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Behavioural interventions and developmental learning difficulties: Factors influencing effectiveness in a Kuwaiti school context

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Abstract

This paper presents findings investigating the effectiveness of behavioural interventions for children with developmental learning difficulties/disabilities (such as dyslexia) under different educational conditions. The primary focus of the behavioural intervention work was a self-management technique involving positive self-statements. This was compared with another behavioural intervention that involved a relaxation technique. The usefulness of the behavioural interventions for teaching English spellings to Arabic children with learning disabilities (LD) was compared using multisensory learning versus simple copying. These LD-based educational contexts were contrasted with a mainstream group of children who underwent normal teaching conditions but also practiced the two behavioural interventions. Findings indicated positive effects from pre to post intervention spelling scores in comparison to baseline groups of children (one LD and one non-LD) who did not undergo any intervention. The findings argue for the potential usefulness of behavioural interventions with children with educational learning problems. However, for the positive self-statements intervention, positive effects were evident only when combined with multisensory learning, suggesting that behavioural interventions need to be assessed for the conditions under which they will be effective versus those where they may not. An understanding of such moderating factors should improve recommendations and procedures for optimal intervention effectiveness.

Keywords: Arabic speaking/culture students; Learning Disabilities; behavioural interventions; English spelling learning; educational moderators

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Introduction

The research reported in this paper aimed to inform the support of Kuwaiti students with a diagnosis of a developmental learning disability (in Kuwait often reduce to LD). In Kuwait, a person is said to have a learning disability when his/her intelligence (IQ) is within the average range or above (i.e. IQ=85 or above) while at the same time they are performing below curriculum levels in school subjects of literacy and/or mathematics; this is the primary criterion of legislation in the country and, despite arguments against the use of IQ in identifying educational learning difficulties, it is consistent with many different contexts around the world (Elbeheri & Everatt, 2009). Of the potentially different types of education-based learning disabilities, developmental dyslexia (often shortened to dyslexia) has been the one that has been most researched within Kuwait. With this in mind, outcomes in literacy were the target for the current research.

Despite the emphasis on educational outcomes, learning disabilities, such as dyslexia, have also been found to be associated with a higher than expected prevalence of behavioural, emotional and/or social problems (McConaughy, Mattison & Peterson, 1994; Mckinney, 1989, Michaels & Lewandowski, 1990; Swanson & Malone, 1992). In the Kuwaiti context, relationships between negative (off-task) behaviours and education achievement have been found in mainstream populations (Everatt, Al-Sharhan, Al-Azmi, Al-Menaye & Elbeheri, 2011), and there is evidence for higher than expected incidence of dyslexia-

related problems among adolescents in offender institutions (Elbeheri, Everatt & Al-Malki, 2009). Such psychosocial problems may interfere with the child's ability to fully attend to and engage in instructional activities. For example, Miles (2004) has argued that a child who does not overcome his/her difficulties with learning early in school will experience higher stress levels, causing an undermining of motivation and negative consequences in educational development. Lindquist & Vicky (1989) argued that some children with literacy learning problems might disrupt a class and become the class clown because they believe the class work is too difficult for them and so will use attention seeking to protect their self-esteem. Furthermore, Edwards (1994) suggested that the feelings of frustration and isolation caused by the individual's educational problems led to negative consequences, with individuals potentially being bullied or isolated by peers, parents and teachers. A range of findings, therefore, argue for such behavioural consequences to be an important area in which to develop appropriate support procedures, including those aimed at reducing negative behaviours - the focus of the current research. Approaches aimed at improving school and classroom environments, including reducing the negative effects of disruptive or distracting behaviours, can enhance the chances that effective teaching and learning will occur, both for the students exhibiting problem behaviours and for their classmates (Adams & Christenson, 2000; Kern, Mantegna, Vorndran, Bailin & Hilt, 2001; Lee, Sugai & Horner, 1999; Umbreit, Lane & Dejud, 2004).

The most widely used interventions to

decrease unwanted behaviour in students are medication-based or cognitive-behavioural (the MTA Cooperative Group, 1999). The focus of the present research was on the latter type given that they can be implemented by educators in learning contexts rather than by medical practitioners. Assessment of the factors influencing the effectiveness of such education-based interventions is particularly important given that medication alone has been found to have fewer long-term positive effects than educational or combined interventions. Medication also has been reported to have potential side effects (Adelman & Compas, 1977; Winterstein, Gerhard, Shuster, Johnson, Zito & Saidi, 2007) which also argue for the need to develop effective alternatives. Furthermore, previous research on cognitive-behavioural intervention methods has indicated that they can help children and older students behave positively (Baer & Nietzel, 1999). Such methods include parent training, peer tutoring and teacher interventions, as well as self-monitoring and strategy training, and psychosocial interventions (see Cobb, Sample, Alwell & Johns 2006; Hoofdakker, Veen-Mulders, Sytema, Emmelkamp, Minderra & Nauta 2007; Pelham & Fabiano 2008; Raggi & Chronis 2006).

The current research focussed on self-regulation methods that are concerned with self-management and self-monitoring. Previous research has suggested that such self-regulation methods, where the student is taught how to control certain behaviours and thoughts, has the potential to increase academic performance (Mooney, Ryan, Uhing, Reid & Epstein, 2005). For example, Barry &

Messer (2003) looked at self-management (a form of self-monitoring) and its effect on the academic performance of children with ADHD. The researchers taught a sample of sixth grade boys diagnosed with ADHD, and on medication, self-management strategies, such as self-assessment and self-recording of the targeted behaviours. The self-management strategies increased academic performance and decreased unwanted behaviours. In another study by Shimabukuro, Prater, Jenkins & Edelen-Smith (1999), children were taught to self-manage by self-monitoring and self-graphing their own academic activities. Findings suggested that the students increased their academic performance, including accuracy in reading comprehension, mathematics, and writing, as well as reduced off-task behaviours. Harris, Friedlander, Saddler, Frizzelle & Graham (2005) also found that self-monitoring of attention and self-monitoring of academic performance increased on-task and spelling behaviour in children with ADHD.

Another type of self-monitoring is self-talk; in the present research, the term positive self-statements will be used to refer to the type of intervention implemented. This was targeted in the current research since it has been used previously with children with learning disabilities. For example, Kamann & Wong (1993) used a cognitive behaviour strategy with children with learning disabilities in which the researcher modelled solving a mathematical problem by thinking aloud (one type of self-talk). Children were also taught positive self-statements, such as "I am doing just fine". The researchers concluded that these procedures

improved the students' performance in the mathematical tasks. In a review of the use of cue cards to support self-regulation in students with learning disabilities, Conderman & Hedin (2011) argued that such cards can be used to assist students to learn and organize academic tasks, simplify challenging materials and support the development of independence in learning. These authors argued that such aids could enable teachers to streamline the school's curriculum, thereby making tasks and procedures easier for their students to follow.

In addition to positive effects reported in the literature, self-monitoring techniques, such as positive self-talk, have the advantage that they are relatively cost-effective and easily learnt and practised. They can also be taught (and supported) by teachers and/or parents, as there is no requirement for large numbers of rules and procedures that the student must follow. Additionally, some of these interventions can be generalized to other aspects of a student's life, potentially influencing social and emotional issues. Once learned, students can practise on their own, independent of outside assistance, especially in the case of self-talk. Such independence has the potential to promote positive outcomes for the student, fostering a sense of self-worth and self-reinforcement. The student may not have to wait for external praise from a teacher or parent, but rather comes to internalize abilities and control.

The effectiveness of such a self-monitoring method (positive self-statements) under different teaching

conditions was the focus of the current work. In addition, the research aimed to contrast the positive self-statements method with an alternative behavioural intervention that has been found to reduce negative behaviours but which was different enough from the self-monitoring procedures to allow comparison. A relaxation technique was chosen for this purpose. Such relaxation methods have been used, and argued to be effective, across different contexts (Amerikaner & Summerlin, 1982; Collins, Dansereau, Garland, Holly & McDonald, 1981; Paul, Elam & Verhulst, 2007; Stuck & Gloeckner, 2005). The rationale for relaxation methods is that, particularly at certain points (such as at examination time), school life can be considered stressful – and, for the student with a learning difficulty, such stresses can be aggravated by difficulties related to their disability. Relaxation techniques are argued to reduce such stresses, and the negative behaviours associated with stress, potentially improving academic performance. For example, Omizo & Michael (1982) examined the effects of biofeedback relaxation training on a sample of hyperactive boys. During treatment sessions, the boys listened to audiotapes that emphasized relaxation and stress management, as well as the importance of self-control. In comparison to a control group that listened to audio taped stories which neither encouraged relaxation nor arousal, the relaxation training reduced impulsive behaviours and increased attention. In a study by Amerikaner & Summerlin (1982), social skills training and relaxation training were contrasted with a no treatment control condition and their effects on the self-concept and in-class behaviour of

children with learning disabilities measured. Consistent with the target of the training, students in the social skills training treatment condition scored higher than the other two groups on a social self-concept measure, whereas those in the relaxation-training group demonstrated reduced excitable behaviour and distractibility. Given the focus of the current work, and their difference in activity compared to positive self-statements, such relaxation techniques seem an ideal contrast against which to compare self-monitoring procedures.

The current study considered the effectiveness of self-monitoring procedures in combination with several teaching methods. The research was part of work investigating ways to support the learning of LD students in Kuwait. Hence, the behavioural interventions were combined with a multisensory learning strategy often used with children with education-related learning difficulties. This strategy was based on simultaneous oral spelling, and the teaching of English words was the chosen skill for intervention. Word spelling was chosen as it is an area with which many students with developmental learning difficulties (particularly dyslexia) have problems – and targeting English with the young Arabic children in the research meant that this would provide a large number of relatively unfamiliar words for teaching. This more targeted teaching strategy was contrasted with a more rote-learning procedure that simply expected students to copy spellings. The number of times that words were copied was matched with the number of processes in the multisensory learning

procedures to enable a contrast between the two methods. Such rote-learning procedures were chosen because they were considered more typical of the mainstream teaching methods that students would experience in their mainstream Kuwaiti schools. Teaching practices in Kuwait often focus more on simple rote-learning and memorization. Indeed, primary school practices, typically, are more based on getting through the curriculum rather than delivering the lesson or involving the students, leading to students' learning differences rarely been taken into consideration. In order to assess the impact of the behavioural interventions when combined with these typical mainstream teaching methods, a group of children in a Kuwaiti government mainstream school was also include in the research.

Method

Participants

Children with identified learning disabilities from a special school in Kuwait comprised the first cohort of participants. To be attending this special school, children had been assessed as having a learning disability by trained psychologists based on evidence of problems in literacy or mathematics, but an IQ equal to or over 85. Children in the special school followed the normal Kuwaiti Ministry of Education curriculum but in classes of typically no more than six students and individualised tutorials with teachers trained to support children with education-related learning difficulties. Students at the school were from generally middle class

socioeconomic backgrounds and were aged between 7 to 15 years. Although the school supported both boys and girls, there were two to three times as many boys than girls. The samples for the current research reflected these special school population characteristics.

Children for the present study were selected following parental consent for their child to participate in the study and the agreement of the students themselves. Selection ensured that all participating children were Kuwaiti, spoke Arabic as a first language and were learning English as a foreign language. Students for the intervention work were then selected based on scores on the parent version of the Attention Hyperactivity Questionnaire in Arabic (Al-Sharhan, 2012). This scale provided an indication of attention or behavioural problems that the target behavioural intervention aimed to reduce. Children were selected if they had a score of 12 or more on the scale; in normative data, less than 7% of the Kuwait mainstream population were given a score of 6 or more on the attention scale and less than 17% were given a score of 6 or more on the hyperactivity scale (as reported in Al-Sharhan, 2012). Children were assigned to intervention groups and an additional group producing baseline improvement data. The latter group of children simply experienced their normal special school teaching methods with no behavioural intervention. They comprised 37 children who were tested on their English spelling at the start and end of the intervention period so that a baseline of improvement produced by the special school methods could be determined for

comparison with any improvements obtained under the intervention conditions. Intervention groups comprised those undergoing the positive self-statements or the relaxation technique behavioural interventions coupled either with multisensory learning or with copying. One group of students were taught English spellings through the recognised literacy intervention method (multisensory learning) combined with one of the behavioural interventions (the positive self-statements or the relaxation technique); ten of these multisensory learning taught students experienced the positive self-statements and nine the relaxation technique. Another group underwent the same behavioural interventions but simply practiced English spellings by copying: nine experienced the positive self-statements and nine the relaxation technique - although the latter groups reduced to five and eight respectively by the end of the period of intervention (this rate of attrition is considered in the discussion of this paper). All students were tested on their English spelling levels pre- and post-intervention, or for the baseline group, over the same period as the interventions.

The non-LD students in the study were all Kuwaiti male students (note that Kuwaiti schools are segregated by sex of child) in the fifth grade of a mainstream government run school. Most of the students came from middle class socio-economic backgrounds. These students had Arabic as a first language with English learnt as a foreign language. The particular school included in this study was an opportunity sample based on contacts of the researchers, but was

selected as it comprised student from a similar background to the special school cohort – and a boys school was used as most of the LD students were male. Another factor in using this school was that the school principal was interested in the work and, therefore, supported the process of conducting the research by ensuring that staff and students were available as much as was possible given the timing of the research: the study was undertaken near to the end of the school year, which led to time pressures from end-of-year exams and the need to finish the Ministry of Education curriculum, factors that would be expected to increase the potential for stress-related negative behaviours which were the target of the present work. Fifth grade classes were chosen for intervention since they comprised a transition period between primary and middle school, potentially leading to increased pressure on children that may manifest through negative behaviour – the period leading up to the end of the primary school years (grades 4 and 5) has often been considered in Kuwait as the point where students show evidence of falling behind in their education and is often the point when processes targeted at detecting an education-based learning disability would be implemented. Dependent on the class that they were in, students were assigned to two different interventions, one involving positive self-statements and one the relaxation technique. An independent baseline group was also used to assess expected levels of improvement without intervention. All these students experienced normal English literacy teaching methods used in Kuwaiti mainstream schools. Class

sizes in the school where the research took place were slightly smaller than normally reported for a Kuwaiti school (which are typically 18 to 25 students or more); however, it is not unusual for students to miss classes at the end of the school year and this tendency meant that the numbers of children in each class varied over the course of the study. Therefore, only those for whom data were available at the start and finish of the study were included in the present data analyses. This meant that there were 18 students in the positive self-statements class and 15 students in the relaxation technique group, and that baseline data were obtained from 23 students. Participation in the research was conditional on parental consent and the agreement of the students themselves. All students were tested on their spelling levels pre- and post-intervention, or for the baseline group, over the same period as the interventions.

Materials

All students underwent a spelling task comprising English words during the first and last session of the study – or an equivalent period of time for the baseline groups. Words were selected from the Ministry of Education's English curriculum: at the end of each chapter of the curriculum text there are a number of words (i.e., vocabulary) that all students need to learn for that chapter. Words were selected from these end-of-chapter lists to match each student's grade level. The words were read out to the students allowing enough time for the students to write the word. Students were asked to write clearly. Repetitions of words were

allowed and only the pace of pronunciation determined the timing of the task, which lasted only about 5 minutes and the number of words spelt correctly was the measure. The same lists of words (20 for the LD children and 30 for the non-LD children to allow for potential differential improvements over time) were used for pre and post testing.

Intervention/teaching strategies

Positive self-statements

Students learnt a set of positive self-statements aimed at boosting self-esteem and self regulation of thoughts, feelings and behaviour at the beginning of each teaching session. Statements were introduced by their teacher and comprised 15 positive self-statements printed on cards with pictures that could be associated with that statement. Teachers were trained to help the students verbalize the statements as well as discuss what the statements mean and give examples for some of the statements when possible. This occurred at the beginning of each class, with 5-7 minutes in total being used for this procedure. The intervention was not aimed directly at changing the behaviour, rather to change students' way of thinking about themselves and their abilities. Hence, some cards contained a positive message about the students' concentration and/or attention, whereas other dealt with the students' own feelings towards themselves: for example, "I can solve spelling and other problems when I am calm", "I am capable of spelling many words", "I can stay in my seat for 15 minutes", "I am worthy and capable". Principles for

creating these positive self-statements materials were based on ideas of developing affirmations by Bloch (2003) and recommendations of Conderman & Hedin (2011).

Relaxation technique

Students were taught to concentrate on breathing from their diaphragm at the beginning of each teaching session. They were asked to put one hand on their chest and the other on their stomach and to concentrate on making the hand on the stomach rise higher than the one on their chests when they inhale and lower when they exhaled. For the relaxation part of the intervention, the students were asked to focus their attention on certain parts of the body (particularly their head, neck, shoulder, arms, hands, stomach, back, legs, and lastly their feet). They were asked to notice whether those parts were tense and to try to relax them by paying attention to each part. If the students did not understand the meaning of tense, they were asked to squeeze their hands and then to let go and relax to demonstrate the meaning of tense versus relaxed. The whole intervention took about 5-7 minutes of the beginning of each session. (These methods were similar to the relaxation methods used by Murdoch, 1987.)

Multisensory learning

For the LD-specific educational intervention, a multisensory method of learning how to spell was used (based on Simultaneous Oral Spelling by Broomfield, 2004). Students were given words from the Ministry of Education

English curriculum on 12 sheets. There were five words per sheet making 60 words in total. During the sessions, the students were asked to learn as many words as they could by going through the sheet. On each sheet, each word was to be seen (look), pronounced (say), spelt (name), and traced twice (trace); the student then was required to hide the word and to spell it (write), after which they were to check whether the spelling was correct (check). If the spelling was wrong, they repeated the exercise.

Copying

In this condition, students were given several sheets with five words on each sheet. As in the previous condition, a total of 60 words was used. The students were asked to copy each word seven times. This was to match with the seven steps in the multisensory learning condition.

Procedures

Baseline

The students in the baseline group were chosen from the same special school or mainstream school as the intervention children. They were given the same spelling tests as the intervention groups, with tests being given three weeks apart. During the three-week period between the spelling tests, they had normal classes taught by their usual teachers and nothing else.

Special school intervention conditions

The students in the LD intervention

groups spent the first 5 to 7 minutes of each session going through either the positive self-statements or the body relaxation technique with the teacher. After this behavioural intervention, the student then practiced English spellings using either the multisensory learning or the copying procedures for about 15 minutes.

Mainstream intervention conditions

The mainstream students spent the first 5 to 7 minutes of their lesson going through either the positive self-statements or the body relaxation technique with the teacher. This was followed by a normal 30 minute lesson that focussed on English language, of which at least half covered spelling English.

Results

For each participant, the number of correct spellings was calculated for the pre and post intervention measures; averages per group, with standard deviations, can be found in table 1 and figure 1.

For both cohorts of participants, two-way analyses of variance were performed to investigate any evidence for a differential effect of intervention on spelling improvements: with a between subjects factor of teaching method (the groups in the positive self-statements and relaxation technique interventions versus baseline for the non-LD groups; the groups in the four intervention combinations versus baseline for the LD groups) and a repeated measures factor of pre versus post intervention period

Table 1. Average number of English words spelt correctly (with standard deviations in brackets) for each intervention combination and the baseline for LD and non-LD students

	Pre-scores		Post-scores	
	Positive Self-statements	Relaxation Techniques	Positive Self-Statements	Relaxation Techniques
LD Multisensory learning	1.40 (1.26)	3.56 (2.46)	4.85 (2.39)	9.17 (4.89)
LD Copying	1.60 (1.51)	2.63 (2.39)	2.20 (3.01)	7.00 (2.56)
Non LD Mainstream teaching	6.50 (5.40)	8.47 (6.99)	7.33 (6.81)	13.53 (7.61)
LD Baseline		3.68 (2.46)		4.95 (3.33)
Non LD Baseline		7.09 (5.38)		9.48 (6.79)

spelling score. For both the LD and non-LD students, the interaction between intervention methods and repeated measures spelling scores were significant (for the non-LD groups, $F(2,53) = 5.88$, $p < .01$; for the LD groups, $F(4,64) = 7.84$, $p < .01$). There were also significant main effects of the repeated measures factor in both analyses (for the non-LD groups, $F(1,53) = 32.87$, $p < .01$; for the LD groups, $F(1,64) = 65.83$, $p < .01$), which were further analysed using paired t-tests that indicated significant improvements in all LD and non-LD groups except for the positive self-statement non-LD group and the combined positive self-statement and copying LD group (Non-LD baseline, $t(22) = 3.43$, $p < .01$; Non-LD positive self-statements, $t(17) = 1.14$, $p = .27$; Non-LD relaxation technique, $t(14) = 4.56$, $p < .01$; LD baseline $t(36) = 4.02$, $p < .01$; LD positive

self-statements + multisensory learning, $t(9) = 5.11$, $p < .01$; LD positive self-statements + copying, $t(4) = 0.70$, $p = .52$; LD relaxation technique + multisensory learning, $t(8) = 4.44$, $p < .01$; LD relaxation technique + copying, $t(7) = 3.12$, $p = .02$). To investigate specific improvements provided by the interventions in contrast to expected baseline improvements, differences between pre and post scores were calculated for each group of children and one-way analyses of variance were performed, one comparing each non-LD group and a second each LD group. A significant analysis of variance was followed by Dunnett post-hoc comparisons comparing each intervention method against baseline. Results indicated significant analyses of variance for both groups (non-LD, $F(2, 53) = 5.88$, $p < .01$; LD, $F(4, 64) = 7.40$, $p < .01$). Dunnett's post-hoc

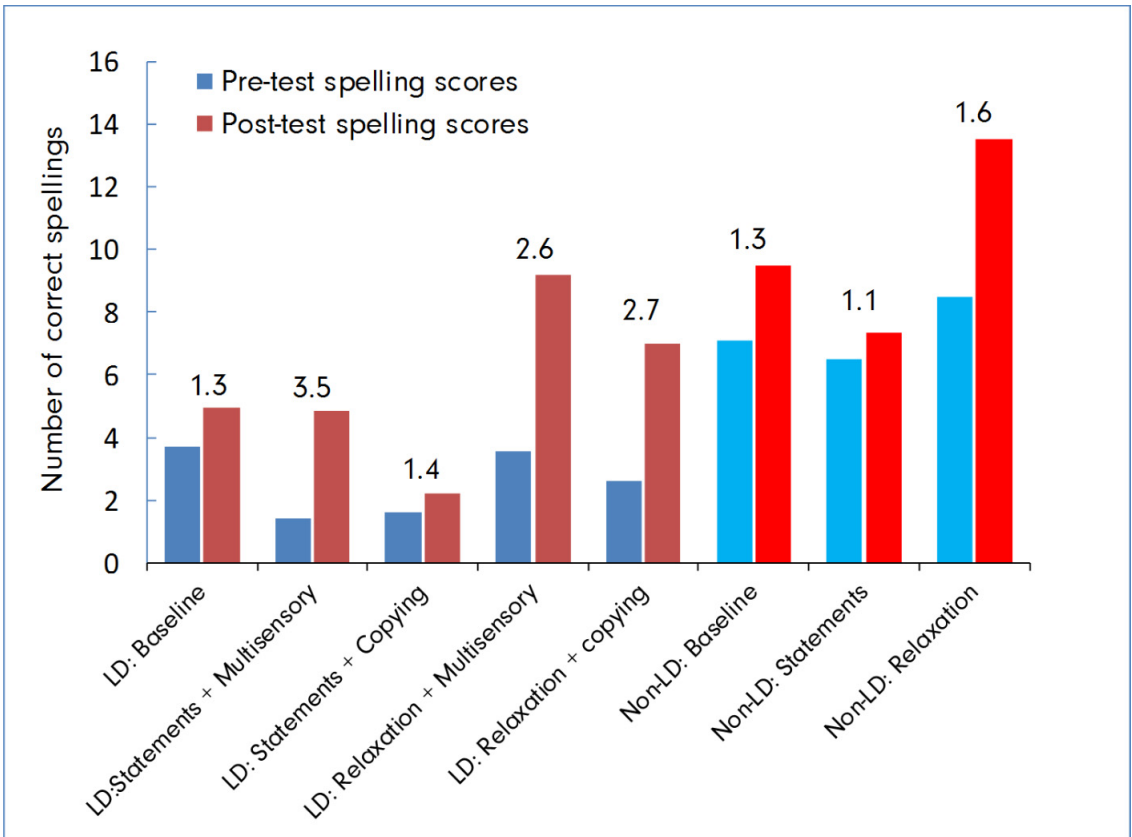


Figure 1. Pre (blue) and post (red) test scores in English spelling across the intervention and baseline conditions

Note: non-LD groups are on the right of the graph with slightly brighter colours; figures above bars are post scores divided by pre scores, which indicate proportional increase, whereas differences between red and blue bars in vertical axis values indicate the number of extra spelling learnt over the intervention period

comparisons of the non-LD data indicated significant effects for the relaxation technique compared to baseline ($p=.03$, one-tailed), but not for positive self-statements compared to baseline. The same comparisons against baseline for the LD intervention combinations indicate significant effects for positive self-statements plus multisensory learning ($p<.05$, one-tailed), the relaxation technique plus positive self

-statements ($p<.01$, one-tailed), and the relaxation technique plus copying ($p<.01$, one-tailed), but not for the positive self-statements plus copying combination.

Discussion

The findings indicated that there were significant improvements in spelling scores found in most intervention

conditions compared to baseline. Specifically, there were significant improvements in spelling under the relaxation techniques, whether combined with multisensory learning, copying or mainstream teaching compared to baseline. In addition, compared to baseline, there were improvements in spelling scores in the positive self-statements condition but only when it was coupled with a multisensory method of learning. These improvements argue that targeting behavioural problems will improve educational achievement, but that some types of behavioural intervention may have to be combined with an appropriate educational method. For the positive self-statements intervention, improvements were evident only with one of the teaching conditions included in the study. Simple rote learning, be it copying or in general oral teaching of class material, may not be effectively combined with a behavioural intervention technique that focuses on internalising outcome: indeed, when these self-focused methods were combined with more rote learning methods (i.e., mainstream teaching methods and the copying method used with the special school students), changes in the targeted outcome were potentially worse than under conditions of no intervention at all. However, when combined with multisensory learning, the positive self-statements intervention showed reasonable gains in spelling, which were proportionally as good, if not better, than those found in the relaxation technique condition: i.e., post intervention spelling scores were just less than three times those of pre-intervention scores for the relaxation

technique LD groups, but more than three times for the LD children who experienced multisensory learning and positive self-statements (see values in figure 1). These findings suggest that behavioural interventions, such as those training self-monitoring, need to be combined with appropriate educational methods (we will return to a discussion of this point below).

The effects identified with the multisensory learning technique are worthy of further consideration and additional research. Multisensory learning has been used for many years in schools across numerous countries (primarily in the USA and UK). However, despite its popularity among practitioners, there are relatively few research studies that have confirmed its usefulness as an educational intervention (see discussion of this point in Joshi, Dahlgren & Boulware-Gooden, 2002; though see also the work of Chia & Houghton, 2011, in Singapore, Guyer & Sabatino, 1989, with adult students in the USA, and Oakland, Black, Stanford, Nussbaum & Balise, 1998, with children in the USA). The current data do argue for the effectiveness of multisensory learning when combined with behavioural interventions, at least in terms of increases in spelling performance. Furthermore, the dropout levels evident in the copying condition could be construed as the students with learning difficulties feeling uninterested or bored, in contrast to the multisensory learning condition in which all students continued to the end of the intervention period. Therefore, one interpretation of the effectiveness of the multisensory learning condition is that it engaged

these students despite the need to produce the same spelling repeatedly.

Also noteworthy were the effects identified with the relaxation technique. This had a positive effect on spelling scores with both cohorts of students. One interpretation of these effects is that relaxation achieves a reduction in stress levels (Beauchemin, Hutchins & Patterson, 2008; Paul et al., 2007), which may be particularly high in students with literacy-related learning problems when faced with spelling tasks and also with mainstream students around examination times. Such relaxation techniques may have led to the students feeling calmer than usual allowing them to concentrate on learning; consistent with those studies that have found that breathing and relaxation techniques can aid concentration, improving both memory and on-task behaviour (Amerikaner & Summerlin, 1982). Also, relaxation techniques can work to lower anxiety levels (Malinski & Todaro-Franceschi, 2011; Paul et al., 2007) which may have been experienced in tests of spelling – and reducing test anxiety has been seen as positive for both LD and non-LD children (see Russel & Sipich, 1974). Whether these techniques show similar levels of effectiveness when stress/anxiety is low may be a further area for future research. The present findings, though, do indicate that targeted relaxation also has the potential to support learning in children under specific learning conditions. There is also evidence that they may be effectively applied in combination with self-monitoring methods. A study by Collins et al. (1981) looked at the effects of self-initiated relaxation, positive self-

talk, and a combination of the relaxation technique and positive self-talk. The results showed that the students in the combined strategy performed better than the control group in measures of reading comprehension and retention. Hence, a combination of self-monitoring and relaxation training (which might also form part of the self-monitoring methods) may provide further insights for intervention development.

The general conclusion, therefore, from the work reported in this paper is that behavioural interventions can be effective when applied appropriately, at least in certain educational contexts or circumstances. Further work is clearly necessary to determine the conditions for effectiveness and develop theories that will allow predictions of when such methods will be useful and when they may not. The evidence of the current research suggests that self-monitoring methods, such as positive self-statements, may need to be combined with educational methods that are successful and/or engaging. When such self-monitoring methods are paired with teaching methods that seem to be less engaging, improvements in achievement may not be evident. Note that copying and mainstream teaching methods can be paired successfully with a behavioural intervention (in this case, the relaxation technique), at least in the learning contexts of the present work; rather the data indicate a specific detrimental influence on the positive self-statements method. One interpretation of the specific effects of self-monitoring is that the positive self-statements method may require positive experiences to lead to positive internalisation. For many

children with developmental learning difficulties, educational achievement has probably been seen as external to their own control – no matter how hard they try, they still fail. Externalising control may have the advantage of protecting self-esteem, but the disadvantage of leading to feelings akin to learnt helplessness. Consistent with this, in a study of the relationship between self-esteem and educational achievement among Kuwaiti mainstream children, Al-Azmi (2010) found that poor scores on measures of educational achievement (particularly spelling) were associated with low self-esteem, but that this relationship was influenced by scores on a locus of control scale; i.e., the child's view on whether they had control over events related to them, which may of course include their achievement in literacy. Those with high external locus of control did not show this relationship between self-esteem and educational achievement.

The effectiveness of a psychological-based intervention is that it changes the child's view, leading to achievement being perceived as an attribute of the self. This would be associated with internalizing locus of control and, hence, improvements in self-esteem through positive experiences and achievement. However, if experiences are negative, as in tasks that are seen as boring and not engaging, or where gains in achievement are short-lived or perceived as external to the individual, then there is likely to be little effect on self-concept. Such an interpretation may also explain contradictory findings in the literature about the benefits derived from counselling interventions related to

changes in self-esteem: some have found positive effects (Omizo & Omizo, 1988; Ozimo, Ozimo & D'Andrea, 1992), whereas others have not (Stafford & Hill, 1989). A prolonged period of positive achievement and engagement, combined with counselling that leads to a more internal locus of control, should lead to improvements in self-concept. This viewpoint argues for the need to implement counselling-based strategies along-side educational interventions that are likely to be engaging and show gains in achievement. If gains in achievement are short-lived or perceived as external to the individual, there will be little effect on self-belief or on the child's view that they have some control over their educational achievement. Under such circumstances, psychological-based strategies, such as positive self-statements, probably will not be effective optimally.

Although further research is needed, the improvements identified give cause for optimism regarding such combined behavioural/educational interventions (see also findings in Everatt et al., 2011). The methods used were for a relatively short period (only three weeks) and further gains may have been apparent if a longer period of training and support had been available. This may be the case particularly for positive self-statements intervention, where a longer period of training might be needed to ensure that the strategies associated with this technique are fully understood and appropriately used by the student. Such techniques may also require a certain level of maturity from the child to be able to implement strategies that require control over thoughts and

behaviours – though the evidence that these were effective in both cohorts from late primary years (from about age 10 onwards) suggests that they can be used effectively with fairly young children, but further research should help identify potential critical periods for the effectiveness of these methods. Finally, further research considering strategies that build on strengths of the individual with a learning difficulty may be worthwhile. Many children with LD show abilities in certain areas while showing weaknesses in others, and some research has shown positive effects on educational achievement when using these abilities, particularly in older children, in contrast to attempts to remediate areas of weakness (see Weeks, Brooks & Everatt, 2002). If a focus upon the child's strengths increases achievement for some period of time, then targeting locus of control together with self-management counselling strategies should lead to the achievements being internalized. This will lead to an increased likelihood of self-esteem improvements, and a reduction in learned helplessness that should increase motivation to learn, even if literacy-based interventions shift to a focus on areas of relative weakness. Clearly, further research is necessary, but this strategic combined approach may prove useful particularly for older children who have experienced a prolonged period of failure during their education and it may provide one way of counteracting the reduction in success found for current intervention programmes as the child grows older.

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