



The influence of a general literacy intervention on the psychosocial development of students with literacy learning difficulties

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Abstract

The present study examined whether the psychosocial development of students with literacy learning difficulties (LLD) could be positively influenced via an academic intervention that focused on the explicit instruction of general literacy skills. Twenty-one students with LLD aged from 8 years 6 months to 11 years 5 months participated in the study. Following pre-intervention assessment, students received an average of 20 sessions of 30-minute duration, over a six week period that focused on developing students' skills in the areas of decoding, vocabulary and reading fluency using age-appropriate narratives. Results found that the students demonstrated significant gains in multiple areas of literacy, as well as, academic and global self-esteem, general self-efficacy and its emotional and social subscales. Overall, gains in literacy were found to be more likely associated with changes in self-efficacy, rather than self-esteem. Additional analyses also suggested that the association between literacy and psychosocial development was greater for students with LLD who demonstrated lower levels of resilience at pre-intervention.

Keywords: self-esteem, self-efficacy, resilience, literacy development, reading comprehension, decoding

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INTRODUCTION

The psychosocial development of students with literacy learning difficulties (LLD) has featured within the research literature. Much of this research literature has focused on self-esteem, though some attention has been given to self-efficacy and resilience. Determining the association between LLD and psychosocial development has led to variable results and is influenced, not only on how each constituent area is conceptualised and defined, but also the research methodology that underpins the research. When research has investigated psychosocial development, such as self-esteem, the focus has mostly been on how self-esteem can be positively influenced within the educational context, via interventions that specifically focus on psychosocial development. Less research has focused on how self-esteem can be positively influenced via academic interventions. The present study is concerned with the latter possibility, and aims to determine whether the psychosocial development of students with evidence of weaknesses in literacy can be influenced by an academic intervention that focused on literacy development, but which also targeted experiences of success and resilience.

Self-esteem can be viewed as deriving from the experiences of an individual within their social world and the evaluations that the individual makes about those experiences (see discussions in Denston, 2016). Whilst early theorists viewed self-esteem as being largely behavioural, more current conceptions view self-esteem as also being influenced by cognition and emotion. The nature of self-esteem has also been debated, in terms of whether it is unidimensional (that is, solely consisting of global self-esteem) or whether it is a multi-faceted concept where differentiation into sub-domains (such as academic and physical self-esteem) occurs, as well as from varying developmental perspective/processes (Marsh & Craven, 2006).

One sub-domain of self-esteem that is of particular interest to educational researchers is academic self-esteem. This interest may be largely attributed to the research that exists around the relationship between academic self-esteem and academic achievement. Indeed, academic achievement has found to show larger associations with academic self-esteem than global self-esteem (Byrne, 1984; Marsh & Craven, 2006), although age or grade/year level and placement within an educational context have been identified as potential mediating variables in this association (Chapman, 1988). Academic self-esteem has been assessed via learning outcomes, which has led to it being conceptualised as the evaluations that individuals make about their ability within specific academic domains (Trautwein, Lüdtke, Köller, & Baumert, 2006) in contrast to the evaluations that individuals make of their wider experiences within the school environment (Marsh & Craven, 2006).

Debate also exists about the trajectory of the relationship between academic achievement and academic self-esteem: whether academic achievement is posited as influencing academic self-esteem, through the skills development model (Calsyn & Kenny,

1977) or whether academic self-esteem is posited as influencing academic achievement, through the self-enhancement model (Guay, Ratelle, Roy, & Litalien, 2010). In contrast, Marsh and colleagues (Marsh, Byrne, & Yeung, 1999; Marsh & Yeung, 1998) argue that the relationship underpinning academic self-esteem and academic achievement is reciprocal and dynamic in nature.

A more recent construct within the field of psychosocial development is self-efficacy. Bandura (1997) viewed that behavioural change was underpinned by self-efficacy, which he defined as the judgements that an individual makes about his/her performance capabilities. Self-efficacy is developed via cognitive and not affective processes, which distinguishes it from self-esteem, even though they have, at times, been treated synonymously within literature. Associations between self-efficacy and self-esteem have been identified; however, these are variable in strength, which is largely due to the value that an individual places on a specific activity (Bandura, 1997).

Self-efficacy is formed via four sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Experiences are fundamental to self-efficacy, although their influence is differential, largely due to the aforementioned value placed on the experience by the individual and the degree to which self-efficacy has developed within the individual. Successful experiences promote self-efficacy, while unsuccessful experiences can compromise self-efficacy. Difficult experiences also play an important role in the development of self-efficacy because they provide opportunities for an individual to develop perseverance.

Self-efficacy has also been associated with academic achievement, which has made it of interest to educational researchers (Multon, Brown, & Lent, 1991). Research has found that in elementary students, self-efficacy and academic achievement were associated to a lesser degree (Multon et al., 1991); however, this was later argued by Pajares and Schunk (2001) to depend on the academic outcomes selected, as well as, how the constructs were operationalised. Pajares and Schunk (2001) further argued that the findings supported the context-specific nature of self-efficacy and that findings would be influenced by the degree of correspondence between self-efficacy beliefs and academic outcomes selected. Studies (Lee & Jonson-Reid, 2016; Liew, McTigue, Barrois, & Hughes, 2008) have found that domains of self-efficacy can be differentiated in children as young as Grade 1, although such research is complex due to the role that cognitive development in self-efficacy.

The area of resilience emerged when research in the field of psychopathology found that individuals who, as a result of exposure to negative circumstances, were identified as at-risk for maladaptation actually demonstrated positive adaptation, thus, developing into competent adults (Luthar, Cicchetti, & Becker, 2000; Masten et al., 1999; Schoon, 2006; Werner, 2000). Resilience develops over time and is a dynamic process that promotes the ability of individuals to overcome significant adversity (Cummings, Davies, & Campbell,

2002; Garmezy, Masten, & Tellegen, 1984; Rutter, 2006; Werner, 1993). Resilience is characterised by two specific elements. These include the experience of adversity or risk, as well as, the successful adaptation, overcoming, or experience of positive outcomes in the presence of the adverse circumstance (Rutter, 2012; Schoon, 2006). Risk factors are those factors that increase the likelihood of maladjustment or negative outcomes for an individual (Ofiesh & Mather, 2012). The development of resilience can be influenced by both temporal and contextual variables, as well as, developmental factors. While resilience is underpinned by the exposure to risk and the positive adaptation by an individuals, debate exists within literature as to what experiences and the level of chronicity that effects the risk of maladaptation (Fletcher & Sarkar, 2013).

Resilience within education has also been of prominence, largely because the school has been viewed as an environment where resilience can be promoted in a child (Martin, 2002), largely via targeting the levels of individual competence or by moderating or mediating risk factors external to the child. However, because risk factors can be derived from within the educational context, Doll and Lyon (1998) argue that the educational context can also result in the accumulation of risk for a child. Students with LLD have been of interest to researchers due to the fact that literacy difficulties can often be chronic in nature (Ofiesh & Mather, 2012), extend beyond literacy to affect wider academic achievement (Forrest-Bank & Jenson, 2015) and psychosocial development (Sorensen et al., 2003), as well as affecting academic ability in young adulthood (Masten et al., 2004). According to Rutter (1987), when examining relationships between LLD and risk, it is paramount to focus on the interactions that occur within the educational context. Sorensen et al. (2003) further refined this to argue that it is the proximal factors within the educational context that are integral to examining resilience. This has been supported in research by other studies that have identified proximal factors (such as successful experiences, problem-solving skills, positive social behaviour) in resilient adaptation (Miller, 2002; Rutter, 2012).

For students with LLD, lower skill levels are more likely to result in lower levels of academic self-esteem (Chapman & Tunmer, 2003). Furthermore, research suggests that students with LLD judge themselves less positively across academic domains (Bear, Minke, & Manning, 2002). Students with LLD who demonstrate multiple difficulties or more complex difficulties may be more likely to experience even lower levels of academic self-esteem than other students with LLD (Cosden, Elliott, Noble, & Kelemen, 1999). These findings derive from the educational context, largely from learning tasks that demonstrate academic achievement. This means examining the association between psychosocial development and academic achievement in students with LLD is crucial. While support for an association between self-esteem and academic achievement has been contentious within literature (see Baumeister, Campbell, Krueger, & Vohs, 2003), research has found that interventions that target academic achievement or learning strategies are likely to show positive effects on self-esteem in primary or elementary aged students with LLD (Elbaum & Vaughn, 2003). This may be due to the role that

positive learning outcomes have on the development of academic self-esteem, which has been supported in research (Lüdtke, Köller, Marsh, & Trautwein, 2005; Wu & Kuo, 2015). However, research should not focus on self-esteem in isolation. Pajares and Schunk (2001) argue that any intervention that targets learning strategies or academic achievement should also focus on self-efficacy. This is because self-efficacy beliefs can be influenced by aspects of an academic or strategy-based intervention and these beliefs also influence the use of newly developed academic competencies in students. Furthermore, the literacy learning difficulties demonstrated by students can also be exacerbated by held self-efficacy beliefs, which can influence the risk for maladaptation, and implicate the role of resilience in research examining associations between psychosocial development and academic achievement.

The current research, therefore, focuses on the following questions:

1. Does a targeted intervention, which includes instruction in general literacy skills, promote psychosocial development in students with LLD?
2. Is change in literacy development associated with change in psychosocial development in students with LLD?

METHOD

Participants

This study involved 21 students from Year 4 to Year 6 who attended a Decile 3 primary school in one of the larger cities in New Zealand. (Note that deciles relate to socio-economic factors within the enrolment area of the school: 1 being the lowest, 10 the highest.) Participants were identified by the Deputy Principal of the participating school as having demonstrated low scores in school tests of reading; i.e., students who had made little progress in their reading development for the duration of their education at the participating school. Students were not eligible to participate in the intervention if they were currently receiving any individualised support for their literacy development within the school context as any influence from such additional support will make conclusions based on the current intervention problematic. In New Zealand, the only Ministry of Education funded intervention for literacy difficulties is Reading Recovery (Clay, 1979), which targets students at 6 years of age. Therefore, schools will have limited resources to support older children with reading difficulties, meaning that (particularly in lower decile schools) there will be children with low progress in reading and writing who will not be eligible for extra support.

The sample consisted 12 male and 9 female students who ranged in age from 8 years 6 months to 11 years 5 months. The sample included 13 students from Year 6, five students from Year 5, and three students from Year 4. Of the 21 students, five were identified by

the school as being eligible for Ministry of Education funding as English as Speakers of Other Languages (ESOL); however, all students identified English as their primary language of communication. Parents/caregivers of students provided informed consent for their child's participation in the study. All students provided personal assent to participate in the study, prior to the collection of pre-intervention data.

Table 1. Demographic information for participants and comparison children

	Study participants	Comparison children
Age		
	M (SD)	10.27 (0.93)
	Range	8: 6 – 11: 5
		8: 7 – 11: 7
Gender		
	Percent (number)	Percent (number)
	Female	42.9% (n = 9)
	Male	57.1% (n = 12)
Year Level		
	Percent (number)	Percent (number)
	Year 4	14.3% (n = 3)
	Year 5	23.8% (n = 5)
	Year 6	61.9% (n = 13)
School assessments		
	Mean (SD)	Mean (SD)
	STAR ¹	2.06 (1.44)
	RR ²	8.21 (3.24)
	OTJ-R ³	2.37 (0.89)

1. STAR scores are based on stanines (scores from 1 to 9)
2. RR is a raw score of accuracy and comprehension components – scores from 10-12 indicate a reading age from 10 to 11 years, whereas a score of 8 suggests a reading age of about 8
3. OTJ-R indicates students' progress as 1=well below, 2=below, 3=at, and 4=above according to the New Zealand Ministry of Education's National Standards

In contrast to a comparison group ($n = 91$) comprising students from the same Year 4 to 6 classes of the intervention students, the 21 children were performing well below expected levels in reading (see Table 1). The comparison group were identified by the school as progressing in their reading development at the expected level (or above) in accordance to National Standards, which set standards for achievement in the first eight years of schooling (Ministry of Education, 2009). Demographic information for the groups is presented in Table 1.

Contrasts were based on school data for the Supplementary Test of Achievement in Reading (STAR) (Elley, 2001), Running Records (RR) (Clay, 2000) and Overall Teacher Judgement-Reading (OTJ-R) (Ministry of Education, 2009). These measures are widely used in New Zealand to assess children progress in reading and the measures were administered by the school independent of the researcher. In each case, the participant group were performing well below their peers in terms of the school's assessments of reading.

Measures

The study used a range of measures to assess change over the course of the study in both literacy and psychosocial development. Measures in literacy included word reading accuracy, text reading accuracy, as well as comprehension and rate. Changes in psychosocial factors specifically related to self-esteem, self-efficacy and resilience. Each of the measures used is described below.

Burt Reading Test

This standardised test is used in New Zealand schools, and is individually administered to children from 6 years 4 months of age. The New Zealand data have demonstrated reliabilities greater than .90 (Gilmore, Croft, & Reid, 1981). In the current study, the data produced a Cronbach's alpha of .96. The test comprises of 110 words, presented in groups of 10 that increase in complexity. Each participant was asked to read orally each set of words from left to right. Testing continued until the student had made 10 consecutive errors. The student was then shown the remaining words and provided with an opportunity to read any additional words. One point was given for each correct response and raw scores out of a possible 110 were collected for analysis.

Neale Analysis of Reading Ability

The Neale Analysis of Reading Ability (NARA) is an assessment of oral reading skills and reading behaviours (Neale, 1999). The test demonstrates reliability co-efficient of over .85 (Neale, 1999); and the current study also found a high internal consistency for the accuracy (.97), comprehension (.91), and rate (.97). The NARA is an untimed test that is administered individually and has been standardised for use with students from 6 years

of age. The study used the standardised component that contained two parallel forms, with Form 2 used at pre-intervention and Form 1 at post-intervention. Each form contained two practice texts, as well as six graded texts that increased in vocabulary and grammar complexity. Each participant was asked to read the text aloud, and was then asked a series of scripted questions that assessed their literal and inferential comprehension of the text. Raw scores for reading accuracy and comprehension were collected for analysis, and reading times were recorded and converted into a rate of reading score.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem scale was developed by Rosenberg in 1965 and was used as a measure of global self-esteem. The scale consists of 10 statements that elicit information about an individual's overall evaluation of their sense of worth. According to previous research (Gray-Little, Williams, & Hancock, 1997; Robins, Hendin, & Trzesniewski, 2001), the scale has an internal reliability of around .88 to .90. In the current study, a Cronbach's alpha of .69 was calculated. Students were read a statement by the researcher (e.g., On the whole, I am satisfied with myself) and asked to respond to the statement by indicating their level of agreement or disagreement using a 4-point Likert scale. Each response was assigned a numeric value ranging from 1 (low self-esteem) to 4 (high self-esteem). Raw scores between 10 and 40 were used for the purpose of analysis.

Self-Perception Profile for Children-Scholastic Competence subscale

This measure included six questions contained within the scholastic competence subscale (academic self-esteem) of the Self-Perception Profile for Children (Harter, 2012). The subscale elicits information regarding a student's perception of their cognitive competence, specifically in relation to schoolwork. Statements are presented to students through an alternative structure format, which seeks to minimise socially desirable responses (Harter, 2012). The subscale demonstrates a high internal consistency, with Cronbach's alphas ranging from .80 to .84 (Harter, 2012). In this study, Cronbach's alpha was .87. Students were read two statements by the researcher (e.g., Some kids feel that they are very good at their school work; Other kids worry about whether they can do the school work assigned to them.). Students were asked to decide which statement reflected him or her most and the degree to which the chosen statement reflected him or her. Each item was assigned a numeric value from 1 (low academic self-esteem) to 4 (high academic self-esteem). Raw scores, with a minimum of 6 and a maximum of 24, were collected for analysis.

Sense of Coherence-Orientation to Life Questionnaire

This measure included 10 questions extracted from the manageability subscale of the

Sense of Coherence-Orientation to Life Questionnaire (Antonovsky, 1987). The subscale measures students' perceptions of control and confidence within their lives (i.e., resilience). The subscale has a reported Cronbach's alpha of .80 (Frenz, Carey, & Jorgensen, 1993); and showed a Cronbach's alpha of .72 in the present study. The subscale contains ten statements that are presented using a semantic differential format. Students were read each statement by the researcher (e.g., Many people – even those with a strong character – sometimes feel like losers in some situations. How often have you felt this way in the past?). Students were required to select a response to the statement using a 7-point scale, with each scale being anchored with semantically different phrases. Each item was scored by assigning a numeric value from 1 (low resilience) to 7 (high resilience). Raw scores, with a minimum of 10 and a maximum of 70, were analysed.

Self-Efficacy Questionnaire for Children

The self-efficacy scale consists of 24 items that measures a child's perceptions of their capabilities to perform desired behaviours in order to meet specific goals (Muris, 2001). The overall scale is a measure of general self-efficacy, which also contains three subscales (academic, social, emotional self-efficacy) of 8 items each. The measure can be used to determine how a child copes and adapts to daily challenges and stressors within life events, which is reflective of subsequent behaviours (Muris, 2001). The scale has high internal consistency, with a Cronbach's alpha of .88 for the full scale, and similarly good reliability scores for the subscales (from .85 to .88) (Muris, 2001). Reliabilities for the current study found a high internal consistency for the full scale (.90), and the academic (.86) and social subscales (= .83) but a lower score for the emotional subscale (.67). Vocabulary used in a couple of questions within the academic subscale was altered to suit the educational context of the school (e.g., homework was replaced with the words home learning, and the word test was replaced with the word assessment). The researcher orally read each question to the students (e.g., How well can you focus on learning (study) when there are other interesting things to do?). Students responded on a numerical scale from 1 (Not at all) to 6 (Very well). This measure was scored with a minimum of 24 and a maximum of 144 for the full scale and a minimum score of 8 and a maximum score of 48 for each subscale.

Elementary Reading Attitude Survey

The Elementary Reading Attitude Survey (McKenna & Kear, 1990) contains 20 questions. Ten questions assess students' attitude towards recreational reading and 10 questions assess students' attitude towards academic reading. High internal consistencies have been reported, with Cronbach's alphas ranging from .80 to .87 for the subscale (McKenna & Kear, 1990). The present study showed a consistent range of reliability scores. Each question was read out loud to students (e.g., How do you feel when you read a book on a rainy Saturday?). Students responded by selecting a point on a scale that most

reflected their feelings, from 1 (Very upset) to 4 (Happiest). Items that contained references to reading class were changed to reading group, in order to suit the educational context of the students. Raw scores, with a minimum of 20 and a maximum of 80 points were collected for the full scale and a minimum of 10 and a maximum score of 40 for the recreational and academic subscales.

Procedure

Pre-intervention assessment measures were administered over a five-day period during the first two weeks of the school term. Post-intervention data were collected over a six-day period at the end of the term. The format for post-intervention assessment gathering matched pre-intervention assessment. All assessments were carried out in the researcher's office, within the participating school. To minimise student fatigue, literacy and psychosocial measures were assessed across several sessions and students received breaks whenever needed.

The intervention consisted of 24 sessions, which occurred during the literacy times of the participating school. The duration of each session was approximately 30 minutes. Students attended a maximum of four sessions per week, over a six-week period. Students were primarily grouped according to class or year level in consultation with staff. Where possible, groups were consistent throughout the length of the intervention; however, fluidity in the composition of groups was allowed in order to best meet students' learning needs. Students attended an average of 20 sessions, with a range of 14-24 sessions.

The intervention sessions followed the format developed by Marriott (2013) and were underpinned by tasks that supported decoding, vocabulary, and fluency components of reading. The first component involved the development of decoding strategies whereby students practised decoding words selected from the focus text as likely to be unknown or difficult for the students to read accurately. Students were taught a decoding strategy that focussed on the use of the CVC syllable structure and the ability to identify the sounds within a simple syllable as a basis to try longer words. Students were also encouraged to look for familiar chunks within words that could include morphological units, orthographic patterns, or rimes. The vocabulary component involved clarifying and teaching students the meaning of selected words identified from the decoding component. The final component of the session focused on fluency and involved a repeated reading format, which incorporated using the researcher as the model of a fluent reader. The session format is provided in Table 2, though each lesson varied as to the included components: for example, the session that focused on decoding and vocabulary included less of the fluency component, while the subsequent lesson would focus primarily on the fluency component, and then the next session would focus on the decoding/vocabulary component for a new text.

The educational resources StoryBytes (Sharp Reading, 2013) were used as the texts for the intervention; these have been formatted for use in guided reading lessons. Each narrative is published in three levels of text difficulty that includes: easy (Reading Age 7-8 years), medium (Reading Age 10-12 years), and hard (Reading Age 13-15 years). For the current study, easy texts were used to teach students the session format, with medium texts used for the remainder of the study. The stories selected had short composition and were deemed to have high-interest subject matter or content for students: for example, stories about Batman, yetis, pirates, and spies. High-interest content was chosen to assist students in engaging within the learning process.

Table 2. Session structure for intervention

Component	Structure
	Words selected from focus text that are potentially unknown by students.
Decoding	Students and teacher discuss and apply decoding strategies that included the used of CVC syllable sound recognition, blending sounds, and chunking based on morphology, orthography, rime.
Vocabulary	Discussion of meanings of selected words from decoding component.
	Repeated reading:
Fluency	<ol style="list-style-type: none"> i. teacher reads a section of the text to students, and all students follow the text using text cards; ii. teacher and students re-read section of the text as a group; iii. students take turns to individually re-read sentences or sections of the text out loud – and remaining students read silently, using their text cards to follow.
	Discussion: text based comprehensions questions that related to the targeted vocabulary.

RESULTS

Descriptive statistics for the measures administered to intervention group are presented in Table 3. Paired sample t-tests were carried out to compare pre- and post-intervention researcher-administered measures (eta squared statistics were included to determine the effect size and followed guidelines set by Cohen, 1988) – these were one-tailed analyses

Table 3. Pre- and post-intervention scores for the intervention group (n = 21) for all researcher-administered measures

Test (maximum score)	Pre-intervention			Post-intervention		
	Mean	SD	Range	Mean	SD	Range
Literacy						
Burt (110)	44.05	14.94	26 - 88	52.19	17.02	31 - 94
NARA-Accuracy (100)	33.67	17.50	8 - 75	39.43	14.90	16 - 79
NARA-Comprehension (44)	10.57	4.39	4 - 20	18.33	5.54	10 - 31
NARA-Rate	39.33	18.02	17 - 101	39.29	18.50	14 - 99
Psychosocial						
Global Self-Esteem (40)	26.86	4.57	19 - 35	28.10	3.33	22 - 34
Academic Self-Esteem (24)	14.95	3.89	6 - 24	17.24	3.99	10 - 24
Resilience (70)	43.52	7.80	31 - 61	44.71	10.63	29 - 65
Self-Efficacy-Total (144)	88.19	18.03	45 - 117	97.33	18.22	60 - 131
Efficacy-Academic (48)	30.62	7.15	12 - 44	31.29	8.80	12 - 45
Efficacy-Social (48)	29.95	8.00	9 - 42	33.38	8.45	15 - 46
Efficacy-Emotional (48)	27.62	7.04	13 - 43	32.67	5.57	21 - 41
Reading Attitude Total (80)	51.90	12.93	21 - 74	53.14	9.54	31 - 73
Recreational (40)	25.24	5.78	11 - 34	26.48	5.05	17 - 38
Academic (40)	26.29	7.16	10 - 37	26.67	5.83	14 - 39

given the expectation of gains in measures between the two time points. Correlational analyses were then used to determine the level of potential relationships between literacy gains and psychosocial development found in the study: partial correlations were used to control the influence of year level and gender.

The paired sample t-test for the Burt test was significant ($t(20) = 5.77, p < .001, \eta^2 = .62$) indicating that students performed significantly better on the single word reading accuracy task at post-intervention. Significant gains were also identified for NARA accuracy, ($t(20) = 4.46, p < .001, \eta^2 = .50$), and NARA comprehension ($t(20) = 12.07, p < .001, \eta^2 = .88$). No significant gains were identified for NARA rate ($t(20) = .03, \eta^2 = .005$), with pre and post reading rates being almost identical (see Table 3). The distribution of rates at both time points were highly skewed (there were some very slow readers), which led to concerns about the normality assumptions. Re-analysis of the data using a Wilcoxon Signed Rank Test (the non-parametric version of the paired t-test) did not show a significant effect for the NARA rate component ($Z(20) = -.469, p > .05$). Therefore, these data suggest gains in reading accuracy (word and text) and comprehension, but not rate of reading.

Similar analyses for the psychosocial measures indicated significant gains between pre- and post-intervention scores for the global self-esteem scale ($t(20) = 1.777, p = .046, \eta^2 = .14$) and academic self-esteem ($t(20) = 3.114, p = .002, \eta^2 = .33$), as well as the general self-efficacy scale ($t(20) = 2.814, p = .006, \eta^2 = .28$), and the subscales of emotional self-efficacy ($t(20) = 3.821, p < .001, \eta^2 = .42$) and social self-efficacy ($t(20) = 2.050, p = .027, \eta^2 = .30$). Non-significant differences were identified for resilience, academic self-efficacy, or reading attitude.

In order to determine if relationships existed between literacy and psychosocial development, analysis was carried out using Pearson product-moment correlations (see Table 4). Correlations were interpreted in terms of effect sizes, based on a small effect having an $r = .10$ to $.29$, a medium effect with an $r = .30$ to $.49$, and a large effect of $r > .50$ (Cohen, 1988). This indicated several medium effects between measures of literacy and psychosocial development, as well as a range of small effects. The present study will focus on r -values of $.2$ and above only.

Overall, literacy gains were more likely to be associated with changes in self-efficacy and reading attitude, rather than self-esteem and resilience. Also, improvements in accuracy (word or text) did not seem to have consistent influences on changes in psychosocial development. However, gains in comprehension and rate did produce small to medium size relationships with self-efficacy and reading attitude. Improvements in reading comprehension were related to positive changes in self-efficacy, particularly academic self-efficacy ($r = .311$) but also general self-efficacy ($r = .273$), as well as reading attitude ($r = .335$). Faster text reading rates were also related to increased academic self-efficacy ($r = .278$), suggesting that those showing increased reading rates

Table 4. Pearson correlations between literacy and psychosocial measures

	Burt word reading	NARA-accuracy	NARA-comprehension	NARA-rate
General Self-esteem	-.003	.104	.134	<i>-.264</i>
Academic Self-esteem	-.011	-.084	-.119	.177
Resilience	-.052	-.114	-.105	.155
Global Self-efficacy	-.137	.009	<i>.273</i>	.168
Self-efficacy - Academic	-.076	.017	<i>.311</i>	<i>.278</i>
Self-efficacy - Social	.021	<i>-.217</i>	.153	-.060
Self-efficacy - Emotional	<i>-.285</i>	<i>.281</i>	.155	<i>.200</i>
Reading attitude	.169	-.015	<i>.335</i>	<i>-.303</i>
Reading attitude - Recreational	-.003	<i>.245</i>	.196	<i>-.254</i>
Reading attitude - Academic	<i>.203</i>	.122	-.100	<i>-.243</i>

Note: *bolded r-values indicate a medium effect; those in bolded italics a small effect of $r > .2$*

felt more confident about their capabilities. In contrast, text reading rate was negatively correlated with reading attitude ($r = -.303$), suggesting that increases in positive attitudes to reading may be associated with slowing reading down, possibly to implement the decoding strategies taught to students over the course of the intervention.

The latter two effects show that the relationship between literacy gains and psychosocial development is complex. To assess these relationships further, the children were divided into two groups based on their pre-intervention resilience level, given that those with high resilience levels may be resilient to changes in psychosocial areas. These data indicated that students with high pre-intervention resilience levels actually reduced their scores on the resilience scale (about 2 scale points), in contrast to those with low pre-intervention resilience levels who increased scores on this scale (about 5 scale points). Additionally, the correlations between improvements in comprehension or rate and changes in the psychosocial variables varied across these two groups. For the low pre-intervention resilience group, improvements in reading comprehension were related to increases in most aspects of self-efficacy (general self-efficacy, $r = .310$, academic self-efficacy, $r = .333$, social self-efficacy, $r = .353$). Similar effects were also found for improvements in reading rate (general self-efficacy, $r = .235$, academic self-efficacy, $r = .617$, emotional self-efficacy, $r = .312$). However, for these children, increases in reading rate were related to reductions in reading attitude ($r = -.547$). For the high pre-intervention resilience group, improvements in reading comprehension were related to moderate improvements in self-efficacy ($r = .318$) but had a large effect on reading attitude ($r = .655$).

DISCUSSION

This study was concerned with the psychosocial and literacy development of primary aged students, from Year 4 to 6, with literacy learning difficulties (LLD). The primary purpose was to examine whether the psychosocial development of students with LLD could be influenced by a targeted literacy intervention. This was based on the meta-analysis of Elbaum and Vaughn (1999) that argued for the effectiveness of school-based interventions that targeted the development of academic skills in improving the academic self-esteem of elementary school students with LLD. In the current study, the evidence suggests that the students were experiencing literacy learning difficulties. Mean scores on the standardised STAR measure indicated that the students performed on average at Stanine 2, which placed the students within the 5th percentile for reading achievement. This finding aligned with the OTJ-R data that indicated teachers rated students as working below the expected national average. Pre-intervention scores on the NARA measure indicated that, on average, students were performing around 7.4 to 7.9 years of age; and on the Burt measure, at pre-intervention students were performing, on average, around 8 years of age. The students were performing well behind their classroom peers in their literacy learning and hence should benefit from targeted interventions supporting literacy learning. The analyses comparing pre- and post-intervention literacy measures were consistent with this argument: students showed significant gains for word and text reading

accuracy, as well as text reading comprehension, though not for rate of text reading.

The latter null effect with regard to rate of reading may be due to the focus of the intervention on more accurate decoding and strategies to support accurate word recognition. An alternative explanation is based on the observations that difficulties existed within the fluency component of the intervention and may need to be a focus of future improvements. The lexicons held by some students were less developed and the fluency component was often interrupted with the decoding of words in the text unfamiliar to students that often extended beyond those words identified by the researcher in the decoding component of the intervention. In order to meet student needs, the intervention was modified partway through by increasing the number of words selected for the decoding component, although this resulted in additional time being spent on this part of the intervention, which likely affected the amount of time spent on the fluency component. It was also evident that students were more reluctant to read during the fluency component, even though the StoryBytes texts were short in nature, and a lack of engagement in the repeated reading element of the fluency component may have reduced the impact of this aspect of the intervention.

However, given that the intervention was leading to improvements in struggling learners (at least in accuracy and comprehension), the focus of the current work was whether this would be related to improvements in measures of self-esteem, self-efficacy, resilience and reading attitude. Analyses identified that students made significant gains in aspects of self-esteem and self-efficacy, but not in resilience and reading attitude. In addition, a positive association was found between improvements in text reading comprehension and increased self-efficacy – and to some extent better reading attitudes. The positive association identified between reading comprehension and academic self-efficacy is perhaps not surprising: having the capacity to answer comprehension questions correctly is likely to be perceived as a key component of successful (effective) reading achievement in older learners.

In the current research, literacy learning difficulties were conceptualised as a risk factor for students, which is likely due to difficulties in literacy development influencing students' ability to succeed within the educational context (see also Margalit, 2003; Miller, 2002). Findings indicated that changes in resilience were not related to literacy gains, and it was only when the children were divided into groups based on pre-intervention resilience levels that the influences of resilience were more apparent. Findings suggested that students with low resilience levels at the start of the intervention showed improved resilience by the end of the intervention, whereas those with high resilience scores at the start showed a small reduction in resilience. By the end of the study, a difference of 12 resilience scale points between the two groups had been reduced to 5. This finding supports the notion that heterogeneity exists in terms of how children may respond to risk, in this case LLD, which means that variation in adaptability is likely (Rutter, 2012; Schoon, 2006). Indeed, these findings may be reflective of children's

reactions to the intervention content. Cummings et al. (2002) noted that perceptions and cognitive processes are likely to underpin children's reactions to experiences, rather than the objective experience itself. Additionally, according to Boyden and Mann (2005), exposure to risk does not automatically result in increased vulnerability. Students in the current study, who were higher in pre-intervention resilience may have held positive perceptions of their literacy competence. Participating in the intervention may have highlighted literacy difficulties leading to an increase in vulnerability. Indeed, it may have been only after experiencing the challenges of reading age-appropriate material that resilience was being developed – prior to this, it may be better to conceptualise the views of these children as confidence rather than resilience. In comparison, students who had lower levels of resilience may have held lower levels of perceived competence in literacy. Therefore, positive perceptions of their experiences may have fostered the development of resilience.

These findings lend some support to Elbaum and Vaughn (2003) in that initial levels of psychosocial development will influence subsequent development; however, in the current study, it was resilience, not self-esteem, that was the focus of this influence. Furthermore, relationships between gains in literacy and psychosocial development were more evident in self-efficacy, not self-esteem; which contrasts with findings within literature that tend to emphasise the association between self-esteem (specifically academic self-esteem) and academic achievement (Byrne, 1984; Chapman, 1988; Guay et al., 2010; Hettinger, 1982; Tunmer & Chapman, 2003). One interpretation of the present findings is that self-efficacy may be predicted to exert more influence on psychosocial development due to perseverance, which enables resilient self-efficacy to develop (Bandura, 1997) and that this has potential benefits to academic achievement. As such, self-esteem may be less fundamental to understanding behaviour and emotional responses in students with LLD than the development of self-efficacy, and its association with resilience. However, the interactions between these concepts are complex (as the present data confirm) and future consideration should be given to examining further those factors that influence the differential effects of an intervention on the development of resilience in students with LLD, as well as association with self-efficacy.

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