

Perceptions and Strategies of Learning in English by Singapore Primary School Children with Dyslexia – a metaphor analysis

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Abstract

Context and objectives:

Learners with dyslexia have difficulties in reading and writing. In Singapore there are about 20,000 primary and secondary school learners with dyslexia. This paper presents research findings on the perceptions and feelings of primary school learners with dyslexia in Singapore regarding their learning of school subjects through English, together with how they use strategies to overcome some difficulties.

Method:

46 children attending remediation classes at the Dyslexia Association of Singapore were interviewed using metaphor analysis. It is difficult to use conventional research methods (e.g. questionnaires, interviews) to find out their views and perceptions due to their difficulties in reading and writing, or sometimes in expressing their thoughts orally, which demands more working memory and sequential processing. Methods of elicitation of metaphors include game playing, picture drawing, role playing and questions and answers.

Findings:

257 metaphors were elicited and classified into eight aspects of learning: (1) reading; (2) writing; (3) learning English; (4) learning a second language; (5) expression of thoughts in English; (6) learning Mathematics; (7) learning Science and (8) concepts of dyslexia. The findings help researchers and educators to understand both positive and negative perceptions of young learners with dyslexia concerning their learning of English. The paper also suggests useful ways to help these learners deal with their difficulties in learning.

Conclusion:

Multilingual dyslexic learners can use metaphors to express themselves successfully if appropriate support and activities are provided, and the use of metaphor can be employed as an effective method to understand the learners better.

1

Introduction

Few studies have given much attention to learners of English as an additional language (EAL) with dyslexia (Martin 2005, 2009; Kormos and Kontra 2008; Siegal 2008). It is even more unusual to find studies about these learners' own views and their EAL learning experience (Burden and Burdett 2007). This scarcity of studies is largely due to four factors: first, the predominant monolingual assumptions behind much research in dyslexia, although bilingual learners and learners using additional languages are equally as likely to be dyslexic as monolinguals, and notably dyslexia may manifest itself differently across different languages; second, it is only a recent development in English Language Teaching (TESOL, EFL, EAL) to research learners with special needs (Kormos and Kontra 2008); third, the difficulties of using appropriate research methods regarding dyslexia, since learners with dyslexia commonly find it difficult to express themselves; fourth, the need to develop specific research methods which are appropriate for younger learners.

This paper reports on a project investigating the perceptions and practices of learning skills in English and other school subjects of young dyslexic learners in Singapore using the research method of metaphor analysis. This project is believed to be the first of its kind to relate dyslexia and English (EAL) as a curriculum or academic language in a multilingual context through metaphor analysis. The term EAL means here that English is an additional language used as a medium for learning. The project aims:

- to find out the perceptions of learning English and other subjects of primary school EAL learners with dyslexia in Singapore in order to understand these learners;
- to know what methods they use to overcome their difficulties;
- to employ the metaphor analysis method developed by the principal investigator (Cortazzi and Jin 1999; Jin and Cortazzi 2008, 2009, 2011), and used successfully for researching perceptions and beliefs regarding English as a foreign language (EFL) held by learners and shown to be effective with first language (L1) learners with dyslexia in Britain (Burden and Burdett 2007). In this project, this method will be extended to young EAL learners

with dyslexia (see further in the methodology section).

It is generally perceived that learners with dyslexia in Singapore would have similar needs to those in other English-speaking countries since English is the medium of education there. However, in reality, many Singaporean learners regard Chinese as their mother tongue or home language, e.g. 32 per cent of Chinese speakers in Singapore use only Chinese (Singapore Population Survey 2000), yet they have to learn to use English as the curriculum language in school. To this group of learners with dyslexia, English is certainly perceived as an additional language. This situation adds complications for them in coping with their difficulties with dyslexia. Further, it is difficult to use conventional research methods (e.g. questionnaire surveys or formal interviews) to find out their views and perceptions due to their difficulties in reading and writing, or sometimes in expressing their thoughts orally, which demands more working memory and sequential processing. Researchers have been trying different methods to investigate these learners' views and recently the use of metaphor has been successfully employed to collect this type of data with a group of British boys with dyslexia (Burden and Burdett 2007). However, few studies (Peer and Reid 2000; Reid and Fawcett 2004) have been carried out to find out English learning perceptions and methods from EAL children with dyslexia.

This paper presents findings from an investigation of 46 children with dyslexia aged between eight and 14 years old who attend the Dyslexia Centre of Singapore. The study uses the more recently developed and innovative research method of metaphor analysis to ascertain the perceptions, feelings and strategy use of these children regarding the following aspects of perceptions related to learning: dyslexia, English, their reading and writing skills, learning a second language, expressing thoughts in English, and learning other subjects through English, such as mathematics and sciences.

2

Contextual background of dyslexic learners in Singapore

Learners with dyslexia have difficulties in reading and writing. These are elaborated in the following commonly agreed definition of dyslexia: 'Dyslexia is a difference in acquiring reading, spelling and writing skills that is neurological in origin. The cognitive difficulties that cause these differences can also affect organizational skills, calculation abilities, etc. It may be caused by a combination of difficulties in phonological processing, working memory, rapid naming, sequencing and the automaticity of basic skills' (European Dyslexia Association 2007). There is no necessary link between dyslexia and levels of intelligence and many dyslexics are seen to be creative and successful in architecture, engineering, lateral thinking and in people-related professions. On the other hand, for language learning, dyslexics may need more time, structure, practice and positive feedback.

In Singapore there are about 20,000 primary and secondary school learners with dyslexia (of a total of about 300,000 primary and 200,000 secondary students). These dyslexic learners find it challenging and feel pressurised when they face learning English as the curriculum and academic language which is the key to their present and future educational achievement (Ganschow, *et al.* 1995; Hutchinson, *et al.* 2004).

In Singapore, children face a complicated linguistic path in language learning. The main ethnic groups (about 77 per cent Chinese, 14 per cent Malay, 7 per cent Tamil) are associated with different languages; however, in this multilingual society, the four official languages of English, Mandarin, Malay and Tamil are used, in addition to around 20 other community languages, as well as various dialects within these languages. Singaporeans regard their home language as their mother tongue: for around 50 per cent of the population this is Chinese, for about 30 per cent it is English, 13 per cent Malay and 9 per cent Tamil; yet, for instance, Chinese-speaking children may grow up using Hokkien, Hakka, Teochew, Hainanese or Cantonese, or combinations of these, as the main home language while learning Mandarin, especially for literacy. Further, in a shift towards English, some homes of primary pupils now predominantly use English – this

is said to be up to 60 per cent of ethnic Chinese and Tamils but 35 per cent of Malays (*The Straits Times*, 11 November 2010) – but if this is the case it still leaves strong influences of other languages. Primary schools teach English and Mandarin (Moseley and Smith 2004) or another 'mother tongue' such as Malay, Tamil and other Indian languages. From then on, English functions increasingly as the learners' academic or curriculum language, through which their educational achievements are assessed. In schools, it appears that children in Singapore treat their mother tongue and English as their dual first languages, although each has a distinctive function and probably quite different scripts (e.g. English, Chinese, Tamil). Some children are particularly confused when a Romanised phonetic script (Hanyu pinyin used for bridging the transition from oral to written Mandarin Chinese) and English are taught at the same time. This adds more confusion to young learners with dyslexia (*ibid.*). For this paper, English is referred to as an additional language (EAL); however, readers should be aware of the distinctive features of the use of EAL in Singapore when this situation is compared with other countries.

Very limited research is available for understanding young EAL learners with dyslexia (Reid and Fawcett 2004; Siegel and Smythe 2005; Martin 2005, 2009). There are general considerations about dyslexic learners of foreign languages (e.g. papers in Rifkin 2009) and a few small-scale research studies of secondary-age dyslexic learners of English as a Foreign Language: in Poland focusing on anxiety (Piechurska-Kuchiel 2008) and reading and spelling (Nijakowska 2008), and in Hungary of a student learning vocabulary (Sarkadi 2008), while the development of a pen-and-paper test of English for dyslexics learning English as a second language in Norway (Helland 2008) remains a rare example with older primary-age learners. To conduct such research is particularly difficult because it is less reliable to use conventional research methods (e.g. questionnaire surveys or observation) to find out how young learners with dyslexia perceive their EAL learning, since often it is not easy for them to express themselves due to both their age and dyslexia (Burden and Burdett 2007). The development of a learner-centred approach is important for English

Language Teaching (ELT) and equally important for EAL learners with dyslexia. Thus, it is essential to take a first step in research by understanding these children's thoughts, perceptions, experiences and their own strategies to cope with their learning. This is exactly the outcome this project aims to achieve.

Singapore has, in recent years, highlighted the issue of learners with dyslexia, stimulated by political and policy changes. The Dyslexia Association of Singapore (DAS) is said to be one of the largest centres in the region with 55 specialised teachers offering English and other subject courses in the centres to over 1,000 school-age learners with dyslexia. A majority of them are primary-school age children. DAS also runs a Masters course for teachers and other professionals to specialise in specific learning differences. Many Asian countries may have a Dyslexia Association, but do not have such learning and training centres which offer specialised English and IT teaching and support to help learners with dyslexia.

3

Research methods explored to understand young dyslexic learners in Singapore

The main research method used for this investigation was metaphor analysis, a recently developed research method (Jin and Cortazzi 2008, 2009, 2011), to engage these young EAL learners with dyslexia, combined with interviewing and interactive activities to elicit metaphor data. Other activities used were role playing, games and picture drawing in order to enable these young dyslexic participants to express their views, comments and thoughts.

Metaphor analysis has been developed based on Lakoff's model in cognitive linguistics and psychology (Lakoff and Johnson 1980; Lakoff 1993), in which metaphors are conceptual: there are systematic "mappings" of correspondences between sets of language expressions of everyday metaphors and underlying concepts (Jin and Cortazzi 2011, p.72–73).

Burden and Burdett (2007) asked a group of 50 boys with dyslexia in Britain to use metaphors to reveal their views, thoughts and feelings about their difficulties. A total of 44 metaphors were produced through interviews containing further descriptions of their metaphors. The use of images through metaphors can help these learners to reveal their inner thoughts in a more concrete way and help them to reveal how they feel about a concept or event. Their research evidence and conclusions show that metaphors provide a way to explore 'the deep-rooted thoughts and feelings of children and young people diagnosed with dyslexia' (ibid. p.77). In the present research, the principal investigator and her colleagues have, over the past ten years, been developing the use of metaphors to find out EFL learners' perceptions of learning, teaching and language, using elicited metaphors with entailments from EFL learners. This approach is more systematic to take account of underlying meanings and allow better categorisation and comparison of metaphors. This has proven to be a powerful way to ascertain the insights of these learners. By collecting thousands of similar metaphors with entailments independently produced by these learners of English, a pattern can be established to see how they perceive their learning and teachers, to investigate their expectations and methods for learning, and to ascertain their underlying beliefs and values about language and language learning.

3.1 Key elements in metaphor analysis: metaphors and entailments

In metaphor research which analyses participants' metaphors it is not enough to collect and categorise the metaphors; an analysis of the 'mappings' and entailments of each metaphor is also necessary (Lakoff 1993; Kövecses 2002, 2005; Jin and Cortazzi 2011).

A metaphor has a 'target domain' (the topic, often abstract) and a 'source domain' (what is being compared to the topic, often concrete, more familiar and better understood). In the metaphor from one of the dyslexic students in Singapore, 'writing is climbing a mountain', the target domain is 'writing, which is compared to climbing a mountain', the source domain. 'Climbing' can be mapped onto 'writing' with systematic correspondences so that the student is seen to compare progress in developing writing to movement going upwards towards a mountain peak.

An 'entailment' is the underlying meaning of a metaphor which comes from the point of comparison and goes beyond the basic mapping. Metaphors often have clusters of related entailments and entailments may differ across cultures. Thus, 'climbing a mountain' has the additional idea that this is 'difficult'; it entails 'a lot of effort' and takes 'additional time' compared to just walking – for many dyslexic students these features apply to writing.

Including entailments is crucial because metaphors are by nature often ambiguous and are often used with a range of possible meanings. This means that there is a danger that a researcher might, perhaps unknowingly, interpret a given metaphor for its 'obvious' meaning but this meaning may be different from the one intended by the person who gave the metaphor. We also know that entailments can differ cross-culturally (Kövecses 2005; Berendt 2008; Jin and Cortazzi 2010). Hence, in this research, the participants were asked to give reasons (entailments) to explain their metaphors. The importance of this, and the fact that metaphor meanings cannot be taken for granted, can be illustrated from the present data for 'climbing'. Among the dyslexic students, 'reading' was 'climbing'

a mountain' which entailed that reading is 'hard' and 'tiring' (in the students' words); in contrast, 'expressing thoughts in English' was 'rock climbing', which 'is fun', whereas 'learning maths' was 'climbing a mountain', meaning that there was likely failure if students did not pay close attention since 'you just fall down from a hill'. These examples show that in this research we need the participants' own entailments, since the ideas and emotions associated with the 'climbing' metaphors are not necessarily obvious and can vary in intended meaning from one student to another. If we simply take 'climbing' as the metaphor without eliciting and analysing the entailment, we risk a great loss of nuance and elaboration of meaning, or we simply get the meaning wrong. Further, in this project the use of metaphors facilitates the expression of feelings and these can be ascertained through the entailments.

3.2 Elicitation methods used to collect metaphor data from young participants with dyslexia

The participants were aged between eight and 14 years old and a majority of them were in primary school. These young learners go to their mainstream schools in normal school hours; in addition they go to the DAS for further classes with educational therapists to enhance their learning. Thus, these young learners are familiar with the setting and teachers in the DAS, while the teachers there specialise in dyslexia support. The project team designed the following ways to actively involve the participation of these learners, which facilitated a larger number of metaphors elicited from these participants (see table. 1).

It was clear to the researchers (mostly educational therapists in the DAS) that these participants would not be led easily to produce any of their own metaphors, but the activities were used to encourage these young learners to engage in their metaphorical thinking processes.

First of all, these learners were given a training session involving them in verbal participation in order to:

- 1) understand what a metaphor is;
- 2) follow what was asked from them;
- 3) produce their own metaphors with entailments (see fig. 1).

After being trained, through verbal participation, to think in a metaphorical way, the learners were given activities to help elicit metaphors. These activities included: drawing pictures; picking up objects from a pile of cards, toys, etc. and using them to express comparison and give reasons; playing a game, such as shopping, going to a supermarket, snakes and



Age group	No. of participants	Gender		Total no. of metaphors	No. of metaphors in different topics							
		F	M		Dyslexia	English	Second language	Reading	Writing	Expressing thoughts	Maths	Science
8–9	6	3	3	55	9	6	6	9	10	7	4	4
10–11	13	6	7	73	9	8	10	9	8	10	9	10
12	14	2	12	97	14	8	14	12	14	12	14	9
13–14	13	5	8	32	7	3	3	4	5	2	5	3
Total	46	16	30	257	39	25	33	34	37	32	32	26

Table 1: Metaphors elicited from 46 young participants with dyslexia in Singapore

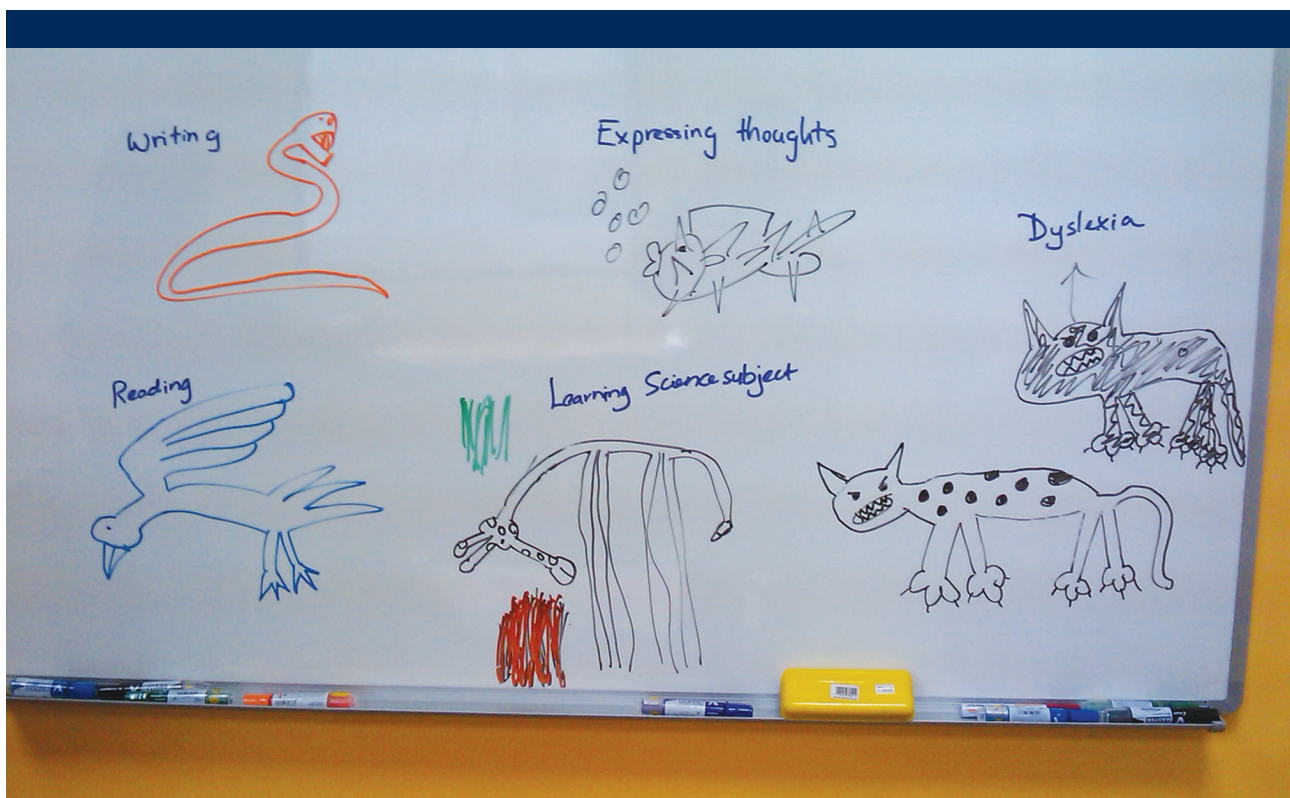
ladders; asking for their personal stories; semi-structured interviews; writing down their metaphors and entailments. For purposes of accurate transcription and data analysis, all the interview or activity sessions were audio- or video-recorded with informed parental consent and a strict ethical data collection procedure.

Drawing was a very useful activity for these young age groups of participants, because it fits well with their learning environment and methods. Some participants spontaneously offered to draw on blackboards or whiteboards to express their profound perceptions on the topics discussed: Drawing 1 gave a way for one child to express his views as visual metaphors. He elaborated his views orally with entailments after drawing.

In his drawing, 'writing' is 'an attacking snake', shown in the drawing of an attacking snake, because writing is like 'an attack' to him, 'constant attacks', it is 'scary and gives pressure'. 'Expressing thoughts' is 'a puff fish', because 'nobody understands what the fish is talking about; the fish poisons others in order to protect himself'; sometimes he finds it hard to express himself, others can't understand what he tries to say, but if others get to know him better, then they understand him better. 'Learning science' is shown in the visual metaphor as 'a giraffe bending down to eat brown grass'. Although this is this child's best subject, because 'normally a giraffe would eat

green grass, but he has to survive by eating brown grass' it is as if he had to be good at something since his English and Maths were not his best subjects. 'Reading' is a 'goose flying', because 'a goose usually doesn't fly but when other birds fly, the goose has to follow. The birds go to a higher level, then the goose must try to follow, but will be slower'.

This boy's way of expressing his concepts on dyslexia was rather unique: he said he did not know what dyslexia meant, but he created a visual metaphor to express his experience of it: two leopards, one with black spots on a white background, the other with black spots on a black background (a panther). He said 'dyslexia people are the same as other people, but they are like a panther, it is rare, different, but they are the same in the leopard's family'. These metaphors not only demonstrate his profound experiential understanding of the topics discussed, but also reveal his emotional insights and some strategies used to deal with some of his difficulties. These activities thus enhanced the quality and quantity of metaphor data from young children with dyslexia and took advantage of the strengths of these children in visual expression.



Drawing 1. An 11 year old boy's visual metaphors to explain his thoughts on the whiteboard

4

Key findings from young dyslexic learners in Singapore through metaphor analysis

The main findings from this project are reported and analysed in overview first and then in eight aspects, which include their concept of dyslexia, the main subject elements and skills of learning. These aspects are dyslexia, English learning, writing, reading, expressing thoughts in English, second language learning, and maths and science. The purpose in examining these aspects is that English, a 'mother tongue' or second language (often it is Mandarin Chinese), maths and science are considered as key curriculum subjects. They are all learned through English, except the second language subject. All these subjects involve the language skills of reading, writing and oral discussion. Students in Singapore are expected to achieve well in these curriculum subjects since they are needed for entrance to higher education and give better job prospects.

4.1 An overview of findings from metaphors given by young learners with dyslexia in Singapore

A number of methods were used to analyse the metaphor data. One classification method used was to look at the polarity between positive and negative. This is potentially important because dyslexia is commonly seen by the public negatively as 'a problem' and by most teachers as 'a special need', so we need to know the characterisations of dyslexia by dyslexics themselves. All the metaphors were thus put into one of five categories: very negative, negative, neutral or containing both negative and positive views, positive, and very positive. First of all, if the metaphor expressed obvious negativity such as 'bully' or a 'broken toilet bowl', it was placed in the negative category; obvious positivity such as 'a piece of cake' or 'drawing a creative picture', was in the positive category. The researchers also checked the entailments of these metaphors to make sure they belonged to the right category. If a metaphor did not show any obvious intention, the entailment was examined in detail to find out the participant's intention of the metaphor created. For example, 'a whole story book': from the words, it was not easy to know the thoughts of the participant, but the entailment revealed that 'because it is hard to read and boring'; thus, this metaphor was classified as negative. 'Swimming' was used to describe a participant's view on expressing thoughts in English:

in her entailment, she viewed it positively 'because swimming is easy for me and makes me happy' so this metaphor was put into the positive category. A 'roller coaster' was an example of participants recognising that learning could be 'up and down'; thus, this metaphor was placed in the 'neutral or both' category. Figure 2 shows that overall, through their metaphors, these learners appear to have only slightly more negative views towards all aspects examined.

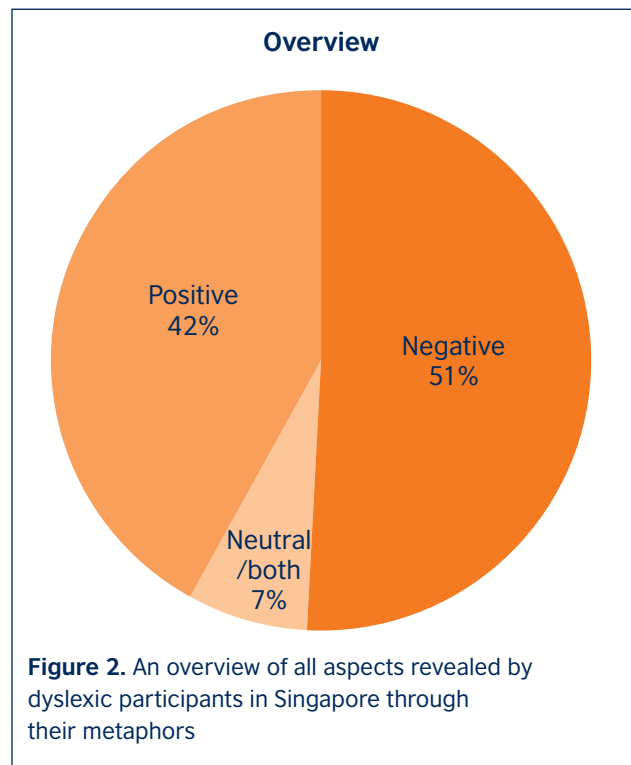


Figure 2. An overview of all aspects revealed by dyslexic participants in Singapore through their metaphors

These findings are not unexpected since there have been beliefs that dyslexic learners tend to have low self-esteem and perhaps their experience is that learning has more barriers and challenges (Humphrey and Mullins 2002). However, what is interesting is the high percentage of positive metaphors, which is of likely significance for potential achievement in learning. Burden and Burdett (2005) argued that the motivational factor, including self-efficacy and commitment to effort, could be an important factor in the success of learning by young dyslexic learners – their participants showed a more positive attitude to learning, yet their 50 boy participants were from a British independent special school, where a

better learning environment and a possibly more positive and well-motivated learner group had been established through selected entry to the school.

The overall finding from this present study shows a large degree of positivity towards all aspects of learning by dyslexic learners in Singapore. This is perhaps largely due to the awareness work carried out by educational therapists, special needs teachers and mainstream school teachers in Singapore to promote the understanding of dyslexia among learners, their families and in their schools.

4.2 A breakdown of eight individual aspects revealed by young dyslexic learners through metaphors

An overall summary is a way of examining what views these participants with dyslexia have towards their learning elements and skills. However, it is more beneficial for teachers and researchers to see how these views are expressed in detail with reference to aspects of learning.

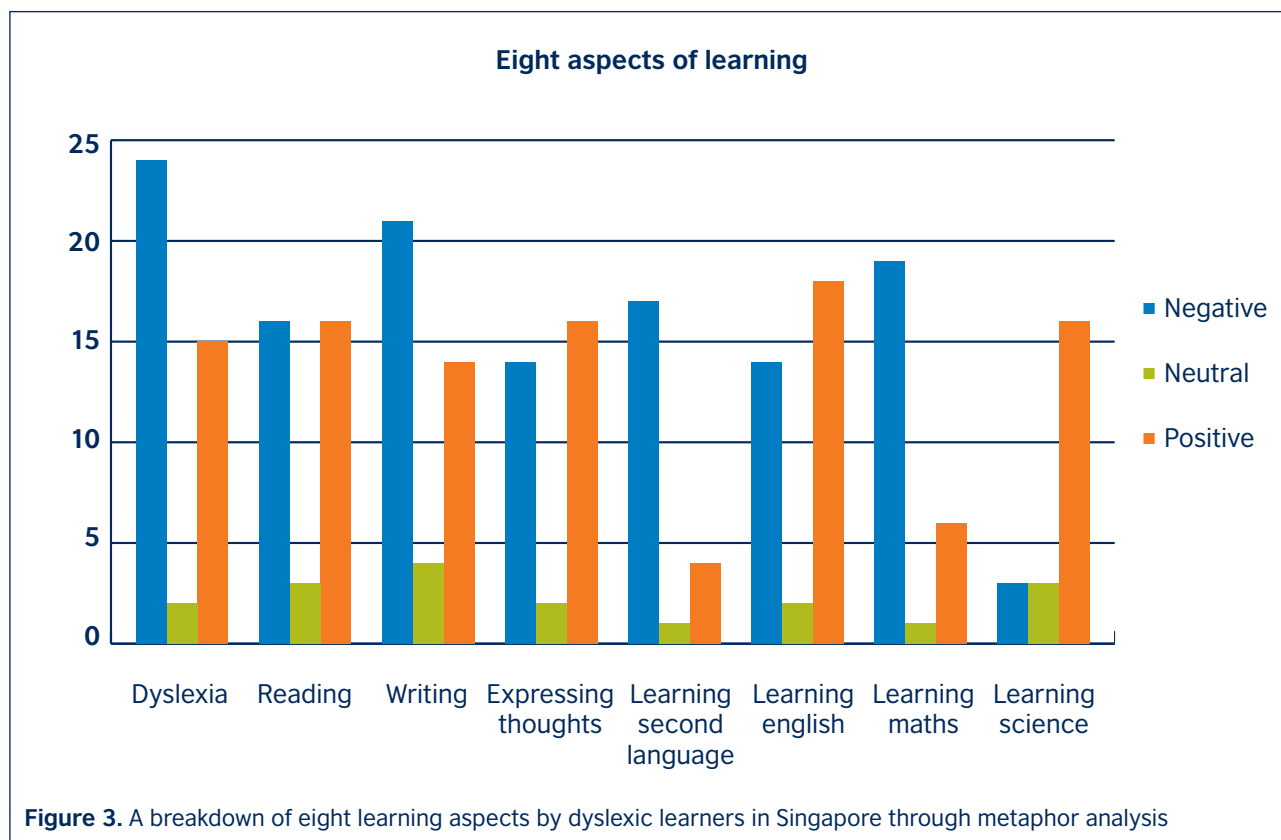
Among these eight aspects, the concept of dyslexia and the learning of writing, a second language and maths were perceived as negative or more difficult by these participants. However, their metaphors and entailments show that they had more confidence and joy in learning science and English, and in expressing their thoughts in English. They expressed their views on reading skills with an equal proportion of positivity and negativity.

On **dyslexia**, the participants appeared to show their self-view of the concept in a rather negative way. An examination in detail reveals that the negative views tend to have two facets: visual and emotional.

The learners seemed to perceive that dyslexia was associated with a 'spaghetti shape', question marks and untidiness: dyslexia is a 'book with words that are curly and round like spaghetti, like spaghetti words, curl and round. Non-dyslexic is like so neat while dyslexic is like so untidy' and 'Boy doing work with a lot of questions mark on his head. That is a lot of work to do in school and I don't understand what I need to do. Don't understand what my teachers says'.

Their emotions were also related to visual images seen in their mind. Dyslexia is 'a face that is stress and scared', in relation to fear. It is 'a broken toilet bowl, everything leaks out,... if someone comes into your house and sees a broken toilet bowl, what would they think of you. This guy got no money uh! So stinking and disgusting,... people won't like you... I can give them a headache, like fixing a broken toilet is not easy'. Their deep anger is shown in their metaphors like 'fire, I want to burn down dyslexia' or grass 'that everybody steps on you'.

Analysis of the positive views of dyslexia revealed that these students were strongly aware of their strengths, ability and strategies to deal with dyslexia and could use it to advantage. They said dyslexia was a 'hot air balloon, I'm raising', it was a 'cup of



coffee, it doesn't really affect me', 'a black leopard which is normal, but rare', like dyslexia; 'extra magazine for a gun, if you know how to use it... teacher...fully utilise it, it gives you an advantage. Change become like normal. You get an advantage'. These views are compatible with the success attributes identified by Raskind *et al.* (2002; 2003): that it would help dyslexia learners if they have their own awareness of dyslexia, its strengths and weaknesses, and develop a pro-active attitude with a belief in their power to change their lives through perseverance and goal setting. These learners' metaphors and entailments show that the children are developing the features of these attributes. Their positive attitudes and resilience, developed through their self-awareness of the dyslexia concept, also support the arguments from Burden's work (2005, 2008) and from the findings of Burden and Burdett's research (2005) that a positive and well-motivated self will create successful dyslexic learners and will contribute to academic success.

The next negative aspect is **writing in English** for these dyslexic learners. The participants relate their difficulties in writing mostly with stress and physical and cognitive demands. Writing is a multilevel and multiskilled cognitive activity. It involves physical and cognitive coordination, which includes pen holding, letter forming, graph-motor skills, hand-eye co-ordination and spatial ordering, as well as spelling, grammatical understanding, logical organisation of thoughts, condensing expressions in a written form, and being creative. These demands are often under-recognised: Berninger *et al.* (2008) argue that explicit instructions should be provided to dyslexic learners for their phonological, orthographic and morphological processes of spelling instead of mainly accommodating their writing problems. Within the multilingual contexts in Singapore, with perhaps several different scripts, the tasks of writing can be more demanding, thus the local cultures of learning (Jin and Cortazzi 2008, 2009) should be taken into consideration for overcoming their writing difficulties.

The metaphors showed the hardship perceived by young dyslexic learners in Singapore. They regard writing as 'walking on a mountain, going up one step at a time'; 'climbing a mountain' or 'climbing Mt Everest, it is hard'; 'egg plant, it is so heavy that I will drop it. It is just like me dropping the pencil because I am so tired'. At the same time, they feel the heavy mental demand which makes them vulnerable and fragile: 'It's like building a card tower, because the sentence structure is hard to master, sometimes and while one mistake, just like a card tower it has this domino effect, you whole sentence is wrong. And people don't like it sometimes. But at the same time it is also fun just like building a card tower you need

to have perseverance to build all the way to the top. And um, your effort maybe all destroyed if you write out of point also. It's like a card tower, everything will fall down if your base, if your foundation is not good everything would come crashing together with it'. These participants revealed their experience of mental stress towards writing, but at the same time, they became more aware of their learning strategies and ways to overcome the problem by having a good foundation and perseverance, e.g. 'Cherry – Typing is like a cherry. Easy to eat. ... Typing is easier than writing because I've learnt how to type and use Microsoft Word brilliantly'; 'taking a bomb into a battle field: if you know how to utilise writing, you can score a lot of marks. But if you don't know how to use it, it's like a bomb exploding right in your face'.

However, their metaphors and entailments also tell us that educational professionals and parents need to know how they can encourage these learners by giving them fun and joy to learn, because they do not want to feel that writing is like ... 'volcano – all my writing explodes and come out everywhere. Teacher always say my handwriting is very bad'. Teachers and parents need to learn to give explicit instructions which they can comprehend with fun activities, combined with encouragement and understanding of the feelings of these learners.

Some of the participants appeared to have no problem with writing, they believe writing is 'singing ABC, it is easy'; 'a light bulb, it shines imagination'; 'jogging in the park, I enjoy it'; 'wind, it's cool'. These tell us that we need to differentiate dyslexic learners who face writing difficulties and those who perceive that they do not, and help them from their different viewpoints.

The third difficult aspect is **learning a second language**. In Singapore, students are required to learn a second language, and in their case it can be their 'mother tongue' since English is an EAL for most, and since they may use a dialect of a standard language at home. Take Chinese children as an example: at home, they may speak Cantonese, which orally is mutually unintelligible for Mandarin speakers, although the writing system is mainly the same; however, in school, Mandarin Chinese is taught and assessed. This creates some difficulties phonologically in the transition between oral and colloquial expressions and written and formal expressions.

It seems that some learners recognised as dyslexic were not allowed to learn a second language in school. They compared their experience like 'Durians. Looks bad, smells bad, tastes bad! I'm not allowed to learn Chinese or French or anything else.

Because I'm dyslexic [said with a self-deprecatory look upwards]'. Some others find it boring and hard; it was the 'biggest book. It is super boring'; 'hiking on a hot day, it's tiring'; 'brain damage, it's difficult'; 'going to heaven, like dying, very hard'; 'black smoke, I get crazy, can't understand'; 'Running on a train track, it is hard to run away from the oncoming train'. These visualised metaphors and entailments show us these learners' inner feeling of hardship and despair in learning a second language.

But again, some of these dyslexics love learning a second language. They show us pictures of the joy of learning a second language: 'winter, snow, it's fun'; 'disco ball, it is shiny, I like it'. Some also form a visual strategy for learning a second language: 'Actually it's kind of like a Chinese mosaic Let's say, ok, different characters have different meanings, each with the individual meaning. But when you combine it, it forms a whole new picture just like a mosaic. You combine one picture, looks boring, if you were to put a collection of pictures you may form something. And you have to match it right so that you'll form the desired picture'. It is significant to see how learners with dyslexia became aware of approaches and strategies to meet their learning targets, since awareness is a first step to achieving successful learning (Raskind, *et al.* 2003).

Learning maths is another aspect with difficulties. Some learners use the strong word 'hate' to describe their frustration at learning maths. Their metaphors for learning maths are often associated with physical tiredness, stress and boredom: it's like 'grape, it has a hard outer layer – which is hard work, something like that. And commitment. Boredom'; 'a storm, it sucks'; 'making a fire, it's hard trying not to get burned'; or 'like reading a newspaper, it's boring'; 'like climbing a mountain, because when the teacher just started teaching Maths, you have to sit there and pay attention. So if you don't like it totally,... at the end you will lose out, you just fall down from a hill'. Some other students use computers to compensate in their learning of maths and get joy out of it, 'playing computer games, it's fun'; or maths is a 'sports car, I can go very fast'. These more optimistic views indicate that it is possible for dyslexic learners to develop higher order language and thinking skills if the teaching of Maths can be made more interesting and other technology used to enhance the learning experience of these learners.

In contrast with learning maths, **learning science** is perceived as a very positive and joyful experience for learners with dyslexia in Singapore. Their metaphors are associated with actions followed by positive emotional outcomes.

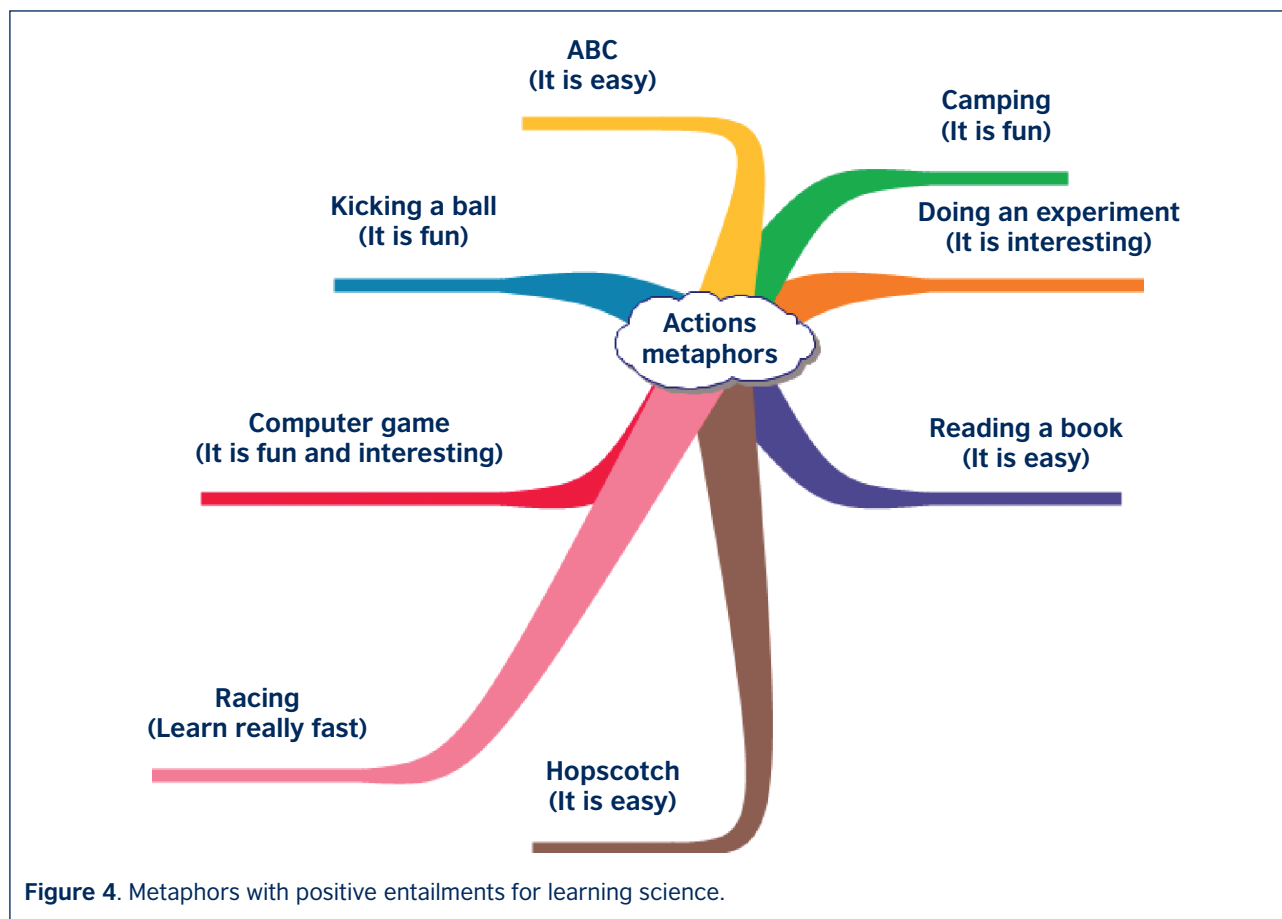


Figure 4. Metaphors with positive entailments for learning science.

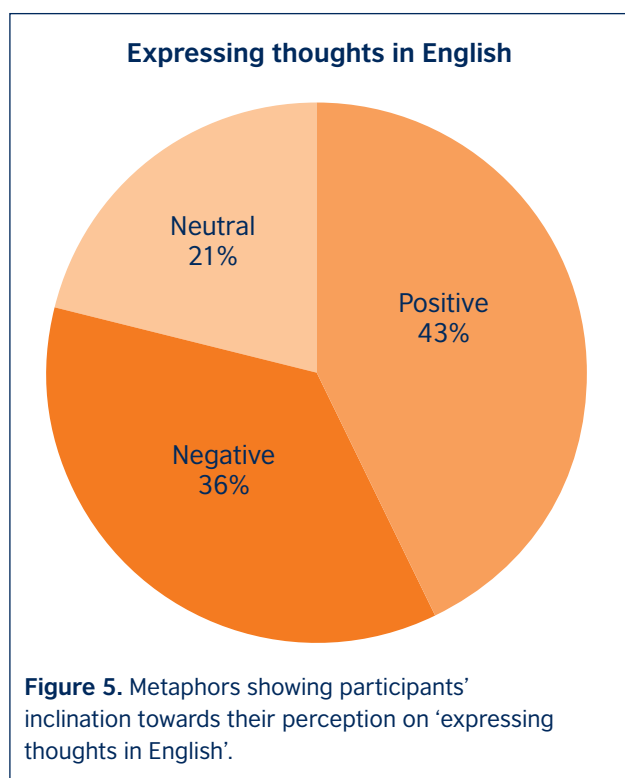
It is likely that they perceived learning science as a much more hands-on subject. They could visualise what they were doing and see the results of their actions in practical experiments. These imaginary and visual metaphors show some negative views, e.g. learning science is like being 'electrocuted, it is hot, uncomfortable'. These metaphors offer us a strong visual mental image (Littlemore 2008) and dyslexic students may have a specific aptitude for visualisation (Cogan and Flecker 2004). The metaphors provide good examples of analogical reasoning when ideas of images from prior knowledge of a different image can be used to create an analogical transfer (Holyoak *et al.* 2010) to generate inferences to explain a different concept. It will be useful to research further to find out why students with dyslexia like learning science in spite of the difficult scientific terms and abstract concepts.

To the surprise of the researchers, **learning English** was perceived more positively than learning some other subjects, including, for many participants, learning the mother tongue. A majority of the metaphors and entailments produced are about their feelings of excitement and eagerness, the ease and fun of learning. These students found learning English was like 'mangroves, you can always find something new in it'; 'bowling, it is interesting'; 'pot of gold, more coins will come and come'; 'rock climbing, it is fun'; 'exploring nature, it's fun and calm'; 'windows, every part of English has light with lots of things inside'. Some students did find it hard to learn English, like other subjects. They felt

stressed, bored and dragged behind with English learning: it was like 'walking in heavy snow, imagine the snow is thick and reaches the fifth storey of Jurong Point and you need to climb'; 'like going to sleep. like watching a soccer match... because I really don't know what the soccer are they doing or what happening'. However, some metaphors revealed their images of overcoming difficulties and experiencing optimistic feelings. English learning is like 'baby bird learning to fly, it gets better'; driving a car, learn very fast'. Through metaphors of learning, they show that they began to understand the complexity of English, e.g. 'platypus, it's just got so many rules. And the rules always have exceptions. And the exceptions always have other rules that link into other exceptions. So it's complicated'. This rather sophisticated awareness of language rules from a 12 year-old shows that dyslexic learners can understand complex linguistic rules which give them a way to prepare for later learning.

Another aspect that participants found more positive is expressing their thoughts in English (see fig. 5). Analysis of the metaphor data in more detail shows that almost half the participants who gave metaphors with negative meaning have a common theme relating to their personal thought processing. This seems to be in accordance with the theory put forward by Frederickson and Jacobs (2001); that learners with dyslexia attribute negative outcomes to internal factors and positive outcomes to external factors. The metaphors show how the students attribute the metaphors with negative meaning to themselves, 'writing on a book – I write, write, write, and people don't understand what I mean'; 'Japanese blowfish – sometimes you don't understand what a blowfish wants to express its thoughts. Just like sometimes you can't express your thoughts'; 'Big question mark – bored, boring, nothing to do, people don't understand me'; 'like you are drowning so like I forgot then like you don't know what you want to know, then the person always want to tell you to remember but I cannot remember so like drowning in water'.

On the other hand, half the students with metaphors containing positive entailments used the key word 'easy' to describe actions that are comparable to expressing their thoughts. It appears that these metaphors associated with daily life are presented for the ease they feel and are not associated with themselves. These metaphors show how the students attribute the positive metaphors to external elements, 'swimming, because swimming is easy for her...'; 'pressing the TV switch, because the switches are soft and easy to press'; 'solving an easy puzzle, it is easy to do'; 'peanuts, it is easy'; 'racing, it is fun and easy'; 'just like killing an ant, because it is so easy'.



Regarding **reading**, the eighth aspect examined through metaphors, this research shows that reading is perceived positively and enjoyably when the dyslexic participants view reading as a function of a pleasant experience. However, those who view reading mainly as a task find reading negative, especially if they haven't been given adequate support to experience the content of their reading. This tells us that it is important to motivate students (Gambrell and Marinak 2009) along the right path so that they are able to access the skills they need to learn.

The metaphors from these dyslexics indicate that they viewed reading as physically hard, with obstacles to comprehension, humiliation and lack of power and choice in their learning process. Reading is a 'hard rock, because it's very hard to read and very hard to spell'; 'solving a difficult puzzle, because it's hard to get a word when you don't know how to read it'; 'teacher writing on white board, cannot read what teacher is writing on the board'; 'bully – hate bullies makes my face red and makes me burn inside'; 'toilet roll – toilet roll can just go roll and roll and roll and roll. You can refill the toilet roll and it will go on and on and on and on'. To help with the feeling of lack of control and to give a greater sense of empowerment, teachers can give the child some avenues to choose between.

Some participants showed that they used visualisation in their reading in order to help with their understanding. Reading is like 'watching a movie, because I think the movie in my head'; 'picture frame, because when I read, it's like a photo, everything got a picture'. Some found reading very rewarding, exciting, engaging and fun: 'sailing – fun to play'; 'roller coaster – it is fast and fun'; 'action packed movie – it is interesting'; 'it's like going through an adventure, because reading has an end um, has a beginning and an story. And adventure is like reading is because at the end then you know what has happened. It's like a story, at the end you will know what will happen. In the middle is like, what's it called uh? Um, suspense? Both reading and adventure have suspense'. These metaphors and entailments show how reading can be enjoyable for learners with dyslexia. It is useful for professionals and parents to understand that it is achievable for these learners to gain enjoyment and knowledge through reading as a skill, and that reading is a way to obtain knowledge by providing a relaxing learning environment. Rather than teaching reading through testing, teachers should offer choices and empower these learners to develop their own pace of reading and learning to read.

5

Conclusion: learning from the findings about young learners with dyslexia in Singapore

This project shows that, with appropriate support and facilitating activities, young EAL learners with dyslexia can understand and produce metaphors and that these learners can create personal metaphors about themselves and their learning to express their identity and emotions. This is a significant aspect of language development: metaphors are important in everyday language use, not just as stylistic decoration but as basic features of normal understanding and expression to facilitate thinking, arguing, persuading, etc., and to handle one's own and others' emotions. Crucially, this illustrates creative abilities linking visualisation, logical thinking and language expression. Given the importance of metaphor and analogical thinking for learning science, maths, English and other subjects, this is an important finding with implications for teachers and parents.

Teachers can develop their own understanding and use of metaphors (Deignan 1995) to help dyslexic learners use and discuss metaphors and to understand the main concepts in content learning, especially by discussing metaphor entailments, perhaps with drawings, actions and participatory games. Teachers can use some of the metaphors from this project to discuss dyslexia, language skills and curriculum learning with children with dyslexia to explore feelings and identities. The use of imaginative negative examples may show empathy and help children to express their difficulties; positive examples can help children to see alternatives, using the experience of other children like themselves and thus, over time, move to more positive orientations themselves.

On the whole, the younger the participants were, the more metaphors they produced (see table 1). This may indicate a number of possibilities we need to address in future research. We need to find out if older learners are less confident or too embarrassed to produce more imaginative expressions, or are more aware of 'right' responses which they think teachers expect. Future research may consider training student peers to interview peers for metaphor elicitation and designing other activities which match teenagers' communication styles.

Methodologically, the 'same' metaphors may not contain the same meaning: everything depends on what the entailment indicates and how different participants view the topic, e.g. some participants used the metaphor 'sweet', which could usually be interpreted positively as it has a positive connotation. However, one learner regarded 'sweet' as too sweet which gave her an uncomfortable feeling such that she had to take it out of her mouth. Often, some participants used the same metaphor, e.g. a 'hot air balloon', but the entailments indicate how some participants used it in a positive way to show they have improved; others used it to indicate a negative effect, because it moves up slowly. This demonstrates the importance of entailment to better understand the metaphor instead of accepting it at face value.

Many metaphors are culture specific, e.g. learning maths is 'a picnic under the sun'. People from many Western countries would view this as positive, but to Singaporeans it is negative because in a hot climate, sun makes people tired and stressed. Some of these metaphors have to be understood from their entailments in context.

Many metaphors and entailments are associated with emotions. We can confirm that it is important to stimulate positive emotions in order to enhance dyslexic learners' learning experiences and outcomes. The affective factor in learning cannot be ignored when learners perceive that they are in stressful, pressurised, or tiring and boring learning environments.

Equally important, professionals and parents need to acknowledge learners' individual needs, learning paces, preferences, styles and choices to enhance their motivation (Worthy *et al.* 1999; Dörnyei 2001) and empower dyslexic learners (Burden 1998, 2005) to achieve their potential. At the same time, cultures of learning (Jin and Cortazzi 2008, 2009) should be acknowledged and attended to in a multilingual and multicultural society like Singapore (Smith 2005). Dyslexic learners' perceptions will give us an in-depth understanding of their learning styles, methods and strategies which professionals can learn from.

This research shows that metaphor analysis can be used as a 'bridge' (Cortazzi and Jin 1999) to enter the minds and hearts of young dyslexic learners for professionals to develop their teaching expertise in order to help their learners.

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