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Editorial Comment

Angela J. Fawcett

It is a very great pleasure to publish the fifth issue of this new journal, the Asian Pacific Journal of Developmental Differences, which is published by the Dyslexia Association of Singapore. The response to the previous 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 six articles, the majority of which are drawn from the Asian context. In this issue we have a stronger focus on adults with dyslexia, with two articles, and evaluation of the teachers who work with children with dyslexia, with a further article. The remainder of the journal focuses on experimental evaluations involving both quantitative and qualitative data. Finally, we introduce a new computer programme designed for young children.

The first article in the journal is drawn from Malaysia, by Professor Sharanjeet Kaur and colleagues, and focuses on the impact of font size and spacing in reading in young dyslexic children. The results demonstrate that wider spacing overall improves the speed of reading for

this group, and has implications for a range of publications. The next article, joint research from the Dyslexia Association of Singapore and staff from the National Council of Social Services, examines the self-concepts and self efficacy of a large group of adolescents with Learning Differences (LD) in comparison with age matched controls. The results suggest lowered self-esteem and greater behavioural problems in the LD group, but students with LD had elevated levels of self perception in General Intellectual Ability, Reading and Spelling compared to their normally achieving peers.

An article from the National Institute of Education in Singapore, from a group led by Prof Zachary Walker, evaluate the effectiveness of teachers at the Dyslexia Association of Singapore. This article examines the importance of using a theoretical framework for supporting creative writing with students with dyslexia. The teachers evaluated show strong evidence of understanding the need for these frameworks and applying them in their daily practice.

An article from Ben Seal presents a case study of two Chinese speakers at school in the UK, contrasting outcomes and demonstrating that one is dyslexic and

the other has more generalised problems.

The final two articles focus on adults with dyslexia in the UK. The final article in a series of feature articles from Neil Alexander-Passe examines a new theory of Post Traumatic growth, arguing that the difficulties experienced in school can provide an impetus for exceptional success in dyslexia. The article is well illustrated with a large survey and an interview study, providing converging evidence in support of these ideas. Finally, an article from Dr Margaret Meehan examines the experiences of a range of dyslexic students during their university degrees, and the impact that their problems have had on their success. In a future article we plan to present the views of staff at the University dealing with these students and how changes in support for dyslexia within the universities impacted on their practice.

In conclusion, this is a strong set of articles, with implications for the Asian Pacific context, and we hope that you will enjoy this issue and continue to contribute your articles for review.



Spacing improves reading in dyslexic children

Indira Madhavan, Sharanjeet-Kaur, Mohd Izzuddin Hairol, Zainora Mohammed

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Abstract

This study investigated the effects of varying spacing between letters, words and lines on reading rate in children with dyslexia. Twenty children with dyslexia, aged 7 to 9 years old, participated in the study. Optimum spacing between letters, words and lines, which improved reading rate, were determined. The stimuli were black lowercase Arial characters presented on a white background, generated and controlled using MatLab (Mathworks, Inc) with Psychophysics Toolbox extension and presented using an Acer Aspire laptop. The optimal inter-letter spacing, inter-word spacing and inter-line spacing were determined in three separate experiments. The results showed that reading rate improved when spacing were made bigger, reaching maximum with spacing of 0.46 deg ($p < 0.001$), 1.14 deg ($p < 0.001$) and 1.21 deg ($p < 0.001$) between letters, words and lines, respectively. Reading rate decreased for spacing larger than these values. We combined all spacing parameters that lead to the fastest reading rate to create an optimised expanded spacing text. We then compared the reading rate measured with the optimised expanded spacing text to that of the default textbook spacing text in the final experiment. There was a significant increment in reading rate with the optimised expanded spacing text compared to default textbook spacing text ($t(19) = -6.49, p < 0.001$). The results suggest that increment of spacing between letters, words and lines improve reading rate in children with dyslexia.

Keywords: Dyslexia, Crowding effect, Text spacing, Reading rate

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Introduction

Developmental dyslexia is the most common learning disability among children (Ziegler, Perry, Ma-Wyatt, Ladner, & Schulte-Körne, 2003) that is neurological in origin (Ambrose & Cheong, 2011). Despite normal intelligence and adequate instruction, dyslexia affects literacy acquisition in 3-5% of school going children worldwide (Gomez & Reason, 2002), where they fail to gain the language skills of reading, writing and spelling. Dyslexia has a strong genetic basis (DeFries & Alarcón, 1996; Shaywitz, 1998; Vellutino, Fletcher, Snowling, & Scanlon, 2004). The prevalence is usually higher in males than females (Pérez, Castro, Álvarez, Álvarez, & Fernández-Cueli, 2012).

Dyslexia is a primary reading disorder characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities (IDA, 2002). It results from a written word processing abnormality in the brain (Shaywitz, 1998). Almost all children with dyslexia show a core phonological deficit (Stanovich, 1988a). One of the key problems in children with dyslexia is reading (Stanovich, 1988b; Wimmer, 1993).

Reading is a complex task involving many visual and linguistic processes, which are fundamental for learning (O'Brien, Mansfield, & Legge, 2005; Wajuihian & Naidoo, 2011). Reading process begins with word learning or code learning (Gough & Hillinger, 1980; Gough, Juel, & Rope-Schneider, 1983). At this stage, readers recognize the pronunciations of the word automatically (LaBerge & Samuels, 1974). The next stage would be

to understand the grapheme-phoneme relationship that leads to identification of words (Ehri, 1980, 1984). Finally, reading comprehension, which involves understanding the meaning of words and sentences for efficient reading.

The main challenge in dyslexia is remediation. The most common and successful approach is to devise an educational program that train sub skills of reading, especially phonological skills (Agnew, Dorn, & Eden, 2004; Habib, 2000). Another approach would be to focus on the physical properties of the reading material print itself, where some studies have been done to investigate the effects of manipulation of print size (Cornelissen et al., 1998), font type (O'Brien et al., 2005) and spacing (Martelli, Di Filippo, Spinelli, & Zoccolotti, 2009). The present study pursues this approach, motivated by studies that show that dyslexia is highly affected by crowding phenomena (Atkinson, 1991; Bouma & Legein, 1977; Martelli et al., 2009; Spinelli, De Luca, Judica, & Zoccolotti, 2002).

Crowding is interruptions in target recognition due to closely placed flankers. Jeon, Hamid, Maurer, & Lewis, (2010) reported that crowding phenomena affects children more than adults. It sets a limit on reading by impairing the ability to identify a target in clutter. Placing targets and flankers closely together causes information from both of them to pool together, leading to difficulties in target identification (Yu, Cheung, Legge, & Chung, 2007). This in turn reduces reading speed (Pelli et al., 2007) and reading rate (Falkenberg, Rubin, & Bex, 2007). These difficulties can be abated by enlarging the spacing of the text (Strasburger, Harvey, & Rentschler, 1991).

Previous studies have shown that increment in spacing improves identification (Perea, Comesaña, Soares, & Moret-Tatay, 2012; Perea & Lupker, 2004). Indeed, children with dyslexia need larger letter spacing for better letter identification and reading (Zorzi et al., 2012). Larger letter spacing also reduces the time taken to identify or recognize a word and subsequently improves reading speed (Levi, Song, & Pelli, 2007).

Critical spacing is the minimum spacing between targets (i.e. letters, words, etc.) that leads to maximum reading speed (Chung, 2002). If the spacing is smaller than the critical spacing, two or more targets fall within the critical spacing and crowding ensues. Thus, pooling of targets occurs, rendering them unrecognisable (Whitney & Levi, 2011).

However, other researchers have reported conflicting results on the effects increasing spacing on reading and letter recognition. Van den Boer & Hakvoort (2015) reported that increasing the spacing between letters did not influence word naming fluency in a group of Dutch schoolchildren, including in those who were poor readers. Perea et al. (2012) reported similar findings in adult participants, where increasing spacing did not increase the accuracy of Spanish word naming.

In Malaysian schools, standard textbooks are the compulsory reading material for all schoolchildren, including for children with dyslexia. Currently, the spacing which are being used in Malaysian school textbooks are 1.06 mm for inter-letter spacing, 3.18 mm for inter-word spacing and 4.23 mm for inter-line spacing. However, the suitability of this spacing

setting for children with dyslexia is unknown, especially when these are also the reading materials for dyslexic children. Therefore, the present study evaluated the effect of spacing in reading performance, and more specifically, on the reading rate. The study was conducted to determine the optimal inter-letter spacing, inter-word spacing and inter-line spacing as well as to compare reading rate between default Bahasa Malaysia textbook spacing and optimised expanded spacing Bahasa Malaysia text.

Methods

Participants

Twenty children diagnosed with dyslexia and aged between seven to nine (mean: 8.10 ± 0.78 years old) from the Centres of Dyslexia Association Malaysia in the Klang Valley participated in this study. The inclusion criteria were having best corrected visual acuity of 6/6 (logMAR of 0.0), and free from sensory, neurological, systemic or ocular problems. At the time of the study, all participants were in the Dyslexia Centre for a three-month short phonological awareness course which ran for four hours per day five days per week.

The recruited children had just enrolled and had not started the course yet. All children spoke Bahasa Malaysia as either their native or second language. Written consent was obtained from the parents or guardians after thorough explanation of the study nature. The Ethics Committee of University Kebangsaan Malaysia approved this study and the study protocol obeyed the requirement of the Declaration of Helsinki for research involving human participants.

Apparatus

Matlab (version R2012a) with Psychophysics Toolbox extension was used to generate the stimuli. An Acer ASPIRE 4715Z laptop (refresh rate: 60 Hz; resolution: 1280 × 800) was used to display the stimuli. The room illumination ranged between 180-200 lux measured using a photometer (ColorCal, Cambridge Research System, Rochester, UK).

Stimuli

All stimuli were rendered in lowercase Arial font and displayed as black characters (luminance of 0.5 cd/m²) on a white background (luminance of 115 cd/m²), resulting in 99.5% Weber's contrast. Except in one condition, font size was fixed at 2.93 mm, subtending 0.42 deg from 40 cm working distance, following the standard Bahasa Malaysia textbook for Malaysian lower primary (age 7 to 9 years).

A pilot study was conducted to select suitable bisyllabic Bahasa Malaysia words as stimuli. Each word contained four to six letters and nine different sets of words were developed. Normal readers between the ages of seven to nine years were asked to read the nine sets of words and the reading rate was measured. The comparability and consistency of reading rate between the word sets for these normal readers were similar ($p > 0.05$), that is, the nine sets of words had equal legibility.

The inter-letter, inter-word and inter-line spacing are described in Figure 1 and further elaborated below.

Study Procedures

Three experiments were conducted to obtain the optimal spacing. In Experiment 1, participants read aloud a set of 20 single words displayed on the laptop screen. In this experiment, the four inter-letter spacings were used (default, +1, +2, +3). The viewing distance for default, +2 and +3 spacings was 40 cm. At these distances, the spacing subtended at the angles of 0.15, 0.46, 0.68 deg, respectively. For +1 spacing, the viewing distance was 90 cm, subtending an angle of 0.37 deg. For this particular inter-letter spacing condition, the size of the letters was enlarged sufficiently to maintain the same angular size of the letter (0.42 deg). Figure 1A shows examples of words and inter-letter spacing presented to the participants.

In Experiment 2, participants were asked to read aloud four words displayed in a single line. The inter-letter spacing used for each word was the one that led to the fastest reading time, determined in Experiment 1. Four inter-word spacing were used (+1, +2, +3, +4; see Figure 1B). At 40 cm viewing distance, these were equivalent to 0.68, 0.91, 1.14 and 1.36 deg, respectively.

In Experiment 3, participants were asked to read aloud five lines of words, where there were four words per line. The inter-letter and inter-word spacing used were those that lead to the fastest reading time as determined in Experiments 1 and 2. Four inter-line spacing were used (default, +1, +2, +3; see Figure 1C). At 40 cm viewing distance, these were equivalent to 0.61, 0.91, 1.21 and 1.52 deg, respectively.

a)	0	abad	b)	+1	bara ayam
	+1	a b a d		+2	bara ayam
	+2	a b a d		+3	bara ayam
	+3	a b a d		+4	bara ayam

c)	0	abad pokok pakai aman
	+1	abad pokok pakai aman
	+2	abad pokok pakai aman
	+3	abad pokok pakai aman

Figure 1: Examples of bisyllabic Bahasa Malaysia words used in this study.

- A. In Experiment 1, four inter-letter spacings were tested, shown for the word *abad* (century).
- B. In Experiment 2, four inter-word spacings were tested while the inter-letter spacing was fixed, shown for the words *bara* (flame) and *ayam* (chicken).
- C. In Experiment 3, four inter-line spacings were tested while the inter-letter and inter-word spacings were fixed, shown here for the words *abad*, *pokok* (tree), *pakai* (wear) and *aman* (peace).

Table 1 summarises the inter-spacing conditions tested in this study.

Once the optimal spacing were determined, another experiment was conducted. In Experiment 4, a text of random words was created based on the results of Experiments 1 to 3. The text consisted of five lines with four words in each line. The inter-letter, inter-

word and inter-line spacing were fixed at the largest parameter that resulted in the fastest reading time. Another text of random words was also created with the same number of lines and words per lines. For this text, the inter-letter, inter-word and inter-line spacing were the same as those in a standard Bahasa Malaysia textbook for Malaysian lower primary.

Table 1. Summary of inter-word, inter-letter and inter-line spacings used in the study.

Condition	Physical distance (mm)	Angular size (deg)	Normalised distance
Inter-letter (Experiment 1)	1.06	0.15	0 (default)
	5.82	0.37	+1
	3.18*	0.46	+2
	4.76	0.68	+3
Inter-word (Experiment 2)	4.76	0.68	+1 (twice default)
	6.35	0.91	+2
	7.94	1.14	+3
	9.53	1.36	+4
Inter-line (Experiment 3)	4.23	0.61	0 (default)
	6.35	0.91	+1
	8.47	1.21	+2
	10.58	1.52	+3

**Viewing distance for this condition was 90 cm. Other experimental conditions were conducted at 40 cm working distance. When the viewing distance was increased, the stimulus size was also increased proportionately so that the stimulus subtended at an angle of 0.42 deg.*

Each participant underwent two experimental sessions on two consecutive days for each experiment. All participants read eight sets of words (four sets per day) in Experiments 1 to 3 and four texts (two texts per day) in Experiment 4. The same set of 20 words was used for all tested spacing in each experimental session but the arrangement of the words was randomised to minimise learning effects. The experimenter sat beside the participant and recorded the accuracy of the responses. The display time for each stimulus was not limited but participants were encouraged to read aloud the words as quickly as possible. A button press at the end of each session recorded the time taken to read all 20 words. Participants were given breaks of five minutes minimum between each reading sessions. Typically, each daily session lasted for 30 minutes. Eye movements were not restricted.

Reading rate (in words per minute), R , was calculated as:

$$R = \varepsilon / t$$

where ε is total number of correctly identified words in a reading session and t is time taken (in minutes) to read the set of 20 words. Final reading rate for each spacing was obtained by averaging the reading rate of session 1 and session 2. Optimal spacing was determined as the spacing that has the maximum reading rate.

Statistical analysis

Repeated measures analysis of variance (ANOVA) was used to compare the mean reading rate between the four different

spacings tested in Experiments 1 to 3. Bonferroni's post hoc test was used to determine the optimal spacing, i.e. the spacing that resulted in the significantly highest reading rate.

Paired t-test was used to analyse the difference in mean reading rate between the default textbook spacing text and the expanded spacing text in Experiment 4.

Results

Experiment 1

Figure 2 shows the mean reading rate (in words per minute) as a function of inter-letter spacing. Repeated measures ANOVA results show that the reading rate was significantly affected by the inter-letter spacing, $[F(3, 57) = 40.87, (p < 0.001)]$. The reading rate reaches maximum at 0.46 deg inter-letter spacing.

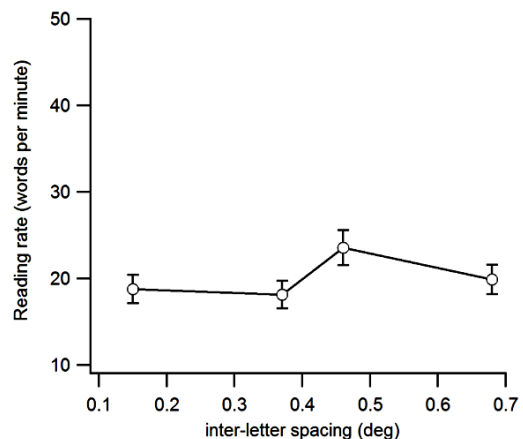


Figure 2: Reading rate, measured in words read correctly per minute, plotted as a function of inter-letter spacing in degrees. Error bars represent \pm standard error of the mean (SEM).

Table 2. Mean reading rates and standard errors for different inter-letter, inter-word and inter-line spacings measured in Experiments 1 to 3. Mean reading rate and a standard error for default and expanded texts (Experiment 4) is also compared. Reading rate is in number of words read correctly per minute (wpm).

Experiment	Spacing			
	0.15°	0.37°	0.46°	0.68°
1 (Inter-letter)				
Reading rate (wpm)	18.79±7.38	18.14±7.20	23.57±8.95	19.89±7.73
2 (Inter-word)				
Reading rate (wpm)	20.48±10.12	21.19±10.05	26.31±12.38	23.45±10.45
3 (Inter-line)				
Reading rate (wpm)	27.21±12.90	27.25±12.26	32.39±12.67	28.59±12.97
4 (default and expanded texts)	Default		Expanded	
Reading rate (wpm)	24.84±11.26		32.39±12.67	

wpm: words per minute

A Bonferroni's post hoc pairwise comparison analysis reveals significant differences in reading rate between 0.46 deg (+2 spacing) and 0.15 deg (0, default spacing) inter-letter spacing ($p < 0.02$). However, reading rate reduces at the largest inter-letter spacing. The mean reading rate for the four inter-letter spacings is presented in Table 2.

Experiment 2

In this experiment, inter-letter spacing was fixed at 0.46 deg (determined from Experiment 1). The optimal inter-letter spacing was equal to the default

textbook's inter-word spacing. Therefore, the smallest (hence, default) inter-word spacing was set at 0.68 deg (+1 spacing) to maintain a proportionate appearance of the stimuli. The other inter-word spacing tested was 0.91, 1.14 and 1.36 deg (normalised spacing values of +2, +3 and +4).

As shown in Figure 3, an inter-word spacing of 1.14 deg yields the maximum reading rate (26.31±12.38 ppm). At the largest inter-word spacing (1.36 deg), reading rate reduces. Table 2 shows the mean reading rate for all inter-word spacings tested.

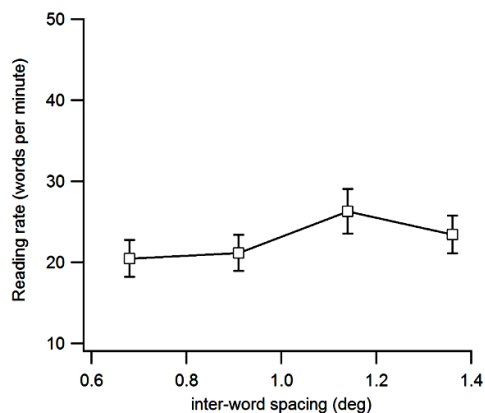


Figure 3: Reading rate (words read correctly per minute) plotted as a function of inter-word spacing (degrees). Error bars represent \pm SEM.

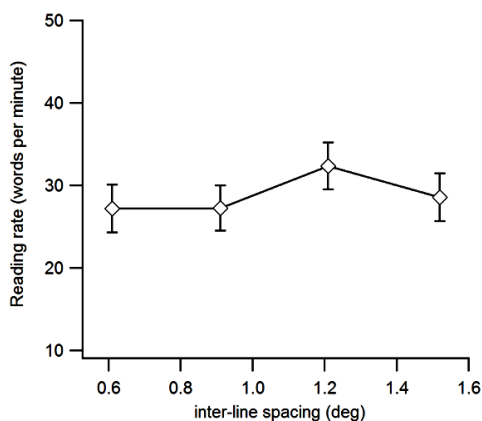


Figure 4: Reading rate (words read correctly per minute) plotted as a function of inter-line spacing (degrees). Error bars represent \pm SEM

The effect of various inter-word spacings in reading rate is highly significant [$F(1.83, 34.75) = 19.19$ ($p < 0.001$)]. A Bonferroni's post hoc pairwise comparison analysis reveals significant differences in reading rate between 1.14 deg (+3) and 0.68 deg (+1) inter-word spacing ($p < 0.02$).

Experiment 3

Reading rate was measured for texts with different inter-line spacing, where the inter-letter and inter-word spacing were fixed at 0.46 and 1.14 deg, respectively, based on the results of Experiment 1 and Experiment 2. Four inter-line spacing were tested: 0.61 deg (default, based on school textbook), 0.91, 1.21 and 1.52 deg, equivalent to inter-line spacing values of 0, +1, +2 and +3.

Figure 4 shows the mean reading rate as a function of inter-line spacing. Inter-line spacing of 1.21 deg results in the highest

reading rate, but the largest spacing (1.52 deg) reduces it. The mean reading rate for each inter-line spacing is presented in Table 2.

The effects of increasing inter-line spacing on reading rate is highly significant [$F(3, 57) = 13.96$, $p < 0.001$]. A Bonferroni's post hoc pairwise comparison analysis reveals significant differences in reading rate for 1.21 deg (+2) and 0.61 deg (default, 0) inter-line spacing ($p < 0.02$).

Experiment 4

The inter-letter, inter-word and inter-line spacing were fixed to 0.46, 1.14 and 1.21 deg, respectively, based on the results of Experiments 1 to 3. Reading rate for this optimised expanded spacing text was compared to that obtained with the default textbook spacing text, which had 0.15 deg inter-letter spacing, 0.46 deg inter-word spacing and 0.61 deg inter-line spacing.

The mean reading rates for both texts are presented in Table 1 and Figure 5. The reading rate was significantly higher for optimised expanded text [$t(19) = -6.49, p < 0.001$] compared to that obtained with the default textbook spacing text.

Discussion

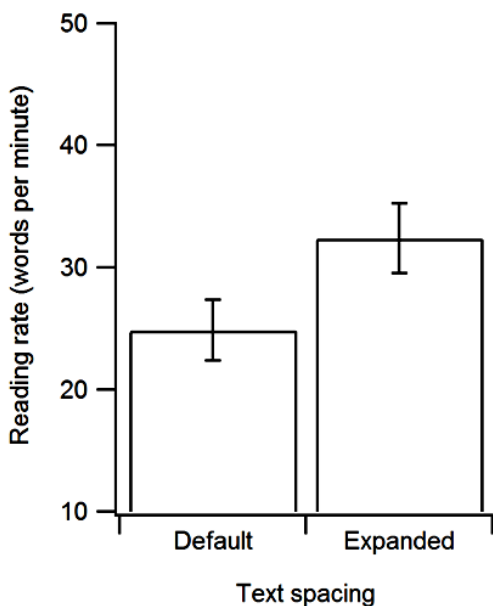


Figure 5: Mean reading rate, in words read correctly per minute, for default text (school textbook spacing settings) and the optimised expanded spacing text. Error bars represent \pm SEM.

We found that reading rate improved as the spacing between letters, words and lines were enlarged, to a certain extent, relative to default textbook spacing. This is consistent with our hypothesis that the optimal spacing for children with dyslexia is larger than default textbook spacing. Our findings showed that, for Bahasa Malaysia text, the optimal spacing

between letters, words and lines are 0.46, 1.14 and 1.21 degrees, respectively.

Theoretically, there is a crowding zone in the visual field that must be exceeded in order to identify an object when they are placed close together (Pelli, 2008). In our context, this is known as optimal spacing. Identification of letters is difficult for children (Reynolds & Walker, 2004) because letter pooling becomes ambiguous (Kohsom & Gobet, 1997). The time taken to read the words would be longer and mistakes made would be higher as the level of confusion is high. Therefore, reading rate would be lower if the spacing between letters is too small. An increase in inter-letter spacing relative to default textbook spacing shows an improvement in reading rate.

Increased spacing between letters help the process of letter position coding. During letter position coding, letters are coded according to their position in a word before the word is identified (Rumelhart & McClelland, 1982). If letter coding process is disrupted, the word such as casino and caniso is indistinguishable (Perea & Lupker, 2003, 2004). This transposition of letters is a common mistake made by children with dyslexia during reading. As readers have difficulties with letter position coding more than letter identification in a word (Ratcliff, 1981), increasing the spacing between letters ensures smooth and accurate letter position encoding process without the interruption of the neighbouring letters. During reading, words are segmented into letter components and the signal from each letter component is processed. During this process, spatial attention

functions to increase the intensity of the signal of each letter component. However, for children with dyslexia, the spatial attention process is slow and inaccurate (Facoetti et al., 2010; Rayner, Sereno, Morris, Schmauder, & Clifton, 1989; Vidyasagar & Pammer, 2010). Although spatial attention modulates noise removal and optimize the perceptual filter during reading, the process is still slow and sluggish due to crowding. Previous studies have shown that pulling spatial attention to the target by placing a cue next to it improves spatial attention process and reading performance (Huckauf & Heller, 2002). In current study, increasing inter-letter spacing could be the cue for spatial attention in children with dyslexia. Therefore, the increase in stimulus intensity signal occurs more smoothly without the interference of noise from adjacent letter after the removal of crowding effect (Carrasco, Williams, & Yeshurun, 2002). That could be one of the reasons for higher reading rate in optimal spacing, 0.46 deg, compared to standard inter-letter spacing of 0.15 deg.

However, for very wide inter-letter spacing reading rate reduces. Indeed, earlier studies have reported similar findings (Cohen et al., 2003; Cohen, Dehaene, Vinckier, Jobert, & Montavont, 2008; Eriksen & St James, 1986; Lavidor, Ellis, Shillcock, & Bland, 2001; Legge, Mansfield, & Chung, 2001; O'Regan, Lévy-Schoen, & Jacobs, 1983; Reynolds & Walker, 2004; Vinckier, Qiao, Pallier, Dehaene, & Cohen, 2011; Yu et al., 2007). When the inter-letter spacing is too wide, the word cannot be seen as a single unit anymore and is beyond one's visual span (Perea et al., 2012). Although the

increase in inter-letter spacing reduces crowding, spacing larger than the optimal spacing causes the word to be physically longer, causing some letters to fall in the peripheral visual field which has low acuity and positional accuracy problem (Yu et al., 2007).

It is postulated that children with dyslexia group letters from the boundaries of neighbouring words incorrectly and automatically reads words from incorrectly grouped letters. Thus, the words read are not correct semantically and synthetically (Epelboim, Booth, Ashkenazy, Taleghani, & Steinman, 1997). Dyslexic children might be able to detect the mistake but still force themselves to spend time figuring out how to correct the errors by trying new grouping of letters. This could be one of the reasons as to why children with dyslexia showed lower reading rate at inter-word spacings 0.68 and 0.91 deg. Reading rate increases and reaches maximum at the optimal inter-word spacing, 1.21 deg. With this inter-word spacing, wrong grouping of letter can be avoided by the larger blank space between the words as the interaction between the beginning and end letters of adjacent words is reduced.

Based on reading model proposed by Morrison (1984), when a word is fixated on the fovea, attention and eyes will be in the same spatial location. At this point, words are processed in detail. When the processing reach at one certain level, attention moves forward to the next word even though the eye fixates at the same location. This is known as parafovea preview. Parafovea processing begins when eye fixates at the first word, say *n*, while attention

moves to the adjacent word, say $n+1$. Some information about the word $n+1$ is received at parafovea position before it is fixated using the fovea. Parafovea preview is assumed to speed up the reading since information of the $n+1$ word is gained from the process (Boden & Giaschi, 2007). Information that is gained from parafovea preview is about the beginning and end letters of adjacent words, word length and word form (Rayner, Inhoff, Morrison, Slowiaczek, & Bertera, 1981). This process could be disrupted by crowding where the indistinguishable boundaries between words might cause a delay in children with dyslexia when processing word information at periphery while reading a sentence with small inter-word spacing. Thus, an increment in inter-word spacing to optimal would optimise the parafovea preview. This is could be another reason why reading rate is maximum at the optimal spacing.

Inter-word spacing larger than the optimal spacing, on the other hand, reduces reading rate. We found that reading rate reduced when the inter-word spacing increased from 1.14 deg (optimal spacing) to 1.36 deg. Similar results have been reported by other researchers (Martelli et al., 2009; Rayner & Duffy, 1986; Rayner et al., 1989; Spinelli, De Luca, Judica, & Zoccolotti, 2002). Inter-word spacing that is too large could result in an increase in time taken to shift one's gaze to identify words located far from the fovea, increasing the possibility of making mistakes in identifying the words. Children with dyslexia might have difficulties in receiving information of adjacent word that is placed too far from fovea where resolution acuity is

comparatively low, thus interrupting with word recognition.

Crowding between adjacent words does exist vertically (Bentley, 1921). Reading performance has been shown to improve with additional spaces between vertically adjacent words (Paterson & Tinker, 1932). Our study demonstrated an increase in reading rate as inter-line spacing increased. Yu, Akau, & Chung (2012) reported that increasing inter-line spacing reduces crowding effect, which occurs between vertically adjacent words. When two adjacent lines in a text fall within the same crowding area, the crowding effect would become more prominent. Although we did not test this specifically, small inter-line spacing might cause children with dyslexia to drift their eyes from one line to the next thus breaking their concentration level and disrupting the word identification process. When inter-line spacing is increased, reading rate increases as vertical crowding decreases (Bernard, Anne-Catherine, & Eric, 2007) due to the improvement of the ability of the children to stay on the correct line. An increase in the vertical space between lines of words are known to increase the number of accurate return sweep (Vanderschantz, 2008) and this consequently improves the reading rate.

However, extra-wide inter-line spacing resulted in deterioration in reading rate. It has been reported that the awareness of the extra-wide spacing between lines of words would slow down the word identification process (Götz, 1998). When the next line is further away, readers may become conscious of both line and space between the lines thus disrupting the reading process.

Our results showed that the reading rate was significantly higher among children with dyslexia when reading the optimised expanded spacing text compared with default textbook spacing text (an increase of 30%, $p < 0.001$). Previous studies found that the reading performance while reading crowded and tight text is lower (Lefton & Fisher, 1976; Rayner, Fischer, & Pollatsek, 1998). In our case, it is clear that default textbook spacing text was difficult for the children with dyslexia to read fluently because the letters, words and lines were closely spaced. Optimised expanded spacing text, on the other hand, reduced crowding and made reading easier. With this text setting, we can assume that positional accuracy is higher as crowding is eliminated. Parafovea preview process could also have occurred more smoothly, allowing children with dyslexia to navigate eyes from one line to the next line more accurately, thus increasing their overall reading rate.

Comparison with other studies

Our findings clearly show that expanding the spacing between letters, words and lines to certain optimum values help children with learning disabilities, particularly dyslexia, to read faster and to reduce mistakes when recognising words. Other studies have also reported that wider spacing helped sentence reading and word naming in dyslexic children (Martelli et al., 2009; Perea et al., 2012; Zorzi et al., 2012). In normal adults, however, with wider spacing, word naming/sentence reading is either unaffected (Risko, Lanthier, & Besner, 2011; Slattery & Rayner, 2013) or becoming more difficult (Vinckier et al.,

2011). Van den Boer & Hakvoort (2015) reported that, for a group of Dutch children identified as poor readers, increasing inter-letter spacing did not benefit their word naming fluency, which is contradictory to the results reported in our study. The difference could be due to the difference in language used for the text. Their poor readers were identified from the One Minute Test (Brus & Voeten, 1995), which may include children with and without dyslexia. In our study, all children had been diagnosed with dyslexia. It is likely that wider spacing helps reading particularly for dyslexic children, but may not help for children who are poor readers without dyslexia.

Conclusions

Our findings show that that spacing in a reading text has an effect on the reading rate in children with dyslexia. Generally, increments in the spacing between letters, words and lines improve reading rate in these children. However, further increases in spacing beyond the optimal spacing reduces reading rate. Overall, our results showed that modification in spacing is an effective way to improve reading in children with dyslexia. These can be implemented in school textbooks that would be beneficial to students with reading disabilities, particularly to children with dyslexia to learn and read like other students. However, further research is needed to confirm the relationship between spacing and eye movement in reading among children with dyslexia.

Declaration of Conflicting Interests

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Self evaluations of children with Specific Learning Difficulties

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Abstract

Children with specific learning difficulties (LD) face significant hurdles with learning compared to their normally achieving peers. While the difficulties of LD children manifest mainly in poor academic performance and learning, they potentially also have co-occurring socio-emotional difficulties. In this study, we compared self perception and self efficacy of LD children with their normally achieving peers. In addition, we administered a behavioral screening questionnaire to determine whether children with LD displayed more behavioural issues. LD children were recruited from various Voluntary Welfare Organisations that provided specialist remediation for LD while normally achieving students were recruited from various schools in Singapore. Findings showed that students with LD rated themselves as having more conduct problems compared to their normally-achieving peers. In addition, in contrast to existing works, students with LD had elevated levels of self perception in General Intellectual Ability, Reading and Spelling compared to their normally achieving peers. Therefore, we argue that identifying children with LD and providing them with learning support through specialist remediation may result in a secondary benefit to socio-emotional domains.

Keywords: Specific Learning Difficulties, self evaluation, self perception, self efficacy

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How do children with specific learning difficulties view themselves?

Adolescence represents a tumultuous stage of life whereby one experiences significant upheavals in psychological and physical development. It is at this phase where an individual's views of the world, his or her place in it and the relationship with peers undergo significant reorganisation (Cole & Cole, 2001). Arguably, for adolescents in many countries, these upheavals are magnified due to significant milestones in their life, like school transition and high stakes examinations. These life stressors and changes faced by adolescents will undoubtedly affect their self evaluations. It is therefore unsurprising to find evidence showing a sharp decline in one's self evaluations from childhood to adolescence, with greater decline in females' self esteem compared to males (Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002).

The decline in self evaluations from childhood to adolescence is further exacerbated in children with a learning difficulty (LD). Although children with LD primarily face problems in learning and academic performance, there is now a large body of evidence to show that these students also face increased emotional, behavioural and social problems compared to their peers without LD (Elbaum, 2002; Gallegos, Langley, & Villegas, 2012; Johnson, 1995; Wilcutt & Pennington, 2000).

Students with LD also face poorer self evaluations compared to their normally achieving peers (Alexander-Passe, 2006; Crabtree & Rutland, 2001; Jarvis & Justice,

1992; Möller, Streblo, & Pohlmann, 2009). One possibility for the increased risk of socio-emotional problems may be related to individuals with LD facing repeated poor academic performance as well as feelings of discrimination and rejection by peers and teachers (Conderman, 1995). Another possibility may be the result of unfavourable social comparisons between them and their non-LD peers in an inclusive classroom (Crabtree & Rutland, 2001). Such comparisons may arise from class teachers and peers not being aware of the child having an LD. On the contrary, knowledge of a child's LD may also result in comforting feedback from teachers that hold an entity view of the child's ability (cf. Rattan, Good, & Dweck, 2012).

Gender differences in self-esteem among children with LD are also evident. For instance, Alexander-Passe (2006) found that females scored lower than their male counterparts in academic and general self-esteem measures. Females were also more likely to engage in emotional and avoidance-based coping relative to males thus resulting in higher ratings of depression.

Despite the aforementioned findings of poorer self evaluations of students with LD, some inconsistencies have also been noted. For example, although students with LD rated themselves to be less competent across academic and organisational domains (e.g., reading, spelling, writing, math and strategy use) compared to their non-LD peers, they still rated themselves as average or above average (Meltzer, Roditi, Houser, & Perlman, 1998). Importantly, Meltzer et al. (1998) found a discrepancy between

teachers' ratings of LD students and how LD students rated themselves, with teachers rating being far more negative. This is consistent with research showing that children with LD tended to overestimate their own academic performance relative to their actual performance (Stone & May, 2002). From these studies, it is plausible that children with LD may not have realistic self evaluations of their own capabilities.

The need to understand how children view themselves cannot be overstated. While externalising behaviors can be easily observed and dealt with, it is often the internalising behaviors like poor self esteem, depression and anxiety that go unnoticed. These behaviours may have adverse consequences as children with LD face increased risks for social withdrawal, depression and feelings of worthlessness (Vaugh, Zaragoza, Hogan, & Walker, 1993; Wright-Strawderman & Watson, 1992).

Impact of negative self evaluations may exacerbate their academic and learning issues. There is clear evidence of the importance of positive self evaluations and academic achievements (Daniel & King, 1997; Román, Cuestas, & Fenollar, 2008). For instance, Román et al. (2008) demonstrated that while family and others' expectations influence academic achievement, the factor that had the greatest impact was one's self esteem. While the direction of causality is not clear, we argue that this relationship is likely to be a vicious cycle with poor self evaluations affecting scholastic performance and poor scholastic performance also in turn negatively impacting self evaluations.

The motivation of the current study is to replicate and conceptually extend previous works to investigate the self evaluations of students with LD. We compared students with LD in specialist remediation with normally achieving students. To provide a more comprehensive outlook of their self evaluations we compared these two groups across a range of self-report measures - the Self Perception Profile of Learning Disabled children (SPPLD; Renick & Harter, 2012), the Strengths and Difficulties Questionnaire (SDQ; Goodman, Meltzer, & Bailey, 1998) and the Self Efficacy Questionnaire for Children (SEQ-C; Muris, Meesters, & Fijen, 2003).

The advantage of these measures is that they allow for more specific insights into different areas that a child might have difficulties with. For instance, the SPPLD and SEQ-C allows ratings of self perceptions across many different domains such as academic, social and physical (see Methods section). These instruments thus allowed us to determine which areas children with LD perceive themselves as inferior. This in turn enables translation of research findings into specific interventions that target areas of weaknesses.

Method

Participants

Children with LD receiving intervention at various Voluntary Welfare Organisations (VWOs) were recruited via email and word of mouth to parents. Students in this group all have either an officially diagnosed LD or are suspected to have an LD. Nevertheless, students in this group

are all facing significant literacy difficulties severe enough to be receiving specialist intervention at various VWOs. Only students from the ages of 10-18 were eligible to participate. Conversely, the sample of normally achieving children were recruited via a direct approach to schools who sought permission from parents for their child's participation in the survey.

The criteria for the normally achieving group was that the students in this group must have (1) at least average academic grades, (2) must not have a current diagnosis of a learning, physical or psychiatric disability and (3) be between 10-18 years old. All participants were given a \$10 shopping voucher as reimbursement for their participation.

In total, 288 children completed the survey. However, we included only children under 17 years of age in the analysis because of the lack of LD diagnosed children above 17 in our sample. This is because intervention services in these VWOs are only available for children in primary and secondary school ages (6-16 years) in Singapore.

This resulted in the underrepresentation of children with an LD diagnosis in the 17-18 age band, which made comparisons between LD and normally achieving children at that age band difficult. Hence, our final sample submitted for analyses included 254 children (145 boys) with a mean age of 12.42 years ($SD = 1.59$, range = 10-16). The majority of LD children were diagnosed with dyslexia ($n = 102$) followed by Specific Language Impairment ($n = 13$), Autism Spectrum

Disorder ($n = 3$), Central Auditory Processing Disorder ($n = 2$) and Attention Deficit Hyperactivity Disorder ($n = 1$).

Materials

Self Perception Profile for Learning Disabled Students (SPPLD)

The SPPLD (Renick & Harter, 2012) is a survey designed for assessing self-perception in children with learning disabilities from ages 8 - 18. It is freely available from <https://portfolio.du.edu/SusanHarter/page/44210>. The SPPLD is a 46 item self-report measure of students' perception of their competence in 10 different domains: General Intellectual Ability, Reading, Writing, Spelling, Math, Social, Athletic, Physical Appearance, Behavioural and Global self-worth. Accordingly, the General Intellectual Ability domain refers to one's perception of one's level of intellect and learning ability. Reading, Spelling, Writing and Math competence refers to the perception of one's ability to read, spell, write and do math well respectively. Additionally, Athletic and Social competence refers to one's perception of himself/herself having competence in athletic or sporting activities, making friends and having good social skills respectively. Behavioural self-worth refers to the extent to which children like their behaviour whereas physical appearance refers to how much they like the way they look. Finally Global self worth refers to the degree they like themselves. The subscales of the SPPLD have high reliabilities between .78 and .89

Respondents were required to read two opposite statements and determine

whether they are more like one (e.g., Some kids are sure that they are pretty smart in school) than the other (Other kids are not so sure they are all that smart in school). Following that, they were to decide whether their chosen statement is "Really true of them" or "Sort of True". Each item is scored on a 4-point scale ranging from least competent (score of 1) to most competent (score of 4).

Strengths and Difficulties Questionnaire (SDQ)

The SDQ (Goodman et al., 1998) is a 25-item behavioural screening questionnaire designed for 3-16 year olds. Three different versions exist for teachers, parents and students rating themselves. We used only the self-rated version in the current study. This is suitable for children aged between 11-16. The 25 items in the SDQ covers 5 broad scales - Emotional symptoms, Conduct Problems, Hyperactivity/Inattention, Peer relationship and Prosocial behavior. A total difficulties score comprises the sum of the first four scales. To complete the SDQ, respondents were required to read statements and rate themselves on a three point scale (0 = Not true; 1 = Somewhat True; 2 = Certainly True) corresponding to the degree they deem the statements to be true of themselves.

Self Efficacy Questionnaire for Children (SEQ-C)

The SEQ-C (Muris et al., 2003) is a 24-item survey that requires participants to rate themselves on a 5 point scale (1 = not at all and 5 = very well) on the degree of their perceived self efficacy. The survey

consists of items that represent three domains of self efficacy. First, Social self efficacy refers to the perceived capability for peer relationships and assertiveness. Second, Academic self efficacy refers to the capability to manage one's learning and mastery of subjects in school and to fulfil academic expectations. Third, Emotional self-efficacy reflects the capability to cope with negative emotions (Muris, 2001). In addition to the subscale scores, a total self efficacy score can be derived by adding all three sub scale scores. Internal consistency for the SEQ-C ranged from between .85 (total self efficacy) to .88 (subscale scores).

Procedure

Participants were given either two or three survey forms depending on their age. Specifically, students above 14 years completed all three surveys while students between below 14 completed the SDQ and the SPPLD only. Participants completed the paper and pencil surveys in one sitting. They were asked to complete the survey independently but were allowed to ask questions if they needed clarification.

Results

All analyses were conducted using R (R Core Team, 2013). As there were multiple t-tests conducted, a Bonferroni correction was done to correct for familywise error rate. Hence, the criterion for statistical significance was set at $\alpha = .0025$ (.05/20).

Self evaluation comparisons between LD children and normal achievers

A series of independent samples t-test

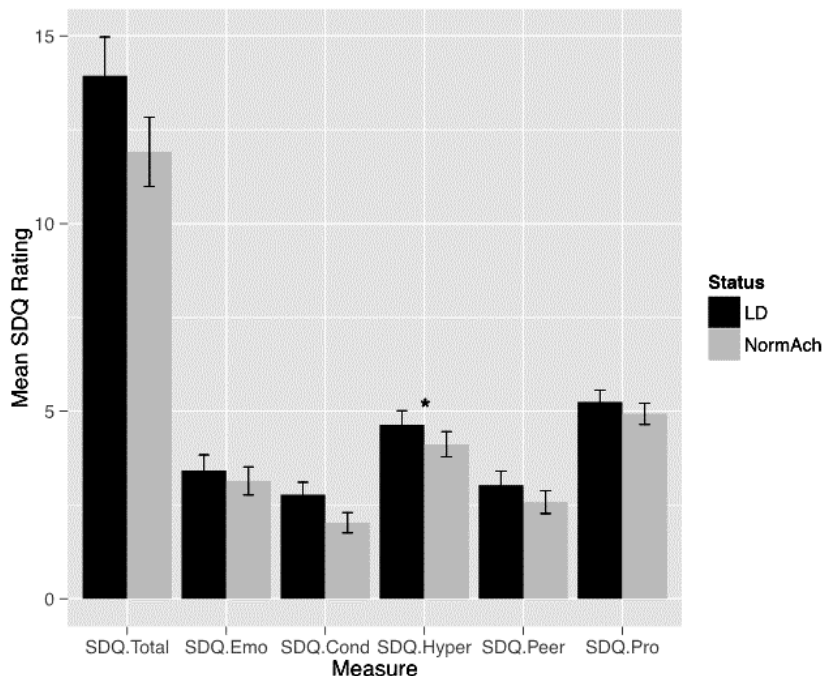


Figure 1. SDQ ratings for LD children (LD) and normal achievers (NormAch). * $p < .001$

was conducted first to compare self ratings on each instrument (SPPLD, SDQ and SEQ-C) between LD children and those of their normally achieving peers. These independent samples t-tests revealed that LD children ($M = 2.77$, $SD = 1.84$) rated themselves with more conduct problems than the normal achievers ($M = 2.03$, $SD = 1.57$), $t(235.21) = 3.34$, $p = .0007$ (see Figure 1) on the SDQ.

Interestingly, LD children rated their general intellectual (GIA), $t(227.89) = 3.36$, $p = .0009$, reading, $t(224.13) = 6.45$, $p < .0001$ and spelling competencies, $t(240.48) = 6.76$, $p < .0001$ as higher than the normal achievers (see Figure 2) on the SPPLD. All other comparisons failed to reach statistical significance. Similarly, no statistically significant difference was

found between LD children and their normally achieving peers using the SEQ-C.

Self evaluation comparisons between children with dyslexia and normal achievers

As the majority of diagnosed LD students consist of children with a diagnosis of dyslexia, we excluded children with other diagnosed LD and repeated the above analyses to determine whether children diagnosed with dyslexia would differ from the normal achievers. We conducted a series of independent samples t-tests to compare self ratings on each instrument (SPPLD, SDQ and SEQ-C) between these two groups. These independent samples t-tests revealed that those diagnosed with

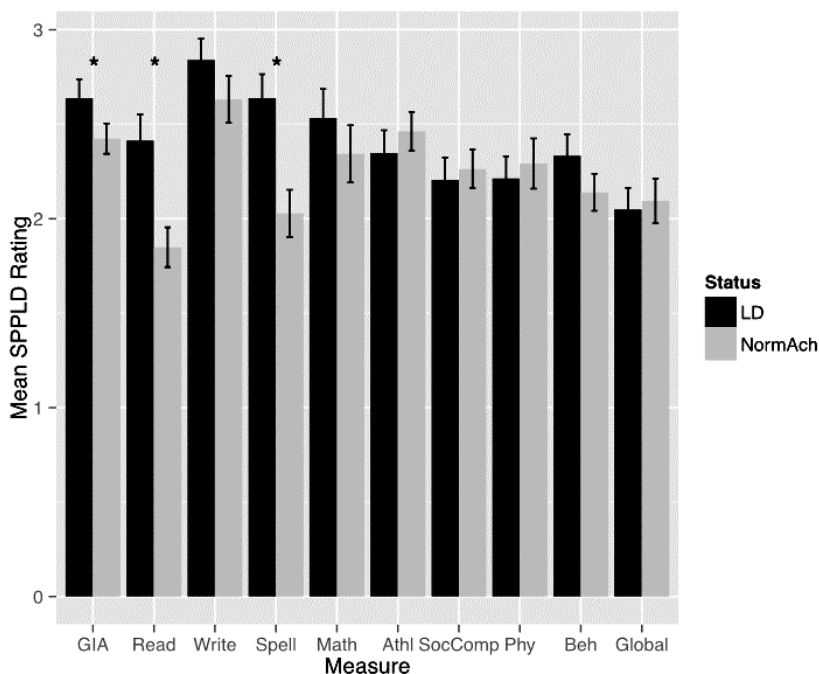


Figure 2. PPLD ratings for LD children (LD) and normal achievers (NormAch). * $p < .001$

dyslexia ($M = 2.82$, $SD = 1.88$) rated themselves with more conduct problems than the normal achievers ($M = 2.03$, $SD = 1.57$), $t(193.84) = 3.41$, $p = .0007$ (see Figure 3) on the SDQ.

Similarly, those with diagnosed with dyslexia rated their general intellectual ability (GIA), $t(183.73) = 3.42$, $p = .0008$, reading, $t(212.23) = 5.89$, $p < .0001$, and spelling competencies, $t(212.23) = 6.79$, $p < .0001$, as higher than the normal achievers on the SPPLD (see Figure 4).

All other comparisons failed to reach statistical significance. Similarly, no statistically significant difference was found between LD children and their normally achieving peers using the SEQ-C.

Gender differences in self-evaluations

Finally, we also evaluated whether there were any gender differences in self-evaluations among those with a diagnosis of dyslexia. As we have corrected for family-wise error rates due to the large number of t-tests conducted, none of the gender comparisons were statistically significant, although the comparisons between females ($M = 6.22$, $SD = 1.38$) and males ($M = 5.16$, $SD = 1.75$) on SDQ prosocial approached significance ($p = .004$).

Discussion

In this study, we set out to determine whether LD children have lower levels of self-perception and self-efficacy.

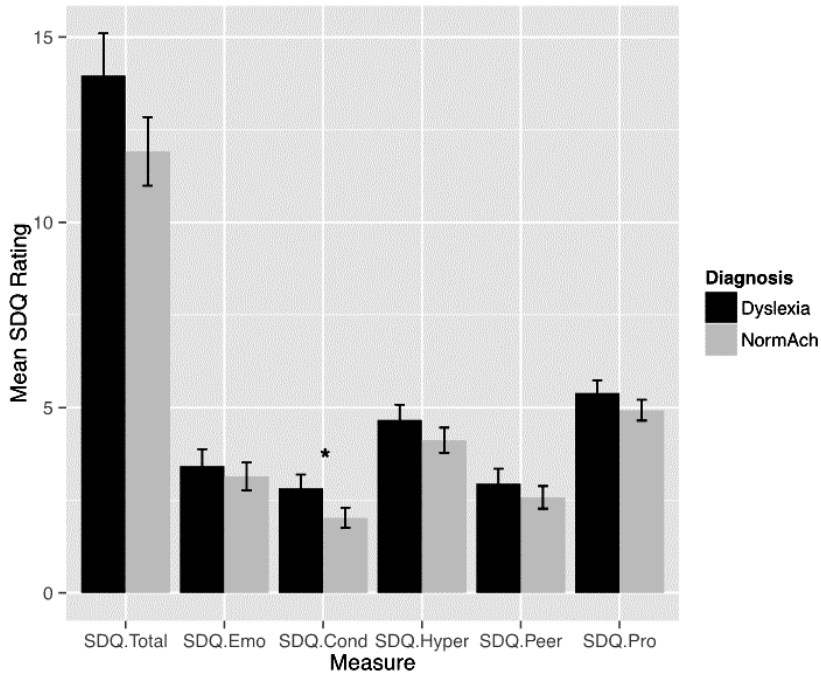


Figure 3. SDQ ratings for children with dyslexia and normal achievers (NormAch). * $p < .001$

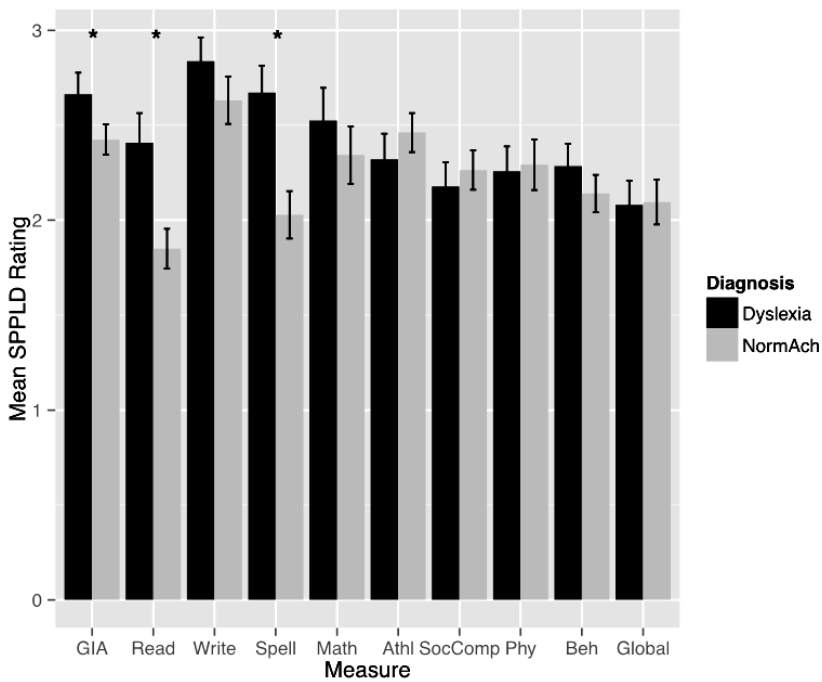


Figure 4. SPPLD ratings for children with dyslexia and normal achievers (NormAch). * $p < .001$

Surprisingly, and by contrast with much of the literature, children with LD rated themselves as more competent in general intellectual ability and have higher self-perceptions of their reading and spelling competency. As the majority of respondents were students diagnosed with dyslexia, further analyses excluding children with other LD yielded the same finding. Specifically, students diagnosed with dyslexia had higher levels of perceived general intellectual ability as well as reading and spelling competencies. Children with LD also rated themselves to have more conduct problems than their normally achieving peers.

Our finding of better self evaluations in academic related domains (General Intellectual, Reading and Spelling competencies) among LD children in the current study is inconsistent with the large body of longitudinal and cross-sectional studies that showed deflated academic and intellectual self concepts among LD children compared to their non-LD and normally achieving peers (Akande, 1997; Grolnick & Ryan, 1990; Hagborg, 1998, 1999; Harter, Whitesell, & Junkin, 1998; Meltzer et al., 1998; Polychroni, Koukoura, & Anagnostou, 2006; Rogers & Saklofske, 1985; Stanovich, Jordan, & Perot, 1998; Stone & May, 2002; Zeleke, 2004).

The reasons for these surprising but discrepant findings are not clear-cut but we speculate that such a pattern of findings may be due to the special attention and encouragement given to LD children by those who are aware of their LD. These encouragements may come from three sources - teachers in their school, parents and educational

therapists in their specialist remediation classrooms. Teachers in class and parents may give children with LD special praise and afford them special attention to highlight their achievements and progress.

Educational therapists delivering specialist remediation in small classes may also further buffer learners with LD's self concepts in two ways. One is via direct encouragement and affirmation. Two is via the implementation of specialist teaching approaches. All the children diagnosed with LD in our sample are currently receiving specialist remediation in voluntary welfare organisations with the majority of them receiving specialist remediation by trained educational therapists at the Dyslexia Association of Singapore by means of the Orton-Gillingham (OG) approach.

A key teaching principle of this approach is to ensure learning is conducted in an emotionally sound manner (Academy of Orton-Gillingham Practitioners and Educators, 2012). For example, educational therapists constantly review previously taught materials and build in opportunities for success and mastery. This helps LD students become more confident in their literacy skills.

Another important component of the OG-Approach is the personalised approach which recognises the needs and pace of the learners. Whereas these are easy to implement in a small group setting characteristic of these specialist remediation classes, these may often be absent in a mainstream school classroom where the large number of students make

it harder to tailor to individual student's needs. In comparison to children undergoing classes with specialised instruction, the normally achieving children may not receive the affirmation and encouragement they need in the regular classroom. Hence, placing children with LD in specialist remediation classes may have indirect benefits to their self-concept due to them learning in a more "learner-friendly" environment.

Children with LD placed in specialist remediation classes are also shown to exhibit higher levels of self evaluations (Coleman, 1983; Humphery & Mullin, 2002; Ribner, 1980). For instance, Humphery and Mullins (2002) found that children with dyslexia placed in SpLD units receiving intervention had higher self esteem and self concepts compared to dyslexic children in mainstream schools. Those placed in SpLD units also had comparable self-esteem and self concept with control students without LD (Humphrey & Mullins, 2002).

Possibly, these specialist classrooms may have added benefits for self-esteem and self concept as it creates a different reference group for children with LD for social comparison (i.e. LD students comparing themselves to other LD children rather than children in their regular classrooms; Marsh, 1987). In other words, it is harder for normally achieving children to "stand out" for academic success as the grades baseline in the classroom may be higher. In comparison, the baseline for achievement in the specialist intervention classroom is lower and hence LD students have much more opportunities to "stand out" and attain affirmation and

encouragement for their achievements.

However, it must be recognised that although positive self evaluations resulting from affirmation and encouragement are good in itself, these must be tempered with realistic evaluations of LD children's capabilities. It was previously shown that LD children tended to overestimate their academic performance relative to their actual performance. Comparatively, non-LD children tended to have more realistic estimations of their performance (Stone & May, 2002). Therefore, even though LD children may have high self evaluations of their scholastic abilities, these may not be in line with reality.

In the SDQ, LD children rated themselves as having more conduct problems than their normally achieving peers. One possibility may be that children with LD may have comorbid attentional and hyperactivity difficulties that resulted in conduct and behavioural issues. However, this is unlikely because their ratings on the Hyperactivity scale on the SDQ did not differ from their normally achieving peers. Another possibility is that children with LD may be misunderstood and singled out by their peers, thus resulting in the problem behaviours displayed. Some, especially those with concurrent language difficulties, may also not express themselves clearly and understand instructions well thus resulting in misunderstandings in school. Therefore, an important implication of this finding is the implementation of behavioural management techniques in classrooms and specialist remediation classes. Additionally, training of educational

therapists in special remediation classes in behavioural management could also be beneficial for managing difficult classroom behaviours.

Limitations

We highlight a few limitations of the current study so as to place its findings in perspective. First, the criteria for selection for the normally achieving group is that the child must not have a diagnosed LD and must have an average to above average academic performance in school. However, since we did not conduct psycho-educational assessments for students in this group, we do not rule out the possibility that some could have an undiagnosed LD. Second, there is an over-representation of children with dyslexia in the current sample of students with LD.

Hence, while we could conclude that LD children displayed better self-evaluations of their reading, spelling and general intellectual ability, this finding is mainly driven by children with dyslexia. Third, due to the age that the SEQ-C was designed for (14-18 years), we could only administer it to about 20% of the sample ($n = 61$) in our current study. Hence, one possibility for the failure to find differences in different domains of self efficacy could be due to the small n-size that completed the SEQ-C. Lastly, it is important to highlight that we only asked students to rate themselves and did not include concurrent ratings by teachers, parents or peers. The lack of these concurrent ratings may thus raise doubts about the reliability of the survey responses.

Future directions

Although our study benefitted from having a large number of children with LDs, the majority of them were children diagnosed with dyslexia. Thus, we could not assess whether different LDs differed in terms of their self evaluations. Future studies could include more students with different LDs so that differences in self evaluations between LD subgroups could be further examined.

Conclusions

In this study, contrary to expectations, we demonstrated that children with LD showed more positive self evaluations of their reading, spelling and intellectual ability than their normally achieving peers. Importantly, the LD children in the current study are all receiving specialist remediation. These results thus suggest that although the goal of specialist remediation is not to raise self esteem and provide emotional support, it may nevertheless lead to an indirect positive impact on academic self concept. Practically, this thus calls for better identification of children who may show LD symptoms and the provision of timely remediation support. Additionally, owing to the elevated ratings of conduct problems in LD children found in this study, perhaps, future investigations could also obtain concurrent ratings by parents and teachers to determine the reasons for this. The findings from such an investigation can then motivate and inform training of those working in specialist remediation to provide more holistic behavioural support.

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Teachers' Perceptions on the Effectiveness of a Process Genre Approach on the Writing Skills of Students with Dyslexia

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Abstract

This research study provides an overview of five Singaporean teachers' perceptions of the process genre writing approach as a method to improve the writing skills of students diagnosed with dyslexia. The researchers conducted a case study with five teachers from the Dyslexia Association of Singapore. Teachers were selected as study participants based on purposeful sampling. Data collection for the participants included a pre-interview questionnaire and a semi-structured interview. All five teachers reported using elements of the process genre writing approach during instruction. Themes representing the teachers' view of the process-genre approach to teaching writing emerged from the research including accessibility to resources, idea generation, structured instruction, familiarity, and ease of use emerged from the study. The results are discussed and suggestions are provided for further research.

Keywords: Teachers' perceptions, process genre approach, learning difficulties, dyslexia, teaching writing, writing difficulties, 6+1 Traits.

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Teachers' Perceptions on the Effectiveness of a Process Genre Approach on the Writing Skills of Students with Dyslexia

The ability to communicate through writing is an important skill needed to succeed in school and essential for successful participation at work and in a society (Norman & Spencer, 2005). However, in many schools in Singapore the writing process is usually embedded within literacy curriculum and is seldom taught in isolation. To develop proficient writers, teachers must provide quality literacy instruction that includes a specific focus on writing (Kraayenoord, Miller, Moni & Jobling, 2009). Essentially, teachers must go beyond teaching writing in the context of reading. While there are a variety of instructional strategies to use when teaching writing, teachers' knowledge of writing pedagogies may differ. Norman and Spencer (2005) found that pre-service educators' personal writing practices and biases, along with their exposure to a variety of writing pedagogies, shapes pre-service educators' beliefs and attitudes about writing, writing development and writing instruction. If left unexamined, pre-service educators' beliefs about writing will impact their assimilation of new instructional methods.

A majority of students with learning disabilities (LD) struggle with all aspects of literacy, including writing. When teaching writing to students with LD, Paran (2012) reported that there is no consensus on any one aspect of writing instruction that will lead to improved writing skills for students with LD. In order to determine effective writing

interventions for students with learning disabilities (LD), including dyslexia, it is important to learn what methods teachers are currently using to teach writing and whether they find the approach effective. These methods include the product, process, and genre approaches as these three pedagogical approaches have been the forefront of discussions of the teaching of writing in the last few decades (Paran, 2012). Thus, one way to bridge the gap between research and practice in writing instruction is to determine if these processes are currently being used to teach writing to students with learning disabilities.

Review of the Literature

The Individuals with Disabilities Education Act (IDEA, 2004) defines the term specific learning disability to be, "a disorder in one or more of the basic psychological processes in understanding or in using language, spoken or written..." IDEA (2004) specifically names dyslexia as a disability included in the definition of specific learning disabilities (P.L. 108-466, Sec. 602[30]). For the purpose of this paper, the term Specific Learning Disabilities (SpLD) will be used. SpLD was chosen as the focus of this paper is on the need to improve writing skills for students with dyslexia.

When compared to their non-disabled peers, students with SpLD are often seen as underachievers who struggle with low levels of motivation and frequently experience poor academic self-concepts. Poor academic self-concept typically manifests in meager achievement and/or limited learning gains in areas such as

reading and writing (Kraayenoord et al., 2009). Students with reading disabilities often find written tasks laborious and produce written work that will include a "paucity of ideas that prevents them from developing or embellishing their ideas" and "a lack of cohesiveness" (Kraayenoord et al., 2009, p.27; Ng, 2013).

The International Dyslexia Association's (IDA) definition of dyslexia is a "language-based learning disability" in which the primary symptoms are "difficulties in spelling, writing, pronouncing words and particularly, reading" (IDA, 2012, p.1). Difficulties with written output, "like the inability or poor ability to express ideas clearly or adequately in written form, are considered one of the characteristics of dyslexia" (Chia, 2009, p.8). The impairment in written expression skills for students with dyslexia can also include compositional fluency (Berninger, 2000). Berninger et al., (2007) highlighted the importance of addressing writing difficulties in students with developmental dyslexia as students with dyslexia require a certain methodology when learning to read, spell, and write.

Writing can be a subjective process; therefore, defining what is considered "good writing" can be a challenge for many teachers. In the context of teaching writing, Nauman, Stirling, and Borthwick (2011) found that without a thorough understanding of good writing, teachers often feel uncertain about deciding what to teach, how to assess students' work, and how to provide feedback on students' writing. To improve the quality of writing instruction, Ulusov and Dedeoglu (2011) suggest that teachers apply reading and writing strategies

throughout learning. Nauman et al. (2011) are advocates for use of the research-based 6+1 Traits model. The 6 + 1 model encompasses the key qualities that define strong writing, including ideas, organisation, voice, word choice, sentence fluency, conventions and presentation (Nauman et al., 2011).

Singapore Education System

Singapore is known for its high stakes assessment educational system (Law, 2013). The high stakes assessment-based system in Singapore is stressful for both mainstream teachers and students. In order for students to move on to the next grade, they must pass the comprehension and standardised writing section of an English examination. For students with reading disabilities who are unable to understand written language, the comprehension section is difficult.

Mainstream teachers who are unsure of their role in a classroom with students with SpLD tend to focus on teaching to the test or the end product, rather than focusing instruction on the actual writing process (Brimi, 2012). However, teaching the writing process to students with SpLD is critical to ensure student promotion to the next grade.

Fortunately, teachers in a non-mainstream education setting, like the Dyslexia Association of Singapore (DAS) who work with students with SpLD, can focus on literacy remediation that includes teaching about the process of writing rather than focusing instruction solely on those methods that are believed to increase test scores.

Dyslexia and the Orton-Gillingham approach

The connection between reading and writing has been described as reciprocal (Anderson & Biggs, 2011). Anderson and Briggs (2011) explained that when a person writes, they also read, and when a person reads, there is a need to compose meaning. The authors further suggested that struggling readers who are not provided with opportunities to write are less likely to improve their literacy skills. With respect to students with dyslexia, the Orton-Gillingham (OG) principles used in the OG approach to teaching reading and spelling may be useful when planning a writing intervention for children with dyslexia.

Chia and Houghton (2011) note that most children with dyslexia have a phonological processing deficit. Phonological processing deficits often include difficulty distinguishing between letter-sound correspondences in order to decode a word (Chia & Houghton, 2011). This deficit leads to the most common symptoms of dyslexia: poor short term memory and difficulty or inaccuracies copying from a board or a book (DAS, 2013a).

The OG approach uses systematic, sequential, multisensory, synthetic and phonics-based approach to teach reading, spelling and writing (Chia & Houghton, 2011). The OG approach is provided systematically and cumulatively, and requires mastery and "overlearning" before students learns a new concept.

The OG approach is based on ongoing diagnostic and prescriptive assessment to

individualise for each student's needs (Ritchey & Goetze, 2006).

Writing difficulties in students with dyslexia

Students with dyslexia can be articulate, well-spoken and able to demonstrate their ability to understand concepts and ideas in verbal conversation. However, writing presents a unique challenge. Individuals with dyslexia frequently write disjointed sentences, lack a clear sequence, and are more restricted in vocabulary. Students with SpLD often face challenges in academic writing assignments, even after reading has become easier for them (Perin & Graham, 2006).

These individuals may find it difficult to get started, struggle to organise and develop their ideas fluently, and struggle to keep track of their thoughts while getting them down on paper (Richards, 1999). These struggles may reflect their lack of automaticity in basic processes underlying literacy (Nicolson & Fawcett, 1990). With the difficulties that students with dyslexia face, it is understandable why they avoid writing tasks.

Writing approaches

Badger and White (2000) developed the process genre approach, which adopts the strengths of the product, process and genre approaches.

Each of these writing approaches is described briefly before the process genre approach is introduced.

Product approach

As the name suggests, teachers use this approach to focus on the quality of the final piece of writing. The product approach introduces text organisation and provides opportunities for students to practice language such as grammar and vocabulary required for the topic (Badger & White, 2000). Students are corrected or graded based on their ability to apply specific language features to a written piece (Belbase, 2012). The limitation of the product approach is that it emphasizes the technical aspects of writing, such as grammar, rather than the actual writing processes and their products such as drafting and re-writing (Belbase, 2012).

Process approach

The process approach takes students through four stages of the writing process (prewriting, drafting, revising and editing) before the final writing piece is achieved (Kim, 2006.). These stages help the students understand the nature of the writing process (Ng, 2013). Prewriting involves the teacher brainstorming story ideas with the students. The limitation of the process approach is its lack of emphasis on linguistic knowledge, such as grammar and text structure (Badger & White, 2000).

Genre approach

The term "genre" refers to the different types of texts that are used in a particular culture to achieve specific purposes (Derewianka, 1996). For example, a formal letter is a genre because it is used specifically to communicate to another (Hammond Burns, Joyce, Brosnan, & Gerot, 1992). In the genre approach, the emphasis is on making connections

between the knowledge of the language, like the language features, to the social purpose, like writing a letter (Kim, 2006.). There are three stages of the genre approach, modeling a genre, joint-construction of a text by the teacher and the students, and the independent writing stage. The genre approach does not go through the writing process of drafting, revising, and editing.

Process genre approach

The process genre approach involves knowledge about language, knowledge of the context in which writing happens, as well as the purpose of the writing. This approach also involves the writing development that draws out the learners' potential. There are six stages in the process genre approach, preparation, modeling, planning, joint-constructing, independent constructing and revising (Badger & White, 2000). The authors proposed that this approach could be an effective methodology for writing. The stages of writing have been summarised by Belbase (2012) as seen in Figure 1.

Writing approach suggested at the DAS

The DAS Writing Framework is similar to Derewianka's (1992) curriculum cycle. The writing stages are pre-writing, deconstruction, joint-construction, and independent writing. In the pre-writing stage, the teacher introduces the topic through brainstorming with the class. Next, deconstruction follows the modeling stage when the teacher introduces the genre of the topic by explicitly highlighting the text structure and language features. Then, together with the students, a plan of the writing topic is

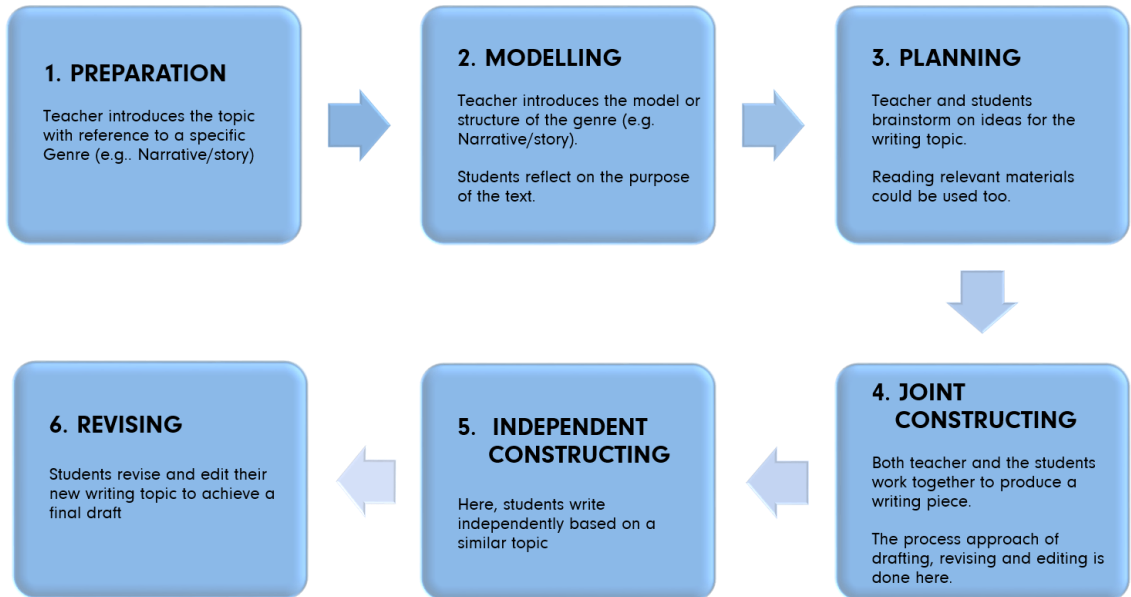


Figure 1. Six stages of the Process Genre Approach.

created based on the points that were brainstormed. Students also go through revisions at this stage. The last stage involves independent writing where the students write out their plan. For more independent learners, the last stage might also include writing out the story based on a similar topic independently. This stage allows the teacher to diagnose whether or not students are applying the concepts introduced. Figure 2 shows the diagram that demonstrates the four stages.

The teaching approach suggested by the DAS is cumulative and systematic, with structured stages, and is aligned with the process genre approach. This approach provides opportunities for students to practise skills and to make connections with related texts and language experiences in a wider context. Students begin learning the writing process collectively, by writing with the teacher. Eventually students will obtain autonomy that will enable them to write independently in school.



Figure 2. Four stages of Writing at Dyslexia Association of Singapore.

Ideas, Organisation

For the purpose of this research study, the authors will use Coe, Hanita, Nishioka, & Smiley (2011) definitions for the terms ideas and organisation. Ideas and organisation are pertinent concepts to focus on for learners with dyslexia. Some of the writing difficulties faced by learners with dyslexia, according to Richards (1999), are their struggle to organise and develop their ideas fluently.

Ideas.

Based on the 6+1 Writing Traits Model, ideas are defined as "the main message, the content of the piece, the theme, together with the details that enrich and develop that theme" (Coe et al., 2011, p. 6). As struggling readers, students with dyslexia may not read as much as their peers. Thus, it is important to build on their content knowledge by reading materials that relate to the writing topic and then brainstorm on the topic after reading.

Organisation.

Organisation refers to "the internal structure, the thread of central meaning, the logical and sometimes intriguing pattern of the ideas within the writing" (Coe et al., p. 6). With the difficulties faced by students with dyslexia, writing a structured and sequential piece can be difficult. Graphic organisers can assist students to understand abstract concepts and guide students to create an organised, cohesive written product (Dexter & Hughes, 2011). This study explored five teachers' perceptions of the effectiveness of the process genre approach as a method to improve the ability to generate ideas and

create an organised writing product for students with dyslexia. This study aimed to answer the following research questions:

1. Does a teacher's current writing instruction include elements of the process genre approach?
2. What are the teachers' perceptions of using the process genre approach to improve the writing skills of students with dyslexia?

Methodology

Instrument

This study used a pre-interview questionnaire and an eight-question interview that were adapted from the Teacher Survey on Writing Instruction (Coe et al., 2011). The pre-interview questionnaire served to obtain the interviewees' education and training background. Although the Teacher Survey on Writing Instruction was developed to determine the level of implementation of the 6 + 1 Trait Writing, the actual questions used in the interview measured the use of the general methods and activities teachers can use in writing instruction. None of the questions specifically focused on the 6 + 1 Trait Writing model. Therefore, teachers were only required to have a basic awareness of the idea of trait-based writing in order to respond to the interview items. Interview questions for this study were adapted from the first four categories of the Teacher Survey on Writing Instruction, specifically because they overlapped with all stages of the process genre approach to writing. The five categories

that were used to create interview questions for this study were:

- (a) Teaching the language of rubrics for writing assessment,
- (b) Reading and scoring papers and justifying the scores,
- (c) Teaching focused revision strategies,
- (d) Modeling participation in the writing process, and
- (e) Having students read and analyze materials that demonstrate varying writing quality.

The interview questions consisted of seven open-ended questions and one closed-ended question. The first seven questions focused on understanding the individual teacher's method of teaching the language of writing, the context of writing, the purpose of writing and the stages of writing. The last question was included to obtain the overall learners' profiles for writing. The researchers sought information about the learners' profiles as a method to connect the individual teacher's current writing instruction practices with students' needs.

In order to establish validity for the instruments used in this study, two colleagues were consulted. The first was a senior educational therapist and core team member of the DAS Curriculum Team (Writing). The first colleague has been teaching at DAS between three to five years and is well versed with the process genre approach to teach writing. The second colleague was a lecturer for the DAS Academy, a private education institution that runs training courses separate from the DAS. Both colleagues checked, edited and validated the

interview questions. The validity checks were completed to ensure that there were no leading questions and that the questions reflect the true nature of the process genre approach. Both colleagues were also unaware of each other's involvement in this research.

Research Design

This study employed an instrumental case study design (Creswell, 2012). Five participants were chosen based on purposeful sampling. Creswell (2012) stated that in purposeful sampling "researchers intentionally select individuals and sites to learn or understand the central phenomenon" (p. 206). The participants in this study are teachers, who are more formally known as educational therapists at the DAS, and were chosen because their primary assignment is teaching students with dyslexia. The teachers were chosen at random to include teachers who are experienced as well as the newer teachers at DAS.

Participants and Setting

One of the primary goals of the educational therapists, also known as teachers, at DAS is to provide a total literacy approach to students with dyslexia. The teachers at DAS teach students from preschool level to secondary level (DAS, 2013b). Teachers focus their remediation efforts on improving the literacy skills (reading, spelling, and writing) of students.

All five participants are female and were chosen to participate in this study based on the number of years teaching at DAS.

The number of years teaching was chosen as a participation factor to investigate whether years of service influence teachers' perceptions of teaching writing. Two of the educational therapists were experienced educators and had at least six years of teaching experience. One educational therapist had three to five years teaching experience, and two educational therapists had less than two years teaching experience.

The decision to only include educational therapists with a minimum of one year of teaching experience at DAS is due to the fact that beginning teachers at DAS (those with less than one year of teaching experience) are mentored to focus first on literacy skills of reading and spelling. This focused mentoring is to ensure that beginning teachers have a firm understanding of the OG approach to teaching literacy before embarking on writing and reading comprehension.

Data Collection and Procedures

The purpose of the data collection phase was to gather descriptive information from the five participants. The data collection phase was conducted in accordance to Creswell's (2012) steps to conducting interviews. Prior to data collection, formal email invitations were sent to the five participants. The pre-interview questionnaire (Appendix A) was included with the email invitation. During the data collection phase, the researcher collected the pre-interview questionnaire, in-depth descriptive information on the participants' current use of aspects of the process genre writing approach and their perceptions of using the process genre

approach to teach writing. Data were collected through individual interviews that lasted approximately 60 minutes each.

Data collection was conducted over a period of twelve days, during which the interviews were conducted. The interview approach used was established by Creswell (2012) based on a one-on-one interview, which involves a data collection process of the researcher asking questions to and records answers from one participant in the study at a time.

After the interview, the data was transcribed and analysed and follow-up interviews were conducted to clarify any missing points. The follow-up interviews were carried out via email for 3 teachers (Teachers B, C, E - refer to Table 1) and in person for 2 teachers (Teachers A and D - refer to Table 1). The profile of the participants in Table 1 below provides information regarding the teachers' background.

Since the semi-structured interview required knowledge on specific terminologies, the participants received an information sheet (Appendix B) with the definition of terms and the interview questions a day before the interview. The objective was to ensure that the teachers were informed of the key terms needed to respond during the interview. To address potential threats to internal validity, participants were also asked not to research the terms or prepare for the interview other than reading the information sheet and interview questions given.

Table 1. Profile of participants in research

Teacher	Centre	Job Title	DAS Experience	Highest Degree Attained
A	1	Senior Educational Therapist	6 + years	Bachelor's Degree
B	2	Senior Educational Therapist	3 - 5 years	Post Graduate Certificate Level
C	3	Senior Educational Therapist	6 + years	Master's Degree
D	4	Educational Therapist	Months - 2 years	Bachelor's Degree
E	3	Trainee Educational Therapist	Months - 2 years	Master's Degree

Analysis

Qualitative data analysis procedures were used to investigate participants' current use of the process genre writing approach and their perceptions of using the process genre approach to teach writing to students with dyslexia. The teachers' interview responses were transcribed, sorted and then compared and contrasted to derive codes and themes.

Creswell's (2012) method of analysis was used to code and categorize the data from individual transcripts and to summarize the results in meaningful ways. Several thorough examinations of the data were undertaken to distinguish linkages, themes, and patterns that were used to interpret the qualitative data (Lincoln & Guba, 1985). The analysis of the interview data began with an individual case analysis of one of the

educational therapists, followed by a within-group case analysis. This involved inducing categories from the answers of one participant and comparing them to the answers of the other participants with the same answer. As the interview questions were closed-ended followed by elaboration, the answers enabled the classification of categories to be done. The themes were drawn from the categories derived from the participants' responses. As the teachers' responses for each question could be summarized into common categories, like "structured method", themes were hence drawn to describe teachers' perception of the process genre approach.

Results

Current instructional practices. After reviewing all of the in-depth interview data for all of the educational therapists, the answer to the first research question,

Does a teacher's current writing instruction include elements of the process genre approach? became clear. Data indicates that all the teachers use at least elements of the process genre approach.

As stated previously, the process genre approach is a six-step process that involves preparation, modeling, planning, joint-construction, independent construction, and revising. All five teachers, to some extent, reported a varying degree of use of the process genre approach to writing instruction. Additionally, all five participants reported completing pre-writing strategies with their students. Teachers cited the use of reading material relevant to the writing topic and brainstorming on the writing topic together as specific approaches used with their students.

Overall, the interviewees frequently mentioned the use of graphic organisers as a tool to guide their students during the writing process, particularly in the joint-construction phase of writing. All five participants also reported providing their students' with independent writing practice. Most commonly, students created their paragraphs based on the points provided during brainstorming (pre-writing) and planning (joint construction) phase of the writing process. Teacher B summarised how she approaches the writing process with some of her students:

So the most recent one that I used was the 5-senses (graphic organiser). Then we brainstorm based on the graphic organiser. Then we'll do, as a class together because I think most of

them would not know where to start. Then, using the information that we gathered during brainstorming, we actually put it down into writing as a text. Right after that, I actually asked them to do a descriptive paragraph on the reunion dinner itself.

Consequently, when asked if each of the teachers had heard about the process genre approach to writing prior to the interview, three teachers (A, C, and E) indicated that they learned about the approach during mentoring sessions or during a professional development training. However, the terms used in the process genre approach were not known to everyone in this case study. Teachers A, C and E, shared that they recalled the terminology during training sessions by DAS. Three teachers were familiar with the term, "process genre approach" whereas two teachers, Teachers B and D were not. Teacher B elaborated:

Actually, I'm not. But when I looked at the example, it actually resembles a lot of what we usually do in the classroom.

Teacher D noted:

I have seen the diagram, but was not familiar at all with the terminology until it was explained to me in details.

Overall, the teachers' responses indicated that regardless of specific knowledge of the process genre writing approach, they were using at least one of the facets of this approach in instruction.

To answer the second research question,

What are the teachers' perceptions of using the process genre approach to improve the writing skills of students with dyslexia? the five participants' responses to the interview questions were synthesized and inserted into a table format. Through the initial analysis, the researchers were able to extract the topics of conversation from each person's interview. The following assertions were generated upon comparing the responses of the three participants with a positive perception towards the process genre approach to the responses of the two participants with a less positive/negative perception.

Assertion 1: Teachers with a positive perception towards the process genre approach to writing instruction used multiple methods to access resources.

The process genre approach requires obtaining and creating one's own resources. This is especially true for the deconstruction stage, where a model is used to show the text structure that is needed. Materials are also needed to elicit responses and encourage idea creation for the writing topic. Although all five teachers shared that they would provide reading materials as a stimulus for the writing topic, only Teacher A also mentioned meeting the need for access to additional resources. She referred to access to technological resources to help students with the writing process. Her response was,

Let's say there's a question (writing topic) right, I would actually Google for them first, for all the materials.

The two teachers with a negative perception noted the importance of

resources, but only mentioned that there were no readily available resources to use an example to show to students. One of Teacher C's perceived limitations of the process genre approach was that she did not have access to any completed models and therefore, she felt that

...(this approach) also requires skills and preparation because before we even can get students to write, we should have a model answer or all the points ready.

Assertion 2: Teachers with a positive perception towards the process genre approach to writing instruction could envision its use to stimulate student-led idea generation.

As the formation of ideas is one of the writing skills focused in this study, it was encouraging to discover that this theme emerged. All teachers shared that brainstorming stimulates students' idea generation for the writing topic. The three teachers in the positive group (A, B, and E) agreed that this method of writing instruction could improve students' ideas. Teacher B said,

Because not only it (the approach) would tap on their prior knowledge, but also I think, it builds on or enhances or adds value to what they already know.

The two teachers from the less positive/negative group disagreed and considered that the writing approach would do nothing to enhance students' ability to create new ideas. Teacher D's response indicated that she believes students would become too

overwhelmed. She said,

I think some of them (students) actually find it too overwhelming. Because when they had the idea that there was so much to do, they had already set themselves up for not wanting to attempt the task.

As noted earlier, in the process genre approach, there are several stages involved, and Teacher C's view was that the prewriting stage stimulates idea generation, whereas deconstruction does not. Teacher C commented that,

It doesn't stimulate discussion or thinking. These ideas would come from brainstorming.

Assertion 3. Teachers with a positive perception towards the process genre approach to writing instruction believe it should begin with structured instruction. All teachers agreed that graphic organisers are beneficial tools that can help students' structure and organise their writing. Teacher A stated,

My graphic organiser is very simple. I told them, A: introduction, B: body and C: conclusion.

Three teachers, Teachers A, B and E liked the idea that there is structure in the process genre approach. Teacher E commented,

I think it is very easy because it is (a) very structured method and it is also easy for students to follow.

Teacher B said,

I think the process actually helps them; you know how kids are very put off by writing? I think by having the process where they do together as a class first, breaks the barrier.

Teacher E commented that the stages of writing of the process genre approach could improve her students' organisational skills,

Because it gives the students a place to put each of his or her ideas.

Teachers were asked whether they would use any or all of the process genre approach in their classes to teach writing to their students with dyslexia. Teachers A and E (from the positive group) commented that they would use all of the stages to teach writing to their students with dyslexia. In fact, Teacher E said,

I would use all the stages. There's no point in using it halfway right? Because I've seen the success rate in it and, ya, I've seen the finished product. I feel it is a very good tool for teaching students to writing.

Teacher A commented that this process genre approach incorporates scaffolding, an extremely powerful way to help students with dyslexia find success in an area where they have previously struggled. She said,

All the stages. I think there's a structure there right, it's a scaffolding you know.

In contrast, Teacher C's response indicated that she believes ideas are generated in isolation from other steps in

the writing process, as indicated by her response,

I don't think so because deconstruction is basically taking a passage you would try to break it down into components... It doesn't stimulate discussion or thinking. These ideas would come from brainstorming.

Teacher C also shared her perceptions that the process genre approach is not a model that can support learning and cannot be generalised from one text structure to another. She shared,

Supposing we want to teach how to write an information report. So deconstructing one information report itself is not enough to get the students to understand the structure of an information report.

Having a structure could also mean that the approach lacks flexibility. Teacher D explained,

I think it is important to not get too caught up with any one approach. Constantly see what is out there. Because there is really no one size fits all.

Assertion 4: Teachers with a positive perception of the process genre approach to writing instruction viewed it as practical and easy to use. The final theme emerged based on how the interviewees perceived the practicality of using the writing approach. Teachers A, B, and E thought that the process genre approach could easily be adapted and used in writing instruction. Teacher B (positive group) related ease of use to

increased levels of student confidence with the writing process. She said,

I think the process actually helps them; you know how kids are very put off by writing? I think by having the process where they do together as a class first, breaks the barrier.

The ease of using the writing approach was further explored to investigate how much of the approach teachers would actually implement in their classrooms. Three teachers (B, C, and D) stated that they did not agree that the approach was completely adaptable for use in their classrooms, however all three stated that they would only use some of the writing stages in their classrooms. Teacher B (the positive group) explained that,

Because there are many kids who are still not ready to write independently yet. So having them to produce whatever that has been brainstormed is already an achievement for some.

Teachers C and D (negative group) found the overall process genre writing approach to be a tedious method. Teacher C explained,

I don't think it is easy to deconstruct the passage. And I think it is time consuming to deconstruct given our time constraints.

For Teacher D, students' confidence level was a concern. Teacher D elaborated:

I think some of them (students) actually find it too overwhelming. Because when they had the idea that there was so much to think and so much to do, they had already set

themselves up for not wanting to attempt the task.

Discussion

The overall study results indicate that the study participants are using some aspects of the process genre approach to teach writing. The results answer the first research question on whether a teacher's current instruction includes elements of the process genre approach. However, based on the results of the interview data, only two out of five teachers are confident in the process genre approach and are currently using all the stages in their classroom. Participants cited factors like students' confidence levels, accessibility to resources and time as factors that hindered the three teachers from using all of the stages when teaching writing to students with dyslexia.

To answer the second research question, on whether the process genre approach could improve writing skills of students with dyslexia, it is important to refer to the extent teachers would use the process genre approach to measure its effectiveness. In terms of improving ideas in students' writing, three out of five teachers agreed that this approach could contribute to this progress. Four of the participants perceived that the process genre writing approach could be used to improve organisation. These results indicate a mixed response from the teachers as to whether the process genre approach is effective to improve ideas and organisation in students' writing.

A possible explanation for the mixed responses for the second research

question could be derived from Teacher C's response,

I can't say for others, but I think I still need skills to do the deconstruction part.

Although the process genre approach is scaffolded as writing stages, as reflected by the Teacher C, the writing approach alone would not be sufficient to enable students to write. The teachers require the skills and knowledge, as they are the ones who facilitate learning, in terms of building ideas and organisation skills in writing. As learners at the DAS come mainly from both the primary and secondary level, teachers need to be equipped with the relevant skills and knowledge to teach for the different writing syllabuses. These skills and the knowledge necessary to apply the process genre approach need to come from teacher training.

Limitations and Further Research

As with any research, there are limitations in this study. Firstly, this research focused on a small number of teachers and the findings may not transfer to other settings. Secondly, all participants were female; therefore, the teachers' perceptions were limited and cannot be generalized to male teachers. Finally, this study was conducted with participants from Singapore and may not generalize to teachers in other areas of the world.

Further research should include a larger sample size and participants that are more heterogeneous. Since the teaching population consists of both males and

females, researching the male teachers' perceptions could value-add the findings of this study. Second, it would be useful to investigate if teaching experience is a factor in improving students' writing skills. The outcomes from this research showed no clear differentiation between negative and positive attitudes based on experience. However, this should be explored further. Third, it may be useful to conduct a writing trial in which participants try out the approach and are observed in the classrooms. This type of activity may give insight into the nuances of applying the process genre approach. Finally, it would be helpful to include students' perceptions of both the process and their own progress.

Conclusion

This research revealed that although teachers are using the process genre writing approach to a certain extent, there are several barriers that inhibit successful implementation in the classroom. The most common barriers were time, accessibility to resources, ease of use and that the comprehensive writing stages may be confusing to students with dyslexia.

While the process genre approach does show signs of improving idea formulation and organisation, it is also important to further explore multiple strategies for writing instruction, particularly when instructing students with dyslexia. Teachers should have knowledge of a variety of strategies to support struggling writers. Teaching students with dyslexia to write can be difficult, but the process genre approach is one of the strategies that can be impactful.

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Appendix A**PRE-INTERVIEW QUESTIONNAIRE**

(to be completed and returned)

1. What is your current highest educational qualification?
Please circle the letter before your answer:
 - a. Bachelor's Degree
 - b. Post-Graduate Certificate Level
 - c. Masters' Degree
 - d. Other (Please specify) _____

2. What is your current teaching role at Dyslexia Association of Singapore (DAS)?
Please circle the letter before your answer:
 - a. Teaching as a Trainee Educational Therapist
 - b. Teaching as an Educational Therapist
 - c. Teaching as a Senior Educational Therapist

3. Circle the letter that best represents how long you have been teaching at DAS.
 - a. Months - 2 years
 - b. 3 - 5 years
 - c. 6 years and more

4. Do you have an additional role at DAS other than teaching
(for eg. resource rep, Math team): Yes/No

If yes, state your role/team: _____

5. Please list any training you have received in the last two years related to writing instruction:

6. Please state the age range of your current students: _____

Thank you for completing this pre-interview questionnaire.

Appendix B

INFORMATION SHEET AND INTERVIEW QUESTIONS INFORMATION SHEET

Section A: Definition of terms

For this study, the following are the definitions which are used:

1. **Ideas:** Ideas are the main message, the content of the piece, the theme, together with the details that enrich and develop that theme (Coe et. al., 2011).
2. **Organisation:** Organisation is the internal structure, the thread of central meaning, the logical and sometimes intriguing pattern of the ideas within a piece of writing (Coe et. al., 2011).
3. **Graphic organisers:** Graphic organisers are visual and spatial displays that make the relationships between related facts and concepts more apparent (Dexter & Hughes, 2011).
4. **Recount:** A recount is the unfolding of a sequence of events over time. The purpose of a personal recount is to retell an activity that the writer has been personally involved in (Derewianka, 1992).
5. **Genre:** The term "genre" refers to the different types of texts which are used in a particular culture to achieve specific purposes (Derewianka, 1996).

Section B: Background on Process Genre approach to teaching writing

Badger and White (2000) suggested a writing approach that synthesizes the earlier writing approaches of product, process and genre. The process genre approach simply means that the teacher takes the students through a series of four stages namely; pre-writing, deconstruction (modeling), joint-construction and independent writing. Here's an example of how it is done:

First lesson (Pre-writing): The teacher uses a picture of *a family at the beach* to discuss with the class the activities that could be done at the beach with the family. Graphic organisers like bubble map could be used here.

Second lesson (Deconstruction): The teacher teaches a genre by firstly using a written piece of writing as a model to highlight the text structure of the genre. For example, introducing the purpose of the personal recount is to retell events. Then, the teacher introduces the personal recount text structure using the 5W1H graphic organiser: who, what, when, where, why, how. The model is a writing topic, *"Shopping with my family."*

Third lesson (Deconstruction): The teacher uses the same text to highlight the pertinent grammatical feature of this text type. For example, highlighting that simple past tense is used in writing a personal recount. The teacher could also use additional handouts or activities to reinforce the concept of simple past tense.

Fourth lesson (Joint-construction): Here, the teacher uses the same graphic organiser from the first lesson as a reference when planning a story with the class, *"Family time at the beach."* Planning the story is done using the 5W1H graphic organiser. The teacher needs to remind students to use the language feature, such as, the simple past tense. In this stage, the teacher goes through the writing process of planning, drafting and revising and publishing. By the end of this stage, the students would have a story written out based on the plan with their teacher.

Next lesson (Independent writing): The teacher asks the students to write out their own story based on a similar topic, in either a series of sentences or paragraphs. For example, "Family time at the movies." Hence, the cycle begins again to reinforce or when introducing another genre.

Interview Questions

(Based on the 'Teacher Survey on Writing Instruction' from Coe et al., 2011)

1. What are the current approaches you use when giving writing instruction in terms of ideas and organisation? [In another words: In your current classroom, how would you improve your students' writing in terms of ideas and organisation?]
2. Have you heard of the process genre approach before this interview? Yes / No a) If yes, where did you hear it from?
3. From what you have read or already know about the process genre approach, do you think it is easy for teachers to use this writing instruction in the classrooms? Why or why not?
4. Do you think the stages of writing of the process genre approach could improve "ideas"? Why or why not?
5. Do you think the stages of writing of the process genre approach could improve "organisation"? Why or why not?
6. To what extent (all the stages or just one or two or none at all) would you use the process genre approach in your class to teach writing to your students with dyslexia? Why or Why not?
7. What do you think are the limitations/possible difficulties of this writing approach?
8. Could you describe briefly your students' primary difficulties when it comes to writing?

Thank you. See you soon for the interview.

Appendix C—Coded responses from the interview

Q1. What are the current approaches you use when giving writing instruction in terms of ideas and organisation?			
Responses	Exemplar Quotes	Coded Categories	Themes
Starts with a reading material: All 5 teachers	Teacher D: "It all actually begins from reading. So we read the passage together." Teacher A: "Let's say there's a question (writing topic) right, I would actually google for them first, for all the materials."	Providing materials as a stimulus	Accessibility to resources
Brainstorming on topic: All 5 teachers	Teacher C: "We brainstorm on the points on the question and the points contributed will be written on the board (whiteboard)."	Brainstorming to stimulate idea generation	Stimulates idea generation
Uses a graphic organiser: All 5 teachers	Teacher B: "So the most recent one that I used was the 5-senses (graphic organiser). Then we brainstorm based on the graphic organiser...." Teacher A: "My graphic organiser is very simple. I told them, A: introduction, B: body and C: conclusion."	Using a structured and visual resource to organise writing	Structured instruction
Scaffolding the writing for students: All 5 teachers	Teacher E: "I listed under introduction, what you should put and then what tense you should have."	Teacher as a facilitator and leader in guiding and paving the direction for the writing	Structured instruction

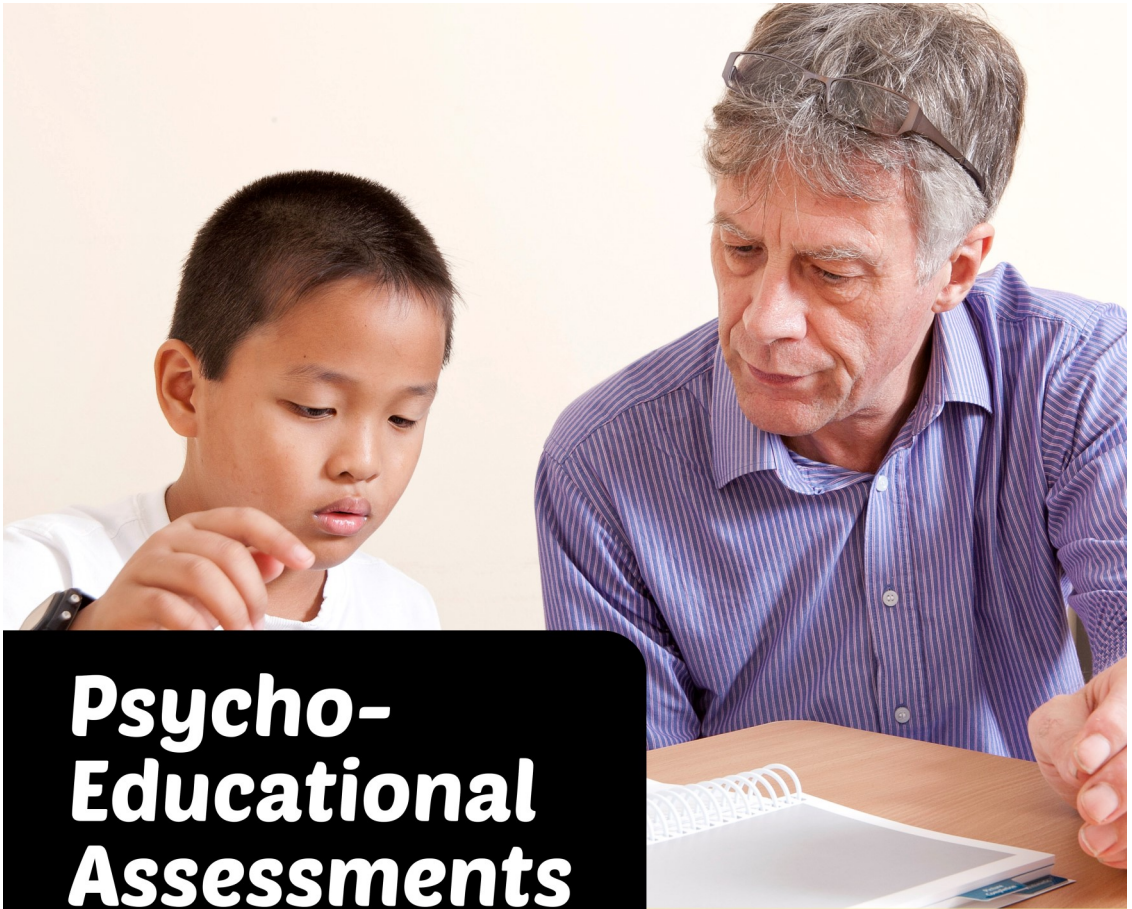
Q2. Have you heard of the process genre approach before this interview?			
Responses	Exemplar Quotes	Coded Categories	Themes
3 Yes (terminology is familiar): Teachers A,C, E	Teacher C: "During the mentoring sessions." Teacher A: "During Inset (In-house teacher training) a few years ago."	Recognising terminology from training sessions	Familiarity
2 No (terminology is not familiar): Teachers B, D	Teacher B: "Actually I've not. But when I looked at the example, it actually resembles a lot of what we usually do in the classroom." Teacher D: "I have seen the diagram but I was not familiar at all with the terminology until it was explained to me in details."	Unfamiliar terminology	Familiarity
Q3. From what you have read or already know about the process genre approach, do you think it is easy for teachers to use this writing instruction in the classrooms? Why or why not?			
3 Yes (find the approach easy to use): Teachers A, B, E	Teacher E: "I think it is very easy because it is (a) very structured method and it is also easy for the students to follow."	Structured method	Structured instruction
2 No (does not find the approach easy to use): Teachers C, D	Teacher C: "I don't think it is easy to deconstruct the passage. And I think it is time consuming to deconstruct given our time constraints."	Tedious method	Ease of using approach

Q4. Do you think the stages of writing of the process genre approach could improve "ideas"? Why or why not?			
Responses	Exemplar Quotes	Coded Categories	Themes
3 Yes (find it effective in improving ideas): Teachers A, B, E	Teacher B: "Because not only it (the approach) would tap on their prior knowledge but I think it builds on or enhances or add value to what they already know."	Enhancing students' prior knowledge	Stimulates ideas generation
2 No (does not agree to it improving ideas): Teachers C, D	Teacher D: "I think some of them (students) actually find it too overwhelming. Because when they had the idea that there was so much to think and so much to do, they had already set themselves up for not wanting to attempt the task." Teacher C: "I don't think so because deconstruction is basically taking a passage and you would try to break it down into components. The structure of that answer. It doesn't stimulate discussion or thinking. These ideas would come from brainstorming."	Confidence level of students Tedious method	Ease of using approach Stimulates idea generation
Q5. Do you think the stages of writing of the process genre approach could improve "organisation"? Why or why not?			
4 Yes (find it effective in improving organisation): Teachers A, B, D, E	Teacher B: "I think the process actually helps them, you know how kids are very put off by writing? I think by having the process where they do together as a class first, breaks the barrier." Teacher E: "Because it gives the students a place to put each of his or her ideas."	Confidence level of students Structured method that helps students	Ease of using approach Structured instruction

Q5 Continued			
Responses	Exemplar Quotes	Coded Categories	Themes
1 No (finds it ineffective to improve organisation): Teacher C	Teacher C: "Supposing we want to teach how to write an information report. So deconstructing one information report itself is not enough to get the students to understand the structure of an information report."	Does not guarantee transference of skills	Structured instruction
Q6. To what extent (all the stages or just one or two or none at all) would you use the process genre approach in your class to teach writing to your students with dyslexia? Why or Why not?			
2 are for using all the stages: Teachers A, E	Teacher E: "I would use all the stages. There's no point in using it half way right? Because I've seen the success rate in it and, ya, I've seen the finished product. I feel it is a very good tool for teaching students to writing." Teacher A: "All the stages. I think there's a structure there right, it's a scaffolding you know."	Having confidence in the approach	Ease of using approach
3 are for using only some of the stages: Teachers B, C, D	Teacher D: "If they (students) are receptive, I would go all out. But if I know I need to be more careful with them, because they are worried about writing, then I would really play on a week by week basis. So it really depends class by class." Teacher B: "Because there are many kids who are still not ready to write independently yet. So having them to produce whatever that has been brainstormed is already an achievement for some."	Concerns regarding practicality of the approach	Ease of using approach

Q7. What do you think are the limitations/possible difficulties of this writing approach?			
Responses	Exemplar Quotes	Coded Categories	Themes
3 teachers stated the time factor as the common limitation. It is time consuming. (Teachers A, B, E)	<p>Teacher B: "I would think the time. Because you need to invest in a lot of time to go through from one stage to another."</p> <p>Teacher A: "I think this can be time consuming. Because you have to create your own (model essays) you know."</p> <p>Teacher E: "Mainly the time. It does take a lot of time. And if you're in Sec 3 (Secondary3) already, and you only have three more terms before you become Sec 4, then, you are going to do only three more pieces of writing right? So I'm not sure if that's enough."</p>	Time-consuming	Accessibility to resources
2 teachers stated difficulties in finding model answers as a difficulty. (Teachers A, C)	<p>Teacher C: "I think (this approach) also requires skills and preparation because before we even can get students to write, we should have a model answer or all the points ready."</p> <p>Teacher A: "Getting the model answers."</p>	Limited resources	Accessibility to resources
1 teacher stated the limitation of using one approach (Teacher D)	Teacher D: "I think it is important to not get too caught up with any one approach. Constantly see what is out there. Because there is really no one size fits all."	Lacks flexibility	Structured instruction

Q8. Could you describe briefly your students' primary difficulties when it comes to writing?			
Responses	Exemplar Quotes	Coded Categories	Themes
Ideas: Teachers A, B, C	<p>Teacher C: "One student, after brainstorming, find it very difficult to get started."</p> <p>Teacher B: "I would think that idea generation is lacking in my students."</p>	Idea generation	Ideas
Organisation: Teachers A, D, E	Teacher E: "Then for Secondary, is more organisation because they do have the idea, but they just don't know where to put what."	Organising ideas	Organisation of ideas
<p>Others</p> <ul style="list-style-type: none"> - Grammar: Teachers C, D - Sentence structure: Teachers A, D, E - Vocabulary: Teachers A, B, E - Spelling: Teachers C, E 	<p>Teacher D: "I realise that grammar would be one. They're confusing the present tense with past tense. Sentence structure seems to be a primary concern. They have very good use of metaphorical language but when it comes to linking things up and putting it all together nicely, sentence structure would be an issue I think."</p>	Language difficulties	Language difficulties



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A Language Barrier or Literacy Difficulties: Native Chinese Speakers in an English Educational Setting

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Abstract

If a child can comprehend their surroundings, they will gain knowledge, learn with more confidence and feel a sense of achievement. Confidence and self-esteem are paramount in the development of a person's education and character (Wood, 1998; Lawrence, 1987). Unfortunately for pedagogues and learners alike, there is not just one universal factor that hinders comprehension, nor is there one magical cure to allow all students to understand everything. Every learner is unique, including their learning preferences and their learning difficulties. When teaching English to non-native speakers, it is not often easy to distinguish between difficulties on account of English being their second language (L2) and problems in reading acquisition because of dyslexia or other literacy difficulties. The sooner their specific needs are identified, the sooner the students can receive the most appropriate help from their educational setting.

Keywords: Dyslexia/Specific Learning Differences; Multilingualism; Chinese; English as an Additional Language (EAL)

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Introduction

Although my time in the Far East sparked my interest in Chinese culture and the language, the main reasons for me focusing on native Chinese speakers learning in English in this article are threefold. Firstly, although every language on the planet is useful and worth learning, English and Chinese are presently the most international and widely used languages in the world. Secondly, because the graphemics of English and Chinese are so different, it allows for more contrasting and, in my opinion, interesting research. Finally, and most importantly, English is my first language (L1) and Mandarin Chinese my most fluent second language (L2) while my wife's L1 is Mandarin Chinese and she is fluent in English as her L2. I live in a bilingual household where English and Chinese are given equal importance, respect and usage.

As we are living in an increasingly globalised world, more and more teachers in the UK find themselves teaching children whose first language (L1) is not English. The amount of non-native speakers in England alone, who are being educated in English as the language of instruction, doubled between 1997 and 2013 and is now at over a million (Department for Education, 2012). This figures translates as around 14% of students in England being non-native English speakers. In some schools, over 90% of their pupils have English as an additional language (Department for Education, 2012). As of the last UN report on immigration (Department of Economic and Social Affairs: Population Division, 2013), the UK as a whole is the country

that has the sixth highest net immigration in the world. Over the previous eighteen years there has been a year-on-year increase of the amount of children in primary and secondary schools in England who have a barrier in the form of a second language (L2). Because of the facts stated in this paragraph, the UK, and in particular England, seems to be a good place to conduct the research that I wish to carry out.

Throughout this article, I usually use the term literacy difficulties to refer to dyslexia, dysgraphia or other lesser-known neurodevelopmental differences which affect writing, reading, motor skills and more. This term is used because I want to focus specifically on the language and literacy aspect of neurological differences and I feel that, since there are so many different types and varying severities of literacy issues, the term literacy difficulties best encompasses a variety of neurological differences. Besides the term literacy difficulties, dyslexia and SEN (Special Educational Needs) will be used occasionally, usually when referring to the school's SEN department or quoting an author who prefers focusing specifically on dyslexia.

Due to ignorance or, more commonly, a lack of funding, lots of educational institutions in the UK put English as an Alternate Language (EAL) students and students with literacy difficulties into the same literacy development classes and group them under the same title, such as Extra English, despite the fact that both types of students require very different types of assistance. This problem must be addressed, but in this article, I will instead be looking at how to identify when these

two needs can be found in one pupil: a language barrier and a literacy difficulty. Although it is not common, there are many difficulties that arise when or because a learner has both EAL and literacy difficulties. One of the main purposes of my article is to research and identify adequate assessment methods to reliably test for such difficulties in EAL learners.

There are examples in my personal career as well as internationally (Geva, 2000 in Kormos and Smith, 2012) where literacy difficulties have been identified very late in an EAL student's time studying in their L2, which may have been detrimental to their education. Late identification of literacy difficulties can lead to an irreversible experience of classroom failure and loss of confidence, regardless of whether the child is learning in their L1 or L2 (Turner, 1997).

My Present Situation

In my current position as Head of EAL, I am responsible for ensuring all of our school's non-native English speakers acquire a level of English from which they are able to access the school curriculum.

This level of English varies depending on the subject, as a lower ability of English is needed to appreciate the art or music curriculum than is needed to access the curriculum of history or mainstream English. The amount of EAL classes that each pupil has per week reflects their level of English; the lower their English ability, the more EAL classes they need.

Regardless of their English ability, all EAL pupils will have the majority of their 41

weekly classes with British children, as they are more likely to build up strong relationships with their peers in this way. We put the integration element of their curriculum and the lives of our overseas students as a high priority and passively discourage EAL students to just spend time with their compatriots. If we didn't allow them to integrate with native speaking peers in the classroom, they would be less likely to socialise with native English speakers outside of the classroom and an important element of their education would be lost. To socialise with native speakers their own age (and to be seen as less different or less of an outsider), is paramount for improving their English ability and building their motivation and confidence.

Dweck (1986) and Kyriacou, (2009) point out the importance of motivation towards learning. Fortunately in my EAL classroom, if my students did not previously have an interest in foreign language learning, their present situation seems to motivate them to learn English as the improvement of their L2 will make their lives in the UK easier. As around 90% of our school speak English as their mother tongue and the remaining 10% have a mixture of L1s, my students are generally very motivated to improve their English and integrate more with their peers from the UK and the rest of the world through the medium of English.

Although motivation assists with aptitude in foreign languages, being keen does not guarantee success. One factor, which could negatively affect a student's aptitude in the learning of foreign languages, is literacy difficulties in their L1. It has been suggested by many that

this leads to more chance of difficulties in learning another language (Schneider and Crombie, 2003; Nijakowska, 2010). Cummins (2000) has developed two theories of Language Learning: Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). I have discovered first-hand that BICS is easier to master for non-native English speaking students who are studying in England. Some students, whom I teach, can get to such a level with their BICS that within two years, teachers from other schools believe them to be native English speaking British children! CALP takes longer to develop than BICS.

Cummins (2000) best expresses the differences thus:

Conversational aspects of proficiency reached peer-appropriate levels usually within about two years of exposure to L2 but a period of five to seven years was required, on average, for immigrant students to approach grade norms in academic aspects of English.

Evidence suggests that the speed of English acquisition varies depending on a variety of things, including the stage of English the student has upon arrival in the UK, the student's age, their living environment outside of the classroom and the amount of support available within the classroom itself (Demie, 2013). A few however, find both BICS and CALP very difficult to master and often make errors in their spoken English, have a strong non-native English speaking accent, and/or find the understanding of subject specific vocabulary particularly difficult to comprehend. This is all in spite of years of studying in England and spending most

of their time both inside and outside of the classroom communicating in their L2, English. There could be a variety of reasons for this: discomfort in social situations, aural issues, a lack of interest in certain subjects, etc. Some non-native English speakers, who retain lower levels of English than their peers of both BICS and (especially) CALP, have been assessed as having literacy difficulties in their L1, in English or in both.

In Nijakowska's book *Second Language Acquisition: Dyslexia in the Foreign Language Classroom* (2010, p. 69), the author puts forward a strong point that "The strength of the native language codes considerably determines the extent to which a learner can become proficient in a foreign language". In order to best learn a foreign language, one must first have a strong basis in one's mother tongue. A strong basis in a person's L1 is more difficult to have if a person has literacy difficulties.

Difficulties that can arise when a learner has both EAL and literacy difficulties

The UK Government (2012) suggests that up to 20% of EAL pupils in the UK have literacy difficulties. I have yet to find research dismissing the theory that learning a foreign language is more difficult for students with literacy difficulties than for students without. This is due to elements of learning that such people find difficult such as phonological processing, auditory discrimination and sequencing, memorising vocabulary and confusion over grammar and syntax (Peer and Reid, 2001).

When a person learns a foreign language

in the classroom of a country where his or her L1 is the lingua franca, there is an obvious difference between how that person learns that foreign language and how they learnt their L1. Chomsky (in Wood, 1998) first proposed the Language Acquisition Device (LAD) to illustrate how a child, who has no concept of grammar, can become fluent in their L1 as quickly as most people do.

When learning another language however, students usually take a lot longer, not least because they are generally not immersed in an environment that just uses their L2. Regardless of the length of time needed to attain fluency in a person's L2, there is a reference point to refer back to (their L1), which paves the way for a completely different style of learning as there was no reference point when learning their L1. For example, for a monolingual English speaker, the German word Hund can be automatically translated back into dog, whereas for a monolingual German child, the word Hund is associated with the animal itself and not a word in another language.

Crombie (2005) summarises by stating that L1 acquisition is absorbed through experience, whereas more often in L2 acquisition new vocabulary is translated back to known L1 vocabulary. Acquiring a language by direct translation into a person's L1 can be particularly difficult for students with literacy difficulties due to proven difficulty with memorising vocabulary (Schneider and Crombie, 2003), and so particular thought must be given to this when delivering a curriculum to such learners.

Unlike the variety of different ways in which a person's L2 can be learnt, most people learn their L1 in the same way: naturally, and are not taught per se (Chomsky in Wood, 1998). Motivation, attitude, learning styles, personality and aptitude generally do not affect how a person communicates orally in their L1 (Cook, 2010) (although class, age, dialect, gender, etc. may, these are more social issues). On the contrary, motivation, attitude, learning styles, personality and aptitude are all paramount when learning an L2 (Ushioda and Dörnyei, 2009; Nijakowska, 2010).

As 80% of English learners around the world class themselves as beginners (Cook, 2010), the implication is that the majority do not progress to higher levels. Success in the speaking of a person's L1 generally develops whether you will it to or not, whereas success in L2 acquisition is influenced by a range of factors.

Javorsky, Sparks and Ganshow (1992 in Crombie, 2005) have put forward the argument that when student learners with literacy difficulties study a foreign language, the writing and reading side should be given a lot less importance, due to difficulties with literacy in the learners' L1.

I disagree with this, although it may be preferable to what I have experienced in the Orient. During my five years in the Far East (three in Taiwan and two in China), I discovered that reading and writing in English are generally given a lot more importance than speaking and listening. Chu (2008) suggests that it is a mixture of traditional teaching techniques and the native Chinese speaking

teacher's lack of confidence in speaking English which has led to most children in these countries having weaker speaking or aural understanding. Chu (2008.) notes that the English education in Taiwan from junior high school age upwards is very examination centred, and thus focuses mainly on grammar and translation activities, forcing students to rely most on repetition and memorisation strategies to study the language. I think that this rings true for many countries.

Research into the field of literacy difficulties by Schneider and Crombie (2003) suggests that this focus on the written form of the language curriculum, the memorisation of vocabulary and strict learn-by-heart grammar rules will cause great frustration for those with dyslexia or other literacy difficulties. I feel that a healthy amount of reading and writing can enrich the education of a student with literacy difficulties.

As mentioned above, many people hold the view that if a person has literacy difficulties in their L1, the literacy acquisition in their L2 will thus be affected (Nijakowska, 2010; Peer and Reid, 2001; Schneider and Crombie, 2003). Although this certainly seems true for alphabetic languages to some degree, it is my assumption that the people who hold this view are not familiar with logographical languages, such as Chinese. Brunswick (2010) emphasises that most of the research into this field focuses on English speakers, with some merely presuming that the results will be similar for other (alphabetic) languages. Shen et al. (2014) elaborates on this and underlines the differences between the logographic system of Chinese compared with

alphabetic languages. I will analyse more deeply the comparison between literacy difficulties in Chinese and alphabetic languages below.

How easily are literacy difficulties identified in EAL students?

As almost all teachers in England will teach students with either literacy difficulties or EAL at some point during their career, it is extremely important to be able to identify whether a non-native speaker who requires EAL classes has literacy difficulties or not. A rise in the number of speakers of EAL joining schools in the UK has resulted in an increased focus on research into literacy difficulties in EAL (most notably, 2008 onwards). This has been in order to both aid identification and improve strategies for teaching and learning.

It can be difficult to distinguish literacy difficulties in L2 speakers because symptoms for literacy difficulties are similar to those for lower level EAL learners as well. Moats et al., (2010 in Mather and Wendling, 2012) state that the most common form of literacy difficulties, dyslexia, leads to poor spelling and word recognition and affects how fluently a person reads as well as their comprehension and their written expression. Unfortunately for identification purposes, EAL students who have yet to master English have some, if not all, of the same problems. The average non-native speaker is able to catch up with and eventually surpass the average native English speakers in school within five-seven years in the UK education system (Demie and Hau, 2013). Therefore those who still achieve less than their

peers seven years after they started in an English educational setting cannot always have their difficulties justified by their mother tongue.

Even though students with difficulties in literacy are more likely to achieve less highly in the foreign language classroom (Nijakowska, 2010), Sparks (2013) states that this should not be a foregone conclusion, as their achievement in such a situation depends on a range of things, such as the type of literacy difficulty, the severity and, most importantly for my article, how the students L1 and L2 compare phonologically or orthographically.

When a person's literacy skills in their L1 can be thought to affect their literacy skills in their L2, the learner's full educational history is extremely useful and parents or previous teachers must, where possible, be involved in order to gather as full a picture as possible of the child's literacy history and any issues evident in acquisition of L1.

It is often the case, when teaching EAL students in the UK that it is impossible to acquire reliable preexisting evidence of literacy skills in a child's L1. For example, in my previous two years of teaching, I have encountered a native Romanian speaking pupil who has documented evidence of literacy difficulties in English but whose parents think dyslexia is a myth; I have taught a handful of children who have no record of literacy difficulties in their L1 but after a long period of time in the UK seem to have at least literacy difficulties in their L2, English; I have taught a Russian boy whom our SEN department have identified as having

literacy difficulties in English, but who had never been to school before coming to the UK, and so we cannot test his literacy in his L1 to help assess him more easily for literacy difficulties in his L2, as he is close to illiterate in his L1. Gunderson et al., (2011) note that many countries do not recognise the existence of dyslexia or other educational differences, and some even have no term for it in their language.

Almost all testing methods used to identify literacy difficulties contain a lot of English language. If such tests are given to non-native English speakers, there will always be the niggling thought at the back of the teacher's mind that at least some of the questions were answered incorrectly because of language ability in the pupil's L2. It could prove very detrimental for a child's education if he or she has been labelled as having literacy difficulties, when in fact they do not.

Unfortunately most literacy difficulties assessment tools are very language-heavy, culturally specific and are aimed at a particular monolingual population. The abundance of literacy in such tests is likely to yield results that show the student's language proficiency, rather than cognitive function (Mortimore et al., 2012). Therefore these results will not accurately show presence of literacy difficulties in most non-native speakers. There is the idea that a test for literacy difficulties can be given to non-native English speakers using words that they are more likely to have encountered. Kormos and Smith (2012) however, state that tests which have lower level English words so that they are more accessible for non-native speakers run the risk of

offering just a limited range of cognitive functioning, and are therefore invalid as forms of assessment. What can be done? Geva (2000 in Kormos and Smith, 2012) reports that in Canada, with over 20% of the population being immigrants (Department of Economic and Social Affairs: Population Division, 2013), some education authorities wait until a child has been in the education system for five years before testing them for literacy difficulties.

I feel that five years is too long for those EAL learners with literacy difficulties not to have been receiving the specialist teaching that they need. That said, as the literacy skills that learners with low level English need to acquire can cross-over with literacy skills that learners with literacy difficulties need to acquire (i.e. the pronunciation of diphthongs, magic E, etc.), it may not be drastically important to identify literacy difficulties in EAL students from day one. I suggest the testing be done by the end of the first term.

More suitable testing methods are being created or have been created to test for literacy difficulties in EAL learners. Smith (ELT well, 2011) has created Cognitive Assessments for Multilingual Learners (CAML) which tests different factors that children (and adults) with literacy difficulties find most taxing. I feel that this system is very useful, but only as a test showing potential literacy difficulties in EAL students.

These assessments include symbol coding and visual input memory exercises, which do not utilise words. I have yet to believe that any testing method can be perfect,

not least because a student might score differently depending on the day that they take the test. Additionally, as Sparks (2013) has mentioned, there are many different types and severities of literacy difficulties. Furthermore, Turner (1997) showed us in his DEST assessments, early testing methods that try to avoid inaccuracies due to lack of language proficiency can also be inaccurate. He observed that the percentage of students with potential literacy difficulties when tested at the age of five differed considerably from the percentage of the same group of pupils with such difficulties when they were tested three years later, when they were able to take a more reliable literacy test.

Chinese Speakers with Literacy Difficulties and the Challenges that They Face When Learning English

Despite there being seven main dialects and hundreds of sub-dialects of Chinese in China as well as all around the world (Duanmu, 2007), they all share an almost identical writing system. As a result, literate Chinese speakers around the world can communicate with a pen and sheet of paper, even if they cannot communicate orally. Although (The People's Republic of) China and Singapore now use simplified Chinese, and Taiwan, Hong Kong and most Chinese communities outside of China (e.g. Malaysian Chinese, British Chinese, etc.) still use traditional characters, the two different writing systems share the majority of their characters and the different ones can almost always be understood from the context of the sentence. The same writing system throughout the separate dialects means

that literacy difficulties will affect a person in almost the same way, regardless of his or her dialect. It should be noted that even though the presumption of Chao (1968, in Fung, 2009) that there is one universal grammar system has since been questioned (Fung, 2009), as my article is not looking at grammatical rules but at how characters are read, I will treat the dialects as one language, and refer to it as Chinese.

As Sparks (2013) mentions, people with literacy difficulties find different aspects of reading and writing difficult and the severity of these difficulties also differs from person to person. In a study of English speakers by Ramus (2003), he states that a deficit in phonological awareness was present in 100% of the dyslexic people tested, which was more than any other deficit. Gunderson et al. (2011) suggest that, due to English having a particularly deep orthography, literacy difficulties in readers of English are related to phonological awareness whereas literacy difficulties in readers of shallow orthography languages, such as Russian, Finnish or Spanish, are more likely associated with a slower reading speed.

That said, Shen et al. (2014) states that people with literacy difficulties in all languages seem to have at least some sort of phonological deficits, even if it is not as much as 100% as Ramus suggests is the case for native English speakers. Smith (2013) puts forwards the argument that the manifestations of literacy difficulties may be clearer in some individuals when they use a particular language, and less obvious when they use a different language. Chinese, like

English, is considered to have a deep orthography but, because it uses a logographic writing system, it is even more opaque than English (Brunswick et al., 2010), which in turn possesses one of the most opaque orthographies of the Indo-European languages (Mortimore et al., 2012).

Richlan (2014) says that orthographic depth itself is one of the most important factors when learning to read and thus the orthographic depth of a language heavily affects the ease or difficulty at which a language is learnt. Linguistically very different from the Indo-European languages mentioned, Chinese, as it is a logographic language, will use more morphological awareness as opposed to phonological awareness when processing language (Lei et al., 2010).

In Chinese, there is no direct use of phonemes when converting the image of a Chinese character into a spoken word. This is why Wu et al. (2009) mention that orthographic-related issues were the main cause of literacy difficulties in Chinese, as opposed to the phonological deficit in English. Despite the very prominent differences between the Chinese language and the English language as well as the issues therein that lead to literacy difficulties, Shu and Li (2012) suggest that, as in alphabetic languages, dyslexic children in Chinese have problems with the accuracy and speed of word reading.

Neurologically speaking, most recent scientific evidence suggests that different areas of the brains of native speakers are used to process reading, depending on whether the person's L1 is alphabetic

or logographic. Siok (2010), Hu et al. (2010) and Tan et al. (2003) all agree that Chinese speakers who do not have literacy difficulties have increased activity in the left middle frontal gyrus when reading their L1. English speakers who do not have literacy difficulties have increased activity in the left superior temporal gyrus when reading their L1.

There has been lots of evidence towards the end of the twentieth century and since the start of the 21st century to confirm the areas of activity for phonological processing of English by native speakers as around the left superior temporal gyrus (Siok, 2010; Hu et al., 2010; and Tan et al., 2003) and the left posterior portion of the inferior frontal cortex gyrus (Tan et al., 2003). Exact locations vary, but those general areas are agreed upon.

Where Siok (2010) and Hu et al. (2010) do not agree however, is whether Chinese speakers who have literacy difficulties and English speakers who have literacy difficulties are affected in the same area of the brain. It is widely recognised (Xu et al., 2015) that people with literacy difficulties, no matter what their L1, have a dysfunction in the left hemisphere language network. More specifically than this, Siok (2010) Siok et al. (2008), Hadzibeganovic et al. (2010) and, most recently, Li (2014) are all of the opinion that Chinese and alphabetic dyslexics show brain irregularities in different areas of the left hemisphere, namely that Chinese speakers with literacy difficulties show a lower volume of grey matter in the area of the brain which is used to process Chinese and that English speakers with literacy difficulties show a lower volume of grey

matter in the area of the brain which is used to process English.

If this is the case, this suggests that there could be two separate brain disorders and that if you have literacy difficulties in Chinese, you do not necessarily have them in an alphabetic language (and vice versa). Hu et al. (2010) and Silani et al. (2005 in Hadzibeganovic et al., 2010) on the other hand, found that people with literacy difficulties, regardless of their L1, were shown to have less than normal activation in a larger area, which includes the left angular gyrus and in the left middle frontal, posterior temporal and occipitotemporal regions. Both views should be considered when I conduct my case study, as the international community who study this field have yet to reach a consensus.

Figure 2 shows that Chinese speaking readers, who do not have dyslexia, have a larger grey-matter volume and stronger brain activity during reading tasks in the left middle frontal gyrus of their brain than dyslexic Chinese speakers.

Figure 3, on the other hand, shows that non-dyslexic readers of alphabetic languages have a larger grey-matter volume and stronger brain activity during reading tasks in the area of the left temporal gyrus (and the occipitotemporal region) than their dyslexic counterparts.

Figure 4 shows the activation volume of different areas of the brain while non-dyslexic and psychologically 'normal' participants processed English words and/or Chinese characters.

of English words that rhyme as well as 24

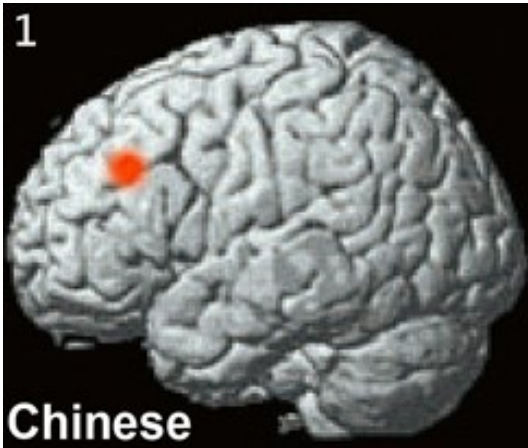


Figure 2 (Siok, 2010)

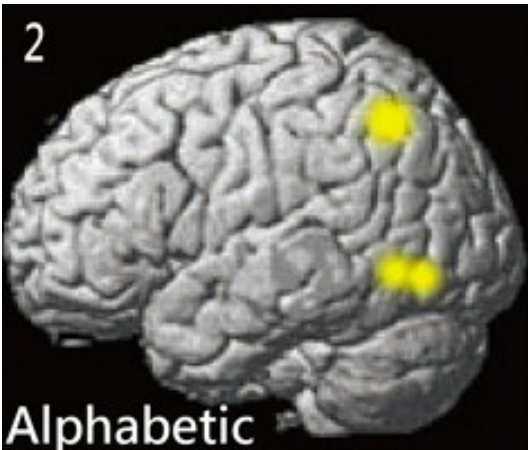


Figure 3 (Siok, 2010)

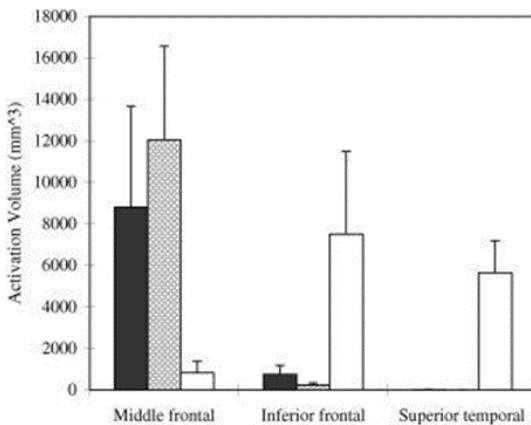


Figure 4 (Tan et al., 2003)

pairs of Chinese characters and 24 pairs of English words that do not rhyme. All 96 pairs had no visuo-orthographic similarities, even if they rhymed (e.g. lacks -axe/ 喝-顆).

The phonological processing looked at 24 pairs of Chinese characters and 24 pairs of English words that do not rhyme. In figure 4, the black bars on the graph represent L1 Chinese readers deciding whether two Chinese characters rhyme; the hatched bars represent L1 Chinese readers deciding whether two English words rhyme (the L1 Chinese readers are all Chinese people who started studying English after the age of twelve, have been studying for their doctorate in the USA for at least three years and had studied English in China for at least twelve years); the white bars represent L1 English readers deciding whether two English words rhyme.

As suggested by Siok (2010) and Hu et al. (2010), English readers have increased activity in the left superior temporal gyrus and (although not mentioned by Siok and Hu) the left inferior frontal gyrus (which, incidentally, borders the superior temporal region).

Unsurprisingly, figure 4 shows that the Chinese readers had high activity in the left middle frontal gyrus when reading their L1, but surprisingly they also had high activity in the same region, which is used to process Chinese, even when reading English. Tan et al. (2003) here offer evidence to suggest that Chinese participants were applying the previously adopted strategy of processing Chinese to process English words and not automatically converting letters to sounds, which suggests that perhaps phonemic

awareness may not be necessary when reading an alphabetic language if a person's L1 is Chinese and affects their reading of their L2, therefore using the morphological awareness of processing their L1 to process their L2.

Paradis (2004) refers to a multitude of experts to show that the academic community is unsure about the reliability and validity of Tan's findings. Some support this theory and specify that people who develop their L2 later will utilise the same cortical areas when processing both their L1 and their L2, although others say that different areas will be used when the person gets to a certain level in their L2. Almost all seem to agree that lower level L2 speakers are using the same area of their brain to process their L2 as their L1; almost all seem to agree that fluent bilinguals are using different areas of their brain to process their L1 and their L2.

Even though the Chinese people in Tan's study use different parts of their brains to process English and Chinese, Paradis (2004) and Perfetti et al. (2007) suggest that some people, whose first language is Chinese but who have been schooled in English from a young age, utilise the same area of the brain as a native English speaker would do to read in their L1.

Unfortunately, I must conduct research for my case study without the luxury of an fMRI machine to observe which part of my participants' brains are more active when processing English. Due to the lack of scientific equipment available to me, my aim is to humanise my research and draw lots of information from the

students' personal experiences to understand how they have found literacy classes in both their L1 and their L2.

Introducing my case study: My participants and the data collection methods

The participants in my case study, whom I refer to as Alan and Amy, are two fourteen year-olds with literacy difficulties in English and/or Chinese who were schooled in Hong Kong, have a Chinese dialect as their L1 and presently spend most of the year living and studying in England. Since they have been diagnosed with literacy difficulties in their L1 while at school in Hong Kong, there was the presumption that they have the same difficulties in their L2. I hope to analyse the presumption of some experts that literacy difficulties in L1 automatically mean literacy difficulties in L2.

I am able to communicate in English with the two students and will be able to investigate without any language hindrance. I have opted to conduct two short, separate interviews with the children and collect information by communicating with parents and teachers as well as gaining access to literacy grades. Despite Alan having a USA passport and Amy having a UK passport, both would see (Cantonese) Chinese as their L1. Alan was schooled in Hong Kong until the age of eleven and came to his present school, where I teach, at the start of year 7. He started with a few EAL classes (just six per week after a term), but went into mainstream English after one year. Amy was schooled in Hong Kong until the age of ten, when she came to board in the UK during year 6. Due to

both students' evidence of literacy difficulties from their schooling in Hong Kong, our school grouped them into an academic set alongside native English speaking peers who attend around five classes per week in our SEN department. It is my supposition that our school, like many people, presumed that as they have literacy difficulties in their L1, they would also in English. After they had ceased all lessons with the EAL department (both within one year of being at our school), they continued with SEN classes alongside their native English speaking peers who have literacy difficulties.

While having EAL lessons, they were mostly having just six per week (having been extracted from mainstream English). Perhaps due to joining our school at a relatively early age when they were the only two students with a Chinese dialect as their L1, both spend almost their whole time in England speaking English with non-Chinese speaking peers. They both generally return to Hong Kong thrice per year, spend eight months in the UK and four months in Hong Kong. I interviewed them just after they had finished year 9, and before they started their two-year GCSE programme.

Due to the sensitivity of the matter, there are some questions that I felt more suitable to ask the children's parents or previous teachers rather than the children themselves. For some questions, the children would not have been able to remember clearly enough, or analyse themselves due to their young age. For other questions, only teachers or parents would have known the answer. I also had the worry that going into too much

detail about the literacy difficulty aspect of their educational history may have made them feel labelled with a title. With the assurance that they can opt out at any time, I set out asking them questions mostly about their feelings and impressions from learning in Hong Kong, learning in England and any comparisons between the two.

Talking with Amy

Amy was very talkative and smiled a lot. She was happy to help and gladly elaborated upon her answers without me asking her to give more information. While in Hong Kong, she speaks Cantonese "all the time", and during her time in England, she speaks English "all the time", although she speaks Cantonese to her parents when she telephones them. We joked about her life being split into "two different worlds", as it seems to be eight months of almost entirely English then four months of almost entirely Cantonese. Amy said that she presently felt more comfortable learning in English than in Chinese, and she clarified by stating that, as the curriculum has moved on since she last attended school in Hong Kong, it may be difficult to keep up with her peers in Chinese, were she to return.

Amy learnt an English curriculum for the first three years of her education in Hong Kong, only having Mandarin language classes taught in Chinese. After this period, she had one year at a state school in Hong Kong, where the entire curriculum was given in Cantonese. After four years of education in Hong Kong, she came to England, where she has been studying for four years. In eight

years of schooling, Amy has only had one year studying in her L1, Cantonese Chinese.

When she was studying in Chinese, she mentioned that she found it quite hard. Although she cannot remember that much about the experience, she said, "I know what I want to write, but I just can't write it out. I can't really remember the symbols, but I can say it (in Chinese)."

Unfortunately, it is unclear whether her inability to remember the characters (or symbols, as she says) is because of literacy difficulties or because her peers had had more time in the Chinese education system to dedicate to learning characters by rote. This lack of time in the Chinese education system in comparison to her peers is what she herself mentioned when asked whether she thought that she was at a disadvantage to her classmates in Hong Kong. She does not however, see herself at a disadvantage to her peers in her present school now that she is learning in English as she "learns quite quickly here".

Amy thought for a short while, before mentioning what she saw as her strengths and weaknesses. On the positive side, she said: "I understand what teachers say quite quickly." before elaborating to say that she understood a written story more than a spoken story. On the other hand, she feels that it is easier to say what she means, rather than write it; this is very common among people with literacy difficulties (Drysdale, 2009).

Part of Amy sees learning in her L2 as "a bit of a disadvantage", as she did not start learning to read and write in the UK

when everybody else did. She then optimistically proceeds by saying that the most important parts of each subject do not start getting taught until year 9 and 10, therefore saying that she arrived at her present school early enough to cover everything that she feels is necessary. This comment suggests that Amy sees the GCSE exams as the most important part of her education, rather than the process of improving her literacy.

In reply to the question of whether she sees having SEN classes as an advantage or a disadvantage, Amy said, "I don't mind if I don't have it as I don't think it's doing that much". She also thinks that she would not need SEN lessons if she went to a Chinese school and that she would prefer learning in Chinese as, she says, "it's my own language".

She acknowledges that it is important to learn both English and Chinese but says, "I want my Chinese to be better because China is getting up", referring to China's increasing power in the world. Despite having only learnt in Chinese for one year, it must have left an impressions on her, as she answered my final question in great depth and with great maturity; when asked whether she would prefer studying in Chinese or English, she replied, "I would be happier studying in Chinese but the way of studying in English is really good because in China you have to study every day".

Talking with Alan

Alan's answers were a lot curter than Amy's, but he generally does not talk as much as she does and is more of an

introvert. Teachers and his mum have said that he has opened up a lot in his three years at my school and, according to his mum, "he is only now beginning to gain confidence" after a "traumatic" time in the Hong Kong education system.

My colleague, who taught him EAL for a year, said that at the start of his time at our school, he would just sit and listen in class and not speak. Drury and Robertson (2008) mention a silent period when children find themselves in a new environment, a new language and/or a new culture, which could have been a reason for Alan's lack of speaking. As he began to open up in the classroom with his spoken English, he retained a reluctance to write in the EAL classroom.

Alan said that he spoke English 99% of the time while in the UK, but gives a different answer to Amy's language used while in Hong Kong. Alan stated that he spoke Cantonese 80% of the time whilst in Hong Kong and English 20% of the time. He communicates in English with his brother, who is ten years old and still studies in Hong Kong. By using English at home, English has become important in his life in Hong Kong as well as the language used during his time in England. Alan answered that he would now feel more comfortable with learning in English, rather than learning in Chinese again, but did not elaborate on why.

Alan learnt in a nursery school in Hong Kong from the age of three before moving up to a primary school and staying there until the age of eleven, when he moved to his present school, where he has been for the previous three years. Although the first eight years of his

schooling were in Cantonese (five, if you exclude nursery school), he had English classes from the age of three, and continued until he came to England, where English became the language of the curriculum. Alan found it difficult to compare himself to anybody, but admitted that in Chinese, he "probably couldn't keep up with them (his peers)". Alternatively in his present school he felt at no disadvantage to his peers, be it in English classes, SEN classes or any other subjects, such as history.

Alan was not very forthcoming with more information, and he seemed to be tiring as the interview continued. When I asked him about his strengths and weaknesses, I had to elicit his answers and other later questions were often one word replies. When given the option of preferring writing or speaking and preferring reading or listening, he selected writing and reading in English as something he preferred to reading and listening in English.

Perhaps his reluctance to offer spoken answers was a clue of this preference, but if he did indeed have literacy difficulties in English, I would have expected him to have selected aural and oral communication. When asked, he mentioned that he thought that it was an advantage to attend some lessons in the SEN department, but that he did not know why he felt that way. Differently to Amy, Alan said that he preferred learning in English rather than Chinese because he could remember the words better, but that it is equally important to learn in Chinese as it is to learn in English. Finally, when asked whether he thought that he would be happier learning in

English or Chinese, he gave one of his quickest answers: English.

Talking with Amy's dad and teachers and analysing Amy's progress in literacy since she arrived at my school

It has been very interesting looking into Amy's educational history. It seems that her experiences were not rare in the Chinese speaking world. While I was living in Asia, I taught many children who were learning in an international school where English was the language used for education, but who had Chinese as their L1. Having spoken to many parents of Chinese descent on the topic of their children learning their mother tongue, it was not uncommon to have parents tell me that their children can speak Chinese at home and be schooled in English.

Although some parents realised the importance of their child learning Chinese, there are many Chinese parents or parents of Chinese heritage who wanted their children to embrace the English language education system (usually based on a British or American curriculum), and leave Chinese for home life, seeing it as less important than English. There was the myth among some that this would naturally lead to bilingual fluency. An even more shocking idea that some parents held was that competency in Chinese will only hinder English ability. Nijakowska (2010) Cummins (2000) and Battle (2009), have set out strong evidence to disprove this and show that competency in L1 will only aid a person's L2 acquisition.

If the theories of Cummins, Battle and Nijakowska can be validated, then

perhaps Amy's literacy difficulties were exacerbated early in her education as she was schooled in her L2 before learning ample literacy skills in her L1.

Amy's father has told me that she studied at an international school in Hong Kong from the beginning of her formal education at the age of six. Except for Chinese class, which was incidentally Mandarin and not Cantonese, the curriculum at her international school was delivered entirely in English with mostly native English speaking teachers, and she received no SEN lessons for the first two years.

Amy's father puts the school's inability to identify her literacy difficulties earlier down to the fact that there was not much writing in the curriculum and very little testing. It was not until her third and final year at that school that they identified her literacy difficulties. Then, at the age of nine, after three years of studying in her international school, Amy attended a state primary school in Hong Kong, where the whole curriculum was given in Cantonese, except for English classes.

She received extra classes for helping to develop her literacy skills just one hour per week in a smaller class of seven students. It is not clear whether the school felt that she needed these extra classes as she had missed out on three years of schooling in Chinese, whether they were told about her literacy difficulties in English, or whether they tested her separately in Chinese. Her father reiterated Amy's own claims that she found Chinese classes harder than English classes, stating that her year in the Hong Kong state sector culminated in

Table 1—Amy’s Grade 7 Test Scores

	Sept 2013 12 yrs 8 mths	Jan 2014 13 yrs 0 mths	June 2014 13 yrs 5 mths
Internal spelling test	8 yrs 4 mths	-	8 yrs 4 mths
Neale Analysis of Reading Ability II (reading accuracy)		7 yrs 8 mths	8 yrs 5 mths
Neale Analysis of Reading Ability II (comprehension)		8 yrs 1 mth	9 yrs 10 mths
Edinburgh Reading Test	9 yrs 2 mths		

“her getting very poor scores in all areas”.

When Amy came to our school, my colleagues tell me that she had already been at a school in Norfolk for two terms. We, as a school, were able to cater for her literacy difficulties more suitably. Upon starting with us, she was considered shy, but with a good level of spoken English already.

Table 1 shows the results of some tests given by the SEN department while she was in year 7. Except for spelling, improvements had been made, but she was still at least three years behind the average for her age.

Talking with Alan’s mum and teachers and analysing Alan’s progress in literacy since he arrived at my school

Contrary to Amy’s schooling, Alan’s has put more importance on Chinese. His mum has told me that he started learning to read and write Chinese from the age of three. She mentioned that her son

enjoyed reading and writing before he started primary school at the age of six. In these first three years of nursery education, although Alan “took a longer time than children of the same age to recognise Chinese characters” and his handwriting was faint, he was “a happy child who loved reading and playing with Lego”.

Bogdanowicz and Ott (in Nijakowska, 2010) mention that faint handwriting implies a problem with motor skills and that late motor development is a sign of being at risk from dyslexia. There was already “early intensive writing” in Alan’s education, even before primary school. Although his entire schooling in Hong Kong was in Chinese, he started learning English from the start of his time at school and his L2 was his favourite subject.

Alan’s mum states that it was the move to primary school that “overwhelmed” her son and gave him an “abhorrent” learning experience. Having just turned six, Alan started at a “very competitive prestigious Chinese primary school in

Hong Kong", where he found it very difficult to recognise Chinese characters. The workload was too much, and he often found that he had two to three hours of homework every night and spent most of his weekend studying how to say and write Chinese characters. This was from the ages of six to eleven.

In the second year of primary school (aged seven), it was discovered that his fine motor skills were affecting him when writing Chinese characters and that he had dysgraphia. His mother has mentioned that his literacy difficulties are a lot less severe in English than in Chinese. When he first came to us and took literacy tests, he was shown to be below average for his year, although teachers were not clear as to whether this was due to literacy difficulties or EAL issues.

Recently, Alan has expressed a keen interest in studying computer science at GCSE, but due to timetabling issues, this subject is only available in the A- and B-bands, whereas SEN classes are only available in the C-band. Alan was told that in order to study computer science from September 2015 (year 10) he had to assure teachers that, along with his recent marks in literacy, he did not need SEN classes by achieving highly in the end-of-term examinations.

Having viewed his literacy scores from the last year, he is presently far ahead of his SEN class, and with scores reaching 120 (where 100 is the average achievement for a student of his age), tests have suggested that he does not have literacy difficulties in English. Additionally, his end-of-term marks were

very commendable and, in combination with many discussions between the SEN department, his tutors and his head of year, Alan has been allowed to move up to the B-band to study computer science and thus no longer have SEN classes.

Discussion and Conclusion

I feel that one of the most useful points that I have learnt from my literature review and case study is the importance of discovering from an early point in their education in English whether an EAL learner has literacy difficulties. Gathering information of previous literacy development is very useful, but if there is no evidence of literacy difficulties for whatever reason, other non-literacy based testing methods should be employed sooner rather than waiting until their L2 is at a higher level. Regardless of the outcome of the early tests, continuous monitoring should be adopted including observing the speed at which the EAL learner's literacy skills improve in their L2.

As I discovered in my literature review, there are some experts (Siok, 2010) whose research has lead them to believe that if you have literacy difficulties in an alphabetic language, you will not necessarily have literacy difficulties in Chinese and vice versa. Others (Hu et al., 2010) have come to the conclusion that even though neuroimaging shows us that English readers without literacy difficulties and Chinese readers without literacy difficulties use different parts of the brain to process their L1, dyslexic learners of both languages have a lower volume of grey matter in the same larger area of the left hemisphere of the brain.

My study of Amy initially seemed to strengthen Hu's theory as, on paper at least, she has literacy difficulties in both English and Chinese. However I do not feel that her literacy difficulties are clear enough in Chinese to use her alone as evidence. Even though she scored very poorly in the end-of-year tests, there is no evidence to suggest that this was because of literacy difficulties. The fact that she attended one hour of SEN classes per week in her Chinese school could have just been because of the evidence of literacy difficulties in English and the assumption that she would have them in Chinese. Even she points out that lower achievement in comparison to her peers could have been due to her Chinese peers having attended a Chinese education system for years previously while she was in an English international school.

The journey of Alan's educational history however, combined with the findings of Tan et al. (2003), offer substance to Siok's theory. There is evidence to suggest that Alan has literacy difficulties in his L1, Chinese, but Alan's improvement in literacy tests during his time in England suggests that he does not have literacy difficulties in English. His mother's information given to the school confirming his evidence of literacy difficulties in Hong Kong combined with low scores in the SEN test when he first arrived in England lead my school to assume he would have literacy difficulties in English. Using Tan et al.'s (2003) findings from their neuroimaging research and the subsequent articles analysing the validity of their study, it could be possible that a person whose L1 is Chinese can start learning an alphabetic language using

the same area of the brain that they use to process Chinese (middle frontal gyrus), then perhaps use a different part of their brain (inferior frontal and/or superior temporal) to process the alphabetic language after they have reached a certain level of fluency.

If a person still uses the same part of their brain to process both English and Chinese, then it stands to reason that they would have literacy difficulties in both languages (or neither). If a person is very fluent in their L2 and thus uses two different areas of the brain to process the two different languages, then Siok's theory paves the way for the possibility of literacy difficulties in one but not the other (although dyslexia in both could be possible under Siok's findings, Hu et al.'s research suggests that it would definitely be the case). Without the findings of Siok, Alan's recent improvements in literacy marks in English and removal from SEN lessons and into the school's B-band may suggest that he has merely 'overcome' his literacy difficulties, a suggestion which would not be accepted by the majority of researchers.

It is possible that Alan has reduced grey matter volume in the left middle frontal gyrus, and he used to use this area to process English reading as well as Chinese reading, but now that his English is being used at school and sometimes even voluntarily at home, he is using the superior temporal gyrus to process English reading, an area which for him does not have a reduced grey matter volume during processing. Recent testing over a long period of time implies that he does not in fact have literacy difficulties in his L2, as he is scoring higher than the

average native English speaking student. The important finding for me is that Alan seems to have literacy difficulties in Chinese but not in English. His initial problems in English literacy have been overcome due to immersion in an English speaking environment. For Alan's development, it does not matter whether the immersion helped Alan to use the superior temporal gyrus to process English or merely improved his English level. I think Alan's experience is clear evidence of the need to test most non-native English students for literacy difficulties upon arrival in the UK using suitable testing methodology. If their L1 is an alphabetic language and they have clear evidence of literacy difficulties in their L1, most researchers say that we can almost assume that they will have literacy difficulties in English as well. If there is no documented evidence of literacy difficulties in their L1 or their L1 is not an alphabetical language however, a test should be given soon after they have arrived and after they have settled into their new surroundings. A CAML would be the most appropriate form of testing for the majority of new pupils, so that EAL issues do not warp the results. This test should not be taken as a 100% accurate test for literacy difficulties, but merely an indication. After some time in the UK education system, a more suitable test can be given.

There is a lot of evidence and information missing from my case study, which prevent me from backing up my comments of the previous two paragraphs as much as I would have liked to. I was unable to use an fMRI machine or other similar device to measure brain activity in certain areas of

the brain of my participants during reading exercises in Chinese and English during their time at school in England. Additionally, due to the specific nature of my study and the fact that I wanted to speak with children whom I had already met and with whom I had already built up a good rapport, there were not many available participants. A broader spectrum of students would have given my conclusions more credibility.

My interviews with the students have taught me the importance that they see in their L1. Even though some children may look down upon using their L1 when living in the UK, as they see English as a way to fit in with their peers at their new school, in today's world I feel that Chinese differs from many other languages. Both Amy and Alan have a sense of pride in their L1 and can see the importance of learning Chinese. China has become a strong power in the world, as Amy herself hints at during our interview. The language (and culture) seems to have become increasingly popular among both people of Chinese decent and other races.

The literature review not only opened my mind to the findings of literacy difficulties in two very different languages, but also showed me how recent the study of literacy difficulties in a person's L2 is, especially when analysing language comparison in languages as diverse as Chinese and English. My case study allowed me to look closely at the lives of Chinese speakers who are learning in English and have literacy difficulties in at least one of their two main languages. The most interesting part of my study was conducting the interviews with Amy and

Alan and the correspondence that I had with their parents. These helped me to both appreciate how difficult it can be to live and study in a country where your L1 is not spoken and realise the adaptability of younger learners. It was amazing to see (from teachers comments, parents comments and from speaking to the students themselves) that once their very specific educational requirements had been catered for, they were more able to enjoy school life and become more confident in themselves as people. This confidence is paramount for educational progress and the development of the character of a person.

After having finished my article and having realised the problems that could occur from testing an EAL student for literacy difficulties either too early using too much of their L2 or too late, I have decided to use CAML testing methods, acquired from ELT Well, to test non-native English students who started at our school this September (2015). I will bear in mind that the tests will not be an entirely accurate indicator of literacy difficulties, but will merely alert me to the children who have the potential of having literacy difficulties in their L2.

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Dyslexia, Success and Post-Traumatic Growth

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Abstract

This paper looks at the origins of success in dyslexic adults, using both an online survey to locate successful dyslexic adults (N=101), and a sub-group of interview participants (N=20) to understand the nature and motivation of success in adults with dyslexia. School trauma was a focus of the study, using the theory of 'Post-Traumatic Growth' as a means to understand how individuals can have a traumatic and humiliating schooling, but still gain post-school success through positive use of trauma.

The 30 item online survey reflected the 8 main item investigative interview script, so that both quantitative and qualitative data could be studied. The items looked at: personality descriptions by others, supportive parents, trauma at school, avoidance at school, excellence in non-academic subjects, leadership qualities, team-building, delegation, gut intuition, use of mentors, motivation, unique selling points (USPs), risk, failure, pursuit of passions, creativity and entrepreneurship. A consistency of response was found between the two groups researched, with comments from the interview study enriching the responses from the online survey to present a coherent picture of success.

The interview study also proposed that school trauma could become a positive force in creating successful and resilient dyslexics, with interesting responses as participants coped with the concept of 'what doesn't kill you makes you stronger' by the German philosopher Friedrich Nietzsche (1888).

Keywords: Dyslexia, success, school, post-traumatic stress disorder, PTSD, post-traumatic growth

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Background

This paper will investigate dyslexia and success, looking at the motivations and processes that a dyslexic experiences through school, turning childhood school oppression into adulthood workplace success.

Dyslexia

Definition: 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. (Rose, 2009)

The recent influential but controversial review of literature by Elliot and Grigorenko (2014) argue that the term dyslexia poorly defines a condition that affects not only reading, writing, spelling, but also short-term memory, balance, organisation, visual difficulties. There are also difficulty with no single agreed model of diagnosis, with diagnosis being made through the recognition of

difficulties in a range of skills with various assessment measures, thus diagnosis is made of 'dyslexic type difficulties'. Literature argues that no two dyslexics have the same range of difficulties, a view supported by UK Government's report (Rose, 2009).

It could be argued that there are two main perspectives concerning dyslexia, one looking at the root causes, be it through heredity or damage in early childhood, with a focus on the deficits that such a condition brings and how it can be overcome through remedial educational interventions. The second perspective looks at the emotional and psychological effects of having a different learning style than that of their friends, family and peers.

This paper is concerned with the second perspective, looking at both the emotional effects of school, and how dyslexic individuals use such effects in both their child and adulthoods to bring about positive change.

The typical school experience for dyslexics

Scott (2004), Edwards (1996) and Alexander-Passe (2010, 2012, 2015a) note that dyslexics commonly experience adversity as children, both educationally in school and socially through exclusion and bullying by peers due to their learning differences. Snowling (2000), Hulme & Snowling (2009) and Thomson (1996) note that dyslexics, due to their difficulties in phonological processing, spelling, grammar, reading and writing are at a distinct disadvantage in mainstream education, as Dyslexia

Action's recent report (2013) note that teachers lack the skills to effectively differentiate for dyslexic and other different learners in their classes. They also highlight the lack of special educational needs (SEN) training for new teachers and infrequent continual professional development (CPD) of current teachers.

Humphrey and Mullin (2002) and Humphrey (2003) identified low self-esteem in dyslexics, especially school-aged dyslexics, and Scott (2004) and Alexander-Passe (2010, 2015a) have argued that bullying by both teachers by their lack of differentiation/understanding and peers through ostracising and exclusion can lead to depression, withdrawal, self-harming and Post-Traumatic Stress Disorder.

Success

Definition: 'How each of us define success is deeply personal. We each have our own definition of success, for some success is about what we accomplish for others it's who we're becoming and still other it's what we own. The central issue is not what your definition of success contains or if it's right or wrong. Instead the central issues is have you created your own personal and organisational definition of success?' (Ambler, 2013)

Success is highly subjective and success to one is not the same to all, as noted by Krakovsky (2014), success is extremely hard to research.

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, 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.

In the case of dyslexics, success has been a recent focus however very little empirical research has been directed in this area. Logan (2009, 2010) investigated dyslexic entrepreneurs in both the UK and USA and found a higher number percentage of dyslexics were self-employed entrepreneurs than worked in large corporate organisations. Logan found that many felt unable to survive in corporate organisations and difficulty following strict working rules prohibited advancement.

There have however been many interviews of famous dyslexics (Coppola, 2007; Branson, 2015; Cass, 2011) e.g. Sir Richard Branson (UK-music and airline entrepreneur), Charles Schwab (USA-financial entrepreneur), Lord Richard Rogers (UK-architect), and Tom Cruise/Whoopi Goldberg (USA-film stars) etc. These have focussed on specific examples of successful dyslexics but have not isolated common trends apart from troubled schooling. One of the few examples is Fink (2002) who conducted an interview study of 60 successful American dyslexics looking at common

traits. Many traits were identified e.g. pursuit of passionate interests, persistence, and empathy of others experiencing struggles in life. This paper aims to further develop such research with a mostly UK sample. An important contribution to the field comes from Nicolson (2015) who in his book, *Positive dyslexia*, outlines how to craft your environment towards success building on your signature strengths.

However not all dyslexics are successful and it is argued that many choose careers that do not play to their strengths e.g. administration (Alexander-Passe, 2012) resulting in a low self-esteem/self-concept, however many end up in prison. Dyslexia Institute (2005) and Henderson (2004) argue that high percentages of dyslexics, many undiagnosed, enter the prison population in the UK, US and Finland. Prison projects (Hewitt-Mann, 2012) suggest that the lack of such success occurs for various unknown reasons, however a lack of early identification and intervention seems evident.

The Disability Paradox

Researchers have recently begun to question why many individuals despite having disabilities enjoy a good standard of life, and have become successful. Rather than withdraw and be ashamed of their disabilities e.g. being in a wheelchair, having depression, suffering from MS, or a life threatening illness, they are thriving. The paradox (Levine, Feldman, Elinson, 1983; Lerner, Levine, Malspies, D'Agostino, 1994) is that too many looking at them would imagine a poor life satisfaction living an undesirable

existence, however research suggests quite the contrary. Albrecht and Devlieger (1999) using a qualitative methodology with 153 individuals with serious and persistent disabilities, found 54.3% reported an excellent or good quality of life, suggesting the paradox. The research found after their initial shock of disability (developing MS, AIDS or diabetes, losing limbs in a car crash etc); the ability to bounce back came from looking at positives, reassessing life's goals, and finding religious faith etc. Those who felt they had a poor quality of life manifested defeatist tendencies and a detachment from life. Albrecht and Devlieger concluded that those perceiving a high quality of life found a 'secondary gain' occurring with individuals with disabilities 'adapt[ing] to their new conditions and make sense of them, finding enriched meaning in their life secondary to their disability, and reinterpret their lives and reconstitute personal meaning in their social roles'. They 'understand their condition, take control, and introduce an order and predictability in their lives. They also learn what is and isn't possible, and develop a value set that helps them make sense of their disability, and harness support and other networks to receive and support others' (p. 986). In essence they are empowered rather than disempowered by their disabilities, finding the resolve to improve the world, and find a role for them in society. Interestingly the difficulties and scars come from the discrepancies: what they would like to do to what they can do, what they used to be able to do, and what they can now do.

The paradox highlights the importance of

personal experience with disability: defining the self, one's view of the world, social contexts, and social relationships. Lys & Pernice (1995) suggests there is a negative bias of attitudes and expectations by the public and health care workers towards persons with disabilities. Connally (1994) found public perceptions of a poor quality of life for individuals with disabilities. This can be understood by the work of Stiker (1997) that disability introduces chaos, ambiguity and unpredictability into the social world of the individual and community. Albrecht and Devlieger suggests that 'disability shatters preconceived expectations and norms, and calls accepted values and notions of well-being into question' (p. 980). Antonovsky (1987) and Lundberg (1997) suggest that individuals with disabilities have the capacity to find meaning, value and motivation to persist in the face of adversity, thus meaningfulness.

Post-traumatic Stress Disorder (PTSD)

Definition: PTSD, or post-traumatic stress disorder, is an anxiety problem that develops in some people after extremely traumatic events, such as combat, crime, an accident or natural disaster. People with PTSD may relive the event via intrusive memories, flashbacks and nightmares; avoid anything that reminds them of the trauma; and have anxious feelings they didn't have before that are so intense their lives are disrupted (APA, 2015a).

PTSD is a relatively new term and was identified in the study of those who returned from war zones, formerly the conditions were called 'shell-shock' to

define similar traits. In more recent times the term has been the focus of many research studies and causes of such trauma have been identified in numerous unknown areas, according to the latest DSM-5 guidelines e.g. PTSD in children younger than 6 years and PTSD with prominent dissociative symptoms (either experiences of feeling detached from one's own mind or body, or experiences in which the world seems unreal, dreamlike or distorted) (APA, 2015b).

In the case of dyslexics, Scott (2004) and more recently Alexander-Passe (2010, 2015a) have argued that many dyslexics suffer from PTSD from adverse schooling. Alexander-Passe found in a study of N=29 dyslexic adults, many with depressive symptoms, that PTSD was evident when they needed to return to school for their own children, symptoms manifested included: resentment and anger towards teachers, severe anxiety when seeing and made to sit on primary school chairs, smelling floor cleaners, sitting waiting outside the Headmaster's office, hearing their child's teacher not listening to their concerns about their possible dyslexic child, and seeing children's work being pinned to the wall as their own was never deemed good enough.

Post-Traumatic Growth (PTG)

Definition: the term refers to positive psychological change experienced as a result of the struggle with highly challenging life circumstances (Calhoun & Tedeschi, 2001).

PTG is a very new term introduced by the American Psychiatric Association in (1980), and whilst examples of PTG have

been documented from the last century e.g. Roosevelt renewed empathy when being struck down with Polio and then became President of the USA, cancer sufferers and air craft crash victims who have been moved to have a renewed love of life and focus, Holocaust survivors who have been moved to share their traumatic and life changing experiences on a world wide stage etc. Linley & Joseph (2004) argue that 30-70% survivors of trauma have said they have experienced positive change in one form or another.

The term has recently been used to trigger new research to understand the growth gained through trauma and adversity (Calhoun & Tedeschi, 2006; Weiss & Berger, 2010), as a related positive psychology stance (Seligman, 2011).

Tedeschi & Calhoun (2004) argue that major life crises typically result in unpleasant psychological reactions, however PTG is argued to happen when attempts are made to adapt to highly negative sets of circumstances that can engender high levels of psychological distress. Tedeschi & Calhoun after reviewing available literature, argue that growth is more frequent than psychiatric disorders following high levels of trauma; however note that growth and personal distress often coexist, and stories over the centuries point to growth from distress e.g. Christianity: after Jesus's death his disciples whilst traumatised go onto create a powerful new religion, and Islamic: Mohammed's suffering is instrumental to his great work.

Examples of PTG have been documented

in those surviving/suffering from:

- ◆ Bereavement (Hogan, Morese & Tason, 1996)
- ◆ HIV infection (Cadell & Sullivan, 2006)
- ◆ Death of a child (Keessee, Currier & Neimeyr, 2008; Znoj & Keller, 2002)
- ◆ Heart attacks (Laerum, Johnsen, Smith & Leving, 1987)
- ◆ Sexual assault and sexual abuse (Frazier, Conlon & Glaser, 2001)
- ◆ Combat (Elder & Clipp, 1989)

It is argued by Tedeschi & Calhoun (2004) and Schoulte, Sussman, Tallman, Deb, Cornick, Altmaier (2012) that the following PTG are typical manifestations:

- ◆ positive psychological change (Yalom & Lieberman, 1991)
- ◆ discovery of meaning (Bower, Kemeny, Taylor & Fahey, 1998)
- ◆ positive emotions (Folkman & Moskowitz, 2000)
- ◆ positive reinterpretation (Scheier, Weintaub & Carver, 1986)

Tedeschi & Calhoun define the growth part of PTG comes not as a direct result of the trauma, but the individual's struggle with the new reality in the aftermath of trauma that defines if PTG is occurring. They use the metaphor of an earthquake, in that it is not the shake that causes the psychological trauma, but the effects of the shake in the building, lose of life, the change from predictable to unpredictability of life, and changes to their regular life pattern which is traumatic. Wright (1989) suggests that PTG is the consequence of psychological survival to coexist with the trauma. McFarland & Alvaro (2000) suggest that

most people have positive life changes without a trauma; however Tedeschi & Calhoun (1996) note that those who have experienced PTG have higher levels of personal change.

It is argued with PTG that it is not a return to baseline levels of activity that defines whether an individual has PTG or not, it is the improvement that is experienced, and that it is more common in adolescents and adults than children because PTG implies an established set of values changed through trauma.

It is argued that there are distinct differences between the concepts of post traumatic growth and resilience/hardiness, optimism and sense of coherence:

- ◆ Resilience – the ability to live a purposeful life after hardship or adversity (Garmezy, 1985; Rutter, 1987)
- ◆ Hardiness – a tendency towards commitment, control and challenge in response to life events (Kobasa, Maddi, Puccetti & Zola, 1985)
- ◆ Optimism – the expectation of positive outcomes to events (Scheier & Carver, 1985)
- ◆ Sense of coherence – adding meaning to events to manage the stressful events (Antonovsky, 1987)
- ◆ Post traumatic stress – the ability to go beyond the normal ability to resist and to not be damaged by highly stressful circumstances, indicating the ability to cause personal/career transformations (Calhoun & Tedeschi, 2004)

Research to understand the activity of PTG was initiated by Joseph & Linley

(2005, 2008) and categorised as using person-centred ‘organismic valuing theory’ in that trauma causes a break down in self-structure (personal concepts of themselves and their place around others). People are intrinsically motivated towards processing new trauma-related information in ways to maximise their psychological well-being. Using the metaphor of a shattered vase, imagine that one day you break it by accident. You can either try to piece it together, to try to badly re-form the original shape, or you use the pieces to create a beautiful new mosaic. If your perspective is to bin the pieces and give up, or try and rebuild in entirety as the original vase – this is an impossible task as it will still be fractured, vulnerable and prone to break again. But if you take on board that a return to the original will be impossible and that you need to create a new use for the pieces, then you are more realistic and a new use can be considered.

Gunty, Frazier, Tennen, Tomisch, Tashiro, Park, 2011) and Zoellner & Maercker (2006) question PTG in that there is a weak correlation between the actual and perceived growth, and that the growth is illusionary as a way of coping with distress. Peterson & Seligman’s (2003) before and after studies have demonstrated that growth occurs, but the measure used was relied on biased non-medical and somewhat biased personal opinion (e.g. The Psychological Well-Being Post Traumatic Changes Questionnaire-PWB-PTCQ by Joseph, Maltby, Wood, 2012).

In the case of dyslexics, there is very little to find. Alexander-Passe (2010) argues the concept of the two condition

coexisting with a study of N=29 adult dyslexics. That a pre-school child is normally taught through multi-sensory activity e.g. play and hands on learning with the need to read or write. Thus when a dyslexic child starts school, they come with an established set of rules (a belief system and assumptions about themselves in the world, which has guided them successfully to this point) about learning and believe themselves to be normal learners. However at the point that reading and writing is introduced, there is a change and a realisation that they may or may not be able to develop in line with their peers. The first trauma takes place in that they see their peers understanding and learning a new language of learning and they are unable to. The second and longer trauma is the ongoing effect on others of their inability to learn like their peers.

Summary

The empirical review suggests that dyslexics are affected as much as from their learning differences, as by how society views their difference. Such differences go beyond reading and writing, and affects their interactions with others. Trauma at school is a common experience for young dyslexics and it is argued that this trauma is both distressing and occurs continuously over a 10 year school career (resulting in post traumatic stress. It is argued by this author that dyslexics either rebuild positively their school/post-school lives (post traumatic growth) or remain shattered and fragile and which can result in unsuitable careers or a path ending up in prison.

This paper looks to an investigative qualitative study of 'Dyslexia and Success' to understand the personal histories of many successful dyslexics, and reflect this to their personal childhood histories of possible school trauma.

Methodology

This study used two methods to collect data to enrich this study:

- ◆ An online survey investigating 'dyslexia and Success' using SurveyMonkey.com. It aimed to promote the project and recruit volunteers for the second part of this project, investigating the perceptions of many successful dyslexics towards success and whether school oppression was a motivation for their success.
- ◆ A qualitative investigative interview study of N=20 successful dyslexics, selected from a pool of N=56 successful dyslexic participants from the online survey who offered to be interviewed.

Online survey study

This online survey of 30 items investigated a wide range of views concerning the dyslexic school experience, along with motivations for success, coping strategies used for success, traits of a successful dyslexic, and lastly the motivations for dyslexic success. The author marketed the survey on a new Twitter feed for the project (#DyslexicSuccess) and on his website (www.dyslexia-research.com) along with Dyslexia forums and dyslexia mailing groups. The author also actively researched both the internet and print

media for individuals that were both publically dyslexic and were successful in their chosen fields.

The sample was filtered to remove the following; non-dyslexics and those who were not assessed by either a qualified specialist teacher or educational/clinical psychologist. This left a sample of N=101:

- ◆ N=52 Males and N=49 Females;
- ◆ N=7 were 10-20yrs old, N=19 were 21-30yrs old, N=26 were 31-40yrs old, N=26 were 41-50yrs old, and N=23 were 51yrs plus;
- ◆ N=25 diagnosed at nursery/primary school, N=19 at secondary school, N=33 at university, and N=22 in the workplace
- ◆ N=31 with a bachelor degree, N=37 with a bachelor and Master degrees;
- ◆ N=44 employed by others, N=39 were self-employed, N=8 unemployed/retired;

Investigative interview study

20 successful diagnosed dyslexic adults were interviewed using an investigative script of 6 main items with a number of sub items. The interviews were conducted using Skype or Facetime allowing for facial prompts to be used, and allowed participants to be put at ease through facial empathy. The interviewer disclosed his own dyslexia to put participants at ease and to explain his own school background. This was felt important as trauma was likely to be discussed.

Interview participants were selected as they had the ability to prove their diagnosis, as each had been diagnosed

by either an educational/clinical psychologist or specialist teachers. Evidence was sought to support their diagnosis claims. Data was kept in a secure locked location.

Before the start of each interview the interviewer gave an overview of the project and detailed that any question posed could be omitted and that the interview could be stopped at any time without giving a reason, however none took this option. Names were changed to provide anonymity. Interviewees were asked if they wished to proceed with the interview and all agreed.

The results were digitally audio recorded and transcribed. The transcripts were then sent to participants to check and correct/amend where needed. They were advised that their interviews would not be used in their entirety and would be cut up into themes. They were assured they would receive a copy of any paper or book to check its use.

The interview data was split into questions and sorted, so themes could be located within the data. Quotes were then highlighted and combined to create themes, which were then compared to previous empirical studies for reflection. This was a form of Interpretative Phenomenological Analysis-IPA (Smith, 2004) as used successfully in Alexander-Passe (2010, 2015a) to create useful themes for further investigation.

The 20 included:

- ◆ N=11 male, N=9 female
- ◆ N=1 (10-20yrs), N=1 (21-30yrs), N=7 (31-40yrs), N=5 (41-50yrs), N=6 (51-

- ◆ 60yrs)
- ◆ N=18 based in the UK, N=2 based in the USA
- ◆ N=15 diagnosed by an Educational psychologist, N=5 diagnosed by a specialist teacher
- ◆ N=1 diagnosed in pre-school, N=3 diagnosed in primary school, N=5 diagnosed at secondary school, N=4 diagnosed at university, N=7 diagnosed at work
- ◆ N=15 no signs of mental health, N=5 had mental health issues

From the sample selected, the following evidence was given of their success:

- ◆ Multi-Entrepreneur, started at 13yrs old
- ◆ Owns a successful IT website design company
- ◆ Owns an IT project consulting company
- ◆ Owns a consultancy for police forces
- ◆ Owns an Foreign exchange trading company, Multi-Entrepreneur
- ◆ Owns a successful disability training company
- ◆ Owns a highly successful training charity in prisons
- ◆ English teacher with a postgraduate degree
- ◆ Film producer, founder of a disability podcast service website
- ◆ Engineering project manager
- ◆ MBE, social entrepreneur, Owns a building company
- ◆ Social entrepreneur, TV apprentice participant
- ◆ Award winning TV and Film producer
- ◆ Winner of an apprentice TV show, inventor

- ◆ Retired Lieutenant Colonel of the US Marines
- ◆ One of the youngest Head teachers in the UK
- ◆ Developed software to streamline building costs for a large public body
- ◆ Learning and Training Manager
- ◆ Owns a counselling charity for dyslexics, qualified counsellor
- ◆ Social entrepreneur

The sample evidence also found 7 had gained a first degree, and 8 gained a master degree in addition to a first degree. The above evidence of their success and their academic success was deemed sufficient to describe the sample as 'successful dyslexics', according to the criteria indicated earlier.

Results- Interview study

Background

How would someone describe you?

- ◆ Participating leader, nurturing, tolerant, trustworthy, loyal, hardworking (PAT)
- ◆ Down to earth, humble (PUY)
- ◆ Creative, determined, happy, positive, different, quirky (TPE)
- ◆ Determined, tenacious, childish, interested, curious, kind, caring, give things a go at most things (SDE)
- ◆ Full of passion, enabler of people (EWD)
- ◆ Very unpredictable, totally non-linear, won't follow rules, quite short-tempered, emotional (GHD)
- ◆ Perfectionist, caring, careful (ESA)
- ◆ Intimidating to work with,

- ◆ inaccessible and intellectually challenging, enabler of people (AMJ)
- ◆ Hard-working, quite warm, friendly, welcoming, willing to help, can't say no to causes, charismatic, intelligent, creative, cautious, can over analyse problems, incompetent, a thinker (AHD)
- ◆ Global thinker, perfectionist, poor attention to detail, good listener, a broad-brush man (ASG)
- ◆ Driven, outgoing, draws in trust, loyal (JBB)
- ◆ Confident, outgoing, a stickler for detail. I'm pretty headstrong, what you see is what you get (PSS)

The evidence suggests several themes: determination, enabler of people, hard-working, people-skills, global thinking, but challenging to work with due to non-linear thinking and the inability to play by traditional rules.

Home-Life/Supportive Family

- ◆ I was perceived as being rather precocious and would ask a lot of questions (PAT)
- ◆ I knew I was different, I knew from an early age I questioned things e.g. why are trees tall? No other child I knew asked those, but I didn't stop until I got a good answer (PUY)
- ◆ I found like most kids I liked the outdoors, but unlike most kids I would actually find things, like pottery and things from the people that lived a long time ago. I had quite a collection and my parents would boast we had an archaeologist in the family (TBA)
- ◆ I think also my parents were quite positive on focusing on what you're good at as well. Not getting worried about being bad at, but getting on with what 're good at, but carry on working hard (TBA)
- ◆ What I remember is the amount of input my mom had. She encouraged me to draw and to write diary entries (AHD)
- ◆ My mum, she couldn't teach me. I remember she would try and sit down all weekend to help me with my writing or maths, but it just didn't work out. So I was sent to a tutor to hot-house me to pass the exam but not learn the subject (NHN)
- ◆ My parents have always been very, very supportive (TPE)
- ◆ My mother, I would never have got through school if it hadn't been for her. If I didn't want to go into school, she didn't send me. That's how I coped with school. She always made me do my homework. She used to sit down at the kitchen table with me for 3-4 hours a night.
- ◆ It was effort not results that mattered to my mum (PUY)
- ◆ Fortunately, I had my mum, who was very supportive, as she was always the antidote to anything that I did wrong at school. If my self-esteem would have gone down, it didn't, because she was so encouraging. It balanced itself out (NHN)
- ◆ As a young man my father told me that I had grown out of it (dyslexia) and to stop using it as an excuse. He told me to stop referring myself as being dyslexic, as there was no proof of it, as he had made the school destroy the evidence and

threatened them with a lawsuit if they ever called me dyslexic again. So I went through my adult life thinking I had been dyslexic but had grown out of it (TBA)

- ◆ My father thought as he could not see dyslexia it was as excuse, my mother thought I was outwardly a very intelligent kid, so thought I was lazy and dumb, and didn't buy into it either. You know back then, to some extent now, it is seen as a crutch for the dumb and lazy (TBA)

The evidence suggests that parents saw they were different early on and were generally supportive, both in academic and non-academic activities. Many tried to teach them but found this very hard and bought in specialist help. What seems to stand out is the mind-set that it was the 'effort' not the 'achievement' that mattered most. This support helped to rebalance the negativity they experienced at school. In one case, parents did not understand the nature of the dyslexic difficulties and were in denial, thus causing secondary stress at home.

School

- ◆ When I went into 1st grade the wheels came off and I had a rotten teacher. When she is dead I will dance on her grave, not just once. She was horrible! (TBA)
- ◆ The more you hear how stupid you were, and lazy you are, the more it becomes your reality. Lazy & dumb. So I went on, trundled through school, it was horrible. A never ending stream of misery.
- ◆ Nobody knew I had difficulties at school (AMJ)
- ◆ I was sent to a school for dyslexics, but it just turned out to be a school for un-academic children (JBB)
- ◆ We talk about PTSD about soldiers coming back from combat. I have been in combat, but my issues are still with my time at school. I have bad dreams (nightmares) about being in college and thinking about how I will cope. My dreams as a soldier are positive but my dreams of school are never happy, they are dark (TBA)
- ◆ Homework for me took hours and hours. Four or five hours when it probably taking one of my mates an hour (PSS)
- ◆ Horrible years. Absolutely horrible, I was humiliated by teachers (PAT)
- ◆ The way they taught me was to keep asking questions about something and I had no idea what it was they were asking me. So it was done as a form of ritual humiliation in a way (PAT)
- ◆ Being told by a teacher 'There's not a lot going in there is there?' (PAT)
- ◆ Copying from the board: it was horrendous, I hated it. It was a waste of time for me because I could never take things down fast enough. An absolute waste of time (PUY)
- ◆ I have memory of being taken to the front of the class and asked to demonstrate how useless I was at using scissors (NHN)
- ◆ I hated it. I hated reading out aloud. My handwriting, necessarily, was therefore also dreadful. I think partly to the fact I didn't know what the letters were I was supposed to write down. I also couldn't read my own writing at all, so couldn't take

- ◆ down notes (NHN)
- ◆ The teachers were abusive and unpleasant, I used to plot their destruction (GHD)
- ◆ Extremely traumatic, I would go as far as to say abusive, ...getting consistent reinforcement that you are failing time after time without the teachers asking why and helping you (ESA)

In summary, 8 enjoyed school, 12 found school traumatic, and the majority (17) felt they were unsupported at school, while only 3 felt supported

The evidence supports the concept that many dyslexics, in this sample of successful dyslexics, had traumatic school experiences, and that they felt misunderstood by teachers on a daily or hourly basis. Several note how they were plotting their destruction or deaths as a result of the trauma they caused. What shines out is the lack of understanding by teachers and the humiliation that many experienced, with only 8 enjoying school.

Avoidance of tasks

- ◆ One tried to do as little as possible, sit at the back of the class or keep one's head down and just hope that, you know, they didn't spot you and say 'will you read the next two paragraphs'. On god, I hated that. So yes, I was consciously trying to avoid reading aloud (JBB)
- ◆ I would always try and avoid reading aloud and reading. My friends would joke that I was a comedian, because we'd go into a French lesson (my worst subject) and it's like I just disappeared. I'd walk out and I'd sort of reappear. I made sure I looked like I was attentive and you look down, you look up but you never look at the teacher when he's asking for all sorts of things. You always made sure that you're concentrating, then he didn't pick on you for not concentrating (TPE)
- ◆ You just made sure you didn't catch the teacher's eye (TPE)
- ◆ It wasn't so much that I chose to write the bare minimum. It's just that I literally, I couldn't figure out how to write more about things sometimes (SDE)
- ◆ Teachers lose patients and just think you're trouble rather than you're actually struggling. I was labelled difficult and disruptive in English and French rather than slow (SDE)
- ◆ I would shy away from writing (PSS)
- ◆ I think it suited me to be the cheeky one at the back of the class making everyone laugh (PAT)
- ◆ I would write the absolute minimum I would have to do, so I was not tripped by sentences going awry and wrong (NHN)
- ◆ My whole life at school was about not being discovered, keeping my head down and out of trouble, and that fear has stayed with me for 35 years (JEA)
- ◆ I coped by not going into school on Mondays and Thursdays, because we had spelling test on those days. One year they made a fuss as I had missed 71 days of school, which they felt was unacceptable (JEA)
- ◆ The worst nightmare was reading around the class, so that was a question of distraction to stop it

getting to me, not misbehaving, but asking the teacher to explain something, and then something else (JEA)

- ◆ I became a master at doing the minimum, and taking any punishment from that. It was a great education in itself (ASG)

The evidence suggests that this sample were creative in their means to survive the continual trauma of mainstream education, in that they used avoidance of reading, writing and spelling to maintain their self-esteem. Avoidance to avoid discovery is noted in several of the quotes, and using camouflaging to avoid detection, fear is noted by many.

Excelling in subjects as a child

- ◆ Photography, skiing, sailing (JBB)
- ◆ Sports, Art and Design, and selling my ceramics and wheeling dealing (TPE)
- ◆ Football and wrestling (TBA)
- ◆ Music (SDE)
- ◆ Drama, Art & Design (PS & PU)
- ◆ Art, design, music (JLA)
- ◆ Spoken German (EWD)
- ◆ Business ventures, stocks and shares, poker, photography (GHD)
- ◆ Sports (AHD)
- ◆ Music (AMJ)

N=5 excelled at sport at school, N=7 excelled at drama at school, N=7 excelled at art at school, N=3 excelled at ICT at school

The above evidence suggests that many of this sample enjoyed many forms of success at school, however most were in non-academic subjects, and those areas

where careers are not generally created from. However in the case of this sample, it could be argued that this success allowed them to rebalance school-trauma and to develop self-worth.

Working Relationships

Leadership

- ◆ People find you, because they look at you and think 'that's interesting; I want to come and work with this team or person'. I'm a manager that wants to empower people (JBB)
- ◆ I would always lead from the front, I would always take control of situations (NHN)
- ◆ I'm good in situations, but most of the time with people, I'm not very good at that. That was also what others said about me. My daughter tells me 'dad you're not a team-player, are you? (NHN)
- ◆ I come up with a vision and pull people with me (EWD)
- ◆ I lead from the front by protecting my team (AMJ)
- ◆ I'm a marvellous motivator, as a manager I'm motivating 'this is what we're going to do, this is why, it's going to be great'. I inspire people but they get upset as they don't want to let me down. I breed loyalty (AMJ)
- ◆ I guess I sometimes lack confidence, I guess it's quite difficult to lead unless I feel confident. I guess it comes back to perfectionism (AHD)

The sense of leadership in this sample is interesting, as it would seem many are

effective leaders of people and develop loyalty in their teams, however some lack the people skills to be an all-round leader.

Team-building

- ◆ My team building skills are excellent, from school to the battlefield (TBA)
- ◆ I'm fairly good at pulling in the right people, and I support their development (PAT)
- ◆ I'm very good at leading people, I like to think, and it's because I'm very good at making sure everybody is involved (PUY)
- ◆ I'm extremely good at getting teams to succeed and motivating them, but I'm completely exhausting for the people in them. After 4-5 years they feel completely burnt out, so need a rest from me. But quite a lot come back, but more on a part-time basis, because they say they can't physically take the pace and pressure at which I work, 'it's the most enjoyable and exciting part of my life, but I can't live that way, it's too demanding'(GHD)
- ◆ I'm able to identify other people's strengths, I don't have an issue working with other dyslexics (PUY)

Several note their people skills, leading and developing/skilling teams so that they can be successful, hence being a motivating element. But where does this ability to know people's strengths come from? We will be looking at 'following your gut' later in this study.

Delegating

- ◆ I expect my team to be clairvoyant, which is quite difficult for them. I know exactly what it is I'm communicating, but I don't necessarily express it in a way which they can understand. I tend to think in concepts, but it takes me time to take those concepts and translate them into words. I end up with this incredibly disconnected communication; I wouldn't say I find it easy. (GHD)
- ◆ It took me 15 years to realize that everybody else doesn't see the world the same way I see it. I usually make 2 or 3 leaps that are beyond what most people are considering (JLA)
- ◆ Sometimes I need to over-explain some things because I have to bring people along my journey of thinking (PSS)
- ◆ Nowadays, typically I'll dive in there, solve all the problems that need to be solved to deliver the solution they want. Then I'll cut them up and give them to a techie. If he's lucky he will know how I want to do it the first time. I mentally chop it up into bits that I feel relate and are important and that people can handle, as I can't give them all of it as it's too much for them to handle (ASG)
- ◆ I build a 3D model of what software I am trying to build, as it allows me to understand it in a global sense and to solve the problems, however I need to chop it up to let others understand my processes and ideas (ASG)
- ◆ I'm good at judging people. I've no

- idea why particularly, but it's a skill I'm blessed with. My last team was 400 people (ASG)
- ◆ I'm a global thinker. I'm not the person who can implement ideas, but the person who can drive ideas forward, but I'm not an implementer, so I tend to hire people who can implement, because their skill set is different from me (GHD)
 - ◆ I'm a brilliant delegator because I can't do anything (AMJ)
 - ◆ I build a beautiful double helix in 3D but if I'm trying to explain this to linear thinkers it just 'explodes their brains', as I've learned that a lot of people just sit there nodding and smiling but not really getting it, but they don't understand what I'm talking about and then do the wrong thing. I now employ brilliant process people, and then they communicate for ideas to others. (AMJ)
 - ◆ I always work on the principle 'don't ask someone else to do what you haven't tried to do yourself, because then you appreciate just how hard work it can be' (PAT)
 - ◆ I'm bad at delegating, because I don't think anyone can see what I'm seeing. When I come up with a solution, nobody can see it the way I see it. For them to work on it with me, I have to take them through my way of seeing it (PUY)
 - ◆ I know one of my gifts is to have a peripheral view of a problem, peripheral view on how to solve it. Now I only work with non-lateral thinkers because they think like me (PUY)
 - ◆ It's hard to delegate (TPE)

- ◆ It's hard for me to delegate things as I find it hard to keep track of other people's involvement, so I tend to just do things myself, rather than chasing others for progress reports, as it becomes administrative and thus stressful (ESA)
- ◆ I don't really delegate, I just do it myself (AHD)

There seems to be a split here in the data, some find delegating hard as they lack the skills to communicate what they need and require, and a second group who are good at delegating as they know they have weaknesses and wish to out-source such tasks. Those who find it hard to delegate tend to 'do it themselves' as it's easier that way, however looking at the data more closely these tend to lead smaller organisations or teams, whereas those who are brave enough to delegate run larger organisations. Interesting those who fall between the two groups tend to employ good-process people to translate their non-linear thoughts or ideas (many in 3 dimensional models) into linear ideas so that teams can action what is required.

The evidence also points to communication difficulties, with dyslexics unable to communicate effectively with linear thinkers. They seem to misunderstand why everyone else can't see solutions the way they can.

Following your gut

- ◆ I rely on my gut a lot, which is again why I surround myself with people that understand my way of thinking (SDE)

- ◆ I would like to think I trust my gut, but my gut is informed on the knowledge that I have developed and my experience. I wouldn't say my gut has been wrong a lot, but I don't think you can base every decision on gut (PSS)
- ◆ I totally follow and trust my gut (PAT)
- ◆ I don't rely on anything else. I don't go by practicality or logic. I just go, if I get a feeling, I follow it 100%. I've lived my whole life like that. Anything I've achieved to date is based on my gut feeling (PUY)
- ◆ I really doubt it. I'm more of a scientist and I doubt it, but I'm getting better at trusting it. It's right 50% of the time (TPE)
- ◆ My gut instinct is normally wrong as I am not good at judging people and I can create intangibles. I can't read people and I can't see when I'm annoying them (NHN)
- ◆ I would argue that it's not my gut I follow, but if we discuss the definition I suspect we would arrive at the conclusion that I use an awful lot of gut. To me its pre-seasoned stuff (ASG)
- ◆ I would never go against my gut, ever (ESA)
- ◆ The reason my staff struggle with me is because I'm brilliant at knowing the thing that hasn't been done, I'm brilliant at risk analysis, my gut just tells me where to look. I'm naturally a gut person (AMJ)
- ◆ My gut is normally right but I don't always follow it (AHD)

Linking to the earlier section on team-building, the ability to know what is right (a person in a team or their skill set) and what the next move should be in a

project is argued to come down to intuition or a gut sense. The evidence suggests that dyslexics have good intuition but do not know why. Many trust their gut entirely to lead their projects and to problem-solve.

Working environment

- ◆ I guess I need the right environment for myself to work. I have to have a workstation and I like to have everything in exactly the right place that makes sense in my mind, not cluttered. I work best at 3am when I can work without distraction (SDE)
- ◆ What I have learned is that if I can control my environment, living life is a lot nicer (PAT)
- ◆ I find it very hard working with other people in my office, so I had to wait until they had all gone for me to actually start working. That lead to me working evenings and weekends and eventually I burnt out. Now I have restructured I have my own office, as I know I can easily be distracted. I need silence to work effectively. My team do not understand my agitation in being over-stimulated by all the information that's going on in a busy multi-team office (PAT)
- ◆ When I'm under stress, when I need to get something done, I need to be locked in a room (PUY)
- ◆ I need constant change. Having one set desk in an office would never fit me (PUY)
- ◆ It was terrible for me when we were all moved into open plan offices, as I get distracted easily. I used to go for walks and seeking out quiet spaces to work (NHN)
- ◆ I didn't just create the best work

environment for me, I created the whole company. (ASG)

- ◆ I work best when I ignore everything else around me. I have a strong right-hand man that tells me when I can't ignore certain things anymore (ASG)

Many successful dyslexics in this study are aware of when and where they work best, and this is an awareness of their strengths and weaknesses. The need for silence and a lack of distractions comes through strongly in the evidence. Interestingly some have created organisation to reflect their work-styles.

Motivation

- ◆ It's not money, its actually proving a point now. That I can be successful as all my contemporaries in the city, but one step better, better because it's my business and I am running it and I'm CEO and that's my satisfaction every day. To prove to people that this is what I am doing and I am capable of doing it. (JBB)
- ◆ It definitely comes from when I was young. Being frustrated at school and feeling a sense of purpose and ability that came from working outside school and earning money, which was more satisfying than sitting down and doing homework (JBB)
- ◆ I love the fact that I can control my own world, and that means more to me than anything else (JBB)
- ◆ To start with it was partially money and it was partially I wanted to prove all those people wrong about me (PUY)
- ◆ Before the apprentice I thought I wanted to be recognised and to be famous, but then I found that very stressful and I hated it. That made me realize it's not fame or success I wanted, but recognition of what I had achieved helping other people identify their potential and strengths (PUY)
- ◆ Historically I was always motivated by trying to prove that I was as good as I thought I was, rather than as bad as I looked. Now I think I want to prove that some people were right about me. This definitely dates back to my school years, as some of my headmasters doubts my abilities (TPE)
- ◆ I seek recognition of my skills and abilities, and this goes right back to childhood and school. I will work extremely hard to achieve things, but it's recognition I seek most of all. I have a chip on my shoulder about not achieving at school (NHN)
- ◆ I seek self-worth, I always had a sense of wanting to be known to be good at something (PSS)
- ◆ I'm motivated to provide a good service and my sense of curiosity to research dyslexia, and to inform others about dyslexia. There is so much pain out there and I ask myself how can I change all this craziness in the education system (ESA)
- ◆ It's not about money, its gaining self-respect. It just makes me think one of my teachers didn't waste her time on me. It always links back to my school days, being under-rated. (AP)
- ◆ It's not about money, it's about

helping children who are stuck in the school system not being supported properly. I want to make a difference (AHD)

- ◆ I knew I was very driven and that came with recognition and success, which I liked (JBB)
- ◆ I don't want to improve things, I want to change things, to rip the heart out of the system and put in something better. Money is not important to me, but change is (AMJ)
- ◆ I want to make things better, and to improve how things are done. 50% of the people I help are paying clients (TBA)

This section also relates to a later section on 'entrepreneurship', discussing what motivations are felt by this sample to be successful, and what drives them to do well in business. The evidence seems to suggest that they are motivated to prove themselves, not just to themselves that they are as good as the next person, but also those who doubted their abilities when they were children at school. Many are now motivated to change the world for the better, and to provide the support and the services they would have wanted as children. This sense of a 'chip on their shoulders' is a strong motivating force that should not be discounted in understanding the make-up of the successful dyslexic.

Coping Skills

Do you or have you ever had a mentor?

- ◆ No, people seem to find it quite difficult to do that with me. People have often said they find it difficult

to give me feedback. It's not because I hit people or anything like that. I wish I had, it hasn't been for the lack of wanting one (JLA)

- ◆ It just dawned on me, literally, last week, that actually I don't have anybody guiding me, my career, and where I'm going. That's quite tricky. I've done it for other people, but not managed it in the other direction (JLA)
- ◆ I have yes, but not mentors per say. But teachers and the odd mentor in the military. I still talk to my school mentors even though I'm in my 50's. But I have never, never had a true mentor, someone I could rely on (TBA)
- ◆ My father once had a conversation with me, saying 'you never had a rabbi' and I said that is true but also I'm not Jewish. He then said 'what I really mean is you have never had a teacher that could lead you through life' and he was right (TBA)
- ◆ I've been blessed by mentors and role models through my life, they are my models and I aspire to be like they are (PAT)
- ◆ It's got to a point now where for me mentors are not useful anymore because they see a very generic career path of climbing the corporate ladder. I'm not on that career path, so now my main mentor is a life coach (PUY)
- ◆ No, but I wish I had. I've had some senior managers who have protected me, but that's different. They know what I'm capable of achieving in the organisation (NHN)
- ◆ I would say that it's always been something that's been difficult for

me, as it's quite exhausting being me, and for someone to understand how I work. I've always wanted one but I never got one at work. Most people who had one at work succeed in that environment. You needed protection in that corporate environment and to some extent I didn't have that (GHD)

- ◆ I suppose I've been lucky, I've had some good bosses who have recognised that I am best left alone to get on with things, as I'm a driven person. However I also have my chairman who is very direct with me and she is my semi-mentor (JBB)

The evidence suggests that many dyslexics find the notion of having a mentor interesting and whilst they would have liked one to protect them, they also recognise that they would have found having one difficult, due to their inability to follow conventional career paths, and that people might find them difficult to manage and to understand. That is not to say that some did not have mentors, but the evidence suggests that this could be a difficult relationship.

Compensation/coping strategies

- ◆ When I write slides in PowerPoint for presentations I will naturally include graphics, I won't use loads of words, the main reason is I can't read them fast enough. Images are triggers for me to start things. They trigger a memory, then I won't need to read a script (JLA)
- ◆ I just tell people I'm really bad with names. I say 'just send me an email' (JLA)
- ◆ I do everything on a PC, I avoid

writing, as my writing makes me look mentally retarded. It's terrible, and then you have the spelling part of it (TBA)

- ◆ My wife is an extremely good editor, and she puts editorial comments like 'trite' along bits. I have shown unedited bits of my writing to others, and they tell me they can't get by the misspelling, grammar and so forth (TBA)
- ◆ The one thing the military helped me a lot to regiment my organisation. I always give myself extra time and projects, by backwards planning and not seeing any problem as insurmountable (TBA)
- ◆ I am very proud and will tell people I am dyslexic (TBA)
- ◆ I used a clipboard with notes to trigger my thoughts in meetings (PAT)
- ◆ I'm naturally messy and totally disorganised, so I spent a lot of time organising, thus my team think I'm very organised, but actually I'm not (PAT)
- ◆ I have someone to proof-read for me, then someone else to do all the admin and detail work (TPE)
- ◆ When I go to events or parties I rely on my wife to tell me about the people I am about to meet, their names and other important information (NHN)
- ◆ I will delegate anything I can to people and pay if needed. I will pay them to do the work I'm not good at. Why struggle for 4 days to do my accounts when an accountant would do it in a morning (NHN)
- ◆ I constantly double-check my work

as I used to live in fear of being caught, as I didn't tell people I was dyslexic (PSS)

- ◆ I read what I write aloud to check it. Then leave it a while and re-read it again to check for missing words and poor spelling. Then I give to someone else to read (PSS)
- ◆ I avoid writing notes in meetings, but will record bullet points (PSS)
- ◆ Work late in the night to get projects completed (PSS)
- ◆ I think the modern form of communication is such a help to dyslexics, thank God I was born in the generation with email, because it's not about using an instrument which is thousands of years old (a pen). I can get away with very concise, short sentences to communicate what you are saying. Modern technology helps me a vast amount (JBB)
- ◆ I try and not work too hard, then I end up working 11 hour days (EWD)
- ◆ I use Dragon Naturally Speaking to dictate my work (EWD)
- ◆ I use an online calendar and am careful not to over-schedule myself (ESA)
- ◆ My husband does the shopping, I don't do shopping (ESA)
- ◆ I use a highlighter a lot, post-it notes, and paper clips to keep organised (AHD)

The above evidence suggests that many of the study participants understood many of their strengths and weaknesses, and had put in place strategies to cope or to compensate for their weaknesses. Technology such as online calendars, spell-checkers, email and voice

recognition software are noted, along with post-it notes, highlighters and using others to proof-read work (as adults still use their mothers to proof-read). Interestingly a few noted the use of visuals in PowerPoint presentations to jog memories of what to say, as they recognise their inabilities to read effectively with speed. Some use avoidance techniques but this seems to be in the minority.

Unique Selling Points (USP)

- ◆ I conceptualize everything and then experiment to prove, it's almost a scientific approach. It's theorizing and experimental. I think one of the reasons people think I'm fearless is I'm quite happy to experiment and to be proved wrong. (GHD)
- ◆ I would rather tell people the truth and upset people, then lie to make people feel better. What I'm saying is there is a problem that needs to be solved. I can make myself a lot of money because other people are unwilling to ask the questions (GHD)
- ◆ I'm quite addicted to change and trying out new things (TPE)
- ◆ I'm very aware of what the limitations people have and what difficulties they face (SDE)
- ◆ I'm brave, courageous, resilient, creative loyal and very hard-working (PAT)
- ◆ I can see beyond what many other people can see to solve problems. I can visualise it in my head and bend it around and see it working (TPE)
- ◆ I have intuition. I can go to a

brainstorming session and will sit there and listen, then throw out the winning solution. Whilst everyone must go ABCDE, I can go A to E, however I must then walk everyone through my thought processes (TBA)

- ◆ Linear thinkers look for differences, but I look for commonalities, their related links. This is the dyslexic intuition (TBA)
- ◆ Communication, recognizing products, understanding products, and then being able to articulate that to a certain market or requirement. I understand systems well so I can visualize and manipulate them (JBB)
- ◆ I can sense things, I can see things and articulate them well. That's my strength. The downside is saying it to people who don't want to know what I've seen, as it goes contrary to their beliefs/values, as many of the problems are caused by them (NHN)
- ◆ I think in pictures and 3 dimensions. I can dissect very fast and solve problems. I work like Google does to collect and solve information, to apply things from one domain to another (JLA)
- ◆ I am a really good facilitator (JLA)
- ◆ I don't have the same thought processes as everyone else. I look at things differently and this is an alternative approach to problem-solving (JLA)
- ◆ I have emotional empathy with people in difficult situations. I understand what emotional pain is (AMJ)
- ◆ I have the ability to see things from a global perspective and communicate effectively to senior

leadership, but also have enough knowledge to communicate effectively to programmers and the workforce, both the 3000 foot and the 30 foot views.

A question to the heart of the project, what is it that makes a dyslexic unique in business? The evidence suggests an ability to see and solve problems differently to others, specifically the ability to conceptualise in 'their minds eye' in three dimensions, however find it hard to translate this into linear parts for others to solve (see the earlier section on delegating). Evidence also suggests that successful dyslexics can make leaps in their solving of problems, hence A to Z without the need for A, B, C, D, E etc. Again linear thinkers need to be walked through the dyslexic's thought process to get to the end solution. Some might suggest this is divergent or creative thinking but again this might come down to gut intuition. Empathy is noted, in that they have the ability to relate to others struggling with problems, their abilities to know a person's strengths and weaknesses and utilize them effectively, and lastly the ability to communicate to both senior leaders and workers effectively. Lastly it is noted the willingness to ask the difficult questions and to not be afraid to question perceived wisdom and convention, in their striving to find new solutions to old or emerging problems.

Traits

Dealing with risk

- ◆ I will take risks, damn right, I will take risks that people would

consider somewhere close to effing horrendous. I don't focus on consequences. You evaluate risk, so I have a high tolerance for risk (ASG)

- ◆ One of the biggest risks is not trying at all. Actually if you don't try, you'll never know if it was a good idea (TPE)
- ◆ Risk is good, however risk without thought is dangerous (PAT)
- ◆ I do take risks setting up this charity, I think part of it was due to ignorance as well. If I were to look back, if I had known what I would need to know in order to do what I have achieved, I probably would never have done it. I tend to deal with problems as they surface (PAT)
- ◆ I am happy to take a risk to do things if I think that would make a difference, I am happy to take on risks (NHN)
- ◆ I think risk is something I don't like, but I think it's unavoidable for dyslexics. Your whole life is waiting to be 'found out' at any moment. You're so familiar with what it feels like, either to anticipate it or to be in that horrible moment when the wheels just come off in life. You really fear but, so it drives you (JLA)
- ◆ I don't avoid it, I would say I have calculated risk. I take more risks than most (PSS)
- ◆ I think in order to get what you want it takes a considerable amount of risk, I think I'm more likely to do it. I don't care what other people think (ESA)
- ◆ I'm a risk-taker without a shadow of doubt, I think 'what have I got to lose' (JBB)
- ◆ I don't like it and I absolutely try

and avoid it. However of you in the business I'm in, then risk is part of business, it's how much comfort you have taking the risks, how you manage it, and what comfort level can you go (JBB)

Coping with failure

- ◆ I always say, in order to succeed in life, you must fail first because you will never understand the taste of success unless you fail. For me, failure is an experience. In order to celebrate success, you must go through the depths of failure (PUY)
- ◆ Failure is a journey, it's inevitable, but the most important thing is don't fail at the same way twice (TPE)
- ◆ Those who have never failed at school find failure as an adult really hard, as they never had the opportunity to fail as children. I think failure is bad, but at least I've done it a lot so at least I know it's not life threatening (TPE)
- ◆ I think some of it is I'm not afraid to fail as I have failed so many times before. So I'm not frightened of failure (TBA)
- ◆ It's a journey. One person said to me, there's no such thing as failure, there's results you didn't want (SDE)
- ◆ I think there's no such thing as failure, really. You always learn and who you are equating yourself with when you say you are a failure. In the eyes of someone else maybe you wouldn't see yourself as a failure. I view myself as courageous having stepped forth when I made mistakes, but I learn from every mistake I make (PAT)
- ◆ I'm used to failure, so I don't mind

failing, and I don't even mind public failing (NHN)

- ◆ I welcome failure and define it as 'learning taking place'. My parents always taught be to 'have a go'. In America if you fail at a business they say 'at least you had a go', in the UK they call you a 'bankrupt' (NHN)
- ◆ Failure is important. I think I have more 'grit' for long-term projects and perseverance, because I don't expect to be the best at something when I begin, or expect to get it right first time. I have spent many many years being forced to do things I'm not good at [at school] that I'm adamant about not being in that position again (ESA)
- ◆ I don't think you can avoid failure. You can try to be in control of everything but failure can still happen, I suppose it's what you do with that failure (EWD)
- ◆ Peter Stringfellow said one of the best things that happened to him was leaving school without any qualifications, because there were no expectations on him. He could try whatever he wanted and failure wasn't a big deal because he wasn't expected to achieve anything (SDE)

In summary, 16 felt that failure was an essential part of success, 2 did not, and 2 were undecided

Relating to the 'USP' section, the ability for many of this sample of dyslexics to 'deal with risk' and 'cope with failure' is investigated. Most indicate the willingness to take on risk, and some relate this back to their childhood and

schooling, in that they learnt to effectively cope (emotionally) with risk and failure. Some relate to the lifelong failure of being found out as being dyslexic, in school and in the workplace, and expecting to be fired as a result. Others see failure as part of a 'learning journey' as many had failed so much at school that they had almost become immune to the negative emotional effects of failure. Interestingly they note they were more willing to risk to gain success, compared to non-dyslexic peers who were risk-averse and were less successful in life, where failure was avoided at all costs. The majority however note that failure was an essential aspect of their later success in life.

Hard-working/passion

- ◆ I work close to 17 hours a day, but that when the family are not around (GHD)
- ◆ One of my biggest strategies is to work until it's done. It's not uncommon for me to work until 2-3 in the morning. Occasionally I work all night (JLA)
- ◆ I tend to work 12 hour days, but then can cram to get a project finished (TPE)
- ◆ I put my whole heart into things when I do things, because my passion is important to me and important to my success (PUY)
- ◆ I am pretty persistent (TPE)
- ◆ My whole life is setting a goal and doing it. Why else get out of bed in the morning (TBA)
- ◆ I am very very highly focussed. I'm all or nothing. If I switch onto something all consuming, my thoughts for weeks. I'm immersed in

topics as I have to know everything about it. I bore my friends and wife about it in every conversation (NHN)

- ◆ I've got a relentless drive to work past stubborn people who say 'no' to me, and wear then down or go around them. If they say 'no' because it's never been done that way before', 'we have always done it this way', or 'no because I out-rank you' then that's not good enough for me (NHN)
- ◆ I think it's due to our determination that we will find a way. I may not have the solution now but by the end of the day I will (JBB)
- ◆ I get very frustrated when people give excuses as to why they haven't done things (JBB)
- ◆ I think it's very challenging for a lot of people to multi-task, and particularly multi-task probably in the way I do. I think it's a trait of dyslexics that we can multi-task (JBB)
- ◆ Most people I know say they are in awe of me and they say they couldn't do all the things I do or have achieved (EWD)

The whole sample noted their passion they have for their work and their willingness to work extremely hard to achieve success in life. Their persistence to not give up and to 'work until the job is done' is testament to why they have achieved in life. The term 'passion' sums up their all-consuming need to understand and solve problems that go beyond the normal 'call of duty' of most people/employers. Their willingness to work extremely long days demonstrates their determination in life.

Are dyslexics over-achievers?

- ◆ Yes, and I can't just do one thing, I'll always have new ideas. When dyslexics achieve a degree, they often feel even more driven to do more. I want to show everyone they were wrong about me and how bright I am, as we can cope with more than one things at a time (PUY)
- ◆ I would say I'm an over-achiever but sometimes also a perfectionist. My friends tell me I'm doing too much, everyone tells me I don't get enough sleep because I work too hard (SDE)
- ◆ I find it very hard to multi-task and a few years ago I burnt myself out taking too many things on (PAT)

In summary, 10 think dyslexics tend to be over-achievers, and 5 do not think so

This interesting question found that whilst many of the successful dyslexics in this sample could be described as 'over-achieving' very few of them recognise it in themselves. However the survey data only found 50% felt that dyslexics tended to be over-achievers in life.

Creativity and Entrepreneurship

Are you creative?

- ◆ Everything I do is based on creativity. The reason I got away from working for other people (in the army and consulting) and started up my own company, as I would come up with these incredible ideas and companies wouldn't take them on, as they

- weren't creative and didn't want to take on the risk (TBA)
- ◆ I have different ways to solve problems. I nearly automatically am able to analyse and pick out the best solution very quickly (PUY)
 - ◆ I solve problems by coming up with many ideas (TPE)
 - ◆ I am highly motivated to understand things, and to figure out how I can use it in way that suits me, and that is enjoyable and interesting (JEA)
 - ◆ Solutions just keep on rolling out. If I sit down I can think up so many things off the topic. At school I can come up with 10 ideas when others have only come up with 3. I couldn't believe how slow they were, then I realized, no they just people can't think, or they self-edit too much (NHN)
 - ◆ I am very creative, be it in the theatre, education or as a writer (AMJ)
 - ◆ I think I'd say I'm definitely creative. I get a massive pleasure from creating (AHD)

Evidence suggests that many of sample felt that in their work and problem-solving, that this was a creative process, or that creativity described what they did and how they worked.

Entrepreneurship

- ◆ It's not about making money, it's about making the world better (EWD)
- ◆ I'm an entrepreneur as it allows me to realise my thoughts and ideas, allowing me to focus on the things I'm good at (JLA)

- ◆ It's not about money; it's about creating justice and equality for everybody. Making sure that the [dyslexic] children of our future don't go through what we've gone through (PUY)
- ◆ I'm not driven by money, it's about self-discovery and pushing my abilities (PSS)
- ◆ I'm not motivated by money, I'm motivated by providing a really great service and providing a place where people can really be helped. I hate seeing people not meet their full potential. Providing a service that was not available to me growing up (SDE)
- ◆ It's not about money, it's about social justice. When I set up this enterprise what I was actually creating was an environment that I as a teenager would have wanted to have been offered, but didn't have the opportunity to receive as it didn't exist. I was setting this up as a coming from an injured place (PAT)
- ◆ I yearned for a wider opportunity to prove myself, and yes of course like everyone else I loved the fluidity of money and the opportunity that money brings (JBB)
- ◆ I have to work for myself as I can't work for anyone else. It would be unfair to put anyone with me, even though I have worked in a national organisation for 30 years, or should I say I have survived them for 30 years, or they have survived working with me (NHN)
- ◆ I have deliberately created an environment in which I feel comfortable working in. It's a case now that because of the person I

am, the skill set I have, and the attitude that I have, that I can't work for anyone else now (ASG)

- ◆ I am definitely motivated to make things better. It's not about money, it's tremendously difficult making money building and running wind-farms (GHD)
- ◆ It's not money, it's fun, and I'm lucky it makes me money at the same time (ASG)

Relating to the question on 'motivation', the sample indicated that money was not a main motivation to work for themselves. What seems to be evident is: their need for the freedom and resources to put their ideas in motion, the need to prove self-worth/abilities to others, the need to create services that were lacking from when they were children struggling at school, and the need to make the world better, be it wind-farms or creating social justice. There is also evidence that many felt unable to work for others, and working for themselves seemed to be the only real option open to them for personal happiness/well-being.

School Trauma as a Life Motivation

- ◆ People say I'm unpredictable, but I say this is learned behaviour from school. I would just fight back if I was bullied or teachers unfairly picked on me. If people question me in a certain way, I emotionally just start seeing that chain of events again. It's just a feeling of being picked on again (GHD)
- ◆ Many dyslexics have 'chips on their shoulder's to motivate them to do things in life (PAT)
- ◆ Some of the dyslexics I meet are motivated to do well because of traumatic schooling, but not all of them (SDE)
- ◆ Some dyslexics I've met have gone to the n'th degree to prove that they are not stupid (SDE)
- ◆ I think I grew up with the drive to do well, even as though things were okay around me, I still had a sense that I was at the bottom of the pit, and I didn't want to stay there (JLA)
- ◆ I think I was simply driven to bounce back from failure. I got used to failing, and I got used to picking myself up again as best I could, because I hated it. That's what drove me as a child and a young adult (JLA)
- ◆ Looking back to my trauma at school, I always say 'I have to thank them because I would never have done as good as I have without that experience' (PUY)
- ◆ I think for everyone that gets a push to prove others wrong, there are several hundred that are emotionally damaged for the rest of their lives (ESA)
- ◆ I listen to successful [dyslexic] entrepreneurs that have struggled with dyslexia, often not knowing that it was their dyslexia they were struggling with, or not fully processing their experiences. Even though you can be very very successful, you can still be dealing with the impact of stress and school-trauma (ESA)
- ◆ Every time I failed at school I was able to say that Richard Branson also failed at school and has built a hugely successful company. That's really what got me through the

worst of it and where I am today (ESA)

- ◆ I absolutely hated the state school system, and I was determined above everything else, to give 2 fingers to the school. I walked out of that gate and the only thing I wanted to do was to go back in a Rolls Royce and tell them to F*** off. That was my main motivation and determination (GHD)
- ◆ I wanted to prove that I was as good as the next person, washing cars, selling and working in the city (JBB)
- ◆ It's a bit of a nag at the back of my head, being told at school 'I can't do it' and now I say 'look at me now' (PSS)
- ◆ Trauma at school is never good, I've seen enough of it myself (AHD)
- ◆ Yes I have a chip on my shoulders about not doing well at school. I'm described as a workaholic, but is it because of school (ASG)

In summary, 14 think they need to prove themselves to others, and 3 do not think so, but 17 felt successful dyslexics don't enjoy school

The evidence points to school-failure being a motivating element in this sample's success, that there was a need to show self-worth and to not only prove others wrong, but to 'shove' it in their faces that they harshly miss-judged them. It is recognised that trauma at school was never good, but it could be argued it was a main motivating force for them. However was school-trauma the only factor in their success?

What would I have been without school-trauma?

- ◆ If I would have been happier at school I would have ended up being a completely different person, contented with life and being in a normal job (GHD)
- ◆ What would I have been if I would have been supported and un-traumatised by school, just a housewife with seven children, just like my mother? So not a successful author and playwright (PMS)

Questioned about the 'what if' they hadn't experienced school trauma, two noted that they would possibly not have been as successful, but likely to have been more contented with life. So was their school trauma the key factor in their success?

Creating successful dyslexics

- ◆ I know other kids [likely to be dyslexic] who had the same background as me, didn't have my positive re-enforcements or parents that engaged with them, didn't have the support network at school, had the same problems as me. But they don't have the drive to do well in life (PSS)
- ◆ I believe the secret to teaching 'grit' and resilience is teaching how to fail. I look back in my life at the stupid and embarrassing things I have done. Given the chance I would still do them again because of the learning that took place, what I got from those things, even though they were painful (TBA)

- ◆ Dyslexics in prison lacked finding out what they were good at, at school (PUY)

The crux to the project was to find positive messages for educators, parents and young dyslexics. The evidence suggests that harnessing failure positively helps to develop resilience and grit, along with the positive support by parents, not just academically but in the journey to locate and harness strengths.

Sending a child to a dyslexic school

- ◆ I think dyslexic children would be better in a dyslexic school as they would know they aren't stupid (NHN)
- ◆ My eldest goes to a dyslexic school. One of my fears about it was that it would be a great place for failure, because your sense of self would come out intact (JLA)

The project questioned whether sending a dyslexic child to a specialist school was a good thing, however too few responses were gained to really understand their views. However a higher self-esteem is suggested, but would this be enough to develop the 'grit' they needed for post-school success?

Why am I successful?

- ◆ Hard work, perseverance, creativity, computers.
- ◆ I am successful because I have worked hard to overcome my learning difficulties using technology - within weeks I taught others to use computers. I now run a successful charity.

- ◆ Entrepreneurial, enthusiastic and creative thinker.
- ◆ Despite being late diagnosed and having a traumatic experience in school, I still completed my degree and masters, worked for 2 FMCG companies, started my own business and appeared on the UK Apprentice. Above all that I now understand my dyslexia and I understand how to use it as a strength.
- ◆ Some combination of intelligence and determination -but currently facing huge challenges and stress at work-so the future is very uncertain
- ◆ I started a business aged 13; I've been in over 100 magazine and newspapers in three years, good pals with lots of celebrities.
- ◆ I had a very fulfilling 30 year career in the police and now run a training company. The company has always been in profit.
- ◆ I have persevered, despite times of utter exhaustion, to do my job well. I have displayed grit.
- ◆ I work for myself, I taught myself computers and design websites and do graphic design and now I teach it,
- ◆ More by accident than deliberately I have been able to create a life/work style that happily accommodates my dyslexic weaknesses and delight in my dyslexic strengths, and extremely hard work.
- ◆ Coped with dyslexia, proved people wrong who said I couldn't do things
- ◆ Because I'm determine to raise awareness and stop others going

- ♦ through what we've been through I have achieved a degree and 2 masters degrees (my last one gaining a distinction for my dissertation) I also was appointed as one of the youngest head teachers in the country 3 years ago. I also have grade 8 piano, horn and music theory and was a finalist in the young composer of the year.

In summary, 19 call themselves successful, and 20 are called successful by others. 13 were self-employed, 5 were senior managers, 4 were professionals. 13 work for themselves, and 7 work for others.

The quotes above have not been labelled with participant names to aid the confidential nature of this study. They do however indicate from the survey data why they described themselves as being

Table 1. How does dyslexia affect you? Tick as many as relevant		
Answer Options	Response Percent	Response Count
Short-term memory (I forget things easily)	79.6%	78
Slow reader (or rarely reads)	68.4%	67
Disorganisation (I create piles to read, file away or pay bills)	67.3%	66
Problems with fine motor skills (tying knots/laces)	28.6%	28
Easily confused (I can't focus sometimes)	52.0%	51
Just can't understand things (things don't always make sense to me)	34.7%	34
Poor spelling ability	66.3%	65
Messy handwriting	56.1%	55
Problem recalling words (e.g. names or spellings)	73.5%	72
Not good at writing (so avoid taking messages)	42.9%	42
Not good at maths	38.8%	38
Can't follow a shopping list	7.1%	7
Can't follow written instructions	20.4%	20
Can't use a dictionary or A to Z (to look up words)	18.4%	18
Clumsy (I fall over or knock and break things a lot)	37.8%	37
Fear of making mistakes and being laughed at	56.1%	55
	answered question	98
	skipped question	3

successful, and it is easy to agree with them that they have achieved success by most standards. Some point to fame, others to proving self-worth, and lastly to create paid employed that works to their strengths. Success is subjective, but 19 call themselves successful with the majority (13) recognising that being self-employed was the means for their success, as Frank Sinatra sang 'doing it my way'.

Results – online survey study

Not all 30 items of the survey are included in this paper due to space, but the following are used to reflect the results of the interview study.

Table 1 data suggests that short-term memory, slow reading, problem-recalling names/facts and disorganisation are main problems still affecting adults with dyslexic, and demonstrating that dyslexia

Table 2. What strategies do YOU use to cope with YOUR dyslexia? Tick all that are relevant		
Answer Options	Response Percent	Response Count
Computer reader or text to speech software	48.4%	46
Rely on a computer to write everything	51.6%	49
Use a spell checker	78.9%	75
Write in pencil and then go over in pen	17.9%	17
Avoid forms	40.0%	38
Avoid reading (saying 'I have forgotten my glasses etc.)	29.5%	28
Get others to do things for you (Getting others to compete forms for you)	38.9%	37
Use organisation software	30.5%	29
Rely on a notepad or diary to record your life	47.4%	45
Dictaphone/Audio typist	21.1%	20
Proof reader	47.4%	45
	answered question	95
	skipped question	6

Table 3. Did you enjoy school or was it traumatic?		
Answer Options	Response Percent	Response Count
Traumatic	65.1%	54
Enjoyed school	34.9%	29
Other (please specify)		20
answered question		83
skipped question		18

Table 4. At school did YOU excel in any non-academic subject?		
Answer Options	Response Percent	Response Count
Sport	36.9%	31
Drama	31.0%	26
Art & Design	50.0%	42
IT	15.5%	13
Other	32.1%	27
answered question		84
skipped question		17

Table 5. Would OTHERS describe you as successful?		
Answer Options	Response Percent	Response Count
Yes	83.9%	73
No	16.1%	14
Other (please specify)		13
answered question		87
skipped question		14

Answer Options	Response Percent	Response Count
No	72.4%	63
Yes	27.6%	24
Other (please specify)		12
answered question		87
skipped question		14

Answer Options	Response Percent	Response Count
Has a large and well-furnished home	11.8%	11
Are in a prestigious job	32.3%	30
Wears expensive clothes or jewellery	3.2%	3
Earns lots of money	29.0%	27
Has a job	33.3%	31
Enjoys their job	81.7%	76
Works for themselves	34.4%	32
Are in a senior position at work	37.6%	35
Are married	31.2%	29
Have children	31.2%	29
Have a degree	24.7%	23
Went to university	20.4%	19
Work from home	10.8%	10
Have a good work-life balance	82.8%	77
Be famous	9.7%	9
Travel abroad regularly	19.4%	18
answered question		93
skipped question		8

goes beyond childhood and school-classrooms.

Table 2 data suggests vast majority use spellcheckers, use of a computer and assisted technology to help them cope with modern life, however several non-technological strategies and tools are used along with avoidance of forms and writing.

Table 3 data found the majority commented that school was traumatic for them, reflecting the results of the interview study.

Table 4 data reflecting the results of the interview study, as many of the dyslexics surveyed experienced success in non-academic school subjects, and this is hypothesised to assist in their belief that they have self-worth.

Table 5 interestingly most recognised that

others would call themselves successful, however the study also found that only 68 of the 73 noted above would call themselves successful with 8 giving reasons for not feeling successful, these include questioning what was success and noting past business failures, however it could be argued an unsuccessful dyslexic would not have even attempted such business ventures.

Table 6 found that many from the survey felt unsupported as children at school, and reflected the results of the interview study.

Interestingly Table 7 investigated perceptions of success, the study did not define success (on purpose) but wanted to understand what participants understood about success. The highest results were that 76 felt that job satisfaction and 77 having a good work-

Table 8. What do YOU think drives someone to be successful? Tick as many as relevant		
Answer Options	Response Percent	Response Count
The need for money	39.8%	37
The need for fame	21.5%	20
The need of a job	36.6%	34
To prove to their self-worth	78.5%	73
To prove to others you are right	45.2%	42
To not work for someone else	31.2%	29
To regain control of your life	65.6%	61
To prove their intelligence	57.0%	53
To improve the world	58.1%	54
answered question		93
skipped question		8

Table 9. Some people believe that failure is an essential part of gaining success, do you agree?

Answer Options	Response Percent	Response Count
Yes-a lot	57.1%	52
Yes-a little	31.9%	29
Neither yes nor no	6.6%	6
No-a little	4.4%	4
No-alot	0.0%	0
Other (please specify)		5
answered question		91
skipped question		10

Table 10. Do YOU think successful dyslexics enjoyed their time at school?

Answer Options	Response Percent	Response Count
Yes	2.9%	2
No	97.1%	68
Other (please specify)		24
answered question		70
skipped question		31

life balance were important, compared to only 23 having a degree, 30 having a prestigious job and 27 having lots of money.

Table 8 looked at success motivation. The results interestingly reflect the interview study, in that 73 had a need to prove self-worth (53 to prove their intelligence, 42 to prove they were right) and 61 wanted to regain control of their life. Again money was a low motivational factor (37).

In table 9 the results indicated overwhelmingly that participants thought that failure was essential for success in dyslexics, reflecting the interview study.

Lastly in Table 10, the results investigated school enjoyment. The majority note that most successful dyslexics did not enjoy school, from the 24 that answered other, such answers were non-committal.

Discussion

This paper was intended to investigate if school trauma was a trigger for post-school success, and two theories were proposed: the disability paradox and post-traumatic growth.

The interview evidence supports the hypothesis that most (but not all) successful dyslexics experience a troubled schooling, and this can create the motivation to prove themselves to others. School can be a harsh environment for a dyslexic who has difficulty reading, writing and spelling amongst many other difficulties. The evidence suggests high avoidance strategies to camouflage such difficulties (e.g. hiding in class, forgetting books/homework), the other option is to either submit to the humiliation of not being able to read effectively as their peers, to use distraction (e.g. being the class clown) or truancy (e.g. calling in sick to avoid tests). This teaches dyslexics to be creative and to use divergent means to maintain their self-esteem, however the evidence still suggests school-trauma is experienced. Both Fitzgibbon & O'Connor (2002) and Albertson (2001) note the camouflaging of difficulties by dyslexics in school, and Belzberg (2013), Foss (2015), Bort (2014), Tickle (2015) echo the humiliation experienced by dyslexics at school by teachers.

Many point to school as being their motivation to so well in life 'to return to school in a Roll Royce to show them they were wrong' (GHD). This indicates the need to demonstrate self-worth to those whose opinion mattered to them, their peers and parents; maybe they felt a

need to also show their parents that they were in fact able to hold down a job and be a success. However the evidence also indicates that many dyslexics are over-achievers, working long hours on a multitude of projects and businesses to keep on achieving beyond the level of their peers, thus keeping on fighting even when they have proven to others their worth. The need to go beyond such levels is likely to come from proving to themselves their own potential and worth.

Abilities to create a vision and pull people along and the problems in delegating effectively due to communications problems were found in this study; however some were very effective despite building large organisations. Those who were good at delegating tended to appreciate their lack of abilities and that others who were better skilled were the ones with greater commercial growth, as also found by Branson (2015), Foss (2015), Cass (2011), Logan (2009, 2010), Clarkson (2015) and Tickle (2015). As Coppola (2007) notes of one successful dyslexic 'my secret was to get out of the way and let them do their job'.

The interview evidence suggests that successful dyslexics are highly creative, to come up with many solutions to everyday problems, but also indicated difficulty turning their problem-solving (e.g. in the evening after work and at bed time). One participant found the only way of really coping with his creative edge was to work for himself, as previous companies were unwilling to pay him to express his creativity and develop various products. Thus the majority were self-employed, as only they believed in themselves with their

need for their constant experimentation of ideas. This also led them to create working environments that were dyslexic-friendly (Cass, 2011, Logan, 2010, Alexander-Passe, 2015a; Fitzgibbon & O'Connor, 2002, and Inskeep, 2007).

The majority of the interview participants solved problems using gut intuition, many in three dimensions, reflecting the work by Thomas West (2004) with his book 'In the mind's eye'. Using intuition and empathy to effectively manage staff and spearhead decisions have also been reported by Fink (2015). This led to clear unique differences between them and their peers, and gave them an edge in business. The results of this study, indicating advanced three dimensional modelling (visual-spatial) and the ability to think differently was also found by Logan (2010) and West (2004). Many noted the ability to solve problems faster by going from A to Z in seconds, rather than having to go through each step separately (also noted by Bort, 2014), whether this is through creative or divergent logic is another question?

Risk and attitude to risk found in this study indicate that dyslexics are far more willing to take risk, some large ones as failure is not feared, as they experienced so much of this growing up, and had developed resilience as a result. Logan (2010), Bridge (2015), Seward (2014) have also highlighted this factor. This also relates to the persistence that Kopf (2013), Alexander-Passe (2015a) and Fink (2002, 2015) noted in their studies, to not give up and the determination to drive concepts through to fruition.

Conclusion

This study started with a literature review of dyslexia and began a journey looking at success and a means to understand why many dyslexics achieve success against the odds. Theories of 'the disability paradox' and 'post-traumatic growth' were used posed to integrate non-dyslexia thinking into the world of dyslexia. To make sense of the paradox of why dyslexics can experience high school-failure, but can also achieve huge post-school success?

The study used an online survey to firstly recruit interview subjects for an in-depth study but also to gain a wider sense of success amongst dyslexics. 56 volunteered to be interviewed, and the first 20 of a projected N=25 are detailed in this paper.

The results of the two studies are reflected, and tell a message of trauma and hardship at school, with most reporting humiliation and the lack of understanding by school educators. However a minority experienced support from a select group of teachers, who sometimes turned into life-long mentors. School was found by both studies to be a harsh place for dyslexics to exist in with many feeling unsupported.

Of the successful dyslexics interviewed, many experienced high levels of parental support, and demonstrated excellence in non-academic subjects at school (art, design, drama, sport etc.) which gave them a means to balance the negativity they found in the classroom.

All survived school and many went on to

achieve success at university with both bachelor and master's degrees, however this assisted many to gain diagnosis for their dyslexia; with others being identified in the workplace. The survey found only 43% were diagnosed at school compared to 45% in the interview sub group.

In the workplace many dyslexics found they had abilities to problem-solve, but lacked the abilities to easily communicate their ideas to others, finding that messages were garbled and their promotion prospects were restricted. A few noted their abilities to lead and build effective teams, however the need to break down information into chunks for linear thinkers was also found.

Views on risk and failure were sought, finding that many dyslexics were very used to taking risks in life, as many had used high levels of camouflage to hide their reading, writing and spelling difficulties at school. They also noted that they were used to failure, and used it as a positive learning tool in life, as they noted that they had failed so often at school that they were emotionally detached from it. They noted this as a difference to their peers in the workplace that were so risk-adverse that they avoided failure at all costs, and thus tended to be less successful as a result.

Motivations for success was investigated with many noting that money was not a main motivator for them, but the need to prove themselves, a need to provide services that they would have needed as children at school, and a need to prove others wrong. The links to school were still evident as successful adults, leading to questions about post-traumatic growth.

Was suffering in mainstream school a positive element in their success as adults? The results seem to suggest that school suffering was a main element, however other factors such as supportive parents and experiencing childhood success, surpassing that of their peers was also important.

Limitations

The survey data was sourced from self-disclosing individuals who identified themselves as dyslexic, thus caution should be used in generalizing from the data, however generalized themes were its main intention.

The interview study data is in its early analysis stage and further investigations with IPA and other models will be used to uncover greater insights.

Interview Study Sample

Figure 1. Interview Script

1. Are you happy to proceed? YES/NO
2. Are you dyslexic? Who FIRST diagnosed it and at what age were you?
3. How would someone else describe you?
4. Tell me about your home life growing up? Siblings? Parents divorced?
5. Is anyone else in your family dyslexic?

Tell me about your time at school?

Trauma (resilience and motivation) / mental health difficulties
 Difficulties were treated negatively
 Under-achievement (was not supported)
 Aptitude for business success
 Excelling in non-academic subjects

Tell me about your working relationship with people?

Leadership
 Creating a vision and carry people with you-
 Team-building skills
 People Skill
 Intuition (people skills and empathy)

What coping skills do you now use?

Delegation skills
 Find and use mentors & Role models (self-esteem/self-belief)
 Support networks (awareness of strengths & weaknesses)
 Self-awareness (knowing your strengths & weaknesses)
 Creating your own working environment
 Compensation skills
 Dyslexia-awareness, not dyslexic-denial
 Developing self-worth (motivation)

What are your unique selling points (USP)?

What traits do you have?

Risk (willing to risk)
 Failure is not an option (resilience from failure)
 Business intuition (finding the core elements to focus on)
 Reasoning skills (making sense of tasks)
 Pursuing your passions (energy and conviction)
 Passions drive an interest to improve literacy skills
 Not taking no for answer (perseverance/persistence) – self-belief
 Extreme focus/goal-orientation (determination)
 Over-achieving in life (not be contented with their lot)
 Mental Health difficulties
 Optimism

Would you call yourself a creative thinker?

Creativity or divergent thinking (solving problems)
 Entrepreneurship (improving the world)

If school-trauma created your success, should we avoid sending dyslexics to special schools?

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The impact of dyslexia support at University; a case study of the student's perspective

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Abstract

In this article, the impact of dyslexia support provision is examined in a case study over the first 4 years of provision within a UK University. Data is provided from students and an interview study drawing out themes from students in the last 2 years of the study is presented. The research shows that dyslexic students are significantly less successful in their degree classification than non-dyslexic students, and continue to show problems with reading, spelling and writing speed and accuracy. The implications of this for policy are discussed

Keywords: dyslexia, Singapore, early intervention, identification, pre-school, post-secondary school, teacher training, specialist school, technology, coordination.

Introduction

Over the past 10 years, the number of university students with dyslexia studying in Higher Education (HE) in the United Kingdom (UK) has increased (Mortimore, 2013). The Equality Act came into force in the UK on 1 October 2010. The Act replaced and consolidated all existing

equality legislation, including the Disability Discrimination Act 2005 that makes it unlawful to discriminate against, harass or victimise a person because they are disabled. The UK governments' drives to inclusion and widening participation (WP) might indicate that numbers of dyslexic students in third level education will continue to grow. The 2014 policy

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revising the government support given to disabled students at university in 2015-16 is under consultation (deadline 24th September 2015) and may lead to the numbers of dyslexic students decreasing or not disclosing, and this needs to be monitored. Currently, funding is not available for level 2 support as described in the Non Medical Helpers Charter (Student Finance England, 2014) which includes the provision of, for example, note taking, laboratory assistants, and care support workers. If students are recommended such support by an Assessor of Needs, the student's university has to provide this support and yet receive no funding. Thus, HEIs are required to implement inclusive policies to make curricula accessible in order to maximise retention. Clearly, the notion of a dyslexia friendly university has become a policy imperative.

There are many factors that can influence a student's experience in HE and these include: previous education, transition to a university, course of study and the staff who work and teach in HE. It is unrealistic to expect entry level undergraduates to rapidly become independent learners, (Pokorny and Pokorny, 2008). A survey of 160 UK lecturers revealed that it could not be assumed that students knew the basics of a discipline; accordingly, lecturers prepared sessions for what they considered to be an 'average student' whilst not aware of the diversity of the students they were teaching, (Martin 1999 cited in Hocking et al., 2007). Indeed, particular challenges are faced by lecturers who teach first year courses to large, heterogeneous cohorts, (Lucas and Meyer, 2004). Graduateness is difficult to

define and yet it is recognised that graduate students, whatever their discipline, can be distinguished from non-university students (Steuer et al., 2012). However, the Library Association (1996 in Glover et al., 2002, p295) described 'graduateness' as "a set of transferable skills including planning, gathering, selecting, appraising, organising and recording information; communicating and evaluating achievements." For disabled students, it is necessary to reduce the barriers they encounter at university level in order to create an inclusive learning environment, (Fuller et al., 2004). Disabled students should be recognised as individuals not viewed as an homogenous group, (Riddell et al., 2002). Indeed, Vianchou (2004, in Keil et al., 2006) goes so far as to say that in education, inclusion policies are considered as add-on policies and individuals with Special Educational Needs (SEN) are not regarded as mainstream. However, to be effective anti-discrimination has to be tackled in different sectors and in various organisations, not just by persuasion and education but also by use of legislation to alter the stigma attached to disability, (Sayce, 2003).

The social model of disability implies that it is society's view of the individual that defines a person as disabled, (Riddick, 2001, p225). Riddick (2001, p 230) also suggested that because dyslexia is framed within the medical model and is considered a hidden disability, educationalists expressed "strong scepticism" towards it. Stress and low self-esteem are often experienced by students with dyslexia. Dyslexic students have difficulty with a range of skills

(Mortimer and Crozier, 2006; Jamieson and Morgan, 2008) mainly reading, writing, presentations and mathematics. However, the difficulties that dyslexic students experience affect all aspects of daily living, because organisational skills depend on a person's memory, sequencing and their concept of time (Fawcett, 2014). Although everyone can experience a lapse of memory or any other dyslexic trait, for the dyslexic student this is the norm, (Mortimore, 2003).

There is some evidence that because of these difficulties dyslexic students tend to select courses that demand less writing, for example, creative art/design or practical-based mathematics courses for example engineering, biological or physical sciences, (James, 2003). Often students with dyslexia excel in presentations but they may have difficulty reading their own slides, mispronounce words and make Spoonerisms that can result in them being an object of fun, (Cogan, 2000b). Indeed, dyslexic students are more likely to be awarded a lower class degree (lower second or third) and are more likely to withdraw after their first year of study, (Richardson and Wydell, 2003 in Mortimore and Crozier, 2006). Interestingly, there was a tendency for dyslexic students in new universities to have more problems with spelling, expressing ideas in writing and concentration. Inevitably, dyslexic students had experienced difficulties in all levels of learning from primary to tertiary education, (Mortimore and Crozier, 2006). However, to be successful in education and training, dyslexic students need to develop their metacognitive skills and make good use of specialist IT software

such as dictation packages, proof reading packages etcetera, (McLoughlin et al., 2002; Brennan, 2007; DuPre et al., 2008). Academic learning is often considered to be inseparable from reading and writing, (Mateos et al., 2007) criterial deficits in dyslexia.

The creation of a culture of confidence is not generally achieved by students with dyslexia and yet it is strategic for all HEIs to become student-centred (Hill and Tinker, 2013), but it will take time for all departments, administration and support staff to understand the nature of dyslexia and the impact this has on students, so in the meantime appropriate support may not be consistent. As Hill et al. (2010 in Morgan, 2015) states with regard to non-traditional students transitioning from Foundation degree, the transition is 'an intensely emotional process' as well as a time of risk (Christie 2009 in Morgan 2015). In order to investigate this further a case study of student support was undertaken.

The study aims

The main aim of this research project was to explore the experience of dyslexic students in HE. How a student experiences HE depends on the student and the university in question represented by the academic and professional staff and the campus environment, so it was decided to implement a two-part study.

ii) To explore the views of dyslexic students attending university, semi-structured interviews were conducted and the experiences of the students in HE were investigated.

Three sets of data were collected from the Case Study University (CSU). These data were as follows: quantitative data on final year students over four academic years; qualitative data from nine interviews with final year students; and a questionnaire sent to staff in three Schools, within the university which provided both quantitative and qualitative data.

The data from staff will be presented in a 2nd paper and will examine how staff feel attitudes to dyslexia affect student's progress.

Research Approach

A combination of quantitative and qualitative approaches was used by merging two databases of student information and by interviewing a small sample of students

Scope of the Research Approach. There were many aspects of the research project that had to be considered in terms of their threat to validity and reliability. The list of variables to be considered for the student database were as follows:

- ◆ Information on the University and College Admissions Service (UCAS) form and Disability Office files.
- ◆ The age of the student.
- ◆ The personality of the student.
- ◆ Whether or not intervention was given if the assessment of dyslexia was made at an early age.
- ◆ Quality of any intervention received.
- ◆ The process of assessment of dyslexia.
- ◆ The difference between mild and severe dyslexia.

- ◆ Co-existence of dyslexia with other disabilities.
- ◆ Emotional difficulties resulting from the disability.
- ◆ The academic ability of the student.
- ◆ The academic potential of the student.
- ◆ How hard a student studied.
- ◆ The department in which the student studied.
- ◆ The subject the student studied.
- ◆ The difference between study at school or college and the demands of a university course.
- ◆ Students who do not tell the University of their Dyslexia.

The list of variables to be considered for student interviews were as follows:

- ◆ Whether the student knew the interviewer and wanted to give the answer that they thought was expected of them.
- ◆ The personality of the student including motivation and determination.
- ◆ How questions were asked.
- ◆ The experience of the student at university.
- ◆ Whether the student remembered the meeting date and time.
- ◆ The interviewer's technique and how questions were framed or the use of leading questions.

Method

- ◆ The sample used for the student database consisted of final year dyslexic students, Code G on the UCAS admissions form, from four academic years Yr1, N = 79; Yr2, N = 75; Yr3, N = 73; and Yr4, N = 93 who were awarded degrees: 320

- ◆ students in total.
- ◆ The start date was selected because specialist tuition was only available from this date.
- ◆ The data were provided by merging two databases, a Disability Office mainly paper-based set and the Admissions database.
- ◆ Only those students who ticked code G (Dyslexia) were considered as part of the study and those who ticked the codes for multiple disabilities, hidden disabilities (dyslexia would be considered as this) and 'other' (students assessed as having a SpLD) were discounted.
- ◆ In total 9 students (Yr3 N = 3 and Yr4 N = 6) agreed to be interviewed about their experience of dyslexia before university and whilst they were studying at the CSU.

Ethical issues

- ◆ Written permission was given by the Director of Student Services and the Disability Office Manager in the CSU Disability Office (DO) to use the databases on the understanding that confidentiality and anonymity with regard to the names of both the institution and individual students be maintained.
- ◆ Permission was requested, by letter, of the students concerned to use the information stored in their files. Only one student declined permission and these data were not used.
- ◆ Final year dyslexic students from Yr3 and Yr4 were invited, by letter, to partake in a 20 minute interview about their experience of dyslexia before university and whilst they were studying at the CSU.
- ◆ Confidentiality and anonymity were assured and that information stored for analysis would be destroyed once the results had been published. Students were asked to sign a form to allow the interview to be recorded.
- ◆ An ethical committee approved the research project and once again, confidentiality and anonymity was guaranteed and an assurance that any files created and information gathered for the project would be destroyed once the results of the research were published.

Data Collection

- ◆ Selected data that might give insight into the student sample's experience of dyslexia was compiled from UCAS forms and from paper-based DO student records merged on a paper form.
- ◆ The data recorded were gender, age, discipline, degree awarded (for example, BA/BSc), degree classification, when first suspected of an SpLD, when formally assessed for dyslexia, if intervention was received, any other disabilities, reading age, reading comprehension age, spelling age, writing and copying speed.
- ◆ Relevant data was transferred from the paper form to an Excel spreadsheet, checked by a colleague and coded, and then copied into the Statistics Package for Social Scientists (SPSS). This was a slow process and was double checked, on a separate day (by the author), for accuracy, and the final spreadsheet database was also

checked by a colleague.

A list of questions was devised and the semi-structured interviews were arranged at a time mutually convenient to researcher and student.

- ◆ The interviews took place in the same room which was relatively quiet, had subdued light was uncluttered and the seats, although upright, were comfortable.
- ◆ When the interviews were conducted, the students were asked for written permission to record the interview and they were allowed to explore questions freely.
- ◆ Care was taken not to use leading questions but allow the student to speak of their educational experience freely. Some questions were asked to clarify points but not to steer the interviewee in any particular direction.
- ◆ After the interview the tapes were transcribed and checked by two colleagues.

Data Analysis.

The student data were analysed and the frequency of:

- ◆ postgraduates and undergraduates;
- ◆ students in each degree category;
- ◆ students studying arts or sciences;
- ◆ students with an Assessment of Needs;
- ◆ students assessed for dyslexia at primary and secondary schools and university were calculated as well as the average age of students at graduation for first degrees.

The ratios of:

- ◆ male to female dyslexic students;

- ◆ dyslexic arts to science students;
 - ◆ female dyslexic arts to science students;
 - ◆ male dyslexic arts to science students;
- were calculated and where possible compared to literature, or data on non-dyslexic students attending the CSU and data obtained from HESA for the same academic period.
- ◆ Chi-Squared values were obtained for frequency of dyslexic and non-dyslexic students who were awarded first class honours degrees from Yrs1-4 and in changes in frequency of dyslexic students in a cross tabulation between the date dyslexic students were first suspected of dyslexia and when they were formally assessed.
 - ◆ The mean reading age, reading comprehension age and spelling age of dyslexic students who were assessed by the same educational psychologist at the university were calculated and the frequencies recorded.
 - ◆ Student interviews were transcribed from tapes and then given punctuation and ill defined 'words' such as 'er' were removed. The names of the students involved were changed and the interviews printed out on different coloured paper.
 - ◆ Common themes were identified and grouped together.
 - ◆ A table was then constructed to indicate the experience of students before university and at university.
 - ◆ Frequency tables, correlation tables, the Chi-squared statistic, Pearson's Rho statistic and One Sample t-tests were generated by SPSS as appropriate.

Results

The student sample consisted of Yr1 N = 79: 67 undergraduates and 12 postgraduates; Yr2 N = 75: 63 undergraduates and 12 postgraduates; Yr3 N = 73: 8 postgraduates and 65 undergraduates; and Yr4 N = 93: 11 postgraduates and 82 undergraduates. When compared to the CSU as a whole, undergraduate dyslexic students formed approximately 3% of the full time, final year undergraduate population: Yr1 = 3.73%; Yr2 = 3.52%; Yr3 = 3.34% and Yr4 =

2.65%. The ratio of female to male dyslexic students was approximately 1:1 for all years (Yrs1-4 1:1.02, 1:1.3, 1:1.8, and 1: 1.3 respectively).

The majority of students graduated below the age of 30 (96.7%), and the mean age was 23.45 and the mode was 21 years.

Mature students are defined by the UCAS as 21 years or over on admission. The percentages of mature dyslexic students who were awarded degrees were 13.6%, 7.8%, 15.4%, 13.4% for Yrs1-4 respectively,

Table 1. Data for dyslexic undergraduates for the academic years 1-4

Year	Gender	1st	2:i	2:ii	3rd	Pass	Total
Yr1	Female	4	22	9	0	0	35
	Male	7	8	13	4	0	32
	Total	11	30	22	4	0	67
Yr2	Female	2	8	14	1	1	26
	Male	2	18	12	5	1	38
	Total	4	26	26	6	2	64
Yr3	Female	1	11	9	1	1	23
	Male	0	12	21	5	4	42
	Total	1	23	30	6	5	65
Yr4	Female	1	14	18	2	3	38
	Male	1	12	24	5	2	44
	Total	2	26	42	7	5	82
Total		18	105	120	23	12	278

a total of 11.9% over four academic years. The percentage of mature non-dyslexic students for the CSU was 15.7% over the same period.

The ratio of undergraduate dyslexic students studying arts to sciences over the four academic years was 1: 1.3. The ratio of female to male undergraduate students studying sciences and arts averaged 1:0.8 over the four years.

The majority of students were awarded BA or BSc degrees. The total numbers of dyslexic undergraduates in each degree class, as shown in Figure 1 indicates that the majority of students (120, 43.2%)

obtained a Lower Second Class Degree. The percentage of First class honours degrees awarded was higher in Yr1 but was stable over the subsequent three years whereas 2ii honours increased from 32.8% to 54.5%.

Using data for the total first class honours from Tables 1 and 2 a chi-squared test indicated that the decrease in the number of First Class honours degrees at the CSU when compared to non-dyslexic students was significant, Pearson's $\chi^2 = 13.5$, $df = 3$, $p = 0.05$, indicating that it would be expected that more dyslexic students would be awarded first class honours.

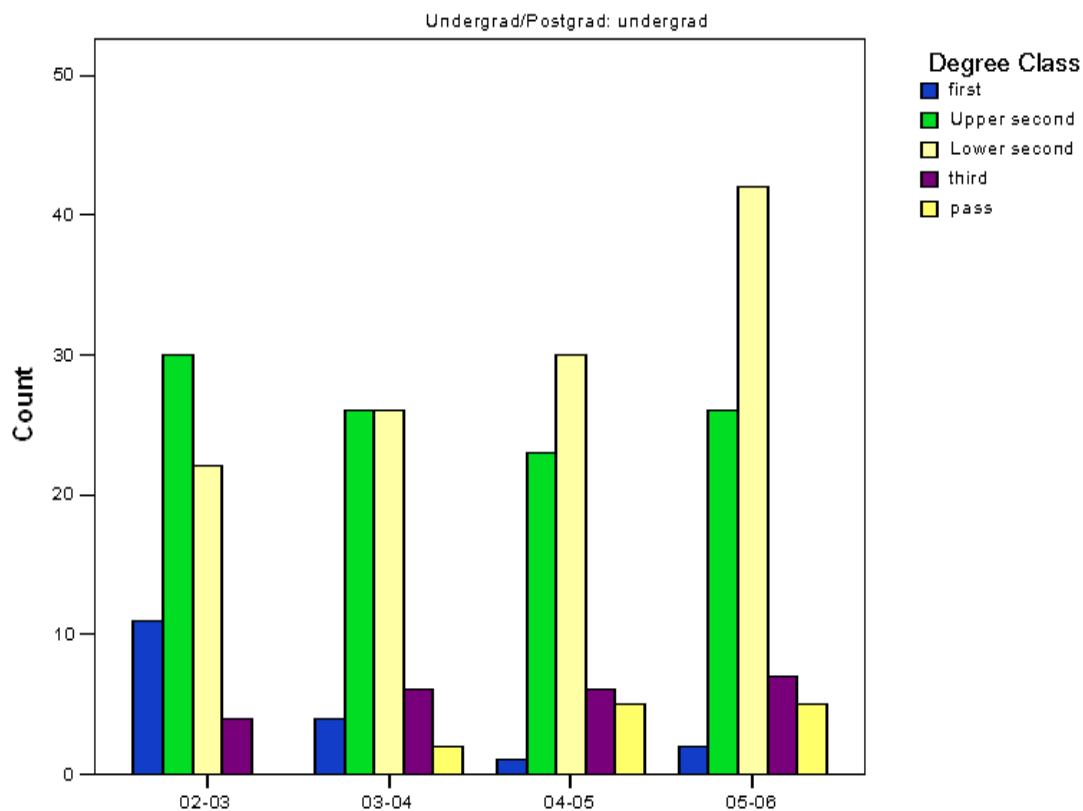


Figure 1. A bar chart of degree classification final year dyslexic students in years 1-4

Table 3 indicates that the number of students suspected and formally assessed for dyslexia at primary school increased, and that the number of university students assessed for dyslexia has not decreased. Taking the results from column one of Table 3, the students suspected at primary school, a contingency table analysis of year against when students were first formally assessed for dyslexia gives Table 4.

Using the data from Table 4, the Pearson's Chi Squared $\chi^2 = 24.7$ (9) $p = 0.03$ so the null hypothesis that there is no

change in the proportions of students in the four education categories across the four years is rejected. The proportion of students assessed at primary school for Yrs 1-4 was: 0.30, 0.24, 0.64 and 0.76 respectively whereas the proportion of students assessed at university decreased from 0.35 in yr 1 to 0.08 in yr 4.

Table 5 indicates that the numbers of undergraduate dyslexic students making requests to access funding for support decreased over the 4 years whilst the numbers of undergraduate dyslexic students accessing funding in the final

Table 2. Data for non-dyslexic undergraduates for the academic years yrs1-4.

Year	Gender	1st	2:i	2:ii	3rd	Pass	Total
Yr1	Female	78	522	329	42	1	972
	Male	73	310	285	86	2	756
	Total	151	832	614	128	3	1728
Yr2	Female	86	490	332	45	0	951
	Male	81	316	278	70	3	744
	Total	167	806	610	115	3	1695
Yr3	Female	115	590	476	78	1	1269
	Male	3	321	350	79	3	790
	Total	118	911	826	157	4	2059
Yr4	Female	98	571	473	84	5	1226
	Male	85	348	345	97	1	874
	Total	183	919	818	181	6	2100

Table 3 A cross tabulation of when dyslexic undergraduates were first suspected of having dyslexia and when they were first assessed.

Year			When students were first suspected of dyslexia				Total
			Primary School	Secondary School	College	University	
Yr1	When students were first assessed for dyslexia	Primary School	6	0	0	0	6
		Secondary School	4	13	0	0	17
		College	3	3	1	0	7
		University	7	10	0	12	29
		Total	20	26	1	12	59
Yr2	When students were first assessed for dyslexia	Primary School	5	0	0	0	5
		Secondary School	9	3	0	0	12
		College	3	2	3	0	8
		University	4	1	0	8	13
		Total	21	6	3	8	38
Yr3	When students were first assessed for dyslexia	Primary School	16	0	0	0	16
		Secondary School	7	10	0	0	17
		College	0	0	0	0	0
		University	2	3	0	13	18
		Total	25	13	1	13	52
Yr4	When students were first assessed for dyslexia	Primary School	19	0	0	0	19
		Secondary School	3	9	0	0	12
		College	1	3	0	0	4
		University	2	7	4	18	31
		Total	25	19	4	18	66

Table 4. Contingency table of year against when students were formally assessed for dyslexia when suspected at Primary School

Year	Formally assessed				Total
	Primary School	Secondary School	College	University	
Yr 1	6	4	3	7	20
Yr 2	5	9	3	4	21
Yr 3	16	7	0	2	25
Yr 4	19	3	1	2	25
Total	46	23	7	15	91

Table 5. When undergraduate students received a Needs Assessment to access funding for support for Dyslexia in HE.

Year	No request made	Before university	First year	Second year	Third year
Yr 1	34	1	16	10	6
Yr 2	30	7	11	12	4
Yr 3	14	12	15	12	12
Yr 4	17	11	18	12	15
Total	185	31	60	46	37

year of their course increased. The number of dyslexic undergraduates putting funding in place before their arrival at university has increased.

113 out of 279 final year dyslexic undergraduate students during this 4 year period who were assessed for dyslexia at

university went to the same educational psychologist. As the diagnostic tests for these students are the same, it is interesting to see how these students fared in terms of literacy attainments.

The minimum reading age was equivalent to 10 years and the maximum 18 years,

which is also the mode but in this instance 18 years is equivalent to >17 years which is the test ceiling. The mean reading age is 16.1 years that is at least 0.9 years below the dyslexic students' chronological age. The implication is that 56.5% of students (65) read more slowly than their chronological age.

The age of reading comprehension for undergraduate dyslexic students ranged from 10 to 18 years, where the test ceiling is 17 years and the mean was 13.5 years that is at least 4.5 years below the dyslexic students' chronological age, but the mode of 22 is the same for 12, 13 and 14 years.

The spelling age of dyslexic undergraduate students ranged from 8 to 18 years where the test ceiling is 17 years. The mean was 14.48 years that is at least 3.52 years below the dyslexic students' chronological age, and the mode is 16 years. 89.0% of dyslexic undergraduate students (97/109) would have difficulty with spellchecking their work.

The writing speed of a university student is considered to be 26 wpm and thus the copying speed would be less as the student has to look at the text to be copied, hold the sentence or phrase accurately in the short term or working memory and then form the characters on the page. The copying speed of the undergraduate dyslexic students for Yrs 1-4 ranges from 10 to 31 wpm and the mean is 19.2 wpm (107) with a mode of 20wpm that is much lower than 26wpm, and 104/107 (97.2%) dyslexic students copy at a speed below 26 wpm.

The free writing speed of undergraduate

dyslexic students ranges from 11 to 37 wpm and the mode is 25 wpm. As might be expected the mean for free writing is faster than the copying speed at 23.4 wpm but this is still below the expected speed of 26 wpm for a student at university. 80/107 (74.8%) undergraduate dyslexic students wrote at speeds below 26 wpm.

Student Interviews

Nine dyslexic final year students were interviewed; three from academic year 3 (Charlotte, Edmund and George) and six from academic year 4 (Adam, Bridget, Daniel, Fiona, Harry and Ian). Two tables (6 and 7) were constructed from the interviews: one concerned with students' experiences before university and one during their course.

The major themes that emerged from the interviews as shown in Tables 6 and 7 can be grouped into three sections: transition to university, support given by the university and students' abilities, strategies and feelings. Minor themes included course choice, IT and the use of stickers in examinations.

Transition to University.

8 of the 9 students interviewed commented on their transition to university. Three students experienced difficult transitions and five students had little problem adjusting to university life. Ian found his transition to his first university difficult because of the attitude of his academic department;

“they were really unhelpful they made me feel that it was my fault that I was dyslexic and said things

like do you realise that if we have to give you extra time in exams that we have to schedule a different room for you. This is a huge problem for us. It will cost us more money."

Harry had not realised that he was out of practice in writing essays after taking a gap year

"for me it was a big shock writing... I spend a lot of time typing over my gap year and coming back... to have to write out was a strange thing"

and Edmund had to adjust to a new life-style. 5 students had no problem making the transition to university: Bridget and George believed that this was due to their college experience whereas Daniel had a relaxed attitude to his first year which facilitated his move to university. George stated:

"...it's more lax at university and you're living away from home – it's different but for the first year I didn't notice a huge difference because I was living in halls and you're pretty well cared for in halls."

University Support

University support was mainly provided by academic departments and Student Support Services which included one-to-one specialist tuition and small group workshops.

Departmental Support

Both Bridget and Fiona felt that there was a lack of understanding of dyslexia on the part of staff in their departments,

although they were eventually able to find help. Fiona said:

"She [academic tutor] looked like the kind of person who had never had a problem with anything academic in her life and probably wouldn't understand it if you tried to explain it to her."

But:

"our Head of Year X is really good, I get on well with him, he's really easy to talk to...I've asked him to be my tutor next year."

Fiona considered that staff should advertise the help that is available in the department because friends who were dyslexic students in other universities were offered help. Bridget felt that she had to struggle to get support which should be available at the beginning of the course and lecturers were not always helpful.

"some people help you more than others... you find yourself [with] a constant battle... It's just that people just don't understand."

In particular Bridget stated that the feedback on essays was superficial and could have been more detailed.

Charlotte said that not all staff knew she was dyslexic and perhaps her lecturers were preparing lectures for the 'average student' as Martin (1999, in Hocking et al., 2007) states. Charlotte felt that little support other than extra time in examinations could be offered to dyslexic students studying science subjects.

However, she reported her fear that because students with extra time in examinations sit in a separate room, they can be disadvantaged when they are not notified of errata in examination papers. This happened to her, and although she was stopped in a corridor by a lecturer, and assured that this would be taken into account in marking her script, she was never sure that this had occurred.

An inconsistency in the adjustments that dyslexic students receive was noted by Charlotte who reported that her dyslexic friends studying other disciplines in the CSU could use stickers to identify their coursework and examinations as belonging to a dyslexic student but they were not used in her department. Indeed Edmund used stickers on essays and examinations since he was assessed for dyslexia in his second year.

Edmund and Fiona thought that departments need to look at deadlines so that not all essays should be expected on one day. They thought that there should be a one week gap between deadlines, recognition of dyslexic difficulties in mark schemes and extra time (extensions) for coursework. Edmund also said that he received no feedback from staff and no possibility of having a draft seen by departmental staff or handing in formative work.

Fiona said it would be a help if core extracts of text to be read could be flagged. An overview of the course before the academic year started would be helpful, so that students could prepare for a module before the year begins. It would be good to have a time when students could ask staff questions and

tutors should ask students to see them and not the other way around.

Although Ian had a bad experience in his first university, he found his department in the CSU was "great" and Harry likewise found his department "fantastic". Ian had the help he needed.

Adam said that academics were supportive but not always in the most sensitive manner. An academic said:

"Come and see me one lunchtime" and I did. We just took my essay and she put red all over it. I have never seen so much red in all my life and I haven't seen it again, Thank God."

Student Services Support

In terms of support from Student Support Services this fell into guidance through the application of an Assessment of Needs and through this the putting into place of note takers, specialist tuition, specialist IT equipment etcetera. Charlotte, Edmund and George found the small group study skill sessions organised by the Dyslexia Co-ordinator to be particularly helpful

Charlotte stated:

"It was just good to be able, finally, to say that I was dyslexic and just talk about that... and organisation seminars that I went to were good."

and Bridget and Charlotte found one-to-one sessions on study skills useful. Bridget said:

"The fundamental issue is essay skills and presentation skills but wrapped

around that and the second core which is all the soft areas like stress, confidence issue..."

George reported:

"For me the biggest impact was always one-to-one you can get a lot from seminars and you can get a lot from groups because it's good to know how other people work... but most progress is made during one-to-one's."

Although all interviewees had undertaken a Needs Assessment, 4 found the process confusing and time consuming.

Edmund said he found the "door always open" and he could see a tutor at least within a week or so. It would be good if there were sessions where students could talk in the disability office, not necessarily about study, perhaps a discussion group. There should be more than one full time tutor because of the number of dyslexic students at the university. If the single tutor had half the workload the service could be even better.

George said there should be workshops to analyse students' weaknesses, improve computer skills, organisation, and use of software packages and academic staff should receive disability training.

As a result of a Needs Assessment each student may be given IT equipment and assistive software. Charlotte, Harry and Ian mentioned how helpful their computers and IT equipment was and in particular Ian found the spellchecker valuable. Ian was also provided with a note-taker.

Students' difficulties and strategies

Three students reported difficulty with organisation in terms of time management (Charlotte and George) and assignment structure (Bridget). Fiona found it hard to read large volumes of text for her dissertation whereas Ian was able to scan read to find the necessary information to study his science subject. Both Harry and Ian had difficulty taking notes. Ian had a slow speed of writing and could not keep up with a lecturer if he spoke too quickly or wrote too quickly on the board. Harry found it difficult to write and listen at the same time and because he found visual representation of information easier to understand, he found it difficult to follow a lecturer who simply spoke without using visual aids. Adam mentioned that the comments on his assignments were about his spelling and so he considered that he had poor proof reading skills. Fiona found it difficult to change how she studied once she had an assessment of dyslexia in her third year.

Strategies that students found helpful were speed reading (George and Ian), mind mapping (Harry), hearing how other students coped with studying (Edmund). Ian found that he was better studying at his own pace and because he studied a more mathematical subject, constantly working through examples to understand topics prepared him for examinations. Adam found that he had to type up his lecture notes and he had to study continuously rather than just before examinations as was the case for his A levels. Harry also found it valuable to be able to download lecture notes from the Virtual Learning Environment.

Adam suggested a course booklet to let students know what specialist tuition was available or perhaps this could be on the website. Adam would have appreciated grammar and spelling lessons, particularly as he intended to study at Masters level and he may have to learn Latin or Greek.

Bridget said that tuition on essay writing, dissertations and presentation skills are central skills and wrapped around these are dealing with stress and confidence issues. A stress management course would be very helpful.

Prejudice

Three students were directly affected by prejudice: Adam, Ian and Edmund. Adam was advised by a teacher when he filled in his UCAS form not to declare his dyslexia in case he was not admitted to the university. This meant that Adam went through his first year without extra time in examinations or any support from the Student Support Services. This experience echoes that of Connor (Fawcett, 2004) who did not disclose his dyslexia and did not achieve his potential and the issue of disability as stigma (Morris and Turnbull, 2006). Adam asked his flat mates to proof read his essays and look for spelling and grammar mistakes but even so he achieved lower grades than in his second and third years after he had declared his disability. Ian, as already reported, found that academics in his first university were not prepared to give him extra time in examinations. Although he had evidence of his difficulty, he had to undertake an assessment with the university's Educational Psychologist which confirmed the first assessment that he was

dyslexic. He was told that if they had known he was that dyslexic he would not have been accepted on to the course, even though he achieved the 3 A's at A Level that the university required. Speed of writing was a major difficulty for Ian but he was told that only if he had a broken arm would he be given extra time in examinations. This certainly indicates that this department did not view Ian as an individual who needed specialist support.

However, with regard to the CSU:

"I had a really good time at the CSU and I had the whole student experience - I had it on a level playing field which was a thing that was really important... The only thing that could hold me back is making the same mistakes that all students do like drinking too much and staying out too late and not turning up - but it wasn't due to being dyslexic or being slow copying things off the board which made me feel that if I put my back into it I could do really well."

Edmund, who was first assessed at university, seemed to feel that he would be viewed as unintelligent because he had dyslexia, and yet dyslexia is not related to IQ. Edmund said university was a challenge and he felt isolated as many disabled students (National Disability Team and National Bureau for Students with Disabilities (SKILL), 2004 in Madriago, 2007). Adam thought that he could have done better and interestingly both these students were told at school that they were lazy or stupid and George said that he felt that being told that he was lazy at

school still had an effect when he was a university student.

Course choice

In terms of course choice Adam and Daniel said that few universities ran the courses in which they were interested. Harry had thought of studying another subject but was impressed by the CSU's academic department. Charlotte and Edmund thought they might have studied another type of subject which may perhaps indicate that they chose courses they thought they could succeed in because of the difficulties experienced due to dyslexia.

Discussion

There is clear evidence from this case study of the provision of dyslexia support over the first 4 years available in a selected university in the UK that dyslexic students continue to show difficulties in comparison with non-dyslexic students. Interestingly, the numbers of dyslexic students at the CSU are higher than average, approximately 3% of the full time, final year undergraduate population as opposed to 1.97% as reported by James (2003) based on HESA figures. This may be due to the CSU having a good reputation in supporting students with disabilities.

The ratio of female to male dyslexic students was approximately 1:1 for all years and this a trend in the ratio of female to male students decreasing (Rook and Miles, 1999), although the mean ratio of non-dyslexic students remained the same.

Grant (2004) suggests that dyslexic students may choose science or art and design subjects because they require less independent reading and writing. The ratio of undergraduate dyslexic students studying arts to sciences over the four academic years was 1: 1.3. This is comparable to HESA (2008) figures for all UK students (dyslexic and non-dyslexic) showing that the ratio of female to male undergraduate students studying sciences and arts averaged 1:0.8 over the four years.

The majority of students were awarded BA or BSc degrees and obtained a Lower Second Class Degree, which corroborates the figures reported by Richardson and Wydell, 2003. The percentage of First class honours degrees awarded was higher in Yr1 but was stable over the subsequent three years whereas 2ii honours increased.

Data relating to when dyslexic undergraduates were first suspected of having dyslexia and when they were first assessed indicates that the numbers of students at the CSU who were assessed at primary school increased over the 4 year period and the numbers of students assessed at university remained unchanged.

In order to access the support services that provide specialist tuition, note-takers etcetera at the university, students who are eligible for the Disabled Students Allowance must have a Needs Assessment, normally paid for by the funding body. The numbers of undergraduate dyslexic students making requests to access funding for support decreased over the 4 years whilst the

numbers of undergraduate dyslexic students accessing funding in the final year of their course increased. The number of dyslexic undergraduates who had funding in place before their arrival at university has also increased, suggesting greater awareness in the student body of the availability of support.

The process of assessment is expensive and can be slow. A prerequisite for a Needs Assessment is an Educational Psychologist's Report and there is usually a waiting list of a month or two. In addition, the cost can be anything between £300 and £800, even with help from the means tested Contingency Fund, a student may think hard before going forward for an assessment. Unfortunately, if a student is given a Needs Assessment in their final year the Funding Body will usually restrict the help given to the student, for example, a student may not be given any IT equipment, although some may be loaned to the student. However, non-medical help in the form of specialist tuition and up to the present note takers have usually been funded. The increase in final year students receiving assessments therefore means they are not able to fully benefit from the support provided.

In terms of the standard scores for the diagnostic tests for the 113 students assessed by the same educational psychologist, the majority showed mild problems with reading but quite severe problems in spelling, more than 3 years below their chronological age. More than half read slowly and the majority have difficulty understanding textbooks and

may need to re-read texts in order to gain comprehension, this will also slow down their ability to gain knowledge from the written word.

Bearing in mind the data for the reading age this means that students could decode text and read aloud but might have some continued difficulty in comprehension. The majority would also have difficulty with spellchecking their work and proofreading. The slow free writing and copying speed of the majority of this group, with a mean speed well below average would impact on their assignments, but above all on their performance in examinations. It may be seen the problems of dyslexia are still clearly apparent, even in this high achieving group of university students.

Limitations

Neither database made a distinction between severe, moderate or mild dyslexia which would impact on when a person was assessed for dyslexia and the type and extent of intervention provided throughout school and at university.

Students over a certain age are not likely to have been assessed at school or college because assessment has only been used widely over the past 30 or so years. In addition, emotional difficulties that may arise from the assessment process or the stress caused by other difficulties which dyslexic students may experience when writing essays, sitting examinations or giving presentations which may exacerbate the difficulties of dyslexia, (Gilroy, 2004) and impact on degree classification were not taken into account.

The date of a student's first assessment was not available for each student and the students from only one UCAS category were considered so students with co-existing conditions such as dyspraxia (Portwood, 2000) or Attention Deficit Disorder (ADD) were not included in this study. As both the latter conditions require either a General Practitioner's referral or large sums of money to obtain an assessment (in the region of £800), if a student is suspected of dyslexia as well as dyspraxia, it is easier to gain access to the DSA on account of dyslexia rather than another disability and the support recommended by the Needs Assessor may not differ substantially. One might expect that a student with co-existing difficulties if they had been assessed for such a condition would have been given more intervention. Some students with dyslexia might select the UCAS code for a Hidden Disability (previously 9) and not Dyslexia (G) in order to prevent the declaration of a SpLD or they may consider that an assessment of "a SpLD of a dyslexic nature" would fall in category (9) and so not be included in the study.

There may be students with dyslexia who have not been tested for visual disturbance or Meares/Irlen Syndrome because not all educational psychologists consider this condition when assessing for dyslexia, (Stein, 2003; Wilkins, 2003). This will impact on their reading, study skills and perhaps their degree classification. No account of the geographical area where the student's schooling took place is considered in this study. It would be expected that there are differences in intervention provided by schools. In addition, some students may prefer not to

declare their dyslexia to the university or be able to afford the cost of an educational psychologist's assessment and so these students would not be included. Since 2008 Student Finance England and more recently Student Finance Wales have come into existence and there may be no noticeable geographical influence for university students.

It is difficult to know if students would have received a different degree had they been given intervention before coming to university. Nevertheless, it is clear from the interviews that some students felt that they could have achieved more if diagnosis had been made sooner and support provided. No account is taken of how hard a student worked or whether intervention would have improved their self-esteem and motivation. Similarly, the type of intervention given at school, when given, is not examined to see what form it took or over how long a period it was given; to simply be placed next to someone who can spell, is not the same as receiving one-to-one specialist support. No account was taken of how many students availed themselves of help from Student Services whilst at university as it was considered that in the timescale of the study this could not be achieved. However, the author is aware that this would be a very necessary step to complete the study. Unfortunately, degree results were only available to the author in the form of categorical information. As degree classification is a large spread, a more accurate representation might be obtained if a percentage score had been available.

Table 6. Themes from Student Interviews before University									
	Adam	Bridget	Charlotte	Daniel	Edmund	Fiona	George	Harry	Ian
	Primary	College	University	University	University	University	Primary	Primary	Secondary
First assessed	✓	✓	✓				✓	✓	✓
Several tests before dyslexia assessed									
Difficulties as a child	Reading	Spelling, pronunciation	Reading, writing	Spelling	English, spelling, fluent writing	Reading	Motor control, concentration	English	Writing
Family history of dyslexia			✓		✓		✓		✓
Considered lazy or stupid		✓	✓		✓		✓		
Feelings	Embarrassed								
School			State		State		Public	Public	Home
School with low expectations	✓	✓				✓			
Hardworking	✓	✓					✓		
Intervention	✓		✓	✓		✓	✓	✓	
Education	Excluded		Excluded				Excluded	Excluded	
Wanting independence	✓								
Non-specialist support	✓					✓		✓	
IT	✓						✓		✓
Examinations-extra time		✓					✓	✓	
Mathematics	Good at algebra	χ		✓				Dyscalculic	✓
Prejudice	✓				✓				✓

Table 7. Themes from Student Interviews at University

	Adam	Bridget	Charlotte	Daniel	Edmund	Fiona	George	Harry	Ian
Department attitude/support		✓	✓		✓	✓		✓	✓
ICT								✓	✓
University support		✓.	✓			✓	✓		✓
Personal abilities/ difficulties	✓	✓	✓			✓	✓	✓	✓
Strategies	✓				✓		✓	✓	✓
Personal feelings	✓	✓			✓				
Specialist tuition			✓		✓		✓		
Improvement to tuition service	✓	✓			✓				

It is clear from this study that dyslexia continues to restrict the performance of university students, and support is needed to ensure they reach their potential. So what does the future hold for dyslexia support in the University sector? In some ways the dyslexia movement has been a victim of it's own success, with awareness leading to increased numbers coming forward over the years for screening and support. The UK government, as part of a general programme of austerity has cut funds to support disability. Recent changes have been made to the UK Disabled Student's Allowance, which require that Universities in England take responsibility for funding the support for all students with disabilities. It is not clear whether all universities will accept this added financial burden.

Consequently, cuts have already been made in the hours of some support workers at Sheffield University, reducing their input to 14 hours weekly from a previous 40 hours. It remains to be seen what the overall impact will be, but it may well be that the UK will no longer provide the best support in the world for students with dyslexia at University level. However, Wales and Scotland will continue to provide the support necessary for dyslexic students to be successful, as a legal right.

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A unique collaboration between the University of South Wales and the DAS Academy, the Master of Arts in Special Educational Needs (MA SEN) provides an intellectually rigorous platform for practitioners to engage in critical reflection and enhance their research skills.

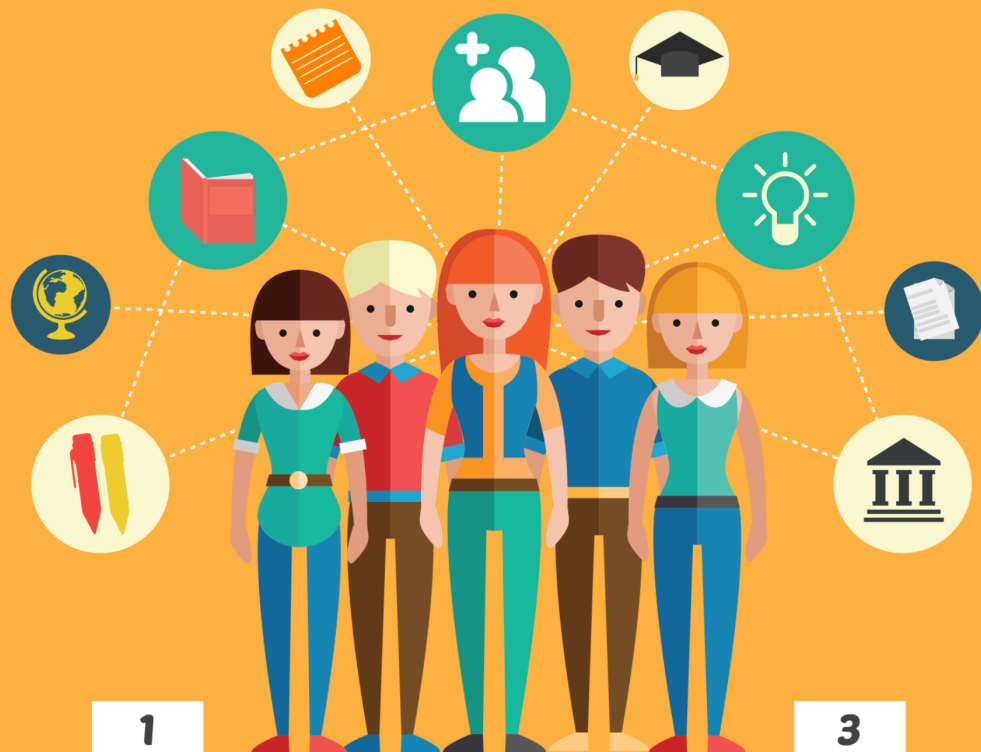
Delivered at the DAS Academy, the programme has its foundation in the University's well established SEN framework and is enhanced with local perspectives to ensure relevance to the Singaporean context, bringing together quality SEN practices from the East and the West.

The programme enables practitioners working with people with special educational needs, or those in education-related fields to develop professionally and distinguish themselves in the growing field of special educational needs.

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CPE Registration No.: 201003689Z | Validity: 30 December 2013 - 29 December 2017

CERTIFICATE IN DYSLEXIA AND LITERACY TEACHING



1

Appreciate the literacy needs of a dyslexic child and acquire knowledge of the phonology and structure of the English Language.

2

Be equipped with skills to support persons with language processing problems associated with dyslexia.

3

A theoretical, practical and experiential learning for personal and professional development.

WHAT OUR STUDENTS SAY ABOUT THE COURSE

"Some of the English rules that I have never come across were introduced, and this has helped me to support my learner when needed." - Educator, 2015 April

"It helps parents of dyslexic kids to teach them in a more systematic way." - DAS Parent, 2014 August

"Gives me a very clear understanding to improving the language usage." - Educator, 2014 August

"It is useful for someone who needs to support her child as it answers the 'why' that surfaced during the learning process." - DAS Parent, 2015 April



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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

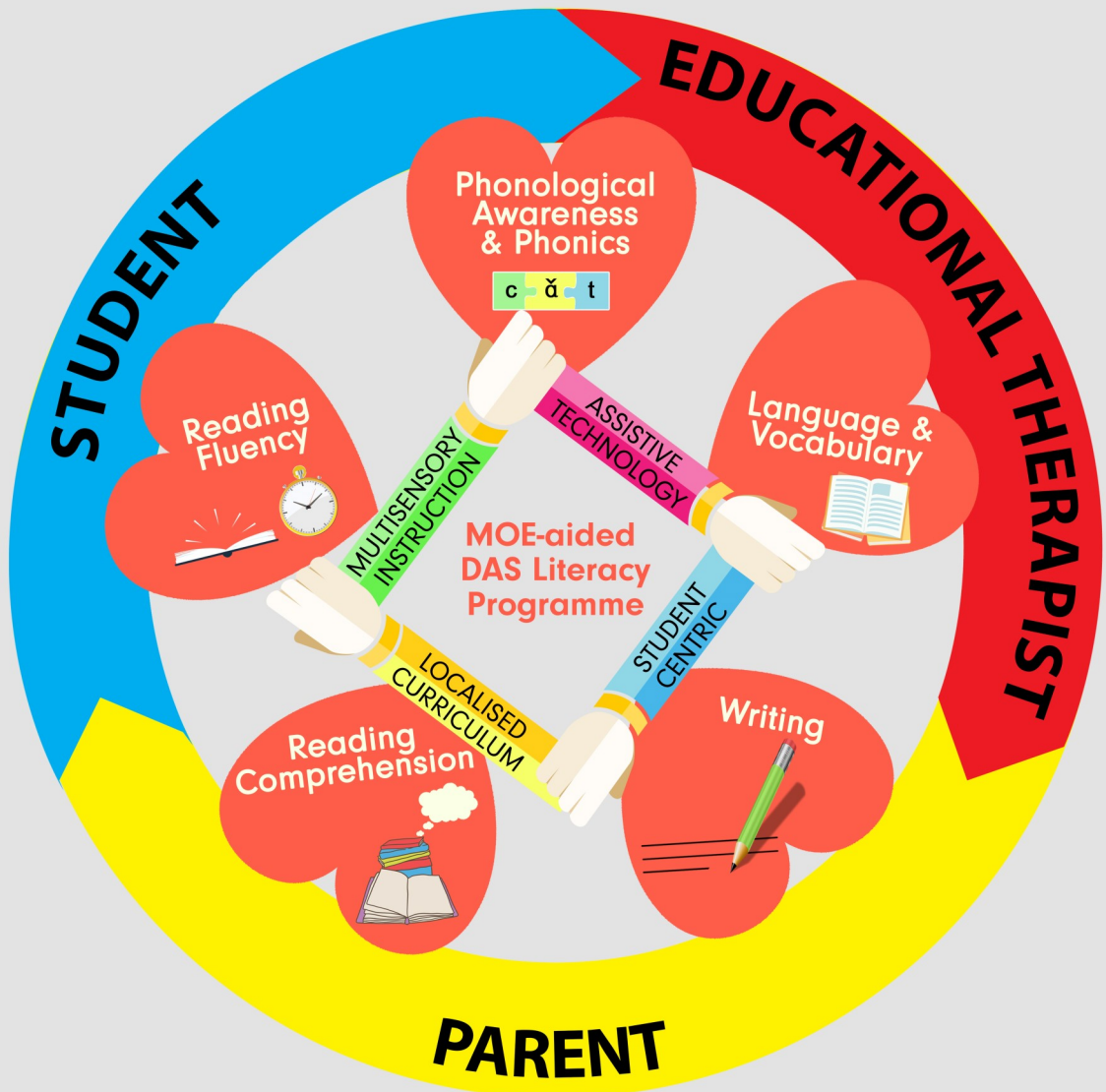
- ◆ We provide high-quality, professional, innovative and client-focused solutions to create and sustain services for the dyslexic community in Singapore and the region.
- ◆ We operate as a financially viable and cost-effective business which at the same time ensures that no dyslexic person is unable 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 250 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.

MAP INTEGRATED CURRICULUM

MOE-aided DAS Literacy Programme



**DYSLEXIA ASSOCIATION
OF SINGAPORE**
HELPING DYSLEXIC PEOPLE ACHIEVE

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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 be 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, Swansea 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.

Asia Pacific Journal of Developmental Differences

Volume 3 ♦ Number 1 ♦ January 2016

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