

Are we exacerbating students' learning disabilities? An investigation of preservice teachers' attributions of the educational outcomes of students with learning disabilities

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Received: 19 May 2010 / Accepted: 11 August 2011 / Published online: 2 September 2011
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Abstract While claims of the importance of attribution theory and teachers' expectations of students for student performance are repeatedly made, there is little comprehensive research identifying the perceptions preservice teachers have of students with learning disabilities (LD). Accordingly, 444 Australian preservice primary school teachers were surveyed using vignettes and Likert-scale questions, to ascertain their responses to students with and without LD. It was found that preservice primary school general education teachers held a negative attribution style towards students with LD. Preservice primary teachers perceived students with LD as a lacking ability in comparison to others in the class. Recommendations for research and training programmes conclude the paper.

Keywords Attribution theory · Learning disabilities · Preservice teachers

Introduction

Students with learning disabilities (LD) form the largest group of students with special educational needs in inclusive classrooms (Clark, 1997; Clark & Artiles, 2000). In Australia, each state government is responsible for the funding of public (government) schools, and the creation of policy and curriculum. Each state uses a categorical approach in defining disabilities, leading to different definitions and categories of LD across the country. While the Northern Territory has identified LD as a specific learning disability requiring support, other states (Queensland, Tasmania, and South Australia) define LD but the support is that provided for students with general learning difficulties. Finally, some states (such as New South Wales) do not distinguish between LD and general learning difficulties (Parliament of Australia Senate, 2002). This discrepancy across states and territories in Australia means that the attention given to students with LD is highly variable across the nation. A recent Australian government report into school funding confirmed the need for a

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national definition so that appropriate funding for students with LD is provided consistently across the country (DEEWR, 2010). In the absence of such a definition, resources are sporadically directed to students and, consequently, their educational needs are not met (DEEWR, 2010). Thus, shared understanding of the existence and needs of students with LD is an essential first step in ensuring that their educational needs are met.

The classic research of Rosenthal and Jacobson (1968) clearly demonstrated the general impact of teachers' expectations on student academic performance, which they termed the 'Pygmalion effect'. Additional research by Eccles and Wigfield (1985) described the 'Golem effect' whereby the teachers' low expectations directly translated into students holding low expectations of their performance. This research with the general student population has been replicated in studies demonstrating that the educators' beliefs and understandings about students with LD influence their classroom behaviours and, ultimately, the students' academic outcomes (Woodcock, 2010). Research has also shown that teachers form beliefs about their teaching, including attributions, during their preservice training, and once these beliefs are embedded they can be resistant to change over the span of a teaching career (Woolfolk-Hoy & Spero, 2005). Therefore, this study examined preservice primary school general education teachers' responses to, and expectations of, students with LD, drawing on the theoretical framework of Weiner's attribution theory (Weiner, 1979, 1985, 1986).

Attribution

An attribution refers to the 'perceived cause of an outcome; it is a person's explanation of why a particular event turned out as it did' (Seifert, 2004, p. 138). Weiner's (1985, 1986) model of achievement-related behaviour deals with causal perceptions of success and failure and has increased our knowledge of how attributions relate to learning in school (Linnenbrink & Pintrich, 2002). Weiner presented two attribution theories of motivation: the 'intrapersonal theory', which addresses how individuals explain their own successes and failures, and the 'interpersonal theory', which addresses how individuals explain other people's successes and failures (Tollefson, 2000). The theory contends that the teachers' perceptions of their students' behaviour can influence their future expectations and responses to students.

Outcomes are attributed to different behavioural causes, with ability, effort, luck, and task difficulty the main forms (Foll, Rasclé, & Higgins, 2008; Holschuh, Nist, & Olejnik, 2001; Weiner, 1979, 1986; Yan & Li, 2008). Additional causes can include teacher, mood, health, fatigue, and others (Weiner, 1986). The behavioural cause that has been assigned as the reason for an outcome has many implications. For example, depending upon the cause given for a behavioural outcome, different behaviours and future expectations will ensue. Thus, matching the appropriate cause to the outcome is vital. Each behavioural performance is measured along different dimensions. It is these causal dimensions that have the psychological force to influence expectancies, emotions, self-efficacy beliefs, affects, and actual behaviours (Schunk et al., 2008).

Weiner (1979, 1986) proposed three motivational dimensions of attribution theory: locus of causality, controllability, and stability. The locus of causality dimension focuses on a backward-looking belief (cause), locating the cause as either internal or external to the person. Controllability refers to how much control a person has over a cause. For example, causes can be internal and controllable (such as effort) or uncontrollable (such as ability) and result in different responses and future predictions (Weiner, 1986). Stability defines

causes as either a consistent trait or a temporary state. Stable causes, rather than unstable causes, are more likely to be permanent fixtures in future predictions. Therefore, according to Weiner's model, the causes of achievement-related behaviour can be located within one of eight categories (two levels of locus, by two levels of controllability, by two levels of stability).

Attribution theory is particularly useful when individuals experience negative or unexpected outcomes (such as failure). Teachers often use causal attributions when searching for reasons for these negative or unexpected outcomes in their students (Clark, 1997). In determining the cause for the student's failure, teachers often use their prior knowledge about the student (Kelley & Michaela, 1980) and search for the cause within the individual (internal locus of causality) hence the main causes include ability and effort. By identifying the cause of failure as within the individual, teachers do not have to expend emotional energy in self-examination or be held responsible for the student's failure (Major, Kaiser, & McCoy, 2003). When teachers impute the lack of effort as the reason for failure, they deem the student personally responsible for such failure (Matteucci & Gosling, 2004; Matteucci, 2007).

Similarly, teachers also attribute the cause of student success. Often when students succeed, teachers believe that the success is due to the teacher's influence (Bennett & Bennett, 1994). Rolison and Medway's (1985) study, for example, demonstrated that teachers were more likely to attribute success among students with special education needs to their own efforts rather than to that of the students'. While teachers felt pride and responsibility for students' success, they attributed students' failures to the students (Rolison & Medway, 1985). The expectations that flow from the attributions that teachers make about students failing or succeeding can affect the way in which they behave towards students (Reyna, 2000).

The influence of teacher expectations

Teachers' expectations can influence students' motivation and performance (Florea, 2007). Students base their attributions for success and failure on cues from the classroom teacher about the students' competence (Clark, 1997). Research has consistently shown that teachers are likely to experience emotions of anger or sympathy following students' performances in the classroom, depending on their expectations of students (Juvonen, 2000; Reyna, 2000; Reyna & Weiner, 2001). Students may interpret anger by the teacher as a reflection of higher expectations. The teacher's reaction suggests that the outcome was in the control of the student, which implies that the student has high ability. Alternatively, students may interpret sympathy by the teacher as a reflection of lower expectations of them, that is, that the outcome was uncontrollable and thus the student has low ability (Clark, 1997; Graham, 1984; Graham, Doubleday, & Guarino, 1984; Juvonen, 2000; Reyna, 2000; Reyna & Weiner, 2001). Thus, when teachers display anger, they demonstrate the belief that the student is capable of changing the behaviour and, thus, the outcome (Bruning, Schraw, Norby, & Ronning, 2004). The display of sympathy, however, communicates the belief that the student is incapable of changing the behaviour or the outcome (Bruning et al., 2004).

Studies (such as Bruning et al., 2004) have shown that teacher reactions to successful outcomes also have an impact on students. For example, a teacher who praises a student following success from an easy task communicates expectations of low ability. Furthermore, an absence of praise following success from an easy task infers expectations

of higher ability (Schunk et al., 2008). Even though praising student success has positive intentions by teachers, inappropriate praise can indicate to students that their ability level is low (Bruning et al., 2004).

Teachers' expectations of students are reflected in the type of feedback they provide to students. Schunk (1984, 1989) found that after success, feedback given by teachers that emphasised ability rather than effort resulted in higher levels of student self-efficacy, which is consistent with attribution theory. Foote (1999) found that the most effective types of feedback for student motivation were positive ability feedback and negative effort feedback. Foote found that positive feedback from success that focused on ability built students' self-efficacy and motivation while negative feedback from poor performance that focused on effort did not diminish the students' self-efficacy or motivation. For this reason, it is important that teacher feedback focuses on effort and effective strategy use, because these are within the control of the students and have been shown to be effective in enhancing achievement (see, for example, Shelton, Anastopoulos, & Linden, 1985). However, these types of feedback were the least used in the classroom (Foote, 1999).

Clark (1997) found that primary school educators viewed LD as an internal, stable, and uncontrollable condition and thus held low expectations for students with LD, showing higher reward, lower anger, higher sympathy, and higher expectations for future failure by these students. Clark's research with primary school teachers concluded that teachers believed that, when compared with their peers without LD, students with LD would fail more, would deserve more sympathy and less anger, and should be rewarded more and punished less. Clark concluded that the attributional message teachers gave students with LD is that they are less competent than their peers without LD and should expect to achieve less as a result. Clark's study supported similar findings by Tollefson and Chen (1988) and has since been supported by Gray (2002), Georgiou et al. (2002), and Woodcock and Vialle (2010). Tourmaki (2003) also found that teachers predicted greater academic success when the student was reading below average level without a label attached than those with the LD label.

The relationship between teacher and student attributions

Students generally have a 'positive attribution style', or 'normal self-esteem attribution' (Jacobson, Lowery, & DuCette, 1986), whereby they attribute success internally (internal and controllable/uncontrollable cause) and failure externally (external and uncontrollable cause). When students succeed due to internal controllable/uncontrollable traits, such as effort and ability, they have higher self-esteem, higher motivation, and future expectations for success.

Research has shown, however, that students with LD generally have a 'negative attribution style' (Waheeda & Grainger, 2002), whereby they attribute success externally (external and uncontrollable cause) and failure internally (internal and uncontrollable cause; Waheeda & Grainger, 2002). Consequently, when students succeed they tend to attribute it to external influences such as luck (Nunez, Gonzalez-Pumariiega & Gonzalez-Pienda, 1995) and when they fail they tend to attribute it to lack of ability. This reduces their self-esteem, decreases their motivation, creates future expectations of failure, and develops a learned helplessness (Cemalcilar, Canbeyli, & Sunar, 2003; Waheeda & Grainger, 2002). Similarly, Nunez, Gonzalez-Pienda, Gonzalez-Pumariiega, Rocés, Alvarez, Gonzalez, Cabanach, Valle, and Rodriguez (2005) suggest that children with LD hold a 'maladaptive attributional style', which involves low ability achievement expectations, low persistence at school

tasks, and low academic self-esteem (Gans, Kenny, & Ghany, 2003; Nunez et al., 2005; Stone & May, 2002). When persistence at school tasks, self-efficacy, and expectations drop, a student might feel a sense of helplessness. Learned helplessness was first coined by Seligman and Maier (1967) in a study where dogs eventually behaved helplessly after experiencing inescapable electric shocks and even though in the end they were provided a way out, they made no effort to escape. Seligman and Maier (1967) concluded that the dogs had learned that they were helpless. 'Learned helplessness is inferred when people who experience uncontrollability first learn that their outcomes elude their control and then generalize this belief about their own helplessness to new situations where the helplessness produces difficulties for them' (Cemalcilar, Canbeyli, & Sunar, 2003, p. 1).

Given that students with LD are likely to develop a set of beliefs that can have detrimental implications for their future achievements (Heiman, 2006), the suggestion to teach students with LD to attribute their failures to external uncontrollable traits or internal controllable traits, and successes to internal traits (positive attributional style) may be appealing. Repeated failures by students with LD may cause them to create maladaptive beliefs that can create problems that go beyond their initial disability. In a review of the literature on the effects of failure on LD children, for example, Licht (1983) concluded that the 'kinds of failures that LD children are likely to experience are the ones that are most likely to lead to the development of 'helpless' beliefs' (p. 484). In order to extricate the student with LD from this negative attributional cycle, educators must not just focus on remediation for their academic deficits, but provide these students with meaningful successful experiences. Given their influence on students' beliefs and behaviours, educators also need to consider the attributional beliefs that they hold concerning students with LD (Lackaye & Margalit, 2006). Research has shown that teachers misunderstand students with LD and judge students based on the LD label rather than the attributions, characteristics, and needs of these students (Lackaye & Margalit, 2006; Tournaki, 2003).

While the link between teachers' interpersonal attributions and students' outcomes has been examined in general, there is little comprehensive research that explores teachers' interpersonal attributions of students with LD. As teachers' beliefs, understandings, and expectations are unlikely to change throughout their teaching career (Woolfolk-Hoy & Spero, 2005), identifying preservice teachers' interpersonal attributions is useful but also has been neglected in the literature. Accordingly, the aim of the current study was to expand further on Clark's study and explore the causal dimensions of educational outcomes for students with LD as perceived by preservice teachers. As previous studies had focused on in-service primary and secondary teachers, this study explored preservice teachers' responses. The study compared their responses to students with and without LD, focusing on whether Australian preservice primary school teachers assigned the students' outcomes to a positive or negative attribution cycle.

Method

The research explored to what extent preservice teachers' knowledge of the presence or absence of an LD would influence (a) the feedback given to a hypothetical boy based on his ability and the effort expended, (b) the frustration and sympathy felt towards each boy, and (c) the expectations held for each student's future.

The preservice teachers in this study were drawn from four University campuses across New South Wales and were undertaking a Bachelor of Education (Primary) degree which prepares graduates to teach children from Kindergarten to Year 6, ranging in age from 5 to

12. Alongside their university studies, preservice teachers are expected to successfully complete practical teaching placements each year. Participants included 444 preservice primary school teachers enrolled in the final year of a 4-year teacher-training programme at four university campuses across New South Wales, 19% of whom was male and 81% female, a similar ratio to the gender distribution of primary teachers in Australia (Callan, 2004).

The survey instrument was adapted from Clark's (1997) original study which examined the way in which American elementary teachers perceived the achievement of students with LD compared to students without LD. Eight vignettes described hypothetical boys who had just taken a typical classroom test and failed. The vignettes did not identify the cause of the hypothetical boys' failures in order to stimulate causal explanations by the participants. The description of each vignette provided three types of information: a statement of student ability, the typical pattern of effort expended by the student in the classroom, and information on academic performance. The descriptions identified half of the boys as LD and half as NLD, half as high ability and half as low ability, and half as expending high effort and half as expending low effort although these terms were not used. The boys were matched on ability (high/low), on typical effort (high/low), and on the presence/absence of a LD (LD or NLD). Thus, eight vignettes, creating a two (ability) by two (effort) by two (LD/NLD) matrix were formed (see [Appendix](#) for the text of all of the vignettes). An example of a vignette (high ability/low effort/NLD) is:

Phillip is a student in your class. He has greater aptitude for academic tasks than most children in the class. Although he occasionally does excellent work, he is usually off task and does not participate in class often. He rarely completes class assignments and does not do much of his homework.

After respondents read the vignettes, they were presented with four questions which asked them (a) feedback that they would give to the child, (b) the frustration that they would feel towards the child, (c) the sympathy that they would feel towards the child, and (d) their expectation of the likelihood of the boy's future failure. Participants completed all eight of the vignettes in the survey. Each of the four questions that followed the vignettes was presented as a Likert-scale item. The vignettes were randomly presented (thus, were presented in no particular order) so that it would eliminate any bias or order effect towards participants' responses. This study hypothesised that preservice teachers in Australia will be more positive and less negative towards students with LD than students without LD, will feel less frustration and more sympathy towards students with LD than those without, and will hold a greater expectation of future failure for students with LD than students without LD.

The instrument was piloted and socially validated with 40 preservice teachers, who were also asked to comment on the clarity of the vignettes and questions. Minor revisions were made to the instrument in response to the pilot participants' comments. All participants for the present study were surveyed in their final semester of their 4-year course. Participants were approached at the end of a lecture and the surveys were distributed by colleagues of the researchers.

Results

A two (N/LD) by two (ability) by two (effort) multivariate analysis of variance with repeated measures was conducted for the four dependent measures (feedback, frustration, sympathy, and expectation of future failure). Multivariate analysis of variance with repeated

measures was used for this analysis as the same measures can be collected multiple times for each subject but under different conditions. Of particular interest were the differences of responses between the students with LD to students without LD on each of the dependent measures. Thus, a post hoc analysis using paired samples *t* tests was also executed, matching all LD vignettes with their NLD counterparts (e.g., LD low ability, high effort vignette matched with NLD low ability, high effort vignette). This was to examine the most extreme differences using *t* values and a Bonferroni-adjusted significance of .002.

The following sections report the results of the repeated measures and post hoc *t* test analyses for feedback, frustration, sympathy, and expectation of future failure. Each section reports the results of the repeated measures analysis by discussing the main effects for each variable (LD status, ability level, and effort expended) and combined two- and three-way interactions. The effect sizes used and measured in this paper reflect upon Cohen's suggested small, medium, and large effect sizes where η_p^2 sizes are equal to 0.10, 0.25, and 0.40, respectively (Cohen, 1969, cited in Richardson, 2011). The repeated measures in each section are then followed by the results from the post hoc *t* test analyses.

Overall, significant main effects, from the multivariate analysis of variance repeated measures, for LD status, $F(1, 444)=109.665$, $p<.001$, $\eta_p^2=.499$; ability, $F(1, 444)=132.632$, $p<.001$, $\eta_p^2=.547$; and effort, $F(1, 444)=407.119$, $p<.001$, $\eta_p^2=.787$, were found for attributional response. In particular, a three-way interaction of LD, ability, and effort was significant and produced a small main effect, $F(1, 444)=13.187$, $p<.001$, $\eta_p^2=.107$, but it was LD status and effort that produced a large interaction effect, $F(1, 444)=105.836$, $p<.001$, $\eta_p^2=.490$. The following sections report the univariate analysis of variance using repeated measures for each individual attributional response.

Feedback

As indicated in Table 1, a significant medium size main effect for LD status, $F(1, 444)=104.737$, $p<.001$, $\eta_p^2=.191$, was found for feedback. As Tables 1 and 2 show, this can be noticed in the η_p^2 and mean score differences between feedback given to the students with and without LD ($M_1-M_2=.408$) with greater positive feedback given to the students with LD. A significant (although small) main effect for ability, $F(1, 444)=30.975$, $p<.001$, $\eta_p^2=.065$, was also found for feedback. This can be seen in the differences in feedback between the η_p^2 and mean scores of low and high ability students ($M_1-M_2=.222$). Finally, a large significant main effect for effort, $F(1, 444)=567.016$, $p<.001$, $\eta_p^2=.561$, was found for feedback. The level of effort expended was the most highly significant main effect found for feedback. This can be seen in the η_p^2 and mean feedback scores given to the low effort students ($M=1.828$) and high effort students ($M=3.568$).

While the ability produced the lowest main effect (compared with LD status and effort), preservice teachers considered a two-way interaction between a boy's level of ability and his LD status $F(1, 444)=17.404$, $p<.001$, $\eta_p^2=.038$ (although significant, it is a small effect size), when giving feedback. Moreover, it was the effort expended by the student and his LD status that appeared to most strongly influence feedback given, $F(1, 444)=107.472$, $p<.001$, $\eta_p^2=.195$ (medium effect size). Also, LD status was particularly influential for the students who expend low effort. Finally, there was no significant three-way interaction effect between LD, ability, and effort in regards to feedback. Thus feedback for test failure was governed by both the students' level of ability and the amount of effort they expend, with preservice teachers' knowledge of a child's LD status having a mediating influence on the feedback given.

Table 1 Preservice teachers' feedback

	LD		NLD					
	M	SD	M	SD				
LD status	2.902	1.23	2.494	1.46				
	Low		High					
	M	SD	M	SD				
Ability	2.809	1.36	2.587	1.35				
Effort	1.828	1.17	3.568	1.15				
	LD LA		LD HA		NLD LA		NLD HA	
	M	SD	M	SD	M	SD	M	SD
LD × ability	2.934	1.41	2.870	1.27	2.685	1.51	2.304	1.29
	LD LE		LD HE		NLD LE		NLD HE	
	M	SD	M	SD	M	SD	M	SD
LD × effort	2.231	1.66	3.573	1.20	1.426	1.49	3.563	1.21
	LA LE		LA HE		HA LE		HA HE	
LD × ability × effort	M	SD	M	SD	M	SD	M	SD
LD	2.221	1.75	3.646	1.41	2.241	1.51	3.500	1.07
NLD	1.592	1.83	3.777	1.07	1.259	1.87	3.349	1.44

As seen in Tables 1 and 2, preservice teachers' knowledge of a student's learning disability influenced the decision about feedback given to the student. The post hoc *t* test results complement the findings from the repeated measures analysis and confirm that this was particularly so with students who expend low effort. The student with LD, who has high ability and expends low effort, $t(472)=12.627, p<.001$, and the student with LD, who has low ability and expends low effort, $t(471)=7.617, p<.001$, received significantly greater positive feedback than their NLD counterparts. However, among the students who expend high effort, there were only small differences between those with and without LD in regards to feedback (see Table 2).

Frustration

As illustrated in Table 3, a significant (but small) main effect for LD status, $F(1, 444)=13.731, p<.001, \eta_p^2=.030$, was found for preservice teacher frustration. The η_p^2 and mean score

Table 2 Main effects of feedback

Effect	<i>F</i>	η_p^2	<i>p</i>
LD × ability × effort	.26	.001 ^a	.613 ^a
LD × effort	107.47	.195	.000
LD × ability	17.40	.038	.000
Effort expended	567.02	.561	.000
Ability level	30.98	.065	.000
LD status	104.74	.191	.000

^aNot significant

Table 3 Preservice teachers' frustration

	LD		NLD					
	M	SD	M	SD	M	SD	M	SD
LD status	3.426	.93	3.547	.89				
	Low		High					
	M	SD	M	SD				
Ability	3.503	.92	3.471	.89				
Effort	4.461	1.07	2.512	0.91				
	LD LA		LD HA		NLD LA		NLD HA	
	M	SD	M	SD	M	SD	M	SD
LD × ability	3.482	1.07	3.370	.99	3.524	.97	3.571	1.05
	LD LE		LD HE		NLD LE		NLD HE	
	M	SD	M	SD	M	SD	M	SD
LD × effort	4.139	1.19	2.714	0.98	4.784	1.16	2.311	1.05
	LA LE		LA HE		HA LE		HA HE	
LD × ability × effort	M	SD	M	SD	M	SD	M	SD
LD	4.302	1.33	2.662	1.04	3.975	1.22	2.766	1.01
NLD	4.662	1.19	2.385	1.05	4.905	1.24	2.236	1.29

difference between frustration felt towards the students with and without LD ($M_1 - M_2 = .121$) shows this. However, there were no significant main effects for ability, $F(1, 444) = .992, p > .02, \eta_p^2 = .002$, indicating no differences in preservice teachers' frustrations towards high or low ability level students. Moreover, a large significant main effect found for frustration was effort, $F(1, 444) = 1499.877, p < .001, \eta_p^2 = .772$. This can be seen in the η_p^2 and mean scores of frustration felt towards the low effort students ($M = 4.461$) and high effort students ($M = 2.512$).

Although ability produced insignificant main effects on its own, preservice teachers did consider a two-way interaction between a student's level of ability and his LD status with a small significant effect, $F(1, 444) = 9.33, p < .01, \eta_p^2 = .029$, in relation to feelings of frustration. LD status was marginally influential with the high ability students. Moreover, it was the effort expended by the student and his LD status that appeared to most strongly influence frustration level, $F(1, 444) = 330.732, p < .001, \eta_p^2 = .427$ (large effect size).

Also, effort was more influential in teachers' frustration level for the students without LD ($M_1 - M_2 = -2.473$) than students with LD ($M_1 - M_2 = -1.425$). Finally, there was a small significant three-way interaction effect among LD, ability, and effort, $F(1, 444) = 47.971, p < .001, \eta_p^2 = .098$, whereby the frustration felt towards students was governed by the level of effort expended and preservice teachers' knowledge of a child's LD status.

As seen in Table 4, preservice teachers' knowledge of a child's learning disability influenced the feeling of frustration towards the student. The post hoc *t* test results complement the findings from the repeated measures analysis and confirm that this is particularly so in relation to effort expended. Those students in the study with LD who expend low effort ($t(483) = -16.437, p < .001; t(486) = -5.808, p < .001$) evoked less frustration from the preservice teachers than their NLD counterparts. Concomitantly, those students in the study with LD who expend high effort ($t(486) = 7.516, p < .001; t(483) = 5.593, p < .001$) evoked greater frustration from preservice teachers than their NLD counterparts. Thus, effort expended is highly influential as students expending high effort elicited far less frustration than their low effort peers ($\eta_p^2 = .772$).

Table 4 Main effects of frustration

Effect	<i>F</i>	η^2	<i>p</i>
LD × ability × effort	47.97	.098	.000
LD × effort	330.73	.427	.000
LD × ability	9.33	.029	.007
Effort expended	1,499.88	.772	.000
Ability level	.99	.002 ^a	.320 ^a
LD status	13.73	.030	.000

^aNot significant

Sympathy

A significant large main effect for LD status, $F(1, 444)=252.652, p<.001, \eta_p^2=.363$, was found for sympathy (see Table 5). LD status was the greatest significant main effect for sympathy with mean differences in preservice teacher sympathy towards the students with and without LD ($M_1-M_2=.548$). A significant main effect for ability, $F(1, 444)=187.941, p<.001, \eta_p^2=.298$ (medium effect size), was also found for sympathy. This can be seen in the η_p^2 and mean differences in preservice teacher sympathy towards low ability and high ability students ($M_1-M_2=.450$). A significant main effect for effort, $F(1, 444)=96.479, p<.001, \eta_p^2=.179$ (small to medium effect size), was found for sympathy. The significance is noticeable with the η_p^2 and mean score differences between the students who expend low effort ($M=3.673$) and students who expend high effort ($M=4.176$).

Preservice teachers considered a two-way interaction between a student’s LD status and amount of effort expended when eliciting sympathy towards them, $F(1, 444)=20.574, p<.001, \eta_p^2=.044$ (small effect size). Furthermore, it was the LD status and ability level of

Table 5 Preservice teachers’ sympathy

	LD		NLD					
	M	SD	M	SD				
LD status	4.199	.99	3.651	1.01				
	Low		High					
	M	SD	M	SD				
Ability	4.150	.98	3.700	1.00				
Effort	3.673	1.01	4.176	1.14				
	LD LA		LD HA		NLD LA		NLD HA	
	M	SD	M	SD	M	SD	M	SD
LD × ability	4.343	1.06	4.054	1.10	3.956	1.11	3.346	1.19
	LD LE		LD HE		NLD LE		NLD HE	
	M	SD	M	SD	M	SD	M	SD
LD × effort	4.024	1.11	4.374	1.14	3.323	1.14	3.979	1.25
	LA LE		LA HE		HA LE		HA HE	
LD × ability × effort	M	SD	M	SD	M	SD	M	SD
LD	4.173	1.22	4.514	1.21	3.874	1.13	4.234	1.19
NLD	3.552	1.22	4.360	1.43	3.095	1.24	3.597	1.57

the student that appeared to most strongly influence preservice teachers' sympathy, $F(1, 444)=23.892$, $p<.001$, $\eta_p^2=.051$ (although this was a small effect size). Finally, there was no significant three-way interaction effect among LD, ability, and effort in regards to sympathy.

As seen in Table 6, preservice teachers' knowledge of a child's LD status significantly influenced the sympathy preservice teachers felt towards them. The post hoc t test results complement the findings from the repeated measures analysis. The most significant difference is between the two students with and without LD who expend low effort and have high ability, $t(483)=12.907$, $p<.001$. This difference is followed by the two students with and without LD, who expend low effort and have low ability, $t(487)=10.241$, $p<.001$, and those who expend high effort and have high ability, $t(484)=8.541$, $p<.001$.

Expectancy of future failure

A significant (medium to large) main effect for LD status, $F(1, 444)=181.79$, $p<.001$, $\eta_p^2=.291$, was found for preservice teachers' expectations of a student's future failure (see Table 7). The η_p^2 and mean score differences between expectations of future failure for students with and without LD ($M_1-M_2=.413$) are noticeable. A significant main effect for ability, $F(1, 444)=432.113$, $p<.001$, $\eta_p^2=.494$ (large effect size), was found for preservice teachers' expectations of a student's future failure. The differences in η_p^2 and mean scores between the expectations of future failure for high ability and low ability students ($M_1-M_2=.708$) shows this. A large significant main effect for effort, $F(1, 444)=511.465$, $p<.001$, $\eta_p^2=.536$, was found for preservice teachers' expectations of a student's future failure. This can be seen in the η_p^2 and mean expectation scores given to the students who expend low effort ($M=4.519$) and students who expend high effort ($M=3.644$).

Preservice teachers considered a two-way interaction between a student's LD status and ability level when eliciting their expectation of future failure for the student, $F(1, 444)=23.237$, $p<.001$, $\eta_p^2=.050$ (small effect size). Furthermore, it was the students' LD status and effort that appeared to most strongly influence preservice teachers' expectations, $F(1, 444)=105.745$, $p<.001$, $\eta_p^2=.193$ (small to medium effect size). Finally, there was no significant three-way interaction effect among LD, ability, and effort in regards to preservice teachers' expectations of future failure.

As seen in Table 8, preservice teachers' knowledge of a child's LD status significantly influenced the expectation they have of the child's future failure. The post hoc t test results strengthen the findings from the repeated measures analysis. The most significant difference is between the two students with and without LD who expend high effort and have high

Table 6 Main effects of sympathy

Effect	F	η_p^2	p
LD \times ability \times effort	5.22	.012 ^a	.023 ^a
LD \times effort	20.57	.044	.000
LD \times ability	23.89	.051	.000
Effort expended	96.48	.179	.000
Ability level	187.94	.298	.000
LD status	252.65	.363	.000

^a Not significant

Table 7 Preservice teachers' expectations of future failure

	LD		NLD					
	M	SD	M	SD				
LD status	4.288	.70	3.875	.69				
	Low		High					
	M	SD	M	SD				
Ability	4.435	.74	3.727	.68				
Effort	4.519	.78	3.644	.69				
	LD LA		LD HA		NLD LA		NLD HA	
	M	SD	M	SD	M	SD	M	SD
LD × ability	4.571	.88	4.005	.77	4.300	.84	3.450	.88
	LD LE		LD HE		NLD LE		NLD HE	
	M	SD	M	SD	M	SD	M	SD
LD × effort	4.566	.90	4.009	0.77	4.472	0.91	3.278	0.88
	LA LE		LA HE		HA LE		HA HE	
LD × ability × effort	M	SD	M	SD	M	SD	M	SD
LD	4.883	1.06	4.259	.97	4.250	1.05	3.759	.92
NLD	4.885	1.05	3.714	1.05	4.059	1.15	2.842	1.11

ability, $t(481)=14.423, p<.001$. This difference is followed by the two students with and without LD who expend high effort and have low ability; and those who expend low effort and have high ability, $t(481)=3.148, p<.001$.

Discussion

The results demonstrate that as the students' ability levels decrease, the preservice teachers' reported feedback becomes more positive, their sympathy levels rise, and the expectation of future failure increases. As students' expended efforts increase, the feedback becomes more positive, the frustration decreases, the sympathy levels rise, and the expectation of future failure decreases. Further, as the students' ability levels increase the difference in reported feedback given to the students with and without LD increases, the sympathy level increases, and the expectations of future failure increases. Finally, as students' expended efforts

Table 8 Future Failure Main Effects

Effect	<i>F</i>	η^2	<i>p</i>
LD × ability × effort	2.26	.005 ^a	.134 ^a
LD × effort	105.75	.193	.000
LD × ability	23.24	.050	.000
Effort expended	511.47	.536	.000
Ability level	432.11	.494	.000
LD status	181.79	.291	.000

^aNot significant

decrease the difference in feedback given to the students with and without LD increases, the frustration and sympathy levels increase, and the expectations of future failure decreases.

In summary, then, the current study suggests that LD status influences preservice primary school teachers' responses to students' test failures. When the cause for failure becomes more controllable, preservice primary school teachers give greater positive feedback, are more sympathetic, and less frustrated towards students with LD than their NLD counterparts. In addition, the less stable the cause of failure, the greater was the expectation of future failure that preservice primary school teachers held for students with LD compared to their NLD peers. Consequently the results suggest that preservice teachers in the study saw LD as an uncontrollable, stable cause of failure. In all four responses (feedback, frustration, sympathy, and expectation of future failure), a greater difference between high and low ability/effort students occurred within students without LD than within students with LD. Low ability and low effort were clear causal explanations for the failure of students without LD, but for students with LD there was less difference between high and low ability/effort students. Therefore, low ability and low effort were not always clear causes for the failure because LD was also a mediating influence.

As Weiner (1986) highlighted, teachers' response to students with LD can be seen as a 'norm to be kind' which is often felt towards those having limitations (such as those with LD). The greatest frustration, least sympathy, and most negative feedback were assigned to the high ability, low effort student without LD (Phillip). Clearly, the preservice teachers perceived this boy's failures to be within his personal control and held him responsible. Conversely, the least frustration, greatest sympathy, and most positive feedback were given to the low ability, high effort student with LD (Andrew). It would seem that the preservice teachers responded more positively to this student because the cause was seen to be out of his control (i.e., with two uncontrollable stable causes for failure to try to overcome through expending high effort).

The Australian primary school preservice teachers tended to respond to the failure of students without LD through what Jacobson, Lowery, and DuCette (1986) termed a 'normal self-esteem attribution'. This is where failure is seen to be due to an external uncontrollable cause such as bad luck or internal controllable cause such as effort. Thus behavioural responses towards the students indirectly inform them that expectations are high and that they have the potential to achieve in the future. However, as the findings of this study also show, Australian preservice primary school teachers tend to respond to the failure of students with LD through what Waheeda and Grainger (2002) termed a 'negative attribution style', whereby failure is believed to be due to an internal and uncontrollable cause (such as ability). Consequently behavioural responses towards students indirectly inform the students that expectations are low and that they do not have the potential to achieve in the future. Sadly, this often reduces self-esteem, decreases motivation, and creates a haven for future expectations of failure and learned helplessness (Waheeda & Grainger, 2002). Furthermore, this supports previous research by Meltzer et al. (2004) and Tournaki (2003) in that they judge low-achieving students with LD more negatively than low-achieving students without LD.

Emphasising innate ability in students with LD lowers expectations about what these students can accomplish through hard work. The beliefs that ability and LD are largely fixed can lead educators to be reluctant to demand higher levels of performance from students with LD. A misdiagnosis of these students' potential is likely to result in them completing their schooling with inadequate skills for adapting into adult society successfully.

In conclusion the data indicate that the attributional message that preservice primary school teachers transmit to students with LD is that they have less ability than their peers

without LD and should have lower expectations as a result. These findings confirm the hypotheses earlier in the article in that preservice teachers in Australia are likely to be more positive and less negative towards students with LD than students without LD, feel less frustration and more sympathy towards students with LD and those without, and hold a greater expectation of future failure for students with LD than students without LD, which supports previous research (Clark, 1997; Georgiou et al., 2002; Tollefson & Chen, 1988; Tournaki, 2003).

Although these results suggest that preservice primary school teachers are likely respond to students with and without LD differently, there are some limitations of the current research. The use of vignette scenarios may produce responses which differ from the responses teachers would make in natural settings (Lee, Hallahan, & Herzog, 1996). The responses preservice teachers make to such scenarios may be those they feel they should make given a similar situation rather than those they might actually make. However, the current study sought to advance research built on the foundation of methods similar to that employed in numerous studies involving attribution and achievement (Clark, 1997; Weiner & Kukla, 1970). As the data were collected from the various university campuses at the end of a lecture, the response rate was high. Nevertheless, only those who were in attendance at the lecture had the opportunity to complete the survey instrument. Thus, a small minority of preservice teachers across the university campuses who did not attend the lecture did not complete the survey. This may or may not have influenced the findings of the current study.

Implications

These findings have practical implications for preservice teacher education and for the professional preparation of others working with students with LD. These not only reflect the theoretical implications but the broader translation of these implications into classroom practise and the academic arena.

It is important for educators to understand the importance and impact that their attributions can play in continuing to reinforce students with LD that their competency level is less than their peers without LD. Understanding the indirect messages that they may send to these students may then lead to attitudinal changes that will help the student with LD achieve. The danger of the 'deficit' perception is that students with LD may respond and behave according to the teachers' expectations, as demonstrated by Rosenthal and Jacobson (1968), and later by Eccles and Wigfield (1985), who claimed the 'Pygmalion effect' and 'Golem effect', respectively. That is, if these future teachers believe that students are likely to fail in the future, then they are likely to behave towards the student in ways that will, more than likely, bring about future failure. One step towards redressing this situation is for tertiary institutions to better prepare future teachers with the skills, perceptions, and knowledge to teach students with LD (as opposed to learning difficulties generally). As tertiary institutions are governed by the states' education departments, changes need to be made by policy makers and those within the departments across the states.

If teacher-training institutions are to adopt the responsibility to raise preservice teachers' awareness of the specific needs of students with LD, a common understanding of LD is essential. As indicated at the beginning of this article, LD is variously defined across the states and territories of Australia, which may be an impediment to concerted national efforts to improve the educational outcomes for students with LD (DEEWR, 2010). Therefore, an essential first step is to address this discrepancy and work toward a unified understanding of

LD as distinct from the more general 'learning difficulty' term. Policy makers, government, and departments across the states of Australia firstly need to address the concern of LD being defined and included as 'learning difficulty'. Learning difficulty is an extremely broad term used in many of the states in Australia and covers many types of students from those with LD to those in poverty and those with a moderate intellectual disability (Elkins, 2002). Thus, LD needs to have a clearly-defined identity so that appropriate funding can be accessed and greater awareness, perceptions, and knowledge of these students can be achieved. One possibility would be for all states to adopt the current definition of LD in the Australian Commonwealth Disability Discrimination Act (1992), which describes it as 'a disorder or malfunction which results in the person learning differently from a person without the disorder or malfunction' (p. 11). If the states' education departments and government focused more on LD, preservice teacher-training providers would more likely accommodate changes to the programmes to increase awareness, perceptions, and expectations towards students with LD.

The results from this research, and the previous discussion of the limitations of the research, have highlighted a number of issues which warrant further investigation. Future research might focus upon the range of data collection methods employed and the groups examined in such studies. There needs to be a greater focus on Australia's philosophical educational view of students in general, and in particular, on students with LD.

As the findings from this study show that preservice primary school teachers hold a negative attribution style towards students with LD, it could also be useful to replicate this study using university lecturers who instruct in education. The same use of vignettes on girls, as opposed to boys, would be necessary to determine whether there are different attributional responses for different genders.

Further studies in Australia could compare teachers' and preservice teachers' perceptions and expectations of students with LD. As a final point, the future research studies discussed here could also be carried out cross-nationally to provide comparative data. Given the present Australian government's intention to establish educational consistency at a national level, such a study would be timely.

Conclusion

Perceptions, understandings, and expectations within Australia of those with LD have raised issues over the years. The greatest difficulties have been in the search for how best to understand students with LD within the education system, to meet their needs, and to teach them the necessary skills for adulthood. The interpersonal attributional traits that preservice primary school teachers within Australia place on students with LD form a negative attribution cycle.

It is essential that preservice teachers be trained to understand the attributional information they convey to students with LD and how the aptitudes of students with LD can be enhanced by skilled teaching (Westwood, 2006). By providing better training of future teachers, the needs and opportunities within the academic arena of students with LD can begin to be met. Consequently, this study proposes that tertiary institutions need to train future teachers to identify and teach LD separately from learning difficulties (ALDA, 2002).

This study has broadened and added to the research base on LD. The transformation of classrooms with inclusive and diverse classes and the changing views of teaching all

students and meeting everyone's needs represent significant challenges. The development of programmes for new teachers to address these emerging challenges in relation to students with LD is clearly central to the focus of this study. Preservice teachers' perceptions, understandings, and expectations of students with LD need to be guided carefully through their teacher-training course and practicum experiences. As a voice for the students would say, 'Don't judge what I can do, by what you think I can't do' (Human Rights and Equal Opportunity Commission, 2003, p. 1).

Appendix

Table 9 Vignettes describing the hypothetical boys (adapted from Clark, 1997)

	NLD	LD
High ability high effort	Thomas is a student in your class. He is a very bright child, among the brightest in the class. He always works hard in class, finishes his assignments, and does his homework properly. He is able to work independently and rarely has to ask for help.	Steven is a student in your class. He is of higher ability than many in the class but has difficulty with tasks he must do in writing, such as writing stories where he must formulate correct sentences and spell correctly. He receives support services which are helping him develop strategies to improve his written work. He works hard but slowly in class, using the methods he was taught and usually completes assignments. His homework is generally done properly.
High ability low effort	Phillip is a student in your class. He has greater aptitude for academic tasks than most children in the class. Although he occasionally does excellent work, he is usually off task and does not participate in class often. He rarely completes class assignments and does not do much of his homework.	James is a student in your class. He is a rather bright boy but has some difficulty with comprehension, both in maths and reading. He sees the Resource Specialist for assistance with his comprehension difficulties. He does the majority of his class work quickly, often making many errors. Homework is done the same way unless a parent supervises him. His participation in group work varies but is usually limited.
Low ability high effort	Christopher's ability is somewhat below that of most children in his class. He works hard in class, asking for help when he needs it. He tries to participate in group work. His homework is finished regularly, and class work, even if not always quite finished, is done properly.	Andrew is a student in your class. He is considered to have lower aptitude for academic tasks than most children in the class. He works slowly but hard in class, generally finishing shortened class assignments. His family works with him at home where he finishes his homework and prepares for school. To help him be successful in language arts and maths, he receives services from the support teacher.
Low ability low effort	Jeffrey is a student whose limited ability is below that of most children in his class. He seldom does class work completely, or he hurries through it making many errors. He rarely does his homework or studies at home but always has an excuse why he hasn't. When encouraged to slow down and work carefully, his work can be appropriate for his age level.	Brian is a student in your class. He is of limited ability compared to most of his classmates. He seldom completes his class work or homework, is often off task, and does not participate in instructional groups. Because of his difficulties in language arts and maths, he receives services from the support teacher learning.

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