, 1992, 1995). Highlighting the need for a positive attitude, Murphy (1996) stated that if teachers graduate from tertiary education with negative attitudes, these attitudes are very difficult to change, leading to low expectations of students with SEN as well as reduced learning opportunities for those students in the long run (Forlin, Tait, Carroll, & Jobling, 1999; Wilzcenski, 1993).

In a study conducted by Nonis (2006) on the attitudes of kindergarten teachers toward inclusive education in mainstream classrooms, the results showed that while 25% of kindergarten teachers were supportive and willing to take on the responsibility of teaching students with SEN, 57% of teachers actually rejected this responsibility. A subsequent study completed five years later with pre-service teachers (Nonis & Jernice, 2011) found that pre-service teachers were more cautious about including students with SEN into their classrooms than the kindergarten teachers. However, pre-service teachers' attitudes towards students with SEN were generally quite positive. Despite the demographic and service differences between both groups in Nonis (2006) and Nonis and Jernice (2011) studies, the authors found that the concerns of these two groups of teachers were largely the same. Those concerns revolved around a lack of classroom resources and insufficient knowledge/ training/understanding in dealing with students with SEN. Since the participants in the 2006 and 2011 studies were not from the same sample, there is no indication of an increase in acceptance of inclusion over time.

Attitudes of SPED teachers with mainstream teaching experience toward mainstream inclusion

While most prior studies completed with teachers in mainstream schools in Singapore, little research has been completed on SPED teachers with more than one year of mainstream teaching experience and their attitude towards inclusive education in Singapore. A better understanding of this specific group of SPED teachers, those with both mainstream and SPED experience, will provide a new perspective for the local context and will be crucial in realizing educational inclusion in Singapore. Therefore, the primary objective of the present study was to examine the attitudes these SPED teachers had toward inclusion in mainstream schools in Singapore. The secondary objective was to confirm whether exposure to SEN students leads to a greater willingness to adapt the curriculum to these students' needs.

Methodology

Research Questions

The following research questions were investigated:

Do SPED teachers have a positive attitude towards inclusion?

Does any exposure to students with SEN lead to a more positive teacher attitude towards inclusion in terms of willingness to adapt his/her curriculum to cater to the individual needs of these students?

Definition of SEN

As it is uncommon for students with severe cases of disabilities to be placed in mainstream Singapore schools, the definition of pupils with SEN for this study is taken as students diagnosed under the 3 main categories of dyslexia, autism spectrum disorders, and Attention Deficit Hyperactive Disorder) studying in mainstream schools (MOE, 2014) .

Participants and Setting

Selection of participants. Participants included a very specific group of SPED teachers who have at least one year of teaching in mainstream classrooms and experience working with students with special educational needs in special school settings. Therefore, the participants are familiar with the teaching strategies used in the mainstream classrooms, specifically those that cater to both mainstream and SEN children.

These teachers are from a convenience cohort of 83 individuals trained by the Curriculum Planning and Development Division (CPDD) of the Ministry of Education (MOE). They were trained in the teaching strategies for STrategies for English Language Learning And Reading (STELLAR) because they were teaching in SPED schools that prepare their students for the Primary School Leaving Examination (PSLE). The training, however, does not involve lectures on Special Education and inclusion. These teachers were identified based on records available from the MOE database.

Teachers who fulfilled the requirements were invited to participate in the study. Emails were sent to participants with an attached cover letter explaining the purpose and objectives of the study (Appendix A). Of the 83 emails sent, 26 emails were undeliverable and were automatically excluded from the study. Of the remaining 57 participants who received emails, 42 (74%) responded. The researcher met these participants either in groups or individually to explain the objectives of the study and provide a questionnaire survey. All questionnaires were completed in the presence of the researcher. Four participants were excluded from the analysis due to incomplete data submitted, which led to a final sample of 38 participants. Of these 38 participants, 29 were female and 9 were male. All of the participants had at least 5 years of teaching experience in both mainstream and SPED schools.

Survey instrument. Teacher attitudes toward inclusion were measured using the Multidimensional Attitudes Toward Inclusive Education Scale ([MATIES]; Mahat, 2008). This survey (Appendix B) was used to measure the affective, cognitive, and behavioral domains of teachers' attitudes. Items from the affective domain serve to determine teachers' feelings and emotions associated with inclusive education. Items that form the cognitive domain reflect teachers' perceptions and beliefs about inclusive education. Items in the behavioral domain assess teachers' intentions to act in a certain manner toward inclusion.

The analyses of the pilot project conducted by Mahat (2008) indicated

that the three subscales successfully met standards for both internal reliability and content validity. This is evident as the Cronbach reliability for each subscale was substantial, with returns of alpha coefficients between 0.77 and 0.91. These results provide strong evidence to warrant the use of this instrument in order to measure teachers' attitudes towards inclusion.

A five-point Likert scale was used to indicate the following attitudinal levels: strongly disagree, disagree, neutral, agree, and strongly agree, with 1 being strongly disagree and 5 being strongly agree. This scale was selected because it is a less intrusive form of measurement ensuring that responses provided by participants are mere expressions of their opinions (Bond & Fox, 2001). Furthermore, participants can easily understand this scale. The survey included a total of 18 items. Items 1 to 6 investigate the cognitive domain, 7 to 11 the affective domain, and 12 to 18 the behavioral domain. In this instrument, three items from the cognitive subscale and all six items from the affective subscale were phrased negatively so that an agreement with the item represents a relatively low level of the attribute being measured. For example, if a participant were to agree strongly to getting irritated when he/she is unable to understand students with a disability, it signifies a low level of belief in inclusion.

Administration of the survey instrument. Participants met with the researcher in person to fill out the questionnaire. While most of these sessions were conducted outside school premises, some of the participants invited the researcher into their school to complete the survey. Prior to the distribution of the questionnaire, participants were reminded of the study objectives. In answering the questionnaire, the participants were reminded to put themselves in a situation where they have to respond to these questions as a teacher teaching in a mainstream classroom. Participants were strongly encouraged to provide their true opinions regarding inclusion in mainstream classrooms and to ask the researcher any questions that might arise. Participants were given the questionnaire with a time limit of 30 minutes. Nearly all participants finished the survey within 15 minutes.

Data Entry and Analysis. The researcher used Microsoft Excel to enter data for all 38 participants. The data were transposed and analyzed using the Statistical Package for Social Sciences (SPSS) version 22. Responses to each question in the survey were analyzed based on the Likert-scale employed. Before score calculation, reverse polarity was carried out on the data, particularly for questions that were reverse-coded. This step was necessary to ensure consistency among the items. In re-coding the responses for all the questions in MATIES (2008) that were reverse-coded, the high scores for these questions were changed into low scores, and vice versa. For example, scores of 5 were re-coded to 1 while scores of 4 were re-coded to 2. A score of 3 remains the same as it represents a neutral stance. Total scores were calculated across the three domains to ascertain whether participants had positive or negative attitudes towards inclusion.

Results and Discussion

Analysis of Attitudinal Domains and Discussion

The overall findings in this study showed that the 38 SPED teachers who participated in the study generally had positive attitudes towards inclusion in mainstream classrooms. However, their attitudes towards inclusion are not consistent with their behavior. There is a positive correlation between their willingness to make adaptations to the curriculum and the placement of SEN students learning in their classrooms.

Table 1

Multidimensional Attitudes Toward Inclusive Education Scale Mean Scores

Attitude	*N*	Mean	SD
Cognitive	38	3.43	1.21
Affective	38	3.54	1.10
Behavioral	38	3.39	3.39

Table 1 depicts participants' scores within the three attitudinal domains. The breakdown in terms of the attitudinal domains showed that while the affective domain scored the highest with a mean of 3.54, the results for the cognitive and behavioural domains stood at 3.43 and 3.39 respectively. Therefore, as can be seen in Table 1, attitudes were highest for the affective domain, followed by the cognitive and behavioral domains.

A neutral attitude would be a mean score of 3. These results suggest slight positive attitudes among SPED teachers toward inclusion in mainstream classrooms. However, it must be noted that a mean score above 4 could be conclusively described as a positive attitude. Thus, further assessment was needed to determine the nature of these attitudes.

Examining standard deviations for the cognitive and affective domains revealed values indicative of low variability (see Table 1). A look at the standard deviation for the cognitive and affective domains reveals a value of 1.21 and 1.10 respectively. This suggests that the responses for these domains were acceptable. However, for the behavioural domain, the standard deviation was at 3.39. This denotes a very wide variance suggesting that the responses provided in this domain required further investigation.

The Cronbach's alpha was calculated for the entire questionnaire to assess the reliability of the measure. The results in Table 2 showed a Cronbach internal consistency of 0.13 carried out for all 18 items in the survey questionnaire. The low reliability for the total scale might be due to differences in how individuals responded to the three domains,

Table 2

Reliability Statistics

Cronbach's alpha	N of Items
.13	18

Table 3

Factor Analysis for Multidimensional Attitudes Toward Inclusive Education Scale

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Cognitive	1.31	43.66	43.66	1.31	43.66	43.66
Affective	.92	30.50	74.16			
Behavioral	.78	25.84	100.00			

Note. Extraction Method: Principal Component Analysis.

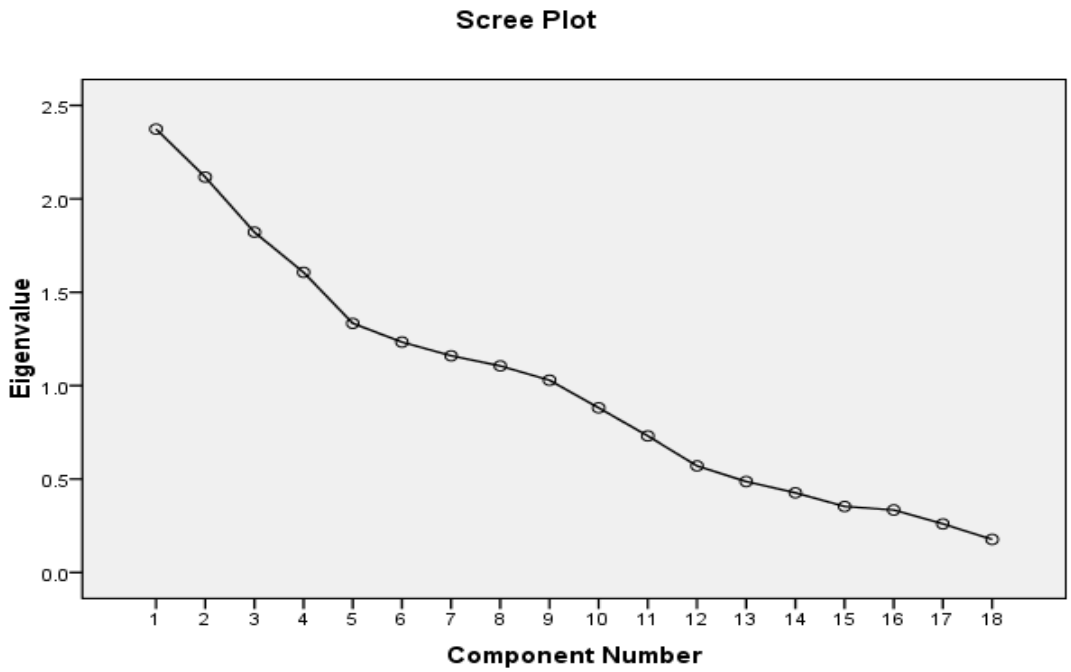

Figure 1. Scree plot obtained from the questionnaire factor analysis. Questionnaire items (components) are listed on the x-axis and eigen values on the y-axis.

Table 4

Correlations between the Questionnaire Factors

			Cognitive	Affective	Behavioral
Spearman's rho	Cognitive	Correlation Coefficient	1.000	-.086	-.191
		Sig. (1-tailed)	.	.304	.125
		N	38	38	38
	Affective	Correlation Coefficient	-.086	1.000	.126
		Sig. (1-tailed)	.304	.	.225
		N	38	38	38
	Behavioral	Correlation Coefficient	-.191	.126	1.000
		Sig. (1-tailed)	.125	.225	.
		N	38	38	38

especially given the high variability in responses for the behavioral domain. To confirm this, a factor analysis was conducted on the full scale to examine the factor structure of this questionnaire (Table 3). With a cut-off point of Kaiser's eigenvalue of 1, results showed that cognitive domain factor explained the greatest amount of variance of the measure (meeting Kaiser's eigenvalue criterion of greater than 1), accounting for nearly half of the total variance (43.66%).

Both the affective and behavioral domains only explained incremental levels of variance (30.5% and 25.84%, respectively) in this measure. Thus, it is likely that participants were only providing the most reliable responses for the cognitive domain. One possibility for the current findings could be due to a lack of anonymity (e.g., the researcher being present while the participant completed the questionnaire) on the part of the participant, leading him/her to feel uncomfortable and thereby resulting in inconsistent opinions.

As seen in Figure 1, the responses to items 10 to 18, which were from the affective and behavioral domains, were less consistent among participants. Furthermore, these were the items that specifically addressed inclusion of students with SEN in a classroom. Although these participants appeared to have favourable attitudes towards inclusion, they actually behaved in ways that appeared negative.

Given the small sample size (n = 38) for the current study, participants might not be truly representative of the SPED teacher population who have experience teaching in mainstream schools in Singapore. This small sample size made

Table 5

Correlation of Teachers' Attitudes towards Inclusion

Questions		A5. I am disconcerted that students with a disability are included in the regular classroom, regardless of the severity of the disability.	B2. I am willing to adapt the curriculum to meet the individual needs of all students regardless of their ability
A5. I am disconcerted that students with a disability are included in the regular classroom, regardless of the severity of the disability.	Correlation Coefficient tailed		** 0.41
B2. I am willing to adapt the curriculum to meet the individual needs of all students regardless of their ability.	Correlation Coefficient tailed	** 0.41	

Note. Number of participants = 38

*. Correlation is significant at the 0.05 level (1 - tailed)

**. Correlation is significant at the 0.01 level (1 - tailed)

it difficult to obtain a truly random representative sample. With that in mind, a Spearman's rho correlation analysis was conducted to address this limitation. This type of analysis allows for the investigation of variability in the questionnaire domains while accounting for a small sample size and lack of normality in the distribution of scores. The results of this analysis revealed a lack of association between any of the three domains. Thus, given the lack of conclusive results based on the above findings, a final factor analysis on all individual items was conducted to ascertain any potential significant correlations/differences between the questionnaire domains.

Analysis of Attitudinal Factors

A Spearman's rho correlation matrix was devised, as shown in Table 5, allowing for an assessment of the associations between items. The key result is a strong positive correlation between participants' "willingness to adapt the curriculum to meet the individual needs of all students regardless of their disabilities" (B2) and "having students with SEN in their mainstream classes" (A5). Thus, if these SPED teachers do have SEN students in their classroom, they are more likely to adapt the curriculum to suit everyone's needs. This finding makes sense since SPED teachers are more familiar with the use of Individualized Educational Plans (IEPs), which require teachers to vary their instructions in order to cater to students' individual needs, when SEN students are in their classrooms.

Overall, the present findings suggest that SPED teachers' attitudes toward inclusion in mainstream classrooms are positive. In addition, even though they may not feel comfortable with the fact that students with SEN should be in the mainstream classrooms, these SPED teachers are willing to adapt their curriculum to cater to the needs of these students with SEN if they were in their mainstream classrooms.

Limitations of the Current Study

There were limitations that diminished the generalizability of the current findings. The two main limitations included the small sample size and concerns about inconsistent/socially desirable responses on the questionnaire. Only a small number of SPED teachers with mainstream experience were studied, as limited data was available that allowed the researcher to identify this group of teachers. This problem was exacerbated by the fact that several SPED teachers could not be contacted via email or they had already left the service. The resulting small sample size limits the generalizability of the current findings to the population of SPED teachers with mainstream classroom experience.

Another limitation is one that affects the type of responses provided by the participants. Social desirability could have influenced participant responses especially when assessing attitudes related to SPED among SPED teachers. Teacher attitudes in this area might be quite sensitive, and some teachers might not wish to be identified as being for or against inclusion. The lack of anonymity when filling out the questionnaire (while individuals could not be identified with their data, participants still filled out the questionnaire in the presence of the researcher) could have had an impact on participant answers.

Future Research

Based on the aforementioned limitations, it is important that similar research assess larger samples of SPED teachers. A sufficiently large sample should be accessed to be more representative of the true population of SPED teachers, as suggested by Lunenburg and Irby (2008). Further research also needs to consider anonymity in more detail. The fact that participants filled out the questionnaire in the presence of a member of the research team might have led to unreliable and inconsistent responses among participants. Therefore, to ensure better reliability in responses, it is very important that participants' identities are

confidential for future studies. One possible option is for them to complete the survey questionnaires and post them using a self-addressed envelope provided by the researcher. Finally, the present study results suggest a mismatch between how teachers think about inclusion and their subsequent actions in carrying out inclusion in their classrooms. However, the reasons for this discrepancy were not explored. Hence, such issues should be addressed in the future.

Conclusion

This is the first study to assess SPED teachers' attitudes toward integrating SEN students in mainstream classrooms in Singapore. Given the small sample size, interpretation of the current findings should be interpreted with caution. The researchers hope this initial study will be used to address gaps in research pertaining to SPED teachers' attitudes, particularly among teachers who have taught in both SPED and mainstream classrooms. Addressing this research gap is important since the knowledge and experience among these teachers with both SPED and mainstream classroom experience will be an important factor in realizing educational inclusion in the future. These findings do provide a perspective currently lacking in the literature for the local context and may play a crucial role in ensuring the success of inclusive practices in mainstream primary schools in Singapore.

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The Impact of Morphological Intervention on Spelling and Self Esteem in Adolescents with Dyslexia

Nicole Mei-Lin Chua [1]*

1 Dyslexia Association of Singapore

Abstract

One of the key issues in dyslexia research is how can we remediate dyslexic children who do not respond to phonics intervention? Chomsky (1970) described English language as a morphophonemic language. There are a number of English words that are non-phonemic and cannot be represented by letter sound correspondence. This study aims to establish whether or not morphology should be integrated with phonics instruction to provide an effective intervention to dyslexic teenagers, thereby increasing their self-esteem. This is a qualitative case study of a group of three 15-year-old dyslexic learners who were attending after-school intervention program at the Dyslexia Association of Singapore. These learners showed little response to the current phonics based instruction based on the Orton-Gillingham teaching approach. The researcher developed specially designed morphological instruction adapted from Bowers (2010), into the established phonics intervention, to provide a compensatory strategy (Carlisle, 1987) for the atypical group of learners. The group of learners showed an increase in confidence and accuracy when attempting spelling tasks. All students' responses indicated that morphological instruction was their preferred way to spell as they remembered word parts visually more easily and they can rely on phonics (sounds) should they fail to identify any word part. This case study suggests that morphology should be incorporated earlier at secondary level as it helps them to see the relevance of the intervention program to their academic work in school, and provides deeper understanding of language and its structure.

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Keywords: Dyslexia, auditory processing deficit, post secondary intervention, Orton Gillingham, Morphology, spelling, self esteem

* *Correspondence to:*
Nicole Mei-Lin Chua , Dyslexia Association of Singapore, 1 Jurong West Central 2, #05-01, Jurong Point, Singapore 648886
Email: nicole@das.org.sg

Introduction

"If we teach today's students as we taught yesterday, we rob them of tomorrow."
John Dewey

Setting

Singapore is a multilingual society where it is compulsory for all primary and secondary school students to be bilingual since bilingual education was made mandatory by the Singapore government in 1966 for primary schools and 1969 for secondary schools (Goh et al., 1979). There also exists a colloquial form of English in Singapore, known as Singlish that is heavily influenced by Mandarin, Mandarin dialects, Malay and Tamil.

Learners' Profile

Participants being investigated in this study are all 15 year-olds who have been diagnosed by psychologists as dyslexics or to show symptoms of dyslexia. All participants did not show significant progress in their The British Ability Scales score after more than three years on the Orton-Gillingham programme. They did not respond well to the remediation and are observed to have poor auditory processing, with one known to have persistent ear infection while the other two shared during their interviews that they were not able to hear the sounds in a word and found spelling using phonograms extremely difficult.

Other observations made over the two year period prior to this study are their lack of motivation and unresponsive behaviour towards the existing remediation method. There were many incidences of copying of one another's work, and their resistance to reinforcement procedures such as 'finger-spelling'[1] and 'table top tracing'[2] that help students be aware of "the feel of the hand-arm movements involved in forming single letters and the sequences of letters used in sound units such as –dge, –tion, etc. (Rome & Osman, 1997).

Literature Review

The importance of morphology has been largely overlooked, with an emphasis on the role of phonological awareness in literacy. In their introduction to a special issue of the Journal of Learning Disabilities, 2014, Nagy, Carlisle and Goodwin note that the importance of morphology and its contribution to all aspects of literacy has become a recent focus for research. However, despite this burgeoning interest, there have been very few studies of children who are failing and these have concentrated on junior school learners. Elbro & Arnbak's (1996) study on the role of morpheme recognition in literacy skills indicated that in adolescent dyslexics morphological awareness plays an important part in spelling. Their findings also suggested that morphological awareness plays an even bigger role in spelling than in reading. As Greene (1996) suggests,

1. *Finger-spelling is a method where students are taught to use their fingers to identify each phoneme in a word, e.g.cat /c/a/t/.*

2. *Table top tracing is a kinaesthetic reinforcement strategy where students practiced tracing the letters in a phonogram such as 'igh' on rough surfaces to help them remember the phonogram.*

older students require a teaching method that goes further than the phonologic structure.

It is crucial that their language teaching involves a "direct instruction at higher levels of language" which she refers to as the morphological and synthetic aspects of the language. Similar findings were also reported by Kirk and Gillion (2009) in their study on children between eight to 11 years old as well. These researchers suggest similarly, an emphasis on the importance of working memory in performing these spelling tasks. One point they made that clearly represents the participants in this study is problems in working memory. Similar observations are made with students in this study where students are often hindered by their limited working memory.

Working memory involves the temporary storage and manipulation of information that is assumed to be necessary for wide range of complex cognitive activities (Baddeley, 2003), spelling is one of these. The study suggests that when a child is able to segment a word into meaningful segments (morphemes), it makes it easier for a child to hold it in their working memory while spelling each word segment. This strategy could thus ease the burden on their phonological working memory as it allows them to concentrate on one meaningful segment at a time.

While many learners without dyslexia acquire morphological knowledge on their own as they progress through school, poor spellers often do not. Carlisle (1987) suggests that poor spellers lack specific word knowledge that enables them to extract the base word from the derived form. For example, 'equal' from the word 'equality'. They were likely to spell the stem differently when it appeared on its own and when it appeared in complex work.

From the above research, it can be deduced that there is a need for explicit morphological instruction for poor spellers since their acquisition of morphological knowledge appears to be delayed due to their lack of exposure to print.

Research Methodology

Data Collection Methods

- **Coding Process**

A qualitative approach was chosen to allow the study to be guided by the data that emerge. Provisional coding was used to predetermine the set of codes prior to the study. The list of codes started with, 'attitudes towards spelling', 'usefulness of morphological instruction', 'preferred method than phonics', 'engagement in class', 'relevance to school work' and 'self-perception'. However, in the process of analyzing the transcription, it was found the responses could be grouped into three main themes. They were 'usefulness', 'confidence' and 'preferred method'.

- **Pre Study Focus Group**

A focus group is essentially a group discussion focused in a single theme (Morgan, 1997) and its objective is to reveal learners' spelling strategies and morphological knowledge. One 45

minutes formative focus group was convened with the three participants.

The session was not recorded so as to allow learners to be as open as possible about how they felt about the current lesson and the difficulties they faced. During the focus group interview:

a. The teacher showed them their spelling sheet from previous week and highlighted the spelling mistakes. Students were asked to re-enact their thought processes involved when they spelled the word.

b. Students were presented with words that contain prefix, base, and suffix: disruption / disagreement/ unhopeful. For each word, students were asked how they would memorise the spelling of the word (visual).

c. The teacher says a word orally and students were asked how they would attempt to spell the word.

- **Structured observation (Hopkins, 2004)**

In each lesson, two segments of the lesson were recorded. The first recording was during the introduction of the root (20 minutes) and the other during the spelling (15 minutes). A total of 12 lessons were videotaped. Video recording is useful to capture students' body language (e.g. nodding, engaging eye contact, and checking mobile phones). This may prove useful as the researcher's interest is also in measuring their increased self-esteem which may not always be expressed in words. These observations were then transcribed and analysed.

- **Documentary-based evidence**

These documents assist in measuring the 'application of knowledge' aspect of participants in this study. It will also be used to re-affirm any observations made that may be inconclusive based on viewing the video alone.

- **Intervention**

A two hour remediation session, once a week was conducted over 12 weeks. Participants were briefed about the study and prepared for the new integrated instruction. The two-hour class consisted of a 10 minute review of previous roots learned; 20 minutes introduction of roots; 10 minutes single word reading that consisted of previous phonograms learned and morphemes taught; and 20 minutes spelling that consisted of previous phonograms learned and morphemes taught.

The rest of the lesson covered comprehension; writing and other vocabulary building activities that the teacher needed to cover as part of the literacy approach. Word study and word detective skills were incorporated into these where opportunity arose (to allow incidental learning).

- **Post Semi Structured Interview**

The questions were predetermined by the researcher to allow feedback on their feelings and thoughts about the integrated instruction after the 12 weeks.

Scoring

Spelling

Each word was scored correct when the participants were able to spell the word independently or self-correct when mistakes were highlighted for him. For example when a word is spelt as 'tidyness', the teacher points out that he has to apply a suffixing rule and the participant spells the word correctly as 'tidiness' – the word will be scored as correct.

Words Generated Independently

The one hour of morphological instruction consisted of a 15 – 20 minute explicit teaching of root words and their meaning. Each lesson a new root word was introduced to the class. During this activity, participants were introduced to a new root word such as 'struct' and given a keyword that contained the root word such as 'construct'. Based on their prior knowledge of the word, teacher then used a Word Structured Inquiry (Bowers, 2010) process by asking participants to identify the prefix and root/base word and to prove that these were indeed real morphemes by associating them with other words containing these same morphemes, i.e. words that contain prefix 'con-' such as confuse, connect, context. After this, participants could begin to brainstorm words that contain 'struct'. They would then brain storm about eight to ten words together on the board.

After each introductory lesson, each participant was require to demonstrate their understanding of a root word by producing 12 other words that were not the same as those written on the board. However, they were allowed to expand any of the words written on the board by either adding a prefix or a suffix. For example, the word 'instruct', participants can produce answers such as instructors/ *un*instruct*ed*/instruct*ion*.

Participants were also expected to be able to apply their suffixing rules when needed. For example, when producing the word struct + ur~~e~~ + al, they should apply the drop-e suffixing rule struct + ure + al, which will then be rewritten as 'structural'. As in the spelling task, the teacher will provide opportunities for participants to self-correct themselves. If participants were unable to correct themselves, they would not score for that word.

Findings and Analysis

Key Definition

Academic self-concept in this study is defined as the person's attitude towards learning. It includes the confidence to do a task, participation type and frequency in class as well as developing independence through the application of learned skills beyond the classroom.

Spelling accuracy in this study is based on the learner's ability to spell the word closest to the correct spelling without the teacher telling him the correct spelling e.g. when the student spell deception as 'decaption', teacher will mark it correct if student is able to change the 'capt' to 'cept' when the error is brought to his attention.

Summary of Finding and Research Questions

The findings from this study were obtained from post study semi-structured interviews, 12 lesson observations and documentary evidence such as class worksheets and teacher-researcher's records of the students' behaviour and responses she noted in the classroom.

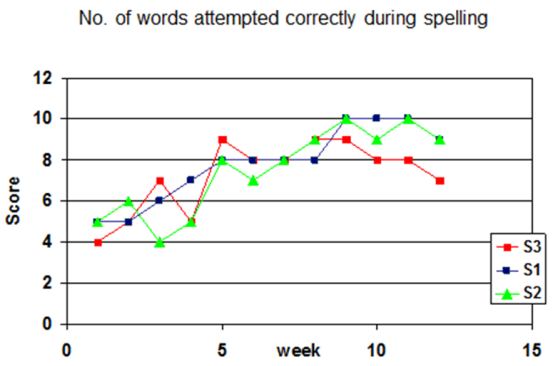

Figure. B – Number of words attempted correctly during spelling

Finding 1: All participants showed an increase in the number of words attempted correctly during spelling throughout the 12-week study.

It was observed that S2 and S3 often spelled words impulsively. At times they seemed to know the word, but failed to analyze the word structure before spelling the word or made connections to the wrong root or base word. An example mentioned earlier in this paper, S2 spelled 'unnoticeable' as 'unknowtisable'. S2 associated the word notice with the base word 'know' instead of 'notice'. Another example is suffix '-able' in 'acceptable' which was spelled as 'acceptble'.

Though the overall spelling accuracy increased, it can be observed that S2 and S3 performance was inconsistent throughout the 12 weeks compared to S1. This is consistent with the observations made in class. S2 and S3 were often playful and talkative in class. At times, they spell impulsively and may omit letters or use incorrect letter sounds. S1 is more attentive and often asked for the word to be repeated when unsure.

Finding 2: Participants were able to generate increased number of words from a given root word through the 12-week study. Even participant S1, who started with a low score of 4 words, increased to 7 words in week 12, and even achieved 10 words in week 9.

From class observations, S1 did not score (see, Figure B) as well as S2 and S3; this could be due to English language not being S1's home language. During the root word introduction, S1 faced similar difficulties producing words that were related to the given root, despite prompts that were later given by the teacher. This could suggest a lack of print exposure and opportunities to use the language that if provided, can give him a deeper understanding of the different orthographic structure a word can take. It was also observed that all three participants generated words with plausible prefixes and suffixes, all which were spelled correctly. While trying to generate words, some common mistakes included placing similar meaning prefixes

to the base word. For example, '***un***respectful' in the place of '***dis***respectful'.

Other common mistakes made during word generation were the application of the three common suffixing rules; 'doubling rule',[3] 'drop-e rule'[4] and 'y change i rule'[5] and the selection of the incorrect form of the bound base such as 'capt versus cept'. For example in the word 'deception' the 'capt' was used instead making the spelling 'decaption'. However, the teacher-researcher would score such mistakes as correct if the participants were able to self-correct themselves upon reminder on the first round.

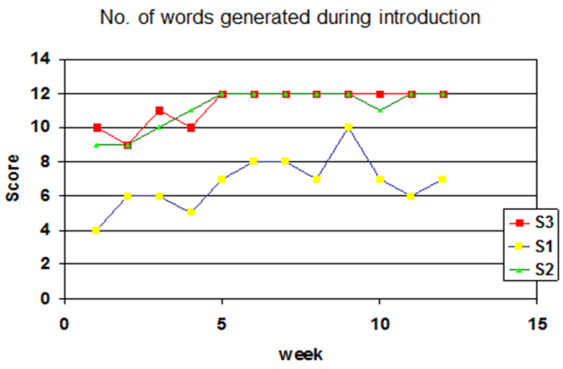

Figure C - Number of words generated during introduction or review of root word

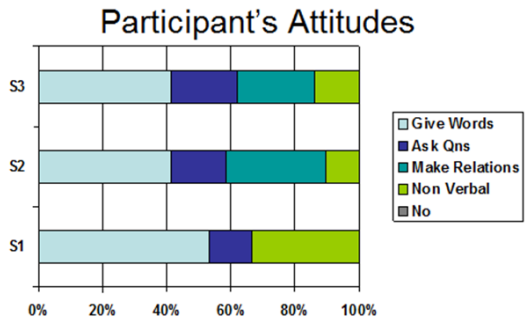

Figure D - Frequency of participation types

Finding 3: In terms of the attitude of participants, all were attentive during the 15-20 minutes introduction of a root or base word. Peer to peer learning was evident in every lesson. Participants were engaged and forthcoming. They provided answers readily when guided by the teacher, S2 and S3 demonstrated the ability to cite examples indicated by the wider portion in "make relations" and that brought out the meaning of the word to help their peers relate to the word better. The bar chart is most constructive when it displays a large portion of 'ask question – **blue**' and 'make relations – **turquoise**' as it reflects that students are making effort to clarify something they are unsure of or are aware of the meaning of the word and therefore able to relate this to their own experience.

From class observations, students responded to the teacher-researcher in

3. *trans + mit + ing = running when adding a vowel suffix to a root/base word that has 1 syllable/1 vowel / end with 1 consonant.*
4. *trans +port + ate + ion = making when adding a vowel suffix to a base word that end with the letter 'e' drop the letter 'e'.*
5. *cry + ed = cried when adding any suffix to a word that end with letter 'y' change 'y' to 'i' except when there is a vowel in front of 'y' or suffix begins with 'i'.*

their own ways depending on their personality.

After 12 weeks of class observations, the teacher-researcher classified the attitude of participants into four main categories:

a. Gives words – students respond readily as teacher guide them to the correct answers.

b. Volunteer answer - students provide answers without teacher guidance.

c. Make relations – students who fall into this category are able to make connections with words that were brainstormed in their conversation, comments, jokes while the class was on on-going. From the teacher-researcher's observations, most students who displayed thorough understanding of the constructed words were able to relate the word to their prior knowledge, making this observation important to take into account.

d. Non-verbal – students showed that they were engaged in the lesson through non-verbal means such as nodding, laughing at their peer's jokes and other forms of body language that equate to their involvement in the lesson.

e. No – students who do not display any sign of engagement or interest. Students who were seen to be engaged in other activities such as texting on their mobile phones or talking to their peers about matters not pertaining to the lesson also fall under this category.

Finding 4: All participants agreed that morphological instruction has been very useful and they have adopted the strategy in both their reading and spelling. However, some also agreed that phonics is still necessary in that the integration of both strategies will help them read and spell better. Most have indicated that they spell by sight recognition and they were often hindered by the letter position in words. For example, the word 'music', at times they know the letters that make up the word 'music', however, are confused by letter positions and may spell the word as 'muisc' or 'mucis'.

When prompted about the strategy they used for spelling, most said that they spell from their imagination which can be associated with their visual knowledge (Templeton, 1979) of how the word looks. S2 shared, "I spell from my imagination...I try to remember words in parts...then I try to spell." similar to S3 whom also shared "I try to imagine how the words look like then try to spell."

a) When asked if participants found the morphological instruction useful and when they most often used it, these are their replies; S2 viewed it positively, "It helped me very much, it changed the way I read and write, it has helped me look at words differently. I use it every day; useful for both reading and spelling." he continued, "(I) prefer to see them as prefix and base word like that. Makes more sense, so easier to remember, easier to remember words by parts than by sound."

When asked if morphological instruction has helped him in school, S1 responded, "Help me break down the word to spell. I

use it every day. Use it in class, at home. I use it more during spelling."

S3, "I think there is changes to the way I look at words. It is helpful. I use it most of the time...I use it as it works better for me. [Before this]...I know some of the suffixes, after you teach me morphology; spelling words are a lot easier for me."

b) It was also observed during the interviews that students felt more confident about attempting spelling and about themselves.

S2 said, "It changed the way I read and write." He went on to compare the current integrated morphological instruction with the existing phonics approach, "In the past before the new teaching, I cannot read and write, but now I can read and write better." By the end of the year of this study, S2 passed his English paper for the first time since primary two. He was 15 years old that year.

As for S1, he shared, "It helped me tackle word better. Learn how to spell." The teacher-researcher also observed in class that S1 was more willing to read. During spelling activities, he was able to ask leading questions that could help him reach the correct spelling of the word. His experience was similar to S2 as he shared how the lesson taught by the teacher-researcher was more defining, "I find the current lesson now easier to study than the time I was at Queeenstown" (his previous Learning Centre).

S3 felt that the explicit teaching of morphology has helped him gain deeper insights on this strategy that he has already adopted to help him tackle words. With the use of morphological instruction, he also felt that spelling words was easier for him.

On which strategy that they felt were more in tune with their learning needs, all participants agreed that morphology was their preferred way. S1 found difficulty remembering the morphemes as well as phonemes while S3 felt that both approaches work best together, he felt that, " Learning both, give us choice to what best to use."

Conclusion

In summary, the findings have shown the effectiveness of the integrated morphological instruction and the increased engagement and participation in the classroom. All students increased in accuracy, in willingness to attempt to correct their errors and in confidence. It can be seen that participants' self-esteem has increased, and this is key to learning. Participants are now equipped with the knowledge to overcome their spelling difficulties and to take initiatives to ask the teacher for words they are unsure about. The integrated morphological instruction has provided a compensatory strategy that is more age-appropriate and relevant to what older students can use in school to help them. A longer-term follow-up is needed to see whether students continue to use this approach when the morphological instruction has finished.

Further research is needed with larger groups of students who have failed to benefit from the standard phonological

intervention. From the data in this case study, it seems plausible to suggest that significant improvements would be made using this approach, which harnesses and enhances the higher level skills of these students, encouraging them to think more deeply about language and its use.

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Perceptions of Success in Dyslexic adults in the UK

Neil Alexander-Passe [1*]

1 Head of Learning Support, Mill Hill School, London

Abstract

This paper reports on a reflective qualitative/quantitative study of 29 adult dyslexics and their perceptions of success. It compares depressive (N=22) to non-depressive dyslexics (N=7), with gender, age of diagnosis and academic success variables. Interpretive Phenomenology Analysis was used to investigate dyslexia and perceptions of success. The study uses both quantitative and qualitative data to understand how dyslexic adults perceive any life success, and whilst many were degree educated, this was not seen by many as enough to herald themselves as successful. Many talked about reaching one's potential, but this was seen as a personal goal-setting exercise, with those who felt themselves as unsuccessful creating unrealistic goals. Whilst many were seen by others as successful, again they dismissed this and denied themselves such attributes.

From the quantitative data, overall the whole sample felt more successful than unsuccessful (65.4% to 30.8%). Males felt more unsuccessful (45.5% to 36.4%), but females felt significantly more successful (72.2% to 16.7%). The secondary questions gave a number of reasons for this: compared to females, males felt rejected by peers, felt inadequate, frustrated and self-blamed, with the strongest differences in terms of feelings of inadequacy in over 50% of both the depressed and non-depressed males.

Introduction

The aim of this paper is to study both dyslexia and the perceptions of success amongst such individuals. Each person's definition of success is different, and this difference is as unique as their many facets of their dyslexia. Has dyslexia held them back, and if so how? Have they re-defined success with dyslexia as a variable? Do they have the same definition of success as their non-dyslexic

* *Correspondence to:*
Neil-Alexander-Passe, Email: neilpasse@aol.com, www.dyslexia-research.com

peers? Do dyslexics create realistic concepts of potential? Are depressive dyslexics more (or less) successful than non-depressives? Lastly, did their negative experience as an undiagnosed-dyslexic growing up have an impact on their perception of their own success?

Empirical Review

What is Dyslexia?

According to Rose (2009) Dyslexia (specific reading disability) is defined as a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. Characteristic features of dyslexia are difficulties in phonological awareness, verbal memory and verbal processing speed. Dyslexia occurs across the range of intellectual abilities. It is best thought of as a continuum, not a distinct category, and there are no clear cut-off points. Co-occurring difficulties may be seen in aspects of language, motor co-ordination, mental calculation, concentration and personal organisation, but these are not, by themselves, markers of dyslexia. A good indication of the severity and persistence of dyslexic difficulties can be gained by examining how the individual responds or has responded to well-founded intervention.

Whilst there are many theories to the cause of developmental dyslexia, many believe phonological deficits are a core function (Snowling, 2000; Thomson, 1996). Whilst research has looked at a medical-based identification, with DNA the most likely candidate (Bishop, 2009; Grigorenko, Wood, Meyer & Pauls, 2000), to date identification has relied upon educational psychologists to diagnose 'dyslexic-type deficits' through a number of sub skill assessments.

Whilst dyslexia is widely understood to affect reading, writing, short-term memory and associated traits (Thomson, 1996, Riddick, 1996, Miles 1994) there is less information available about how dyslexics interact with society and their environment at large (Scott, 2004; Alexander-Passe, 2006, 2008, 2010). Many ignore dyslexia as a life-long condition that affects individuals from cradle to grave and the emotional/psychological manifestations from such a condition.

Alexander-Passe (2010), Scott (2004), and McNutty (2003) agree that dyslexia is camouflaged in adulthood, due to advanced coping strategies allowing a sense of normality to be projected. Dyslexics are very conscious of their differences, so create a secondary persona to operate in the wider community (Alexander-Passe, 2010, 2012; Scott, 2004). This persona works the majority of the time; however when it cracks can become highly embarrassing, demonstrates how vulnerable they can be, and confirms their otherness compared to their peers.

There is however a shortage of research concerning dyslexia and personal perceptions of success and this paper aims to shed light on this subject.

Dyslexia and Self-esteem

There is strong evidence to suggest that dyslexics suffer from low self-esteem when they fail consistently at school and that deviant behaviour is a common bi-

product (Morgan, 1996; Kirk & Reid, 2001; Scott, 2004; Hales, 1994; Riddick, 1996; Humphrey & Mullins, 2002). Riddick, Sterling, Farmer and Morgan (1999) and Peer and Reid (2001, p. 5) agree that 'frustration leads very often to antisocial or deviant behaviour' amongst dyslexics, especially those with low self-esteem.

Some pupils might disrupt a class because they interpret the class work as threatening, and use attention seeking to protect self-esteem, according to Molnar and Lindquist (1989). They suggest that if the teacher, in class with pupils, can re-interpret the nature and purpose of classwork (keeping the child's self-esteem), the child's long-term behaviour will change. But most teachers, as Molnar and Lindquist (1989) found, hand out reprimands, as this is the only skill they know that quickly influences a child's present behaviour – a fire-fighting technique. Low self-esteem will also mean the development of a poor or negative self-image.

Such beliefs become self-fulfilling prophecies due to the expectation to fail (Riddick, 1996). Morgan and Klein (2003) note that childhood experiences of being labelled 'thick' and public humiliation caused by failing often results in choices which reinforce low self-esteem. This results in many dyslexics failing in public examinations and leaving compulsory education without the ability to pursue normal career paths (college-university-careers), due to few or no academic qualifications.

Specialist schools or classes for dyslexics have been found to improve self-esteem, especially social and academic self-esteem (Thomson & Hartley, 1980), and Scott (2004) suggests the best improvements in self-esteem comes from literacy, and the improvement of literacy breaks the difference between dyslexics and their peers, as 'difference' is the core problem.

Empirical studies note correlations between low self-esteem/anxiety and academic failure - more so with dyslexics, as, since Humphrey and Mullins (2002, p. 199) note 'the experience of dyslexics at school has clear and demonstrable negative effects on the self-concept and self-esteem of children'. Riddick et al. (1999, p. 241) indicated 'the powerful mediating effect of literacy performance on how individuals perceive themselves and are perceived by others', suggesting literacy failure can distort the dyslexic's self-perception.

There is significant empirical evidence to suggest that dyslexics leave full-time education damaged by their experience at school, and many leave with little or no qualifications to their name. Thus to achieve any form of success following such trauma manifesting in low self-esteem must be a lot harder in comparison to their peers. This study aims to look at how success can be created out of nothing, in a group of adults who experience depression, in comparison with their non-depressed peers.

What is success?

According to Oxford Dictionaries (2013), success is defined as (1) the accomplishment of an aim or purpose: the president had some success in restoring confidence; (2) the attainment of

fame, wealth, or social status: the success of his play; (3) a person or thing that achieves desired aims or attains fame, wealth, etc.: to judge from league tables, the school is a success, must make a success of my business.

To summarise the above definition one could conclude that success is accomplishing an aim or goal, and in many ways it is aligned with fame, wealth and social status. This will be the basis of this paper.

Dyslexia and realistic success (theory)

To understand how success and dyslexia align, it would be best to start at school, the place where most young people will experience success. But in the case of dyslexics, and according to literature noted earlier, it commonly is a place of trauma and failure. Thus dyslexics rarely experience as much success as their peers, and commonly fail, on a daily basis, in these early environments. Not only this, all their peers are well aware of their failure in tasks which can cause them embarrassment and bullying, along with the development of low self-esteem.

So could one hypothesise that success for a dyslexic could be: surviving each day at school without getting something wrong, and if they did, that no one seeing it; or accomplishing on par with their peers even though the effort required was much greater than would normally be expected.

As the quote goes, 'success begets success', so must 'failure begets failure'. If dyslexics experience failure on a daily basis, then this could be self-perpetuating (according to the Pygmalion effect by Rosenthal & Jacobsen, 1968; Mitchell & Daniels, 2003; Whiteley & Johnson, 2012). Thus one could ask, are dyslexics less likely to experience (achieve) success? And if they do, will this be comparative to non-dyslexics, who would have experienced a higher likelihood of achieving success?

Another perspective could be given by examining 'Attribution theory' by Seligman (1991) and Seligman, Abramson, Semmel and Baeyer (1979) as a means to combat 'Learned Helplessness'. Seligman discusses how by retuning or reframing an individual's perception of events from global (e.g. I am rubbish at Maths) to specific (e.g. I only find fractions hard) will allow the sense of failure to reduce and a sense of success and mastery to increase. This is especially useful for dyslexics who experience high levels of failure in educational setting.

Dyslexia and success (empirical)

There is a growing body of research that investigates success amongst dyslexics from many perspectives.

To start with dyslexia organisations in the UK and the USA frequency publicise a long list of dyslexics of note (BDA, 2013; IDA, 2013), these range from billionaire businessmen (Sir Richard Branson, Charles Schwab, Ingvar Kamprad), film stars (Tom Cruise, Whoopi Goldberg), politicians (Winston Churchill, George Patton), inventors (Alexander Graham Bell, Thomas Edison), artists (Leonardo da Vinci, Pablo Picasso), scientists (Steve Jobs, Albert Einstein), sports people

(Muhammad Ali, Sir Steven Redgrave), and writers/poets (Agatha Christie, Benjamin Zephaniah).

The most known study is by Logan (2001, 2009, 2010) investigating the frequency of dyslexics amongst corporate management and entrepreneurs. Her conclusions based on a small response rate (43% in the UK study and 7% in the US study) of undiagnosed dyslexics (a screening questionnaire was used) found more self-diagnosed dyslexics as entrepreneurs (from an N=30 US sample). However due to the sample size, response rate and that no evidence of dyslexia diagnosis was required to participate, these findings should be taken with caution.

It is argued that self-employment allows dyslexics the ability to work in their own way, concentrating on strengths, rather than suffering huge amounts of paperwork in middle-management. Success also came through delegating paperwork and other tasks, so they could concentrate on what they do best, talking to people and coming up with novel/ divergent answers to problems. Fitzgibbon and O'Connor (2002) support Logan's conclusions that dyslexics are least likely to thrive in a corporate environment.

Whilst dyslexic organisations herald well-known dyslexic businessmen (e.g. Richard Branson, Charles Schwab) as role models, are these realistic? Biographies of such men suggest they delegate all menial tasks (note-taking, reading and writing emails, checking financial forecasts etc.), the tasks dyslexics are typically not good at. This frees them up to think creatively/divergently, to sell ideas to others, and indulge in risk-taking; skills dyslexics can excel in. Gatewood, Shaver and Gatner (1995); Stewart and Roth (2001), and Logan (2001) would argue that such skills are essential for entrepreneurship. Branson and Schwab have built global empires that are built on them acting autonomously - thus they are the brand.

The most relevant study for this paper is by Fink (2002) who investigated 60 successful men and women with dyslexia (e.g. doctors, lawyers, educationalists, filmmakers, computer programmers, writers, administrators etc.). The aim of the project was to assess how diagnosed dyslexics had attained in prestigious careers whilst battling with literacy problems. Results of the interviews found that: (1) they pursued passionate interests – subjects they were happy to read about and thus improve reading ability with; (2) development of persistence and empathy – to not give up in the face of struggles/ problems and to empathise with others with similar struggles; (3) mentors were important role models and supporters in struggling times; and (4) denial of access to chosen careers by others – being discouraged reinforced motivation to overcome barriers.

Goldberg, Higgins, Raskind and Herman (2003) point to findings of a 20 year longitudinal study of successful and unsuccessful adults with learning disabilities (a similar term for dyslexia in the US), with N=47 participants. Interestingly participants were classed as successful by clinical judgement on six domains (employment, education, independence, family relationships,

community relations/interests and crime/ substance abuse). Those judged successful had the following variables correlated with success (Perseverance .88, Proactivity .90, Goal-setting .75, Self-awareness .69, Emotional stability .55, Lack of support systems -.84, Emotional instability -.78, Reactivity -.70, Lack of goal setting -.70, and lack of self-awareness -.58). These would support Logan's (2001, 2009) data.

Tulip Financial Group's (2003) study of N=300 UK millionaires found that 40% were dyslexic in a study reported in the media in 2003. Adrian Atkinson, a business psychologist who worked with the study, noted that 'Most people who make a million have difficult childhoods or have been frustrated in a major way. Dyslexia was one of the driving forces behind that'. Millionaires they found knew that mistakes were OK, speed is the key to business advantage, and they work within their strengths. Rene Caraylol, a business adviser and another member of the research team stated of dyslexic millionaires 'They don't do failure, they redefine it. Failure for them is a learning experience that will enable them to be even better. If they fall over, they just come straight back up again' (Sunday Times, 2003).

Many researchers find successful dyslexics, whilst experiencing success, also fear failure; over produce; have a very strong personal self-drive for financial freedom; dream about achieving their goals; are control freaks; extremely self-critical; perfectionists; always striving to do better; have a need for order, are confident; persistent and show stubbornness (Scott et al. 1992; Wszeborowska-Lipinska, 1997; Reiff, Gerber and Ginsberg, 1997). However, studies of individuals who go on to become millionaires have shown that the proportion of dyslexics among them is four times the proportion of the general population (Stanley, 2002), suggesting such attributes are not necessarily debilitating.

There seem to be counter-arguments concerning self-esteem. Scott et al. (1992) suggest successful dyslexics will: lack self-confidence; self-doubt, have low self-esteem and fear rejection. Whilst Wszeborowska-Lipinska (1997) counters this by suggesting that, as successful dyslexics are not only reaching the heights of their peers but feel the need to surpass them, they therefore require more self-confidence and higher self-esteem than their peers do.

Richardson (1994) and Richardson and Stein (1993) take an interesting perspective on the personality profile of successful dyslexics, looking at psychological factors. Findings indicate that successful dyslexics were eccentric, extroverted and used unusual perceptual experiences (hunches, gut reactions and delusions) for decision making.

A main difference between successful and unsuccessful dyslexics found by Scott et al. (1992), is that they had at least one person who believed in them (mostly their mother) and encouragement of talents and hobbies (also found by Morgan and Klein, 2001 and Thomson, 1996). Thomson also noticed that successful dyslexics were commonly those who 'got by' by being highly intelligent, but were often under-achievers, failing to attain

their potential and sometimes suffering a lifetime of frustration.

Gerber, Ginsberg and Reiff (1992) believe a 'goodness of fit' and the seeking of support systems are two key external factors for dyslexics and those with learning difficulties (an American term which covers dyslexia) to achieve success at work. The 'fit' or 'match' of dyslexic abilities to the employment environment and expectations create success for both employer and employee. Morgan and Klein (2001, p. 130) interestingly contemplate that employers need to be 'aware that whilst some dyslexic difficulties seem like incompetence, they need not necessarily be an impediment to doing the job'. Dyslexics doing jobs differently can also have their advantages, as Klein and Sunderland (1998) found with one young dyslexic labelled a 'slow learner' at school. At 16 years old she went to work for a local factory making electrical components for cars. Her role was basic and routine, but within a short time she had re-wired one of the components in such a way that it was more efficient, used less wire and saved the company large amounts of money.

Dyslexics who struggle

A high percentage of individuals in UK and Swedish prisons with reading difficulties or dyslexia (30-52% of all prison inmates in tested prisons) would suggest that many leave mainstream education unable to find gainful employment and are forced to use illegal means to support themselves and their families (Alm & Andersson, 1995; Kirk & Reid, 2001; British Dyslexia Association, 2004; British Dyslexia Association and HM Young Offender Institution Wetherby, 2005; Dyslexia Institute, 2005; Herrington, 2005). Some individuals with dyslexia (depending on education and severity) may find it very difficult, if not impossible, to learn to read, write or do mathematics (Scott, Scherman & Philips, 1992).

Frequently, adult dyslexics find they lack not only adequate academic and emotional skills, but also interpersonal communication and social skills as well - putting them at a greater risk of a continual cycle of failure.

More recently, UK research highlights the frequency of dyslexia in UK prisons. Rack's (2005) study in eight Yorkshire and Humberside prisons suggested dyslexia was three to four times more common amongst prisoners than in the general UK population, with an incidence of 14 –31%. He found that 40 – 50% of prisoners were at or below the level of literacy and numeracy expected of an 11-year old (Level 1), 40% of whom required specialist support for dyslexia. He concluded that dyslexia is three to four times more common amongst offenders than amongst the general population, Herrington (2005) reported that the Basic Skills Agency Initial Assessment recorded 60% of prisoners had a reading ability equivalent to or less than that of a 5-year old child.

Lastly, British Dyslexia Association (2004) indicated that problem behaviour amongst young people with dyslexia was often evident before identified as dyslexic, thus it could be argued that their adverse behaviour was the manifestation of undiagnosed learning difficulties.

Methodology

Sample

Participants were recruited three ways: (1) emails to UK dyslexia newsgroups, (2) adverts on dyslexic web-forums, (3) inclusions on dyslexia associations' websites. Four dyslexic sample groups were requested (with/without depression, degree/non-degree educated), with dyslexic adults with depression being largest group replying.

All participants were required to provide evidence of: (1) formal diagnosis of dyslexia evidence (e.g. educational psychologist reports), (2) depression (e.g. a clinical depression diagnosis or at least one course of physician/GP prescribed anti-depressants). Whilst mild depression is common in society, only severe cases tend to be referred for clinical diagnosis. See Tables 1, 2, 3 for sample details. The mean age of dyslexia diagnosis data indicated that non-depressives tended to be diagnosed earlier, however in both groups they were mainly diagnosed post-school and after leaving university.

Apparatus

An investigative semi-structured interview script was used with N=24 items (See Figure 1). Interviews lasted between an hour and three hours.

The Interview Process, Confidentiality, Informed Consent and Personal Disclosure

All participants were sent details of the study before the interview, and all verbally confirmed participation before

Table 1. Sample data: Size, mean age and standard deviations

	N	Mean age (years)	Standard Deviation
All	29	40.56	12.67
Depression diagnosis	22	42.32	13.0
No depression diagnosis	7	35,14	10.89
Depressed - females	15	38.8	11.71
Depressed - males	7	49.86	11.32
Non-depressed - females	3	18.0	1.63
Non-depressed - males	4	43.5	6.54
Depressed - dyslexia diagnosis	22	28.09	11.83
Non-depressed dyslexia diagnosis	7	22.28	14.77

Table 2. Sample Data: Depressed Participants

Depressed	Age	Diagnosed age of Dyslexia	Gender-male	Gender-female	Degree-educated	Non-degree educated	Depressed at school
Adrian	45	32	X		X		
Brian	70	35	X		X		X
Jasper	59	45	X		X		
Norman	40	33	X		X		X
Anita	47	45		X	X		
Emma	36	25		X	X		X
Maureen	34	27		X	X		
Rachel	40	32		X	X		X
Shelley	61	50		X	X		X
Susan	27	20		X	X		X
Trixie	58	11		X	X		X
George	54	40	X			X	
Ronnie	33	15	X			X	X
Samuel	48	19	X			X	
Andrea	41	39		X		X	
Karen	56	40		X		X	
Kirsty	23	16		X		X	X
Lara	25	20		X		X	X
Milly	37	7		X		X	
Natasha	40	25		X		X	
Norma	29	23		X		X	X
Phoebe	28	19		X		X	X

Table 3. Sample Data: Depressed Participants

Depressed	Age	Diagnosed age of Dyslexia	Gender-male	Gender-female	Degree-educated	Non-degree educated	Depressed at school
Zara	26	8		X	X		
Harry	52	45	X			X	
Jordan	34	33	X			X	
Malcolm	46	36	X			X	
Peter	42	8	X			X	
Izzy	24	5		X		X	
Jean	22	21		X		X	

Please describe how you are feeling today? *(Are you taking any depression medication at present?)*
Please describe your life/yourself? *(I need to create a description of you e.g. age, education, job, character, personality etc)*
Do you enjoy life?
Please describe your childhood? Was it happy? *(e.g. with your family)*
Do you have any siblings? Do you think you were treated fairly/unfairly to your siblings?
Please describe your time at school? Was it enjoyable?
Did you ever get frustrated from your learning difficulties?
What does dyslexia mean to you?
Is dyslexia something positive or negative?
How does dyslexia affect your daily life?
What classic dyslexia symptoms to you have?
Do you think your hobbies help you? Giving you self-confidence?
Do you ever blame your dyslexia for things?
Do you/have you ever resented your teachers at school for not seeing your difficulties?
Do you ever feel rejected? Please explain?
How does failing or getting things wrong affect you?
Do you ever say why me? Why am I dyslexic?
Do/Did you self-harm? Why? What are the triggers?
Have you ever thought about or tried to commit suicide? Why? What were the triggers?
Do you think dyslexia and depression are correlated (linked)?
Did you ever truant/run away from home?
How do you feel going into schools now, what triggers any negative emotions?
Do you enjoy being you? Please explain?
Would you call yourself a successful dyslexic?
What do you think makes a successful/unsuccessful dyslexic?
Do you feel you are reaching your potential?

Figure 1. Interview Script N=24 items. (Alexander-Passe, 2010)

the start of each recorded interview. Participants were also advised that they could avoid any questions that were too emotional to answer and could halt the interview and their participation in the study without reason; fortunately, no participants took this option. As avoidance was noted in several interviews, further investigative questions were required.

Confidentiality was assured at several points: (1) in the original study advert; (2) in email confirmation/requests for basic details (name, age, education etc.); (3) at the start of each interview, (4) advising participants that pseudonyms names would be used.

Each participant was also reassured that they would receive a copy of their transcript which they would have the opportunity to check and modify. As the interviews concerned participants disclosing emotionally painful or frustrating events it was felt best that the interviewer (Alexander-Passe) also disclosed, where required, that he was diagnosed dyslexic at fourteen years old and understood and had experienced many of the difficulties at school that they may have encountered.

Analysis

Each interview was recorded on audio tape, transcribed, spell-checked with minimal grammar changes; lastly a check was made for readability. The transcript was then emailed to each volunteer for them to check and amend if required, with the opportunity for them to add additional notes or post interview revelations, as interviews can commonly trigger post-interview thoughts. Interviews were then subjected to IPA analysis.

Interpretative Phenomenological Analysis (IPA)

IPA is a relatively recent analysis model but has its historical origins with phenomenology and aiming to return to studying living things (Husserl, 1970). This refers to the concept that "to return to the things themselves is to return to *that* world which precedes knowledge, of which knowledge always speaks" (Merleau -Ponty, 1962). Husserl was very interested in the life-world, comprising of the objects around us as we perceive them and our experience of our self, body and relationships.

Whilst there are many forms of phenomenology in use (*Idiographic, Eidetic, and Transcendental*), IPA using Idiographic ideals is used in this study. Smith developed Interpretative Phenomenological Analysis (Smith, Harré & Van Langenhove, 1995; Smith & Osburn, 2008) to analyse elements of the reflected personal experience - the subjective experience of the social world. Giorgi (1994) argues that phenomenology avoids the reductionist tendencies of other research methodologies, and uses the researcher's assumptions/divergent links to inform new insights from the data, rather than forcing data to fit pre-defined categories.

Such intuition in the researcher allows 'outside the box' thinking. The researcher is an interpretative element to understand themes and body language, compared to Discourse Analysis (Potter, 1996) which

	All %	All males %	All Females %	All Depressed %	Non-Depressed %	Depressed with degree %	Depressed without degree %	Depressed males %	Depressed females %	Non-Depressed males %	Non-Depressed Females %
	N=29	N=11	N=18	N=22	N=7	N=11	N=11	N=7	N=15	N=4	N=3
Feeling successful	**65.40%**	**36.40%**	**72.20%**	**63.60%**	**42.90%**	**63.60%**	**63.60%**	**42.90%**	**73.30%**	**25.00%**	**66.70%**
Feeling unsuccessful	**30.80%**	**45.50%**	**16.70%**	**22.70%**	**42.90%**	**18.20%**	**27.30%**	**42.90%**	**13.30%**	**50.00%**	**33.30%**
Feeling sensitive to criticism	30.80%	27.30%	27.80%	27.30%	28.60%	18.20%	36.40%	28.60%	26.70%	25.00%	33.30%
Feeling self-blame	34.60%	45.50%	22.20%	31.80%	28.60%	36.40%	27.30%	42.90%	26.70%	50.00%	0.00%
Feeling rejected by my peers	69.20%	72.70%	55.60%	68.20%	42.90%	54.50%	81.80%	85.70%	60.00%	50.00%	33.30%
Feeling misunderstood	69.20%	54.50%	66.70%	63.60%	57.10%	63.60%	63.60%	42.90%	73.30%	75.00%	33.30%
Feeling introverted	50.00%	45.50%	44.40%	45.50%	42.90%	36.40%	54.50%	42.90%	46.70%	50.00%	33.30%
Feeling inferior	57.70%	54.50%	50.00%	50.00%	57.10%	45.50%	54.50%	57.10%	46.70%	50.00%	66.70%
Feeling inadequate	30.80%	54.50%	11.10%	27.30%	28.60%	27.30%	27.30%	57.10%	13.30%	50.00%	0.00%
Feeling helpless when I fail at tasks	65.40%	54.50%	61.10%	63.60%	42.90%	45.50%	81.80%	57.10%	66.70%	50.00%	33.30%
Feeling frustrated	69.20%	81.80%	50.00%	59.10%	71.40%	45.50%	72.70%	71.40%	53.30%	100.00%	33.30%
Feeling alienated	57.70%	54.50%	50.00%	54.50%	42.90%	72.70%	36.40%	57.10%	53.30%	50.00%	33.30%

relies on precise analysis of the words used.

IPA has been used in many research studies (Thompson, Kent, & Smith, 2002; Clare, 2003; Biggerstaff, 2003; French, Maissi, Marteau, 2005).

IPA is suitable for this sample due to: (1) Being 'social model of disability' and inclusion friendly, aiding understanding in special need samples; (2) Allowing flexibility and the ability for themes from initial participants to inform an investigative interview script; and (3) Dyslexic friendly as it does not rely solely on discourse.

Analysis Methodology Used in this Study

This study predominately uses IPA methodology for analysis of data; however the results from the transformations (themes) were then used to create quantitative data, thus mixing qualitative and quantitative methodologies. Nineteen main themes were identified from transformations in the third stage of IPA and two-hundred feelings or aspects were identified for these nineteen themes, displayed in quantitative percentages. The quantitative data was then used to create tables along with interview evidence in the form of quotes (from mean units from the second IPA stage) are used to form each argument/topic for the results.

Results

Profiles

Profile results from this study are drawn from Table 4. Primary questions were about 'do you feel successful or not'? Secondary questions are drawn from the wider study on depression and emotional coping.

Overall the whole sample felt more successful than unsuccessful (65.4% to 30.8%). However, males felt more unsuccessful (45.5% to 36.4%), but females felt significantly more successful (72.2% to 16.7%). The secondary questions points to reasons for this: compared to females, males felt rejected by peers (72.7% to 55.6%), felt inadequate (54.5% to 11.1%), frustrated (81.8% to 50%), and self-blamed (45.5% to 22.2%).

Looking at the depressive data, depressives compared to non-depressives felt significantly more successful (63.6% to 22.7%), this was due to high feelings of: rejection by peers (68.2%), being misunderstood (63.6%), helpless when failing at tasks (63.6%), frustrated (59.1%) and lastly alienated by others (54.5%). Non-depressives tended to be undecided about feeling successful and unsuccessful (both at 42.9%) and showed high ratings for feeling frustrated with life (71.40%), and misunderstood and inferior (both 57.1%).

Both depressives with and without degrees felt more successful than unsuccessful (63.6% to 18.20% and 27.3%), however those without a degree felt strong feelings of rejection by peers and helpless when failing tasks (both 81.8%), along with frustration (72.7%).

Comparing depressive gender data, females felt more successful than males (73.7% to 42.9%), with lower frequency as

unsuccessful (13.3% to 42.9%). Males felt high levels of rejection by peers (85.7%) and frustration (71.4%). Whilst a smaller sample, non-depressives tend to follow a similar pattern with females feeling more successful than unsuccessful (66.7% to 33.3%), however males felt more unsuccessful (50% to 25%)

Interview Evidence & Discussion

Feeling successful

Would you call yourself a successful dyslexic? To a certain degree, yes. But I would say it has been very work hard to get where I am. You know, I'm a very stubborn person and if I put my mind to do something, I've always been like that to a certain extent. So yes but I've had to work very hard to get there. (Andrea).

Do you feel that you are reaching your potential? No! I think my opportunities to reach my potential were reduced by me being diagnosed too late. I think going back into education when I did, showed that I missed out on so much opportunity. **Would you call yourself a successful dyslexic?** Yes. I think that in spite of the lack of help when I was at school, I think that I am in professional employment, a professional and I have a higher education qualification, I am happy in my job and happy in my life. **What makes a dyslexic successful?** [Long pause] the main thing for anybody is to be happy, but I think to basically achieve in a world not made for us. It is a difficult one to define. **For me, it is not about having a degree. It is about being happy with where you are at.** Yes, I agree. Whilst I needed to prove to myself I could do it, I admire anyone who can go further. I do not have an honours degree, as I could not deal with a dissertation. I feel I have enough to stick two fingers up at my old teachers. I just got to the stage where I have a good job, foster kids. The trauma of doing a dissertation was going to be too much. (Anita).

Would you call yourself a successful dyslexic? [Laugh] yeh, I would actually... I'm quite pleased and if I was to die today, I feel I have achieved quite a lot. **Do you feel you have reached your potential?** Nowhere near yet. Well... just over half way there. (Emma).

Would you call yourself a successful dyslexic? I would like to think I'm as successful as I want to be now, but I want to become more so. **What do you think makes you a successful dyslexic?** Being positive, not bitching about it, moaning about it, not saying 'I'm dyslexic, help me, I have a disability' ... Don't use anything as an excuse, not being dyslexic. If you are going to be successful you will no matter what. Just do not use dyslexia as an excuse. Know when you are wrong and accept it, no one is perfect and that you will make loads of mistakes. To not be afraid of failing as well. **So it sounds like being contented with your life, not resenting your past.** Not resenting it one bit, it's who I am. I wouldn't change anything about my life. (Izzy).

Would you call yourself a successful dyslexic? Yes. I think that comparing what I have done to what I could have left school with. I could have left school at sixteen years old and done nothing. I think that I put a lot of the good characteristics of dyslexia, like being

inordinately stubborn to good use and I wasn't going to let people say that 'you can't do this', I've been to university and I have my BA, you know I think I am successful as a dyslexic and I think that dyslexia got me there and I'm not sorry for that. **So what do you think makes a dyslexic successful? Reaching your potential or getting a degree?** I think you have to set your own rating of successful, my view of it might not be suitable for someone else, and I would never tell anyone that my version is the right one. I said I wanted to get a degree and I did, that for me is my success...I do not think you should cramp (judge) anybody else's success, in terms of some people getting through school is a success if they are dyslexic and hate it that much, for them that is success. (Kirsty).

Would you call yourself a successful dyslexic? [Pause] yes, as I am not in prison. **Why prison?** So many dyslexics end up in prison. Most cannot read and write. But the fact that I have what I have, with whatever means I have used to get it, makes me successful. I am successful, as I have a lovely family and I am not in prison yet. **Do you think it is a fine line to your past that you might have ended up in prison?** Probably being Jewish is part of why I am not. (Malcolm).

Would you call yourself a successful dyslexic? I would say I was successful at hiding it for thirty-three years. I think subsequently I have been told I am successful, people have said to me 'it is really impressive, and you have done really well'. Basically I got half way through my master's course and doing very well before I was diagnosed. They said 'you have O'levels, A'levels, and an undergraduate degree, and you didn't have any support!...That's fantastic' and I that sort of flipped one-hundred-and-eighty degrees with the feelings I had about it, that I didn't do as well as I should have done, that I could have done better, as there were people now saying 'you did really well, considering all the stuff you had to deal with'. So I kind of probably am, but I don't feel successful in my own camp, so in some ways I kind of... it's difficult. **So other people call you successful but you don't feel it yourself?** Yep. **So what would you need to feel successful?** I think to feel successful; I would need to feel that I was fulfilling my potential in terms of understanding and ability to act. I have had one or two experiences, where I was absolutely stretched and reached for something and achieved it. (Norman).

Would you call yourself a successful dyslexic? You are using very ambiguous terms. For some, being successful is the ability to write a letter or an essay for the first time. For me, I think I've done relatively well compared to the average person, I have more than the minimal wage coming in, but there are colleagues doing better than me. We all drive to do better and I know I have done better than some people have [my peers]. **To some dyslexics that having a degree means they are success.** I read about someone who studied for a degree and was dyslexic, but it didn't make them any happier, so I think if I got one I would feel better about myself, it won't change me, it won't take away the years of bullying. I think it's good to get a degree and I would feel better about myself. **There is no right or wrong answers to such**

questions; I see it is more to do with one's potential. How you judge yourself. It is about status and stuff. **Some see it about money or about being happy. I would feel happy** to have a degree but it wouldn't make me happy every day. It would make me feel better about my work and my capabilities, so in that sense I can understand that. But it wouldn't make me whole (complete), it's just one aspect to your life. I see the need to do better, that part of me, to conquer it [getting a degree]. (Phoebe).

Would you call yourself a successful dyslexic? I might turn it round and say that I am successful and I am dyslexic, which sits more comfortable with me (Shelley).

The quotes powerfully describe how dyslexics feel about success. Attributes noted to success were: stubbornness, hard-working, degree-educated, proving oneself, positivity, not fearing failure, relaxed about making mistakes, and hiding ones dyslexia. Many talk about stubbornness as believing in oneself and ones abilities, such individuals note that move towards success was not being afraid of making mistakes, and seeing mistakes in a positive means to gain mastery in a profession or field.

There were many positive definitions of success ranging from being married to having children. Whilst many agreed that attaining a degree made them successful, others disagreed and said it would just make them feel better about themselves (higher self-esteem) which was a personal challenge.

Norman interestingly remarked that he was successful as he had hidden his dyslexia for thirty-three years, but was this success? It suggests that only through hiding his dyslexia could he have gained success, a negative perspective. Another negative view by Norman was being successful by not being in prison, as research suggests a high frequency turning to crime as a means to maintain self-esteem (Morgan, 1996; Kirk and Reid, 2001). Shelley was at odds with the term 'successful dyslexic' and preferred 'successful and dyslexic', suggesting that success came despite her dyslexia, not because of it.

Feeling unsuccessful

Would you call yourself a successful dyslexic? No. What do you think you would need to call yourself a successful dyslexic? A degree? Well. I think a degree is just one milestone to complete. For me at this age, if at a young age I had achieved my degree it would have made an advantage in my life, which would be more than an achievement, to respect myself. A degree is to achieve something that I was not equipped to achieve [when I was younger]. It was not that I was not inspired and that people were not there for me, I just did not do it. (Jordan).

Would you call yourself a successful dyslexic? No, because there is so much more I want to achieve. **Do you feel you are reaching your potential?** No. **Do you feel you will ever reach it?** I hope so. (Jean).

Would you call yourself a successful dyslexic? No, I wouldn't say I was. Perhaps it's just I'm accepting that I am

where I am, I do what I do, and I can't change the past, but there is the opportunity to change the future. To sit back to think and ask myself if I'm successful or unsuccessful? [pause] you can wallow in that for a long time, and then you suddenly realise you have wasted a lot of time, something that's not productive. **Many dyslexics feel that having a degree is their mark of success, to get to that point. But you have that and beyond but still you don't feel you are successful?** I have achieved a lot of things which is quite good, I've stood for [the UK] parliament, I got a degree, I'm now teaching which is something I really enjoy. **Have you reached your potential?** No. There is always more to do. (Harry).

Would you call yourself a successful dyslexic? [Long pause] I have to answer that no. **Why?** Because I am never happy with what I have done. **You were comparing yourself with your dyslexic brother with the degrees and qualifications, would you call him a successful dyslexic?** [Long pause] I would not call him a successful dyslexic because he has degrees, I would call him more successful than me because he is more contented with life, whether he is or not I do not know, I do not see him that often. I would hazard a guess he is more contented with life and I am very discontented with my achievements. **Do you think he is happier and more contented because he is reaching his potential?** Yes maybe. **Do you think you are?** No. **Near it?** No. **So what would be reaching it?** When I have a house in Africa, Costa Rica and do not need to work anymore **So it is about money then?** Unfortunately, yes, and that is one of the things I hate about myself. I used to be incredibly materialistic, crave a nice bike or car, and crave to be seen to have money. I do not care about that anymore, so I am not as materialistic as I used to be. (Peter).

Would you call you're a successful dyslexic? Nope, not yet. Every dyslexic feels they have under-achieved don't they. **Do you think when you get a degree that you will be a successful dyslexic?** Yes. No I don't think I will actually, because even if I get it, it would be like, thinking 'I got support, so it's not really me'. **So you think the support you get would take from the value of the achievement?** Yes. **Don't you think getting the support is purely there to be a support; they aren't doing it for you?** In a way, but it still feels like that. (Ronnie).

The quotes above largely describe potential, under-achievement and unrealistic concepts of personal success. Going back to attribution theory, if individuals set very high success criteria and they are unable to reach them, and then they are setting themselves up for constant failure. Seligman would argue that one needs to create smaller and more specific goals, where one can experience success, so that mastery can be experienced and self-esteem can be enhanced. Peter talks about a monetary definition of success, as only through riches can he outwardly be successful and not need to work, many successful individuals carry on working whilst attaining wealth and positions of influence (e.g. Richard Branson is a Billionaire), and enjoy personal challenges. Others in the study talk about

personal definitions of happiness and accomplishing goals. Both are valid definitions.

Feeling both Successful and Unsuccessful

Would you call yourself a successful dyslexic? I probably would have done a year ago when I graduated, as I felt good from that, also I had to do a CertEd as well (certificate of education, a teaching qualification), so for those two years at university, I was also teaching, so I would have said then. But now I have that on paper it really does not seem to be helping me, you know. But I don't know if that is normal or to do with the dyslexia? (Rachel).

Would you call yourself a successful dyslexic? Um, I'm very tempted to give two answers. **Okay give both**. If in terms of the world, they might say no. I think for me I have been a successful dyslexic, as I have proved to myself and the world that I'm pretty able and have a lot of talent. At the end of my career as a theatre critic I was admitted to the 'critic's circle of Great Britain', so that's a professional body and means that you're good. **Potential comes up a lot when talking to dyslexics, do you feel you have reached your potential, or working towards it.** I think I am working towards it, I am still frustrated because I feel I should have at this stage have achieved more of my potential than I have, but whilst some of it is due to me, most is due to the frustrations concerning the way the world is. (Trixie).

Would you call yourself a successful dyslexic? It is quite funny in this one. In the material world, I am a failure, because I cannot get a job, which is how most people measure themselves. But in the providing help to others I seem to be quite good at that, and that is helping me understand me, it means when people say 'thank you for helping me' that gives me a buzz. (George).

The three quotes describe different perspectives on success, one talks about gaining a degree and then finding out that that marker for success was useless and that they needed to be more realistic, another talks about others calling her successful but she talks about constantly not reaching her potential, thus she denies her own success. Lastly George brings the study back to outward symbols of success, a degree. However as discussed earlier success is more than academic attainment. He however feels successful in helping others and gaining outward symbols of praise, a simple but powerful 'thank you' by helping others.

Conclusion

This paper began by investigating dyslexia, dyslexia and self-esteem, defining success, and looking at dyslexia and success from both theoretical and empirical perspectives. There is a growing body of research that supports the concept that dyslexics can do well in life and attain both academically and in professional careers.

However in the eyes of the ordinary dyslexics that struggle through school and in low paid careers, role models heralded by dyslexic groups (e.g. Richard Branson, Tom Cruise, Charles Schwab etc) are

unrealistic, as they are known for vast success, wealth and do not show any of the negative effects they themselves experience on a daily basis, namely: difficulty reading, misreading things, problems with short term memory, and being unable to tie a shoe lace amongst many attributes of dyslexia. It is argued by some (School of Dyslexia, 2013) that when you are rich and famous or work in the creative arts, then it's okay being dyslexia, its trendy, however to reach success in other professions (e.g. marketing, law, medicine, accountancy etc.) it can be a distinct disadvantage.
Logan (2009) is typical of the more recent wave of research that has investigated success and dyslexia, citing a study that argues that dyslexics tend to be more suited to entrepreneurship than working in corporate environments, however with a 7% response rate from her more recent US study, the results should be taken with caution. However the Tulip Financial Group's (2003) study of N=300 UK millionaires found that 40% were dyslexic is another similar study and found that dyslexics were highly resilient and used school failure and frustration as a motivation for success. A much larger sample which gives suggests a more powerful argument.

Other studies have looked at the attributes related to successful individuals, this the author finds more helpful for ordinary dyslexics and practitioners to develop the skills required for successful careers. Fink (2002), Golberg et al. (2003), Scott et al. (2003) note perseverance/ resilience, the ability to bounce back after failure, goal setting, proactivity and lastly having support systems in place. This last point is defined as someone who believes in them, and can assist in the areas they find difficult e.g. reading, writing, organisation. This is commonly a family member, a teacher or a mentor.

The quantitative data in this study found that this sample felt more successful than unsuccessful, with females feeling more successful than males. This was explained as males experiencing more rejection from peers, feeling inadequate compared to peers leading to frustration and self-blame. Interestingly the depressive sample felt more successful than the non-depressives (however most in this study had depressive symptoms), feeling unsuccessful was due again to similar factors: rejection from peers, feeling misunderstood by others, helpless when failing at tasks, which lead to frustration and perceived alienation by others. Non-depressives were undecided whether they were successful or unsuccessful and felt highly frustrated, misunderstood and inferior.

Interestingly, those with a degree felt more successful than not, with those with a degree, feeling rejection by others and helpless when failing leading to frustration. Gender data also shows depressive females feeling much more successful than males, with males feeling rejection from peers leading to frustration.

The interview data adds flesh to the bones of the hard quantitative data, and heavily talks about potential. Whilst attaining a degree and surviving school to reach university, their real success was personally defined concerning happiness with life. They echo the empirical studies, in that their success came from being stubborn, attaining despite educational

struggles/failure, resilience, and hiding their dyslexia. Success came despite their dyslexia, not because of it. It was also noted that success came from not ending up in prison, as many dyslexics do turn to crime for self-fulfilment and for monetary gain. Norman powerfully concludes if he had gained so much without a dyslexia diagnosis, how much more could they have achieved if they had been actually diagnosed and helped at school. One could argue that being the underdog was his motivation for success.

Those feeling unsuccessful talked about not reaching their potential, and whilst other might class them as being successful, they did not and thus struggled to create realistic goals. Unfair family comparison to non-dyslexic or even dyslexic siblings was noted by one, which caused anxiety. Each dyslexic or individual is different, and each has their own abilities and struggles in life, and as noted earlier success is personally defined and this can have a powerful influence on one's mental health. Self-blame and thus self-doubt was noted in the study data, which explains why many in this study denied their success in life.

To conclude, this study has raised interesting questions about personal definitions of success, and highlights that dyslexics can be plagued by self-doubt and unrealistic concepts of potential. Whilst many in the study had gained a degree, this was not seen by them enough to herald them as successful. However personal satisfaction and having a loving family unit was seen by many as more important than status and money. Lastly, it was noted that success came despite their dyslexia and not because of it, and their school struggles gave them their motivation to prove themselves in life. To end, Shelley argued that she was uncomfortable being called a 'successful dyslexic'; she preferred 'successful and dyslexic', which again discusses the phenomena that having dyslexia will not give you special powers, it is just a learning or life difference.

Strengths and Limitations

Whilst 29 participants took part in the study, 22 were diagnosed as depression and only 7 had no depression diagnosis. The author took the viewpoint that the vast majority of the participants (N=29) suffered one or more depressive symptoms, and that the study would not label any quotes as from a depressive and others from a non-depressive, as this would be misleading and lead the reader to make assumptions. It is striking that even in a sample that is plagued with depressive symptoms, there are greater feelings of success than failure.

This study significantly adds to the literature on dyslexia and success, and indicates that dyslexia adults with a range of achievement levels can be successful even in the presence of depressive symptoms. One of the most striking findings is that over 50% of all males in the sample felt inadequate, in comparison with only 11% of depressed females and no non-depressed females. Moreover, significantly more females felt successful than males. One might argue that this is a legacy of dyslexia for males, whether or not they are successful in later life.

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DYSLEXIA ASSOCIATION OF SINGAPORE (DAS)

Our Mission: Helping Dyslexic People Achieve

Our Goal: To build a world class organisation dedicated to helping dyslexic people and those with specific learning differences in Singapore.

Our Aims:

- To put quality first in delivering a comprehensive and effective professional service for dyslexic people and those with specific learning differences on a not-for profit basis.
- To provide an assessment service for individuals at risk of having dyslexia and/or specific learning differences.
- To provide educational programmes and other support services for individuals with dyslexia and/or specific learning differences.
- To raise public and professional awareness of the nature and incidence of dyslexia and specific learning differences.
- To enable others (teachers, parents and professionals) to help dyslexic individuals and those with specific learning differences.
- To assist and elicit financial and other support for people with dyslexia, those with specific learning differences and their families.
- To promote and carry out local research into dyslexia, specific learning differences and to disseminate results.
- To network with other organisations in Singapore and internationally to bring best practices to the DAS and Singapore.

DAS as a Social Enterprise

- We provide high-quality, professional, innovative and client-focused solutions to create and sustain services for the dyslexic community in Singapore and the region.
- We operate as a financially viable and cost-effective business which at the same time ensures that no dyslexic person is unable to access our services because they cannot afford it.
- We generate social returns on our investments through the development of a dynamic, motivated team of highly qualified and experienced professionals.
- We have a heightened sense of accountability to stakeholders through our professional management team.

Registered in 1991, the Dyslexia Association of Singapore (DAS) is today a vibrant voluntary welfare organisation with over 240 full-time staff who provide a wide array of services for dyslexics not only in Singapore but in the region. DAS Specialist Psychologists conduct assessment and diagnosis for preschool students to adults. DAS Educational Therapists, Speech and Language Therapists and Specialist Teachers provide support for over 3,000 preschool, primary and secondary school students in 13 venues all over Singapore. Increasingly, DAS provides support for dyslexics who also suffer from other Specific Learning Differences such as ADHD, Dyspraxia, Dyscalculia and Non-verbal Learning Differences.

The DAS Academy is a Private Education Institution (PEI) registered with the Council for Private Education (CPE). It is a wholly-owned subsidiary of the Dyslexia Association of Singapore (DAS). Like DAS, the Academy is also a registered charity with the Commissioner of Charities. DAS Academy delivers a wide range of workshops and courses including a Master of Arts in Special Educational Needs. DAS Academy provides the bridge that links professionals, caregivers and people with special needs.

Asia Pacific Journal of Developmental Differences

Guidelines for Contributors

Overview

The Asia Pacific Journal of Developmental Differences (APJDD) will be unique in addressing a range of special educational needs including dyslexia, autism, dyspraxia, dyscalculia, ADHD in the Asian context. The journal will cover theory into practice and will provide a showcase for research in the Asian context as well as highlighting research areas which have implications for further research within Asia and beyond.

Frequency of Journal

The Journal will be published twice a year in January and July.

Contributions Considered for the Journal

Primary consideration for publications will be given to manuscripts that are focused on developmental differences within the Asia Pacific region. Manuscripts will be peer reviewed and included in the journal on the following criteria:

- They contribute to the further understanding of developmental differences as well as the applications and implications in the educational, social and cultural environments.
- They include sound research methods, interpretation and validity of results
- They contain organised and clarity of writing
- They contribute to the local Asian context
- They should original papers that have not been submitted to other journals or publications.

Submission of Manuscripts

All manuscripts are to be sent in electronic copy (MS WORD) as well as a PDF copy of the final edited document. PDF copy is required to verify the word copy and for publishing purposes. There is no need to submit hard copies of manuscripts.

Submissions are to be emailed to the editor at both email addresses below:

Angela Fawcett
DAS Academic Director
Dyslexia Association of Singapore,
Emeritus Professor, Swansee University,
angela@das.org.sg

Deborah Hewes
Managing Editor
Dyslexia Association of Singapore
www.das.org.sg/publications/journal
deborah.hewes@das.org.sg

Preparation of Manuscripts

It is expected that all manuscripts be submitted using the American Psychological Association (APA) standard of referencing and publication. APA style is detailed in the Publication Manual of the American Psychological Association (6th ed), which offers sound guidance for writing with clarity, conciseness and simplicity. Authors should follow the APA style in preparation of their manuscripts.

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