

## Impact of Teaching Attitudes and Behaviors for Learning on the Reading Achievement of Students Falling Behind

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**Abstract.** This research evaluates the impact of a teacher professional development program, “Attitudes and Behaviors for Learning” (AB4L) on the achievement of students struggling with reading. Two primary school teachers from two economically disadvantaged schools received three half-day training sessions in practices to teach students positive attitudes and behaviors for learning, which they implemented during literacy classes. 98 students were taught the AB4L program while 86 students were not. Results include: (a) Student- and teacher-rated learning behaviors were positive correlated with objective reading performance; (b) A significant benefit of AB4L on the reading performance of those students who scored in the lower 50 percent of their class on a reading comprehension survey; (c) Students in classes where AB4L was implemented who showed improvements in reading comprehension also showed increases in behaviors for learning. A recommendation is that teacher professional development programs should incorporate positive attitudes and behaviors for learning.

**Keywords:** Reading Achievement; Reading Improvement; Reading Teaching; High Risk Students; Student Learning Behavior.

### Introduction

This research seeks to illuminate the extent to which primary-age students who have fallen behind their classmates in reading display delays in the development of attitudes and behaviours for learning that have been found to contribute to student engagement and achievement. A second question addressed in the present research is whether a professional development teacher training program that up-skills teachers in ways to present and strengthen student attitudes and behaviours for learning during classroom literacy lessons results in an improvement in the achievement of students struggling with reading.

As exemplified by the Department of Education and Training investment in the *National Partnerships for Low SES Schools. Literacy and Numeracy and Improving Teacher Quality* (Australian Department of Education and Training, 2014), educational policy continues to explore innovative and effective ways to

assist schools in helping students meet basic literacy standards and to close the achievement gap for the disadvantaged. This study adds to the 'best practice' literature on the teaching of reading and the link between students' attitudes and social and emotional learning skills which are vital for student engagement and the development of their literacy skills (Bernard, 2011).

Student characteristics fundamental to engagement and achievement (e.g., Lee, 2014) have been termed learning-to-learn skills (Barnett, et. al., 1996), academic self-regulation skills (Zimmerman, 1990), learning behaviors (McDermott, 1999), academic enablers (DiPerna & Elliott, 1999), approaches to learning (Rock & Pollack, 2002), social and emotional learning competencies (Collaborative for Social and Emotional Learning) and student dispositions (Hattie, 2013). Specific learning behaviors include goal setting, self-monitoring, time planning, social skills including seeking help when needed, engagement, confidence, persistence, self-talk for managing frustration, flexible methods for learning as well as positive attitudes towards learning including high self-efficacy beliefs and intrinsic interest in learning (McDermott, 1999).

Research into the characteristics of students with difficulties in reading reveals delays in the development of self-regulatory learning behaviors such as setting and achieving learning goals, monitoring success, the failure to use self-talk to manage anxiety and frustration of completing difficult learning tasks as well as a range of negative attitudes towards themselves and learning (e.g., Vaughn, & Broadman, 2007).

Research has examined gender differences in students' use of behaviors for learning with the advantage being demonstrated by girls. For example, Duckworth and Seligman (2006) discovered gender differences in favour of girls in *self-discipline* and *self-control*. Gender differences in behaviors for learning may depend on the academic domain (e.g., Pokay & Blumenfeld, 1990).

Research continues to accumulate demonstrating the effects of non-cognitive and linguistic competencies on student achievement (e.g., Durlak, et. al., 2011). Of particular relevance to this research is a study (Ashdown & Bernard, 2012) that investigated the effect on reading achievement of a social and emotional learning skills curriculum designed to teach positive attitudes and behaviors for learning and well-being. The lessons were designed to teach young children confidence, persistence, organization and resilience including a range of positive attitudes (e.g., optimism, self-acceptance, internal locus of control for learning). The lessons were taught three times a week, supported by a variety of additional social and emotional teaching practices. The results indicated that the program increased reading achievement for the lower achieving grade 1 students. Bernard (2006) proposed that it is time that we teach social-emotional competence for learning as well as we teach academic competence.

Five teaching practices are contained in the Attitudes and Behaviours for Learning (AB4L) (Bernard & Milne, 2016) professional development program that was evaluated in this research. Practice 1. Prepare Students to Begin Literacy Lesson with a Positive Mindset. For many years (e.g., see Bloom, 1976 "*Human Characteristics and School Learning*") researchers have identified student attitudinal dispositions towards school and specific classes as they begin a learning task as a major factor in their achievement. Hattie's (2013) meta-

analysis of over 800 studies on student achievement reported the effect size of students' disposition to learn as .61. Practice 2. Share with Students the Goals of the Literacy Lesson, Have Them Set Goals, Monitor Progress and Revise Learning Methods and Behavior and Practice 3. Communicate Behavior-Specific Feedback for Learning. Hattie's (2013) meta-analysis also revealed a large effect size of teachers helping students set goals for learning and providing positive and negative feedback to students on their achievement as well as on their use of learning strategies (also, see Locke & Latham, 2002; Schunk, 2003). Practice 4. Identify and Discuss Behaviors for Learning. Research shows student learning behaviors contribute to school readiness, literacy and mathematics outcomes (e.g., DiPerna, Volpe & Elliott, 2002; Fantuzzo, Perry, & McDermott, 2004; Green & Francis, 1988; McDermott, 1984; McWayne, Fantuzzo, & McDermott, 2004). Practice 5. Discuss Positive (and Negative) Self-Talk for Learning. The self-regulatory nature of inner speech and self-talk (Vygotsky, 1934/86) has been found to assist students in guiding their thinking and learning (Kross, et. al., 2014; Winsler & Naglieri, 2003; Winsler, Manfra & Diaz, 2006; see Hardy's 2006 review of self-talk literature). Self-talk is a major component of cognitive-behavior therapy, a 'best practice' intervention for young people with emotional and behavioral problems that interfere with their learning (Bernard, 2006). Moreover, students who acquire self-regulatory skills experience improved academic achievement and increased self-efficacy (e.g., Zimmerman & Schunk, 2001).

The present project posed the following research questions.

1. Are students' behaviors for learning associated with their reading performance?
2. Are there gender differences in behaviors for learning?
3. Will the AB4L program have a positive effect on students' behaviors for learning?
4. Will the AB4L program have a positive impact on students' reading performance?
5. Will students in the bottom 50 percent of their class in reading performance who receive the AB4L program show greater improvement in their reading than students in the bottom 50 percent of their class in reading performance who do not receive the program?
6. Will the AB4L program have a different impact on the behaviors for learning and reading performance of boys versus girls?
7. Do students who show improvements in their behaviors for learning show concomitant changes in their reading performance?

## **Method**

### **Participants**

The study used a pre-post treatment-control quasi-experimental design to evaluate the effectiveness of AB4L. Two school principals located in a rural community in Victoria agreed to have the program implemented in their schools. In School A, the students in two composite grade 3/4 classes were chosen to receive the AB4L program while in School B, the students in two composite grade 5/6 classes received the AB4L program. For purposes of comparison, in School A, the students in two composite grade 5/6 classes did

not receive the AB4L program while in School B, students in two composite grade 3/4 classes did not receive the AB4L program while students in two composite grade 5/6 classes received the AB4L program. The total number of students receiving the program was 98 (51% female) while the total number of students not receiving the program was 86 (45% female).

#### Measures

**Teacher Ratings: Learning Behaviors Scale (LBS).** The LBS (McDermott et al., 1999) is a standardized 29-item teacher-completed rating scale. Items are rated on a 3-point scale (0 = doesn't apply, 1 = sometimes applies, 2 = most often applies) indicating the presence of the behavior over the past two months. Scales were scored as the mean of the items. The measure included an overall score and four subscales measuring motivation, attitude, persistence, and strategy. Internal consistency coefficients are high for the overall (.89-.92) and subscale scores (.70-.87) both overall and for age, gender, and ethnic subsamples, and stability coefficients across a 2-week interval were strong (.91-.94; McDermott, 1999).

**Student Ratings: Student Learning Behaviors Survey (SLBS).** A new rating scale, the Student Learning Behaviors Survey, was developed for this study and was designed to measure student self-perceptions of attitudes and behaviors associated with their engagement during literacy instruction (reading and writing). Items were rated on a 2-point scale (0 = disagree, 1 = agree). Questions were developed by the first author of this study that examined student self-perception of their confidence, persistence, goal orientation, teamwork, disorganization and worry associated with literacy instruction. The initial survey of 18 items asked students to agree or disagree with a series of questions; for example, "I get easily tired when I read or write," "I distract others during reading or writing time." See Table 2 for complete item text. The SLBS had a mix of positively and negatively worded items.

A maximum likelihood factor analysis was conducted on the pre-intervention responses of all participating students to the initial set of 18 items. Examination of the scree plot suggested one main factor, and a second smaller factor; variance explained by the first 8 unrotated components was 23.6, 10.9, 7.3, 6.6, 6.2, 5.7, 5.3, 4.9. The two items that loaded highly on the second factor ("17. I could do a lot better in my reading"; and "18. I could do a lot better in my writing") were removed as they appeared to combine both perceptions of low ability with a perceived ability to do better. After removal, the scree plot showed clear support for a large first factor with variance explained by the first 8 unrotated components of 23.6, 8.4, 7.3, 6.4, 5.9, 5.3, 5.1, and 4.2. While it would be possible to attempt to further explore subscales on this measure, the scale composed of the first factor reflected the most reliable and systematic source of variance, and provides a parsimonious representation of overall positive attitudes and behaviors regarding reading and writing. The retained items and their factor loadings are shown in Table 1. The test was scored as the mean of the 16 items after item reversal. Cronbach's alpha reliability for the Student SLBS was .79 at Time 1 and .73 at Time 2. The correlation between pre and post intervention scores was  $r = .61$ .

**Table 1: Item Loadings for 16 Retained Items of the Social Learning and Behavior Scale**

Item	Loading
1. I get easily tired when I read or write. (R)	-.36
2. I sometimes forget to bring to class things I need to learn (pencils, paper, book). (R)	-.33
3. I distract others during reading or writing time (R)	-.43
4. At the beginning of a lesson (reading, writing), I set a goal for what I want to learn.	.20
5. I put up my hand to answer a difficult question (reading, writing).	.33
6. I like to read.	.47
7. I like to write.	.33
8. I worry a lot about my schoolwork (reading, writing). (R)	-.38
9. When reading or writing gets really hard, I can give up before getting it done properly. (R)	-.73
10. I can do schoolwork that is hard to do (reading, writing).	.41
11. When I do not understand something (reading, writing), I give up easily. (R)	-.74
12. I am a good listener when working in my reading or writing groups.	.49
13. I help others when they do not understand something (reading, writing).	.43
14. I get distracted when I am doing my reading and writing. (R)	-.43
15. It takes a long time for me to settle down to do my reading and writing. (R)	-.47
16. I lose confidence when reading or writing. (R)	-.62

*Note.* Reversed items are indicated by (R). Loadings are based on a one factor maximum likelihood factor analysis.

Objective Reading Performance. The Victorian Curriculum and Assessment Authority's *On Demand Computer Adaptive Reading Test* (2006, 2010) was used to assess students' level of reading comprehension and, specifically, the extent of development of reading comprehension competence over the three and a half month period of this evaluation project. This 30-item test presents 10 sub-test packets of three reading items to students. Each item is designed to test a specific skill associated with reading comprehension. Some examples of reading comprehension skills assessed include analyze imagery in a text, analyze plot in a text, analyze point of view in a text and analyze setting in a text. The test provides a standard score that corresponds to grade-level performance relative to AusVELS standards. Across the whole sample reading performance scores were correlated  $r = .79$  across the two time points.

#### Attitudes and Behaviors for Learning Program

The AB4L program provides teachers with explicit instruction in the use of five practices that can be employed throughout a reading lesson to teach students various attitudes and behaviors for learning (see Table 2). Teachers were trained to integrate the five AB4L practices throughout the different components of a literacy lesson (before the lesson begins, during whole class, teacher-led instruction, during small group/dyadic/individual work, at end of literacy session –reflection on learning, assignment of literacy homework).

**Table 2: Teaching Practices for Integrating Attitudes and Behaviors for Learning into Different Components of Literacy Instruction**

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1. Prepare Students to Begin Literacy Lesson with a Positive Mindset. At the beginning of a literacy lesson, help students maintain a positive focus by reviewing different positive attitudes.
  2. Share with Students the Goals of the Literacy Lesson, Have Them Set Goals, Monitor Progress and Revise Learning Methods and Behavior. Regularly, ask students to set goals (what they want to learn; mark they will receive). Spell out the different concepts and skills/strategies that will be taught in the literacy lesson. At the end of the class, have students reflect on goal attainment. Based on this feedback, encourage students to modify their approach to learning.
  3. Communicate Behavior-Specific Feedback for Learning. Acknowledge individual and groups of students who display different 'behavior for learning' by providing feedback that names/describes the behavior and attitude they have demonstrated in a literacy activity
  4. Identify and Discuss Behaviors for Learning. Discuss different behaviors that students should practice/use that can help them to be self-managing and engaged during a literacy activity.
  5. Discuss Positive and Negative Self-Talk for Learning. Describe and model positive and negative self-talk that that students can use to remain calm when feeling frustrated or overwhelmed by a learning activity.
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### **Procedure**

During the two weeks before the first of three teacher-training sessions, collection of evaluation data occurred. All teachers (those to receive training in the AB4L program; those who did not receive training) completed the Learning Behaviors Scale for each of their students. Teachers had all students complete the Student Learning Behaviors Survey. All students also completed the On Demand Computer Adaptive Reading Test.

The teacher training sessions took place over a three- and a half-month period. The sessions were conducted by an experienced classroom teacher/literacy coordinator. Each session took approximately three hours.

Evaluation Data Collected (2 weeks before commencement)

Week 1. Teacher training Session 1.

Week 3. Classroom observation of teachers by trainer.

Week 6. Teacher training Session 2.

Week 8. Classroom observation of teachers by trainer.

Week 11. Teacher training Session 3.

Week 13. Classroom observation of teachers by trainer.

Evaluation Data Collected (2 weeks after commencement)

During weeks 3, 8, and 13, the trainer conducted a classroom observation of each participating teacher as the teacher taught a literacy lesson. The purpose of the observation was for the trainer to determine the extent to which the teacher was implementing AB4L. After each observation, the trainer would

summarize in an email the findings in terms of each teacher's strengths and areas for improvement.

To address the issue of potential bias of having the developer of the AB4L program involved in its evaluation, the program was implemented and surveys administered by a literacy coordinator of a nearby school whose livelihood did not depend on finding significant effects of the AB4L program. Additionally, the second author of this research paper who conducted all aspects of data entry and statistical analysis had no prior familiarity with the program and has no vested interest in the results.

## **Results**

### **Correlations at Pre-Intervention**

Pearson correlations using pre-intervention measures indicated that objective reading performance was positively correlated with both student-rated learning behavior ( $r = .34, p < .01$ ) and teacher-rated learning behavior ( $r = .45, p < .01$ ). All subscales of teacher-rated learning behavior were correlated with objective reading performance (correlations ranged from  $r = .32$  to  $r = .53$ ). Finally, student-rated learning behavior was positively correlated with teacher ratings ( $r = .53, p < .01$ ).

With regards to gender differences, an independent groups t-tests indicated that teachers rated the learning behavior of girls more highly than boys ( $d = 0.46, p = .003$ ). However, no significant differences were obtained for student-rated behavior ( $d = 0.24, p = .14$ ) or objective reading performance ( $d = 0.10, p = .53$ ).

### **Effect of the Teaching Intervention (AB4L)**

Means and standard deviations for pre- and post-intervention scores are shown in Table 3. Before assessing the effect of the intervention, we first examined assumptions. There were no significant differences between the control group and intervention group at pre-intervention on any of the outcome measures. However, although not a significant difference, the intervention group did score about a third to a half standard deviation lower on learning behaviors at baseline. Standard deviations were similar across time points and groups. In terms of normality, objective reading performance (skew at pre-intervention = 0.30) had minimal skew, whereas student-rated learning behaviors (skew at pre-intervention = -0.67) and teacher-rated learning behaviors (skew at pre-intervention = -0.87) were negatively skewed reflecting a tail of particularly poor performers. Given the moderate to large sample size, the inferential tests used are robust to the presence of this mild skewness.

**Table 3. Means and Standard Deviations for Students Who Did and Did Not Receive the AB4L program at Pre-Test and Post-Test on Main Outcome Variables**

Variable (scale range)	Pre-Intervention		Post-Intervention	
	Control M (SD)	Interven. M (SD)	Control M (SD)	Interven. M (SD)
SLBS (0 - 1)	0.75 (0.21)	0.70 (0.22)	0.75 (0.18)	0.83 (0.17)
Reading (1 - 10)	3.12 (1.19)	3.18 (1.11)	3.26 (1.26)	3.44 (1.06)
LBS Total (0 - 2)	1.58 (0.39)	1.43(0.49)	1.75 (0.29)	1.73 (0.39)
LBS Strategy (0 = 2)	1.74 (0.36)	1.62 (0.45)	1.82 (0.28)	1.80 (0.38)
LBS Motivation (0 - 2)	1.55 (0.47)	1.26 (0.57)	1.71 (0.34)	1.70 (0.44)
LBS Attitude (0 - 2)	1.63 (0.42)	1.51 (0.54)	1.83 (0.26)	1.79 (0.38)
LBS Persistence (0 - 2)	1.48 (0.51)	1.27 (0.65)	1.62 (0.43)	1.66 (0.51)

*Note.* SLBS = Student Learning Behavior Scale (Student-Rated); LBS = Learning Behavior Scale (Teacher Rated). Control group did not receive the AB4L intervention, whereas the Intervention group received the AB4L intervention.

To assess the effect of the teaching intervention, a gain-score approach was adopted. This involved first computing change scores for each outcome measure calculated as post-intervention score minus pre-intervention score. Then, independent groups t-tests were performed on these change scores with intervention group as the independent variable. This approach is statistically equivalent to examining the interaction effect in 2 by 2 mixed ANOVA (Knapp & Schafer, 2009). To quantify the size of the difference in improvement, the effect size measure discussed in Morris (2008) was used. This is the pre-post equivalent of standardized mean difference (i.e., Cohen's *d*) and represents the standardized mean difference in change scores. Students who received the program showed significantly greater increases compared to the control group in teacher-rated learning behaviors ( $d = 0.30, p = .03$ ), student-rated learning behaviors ( $d = 0.55, p < .001$ ), but no significantly greater increase in objective reading performance ( $d = 0.11, p = .32$ ).

Because the research uses a quasi-experimental design, we also examined whether the effects were maintained using an ANCOVA approach to assessing the effect of the intervention (for a discussion of this issue, see Knapp & Schafer, 2009). This involved running a linear model predicting time 2 outcome scores from condition (intervention or control) and covarying for time 1 outcome scores. Using this alternate approach to assessing the effect of the intervention, the effect of student rated learning behaviors was still highly significant ( $p < .001$ ), and the effect on objective performance was still non-significant ( $p = .26$ ). However, the effect on teacher-rated learning behaviors changed somewhat whereby the effect was only statistically significant for persistence ( $p = .03$ ), and was non significant for total ( $p = .25$ ), strategy ( $p = .09$ ), motive ( $p = .12$ ), and attitude ( $p = .58$ ). This difference in results between the ANCOVA and change



score approach is an instance of Lord's paradox. It presumably arises for teacher-rated behavior, because scores were slightly lower, albeit non-significantly, in the intervention group at pre-intervention. This makes it less likely that the intervention group will have larger covariate adjusted scores, thus making it harder to get a significant ANCOVA. Alternatively, under some mechanisms of change, it makes it somewhat easier to get a significant change score.

To assess whether the intervention was particularly effective for lower performing students, a further analysis was conducted of students in the lower half of their class in their reading scores at pre-intervention. Using the above mentioned t-test on change scores, for these students, there was significantly greater increases in objective reading performance in the intervention group (Pre-Test,  $M = 2.34$ ,  $SD = 0.74$ ; Post-Test,  $M = 2.88$ ,  $SD = 0.65$ ) relative to the control group (Pre-Test,  $M = 2.07$ ,  $SD = 0.51$ ; Post-Test,  $M = 2.29$ ,  $SD = 0.62$ ),  $d = 0.42$ ,  $p = .03$ .

To assess gender differences in the effect of the AB4L program, an ANOVA was performed examining the gender by intervention group interaction on change scores for teacher-rated behavior, student-rated behavior, and objective reading performance. There was no statistically significant evidence for differential effects of the AB4L program for boys and girls (all  $p$ 's > .05).

#### **Correlation of Improvements in Rated Behavior and Objective Performance**

To assess whether students who show improvements in their learning behaviors show concomitant changes in objective reading performance, correlations between change scores separately for the two conditions were calculated (see Table 4). Change scores were calculated as post-intervention minus pre-intervention scores, such that a positive change score indicates that the student showed higher scores after the intervention (e.g., better learning behaviors or improved objective reading performance). Correlations of change scores of teacher-rated behavior and student-rated behavior with change scores for objective reading performance were positive and significant in the intervention group but not the control group. Thus, it can be seen that for students receiving the AB4L Program, those who showed increases in their student-rated and teacher-rated learning behaviors tended to show improvements in objective reading performance. However, a test of significant differences between independent correlations using Fisher's  $r$  to  $z$  transformation was performed (for formulas, see Cohen et. al., 2003) indicated that the differences between control and intervention group correlations were not statistically significant.

**Table 4. Correlation of Change Scores on Teacher and Student Rated Learning Behavior with Change Scores on Reading Performance for Intervention and Control Groups**

	Change in Objective Reading Performance	
	Control	Intervention
Change in SLBS	.03	<b>.22</b>
Change in LBS Total	.10	<b>.27</b>
Change in LBS Strategy	.06	<b>.24</b>
Change in LBS Motivation	.07	<b>.27</b>
Change in LBS Attitude	.10	<b>.24</b>
Change in LBS Persist	.03	.13

*Note.* Values in the table are Pearson's correlations between change scores (post-intervention minus pre-intervention) calculated separately for control and reading intervention groups. For example, a positive value indicates that increases in self- or teacher-rated behaviors are correlated with increases in objective reading performance. SLBS = Student Learning Behavior Scale (Student-Rated); LBS = Learning Behavior Scale (Teacher Rated). Correlations larger than .22 are statistically significant at the .05 level and are shown in bold.

## Discussion

This investigation examined the extent to which schools, especially those with high proportions of students from socially and economically disadvantaged backgrounds, should concern themselves with ensuring that the set of student characteristics referred to as attitudes and behaviors for learning should be an essential aspect of literacy teaching practice.

### Baseline Correlations and Gender Differences

Consistent with previous research (e.g., Rock & Pollack, 2002), objective reading comprehension was correlated with teacher and student ratings of learning behaviors. These correlations may reflect both the benefits of the learning behaviors as well as a general sense of efficacy in performance that may be induced by the teaching environment that included opportunities for feedback and peer comparison.

Teachers rated girls higher in behaviors for learning than they did boys confirming previous findings of gender differences (e.g., Duckworth & Seligman, 2006; Schaeffer, 2004). Of interest is that when student self-perceptions were examined, no gender differences were found. This inconsistency with teacher ratings may be due to a tendency of boys to provide unrealistic ratings of their learning behaviors resulting in the elevation of scores on the Student Learning Behaviors Scale. One implication of this finding is that teachers may need to be more explicit in providing boys with feedback concerning their use and non-use of various attitudes and behaviors for learning.

### Effect of Intervention

The AB4L program had a positive impact on the behaviors for learning of students who received the program. This finding that behaviors for learning are teachable is supported by extensive previous research (McDermott, Leigh, & Perry, 2002; McDermott, Mordell & Stoltzfus, 2001). A novel aspect of AB4L is

that it is not a stand-alone program taught where students are taught foundational positive attitudes and learning behaviors apart from academic instruction. Integrating the teaching of attitudes and behaviors for learning as a part of literacy instruction is likely to produce a much stronger effect than a program taught on its' own.

While the AB4L program benefitted students' behaviors for learning, it did not show the same overall effects on reading performance for all students. There are multiple influences on students' reading competences and achievement and while the enhancement of student learning behavior places students in a better position to profit from instruction, we also know that prerequisite, background knowledge is a major factor in predicting and explaining levels of achievement (e.g., Wang, Haertel &Wahlberg, 1993). Perhaps, participating students' pre-requisite reading comprehension skills were so under-developed that improvements in a reading comprehension test (Reading in Demand) was not possible in such a short period of time.

Alternatively, it is the case that there are students in the two low SES schools in the sample who are reading near grade level expectations. It may be that these students have reasonably well-developed learning behaviors despite the low SES index of the school. For these students, it may be the case that the benefits of AB4L on reading performance may be seen in the long-term.

Results reveal a significant benefit of AB4L on the reading performance of those students who scored in the lower 50 percent of their class on the reading comprehension survey used in this project. Comments from teachers indicated a shift in focus of class concern from reducing negative behavior to advancing positive behavior and an increase in whole-class student interest wanting to be successful. It may be the case that this shift in classroom culture along with the explicit teaching of positive attitudes and behaviors for learning had the most impact on the disengaged, under-achieving students.

The finding of equal benefit of impact of AB4L on boys and girls is an important finding especially for the education of boys. It appears that the explicit teaching practices employed in AB4L where students are asked to practice ways of thinking and learning behaviors to use during classroom instruction combined with behavior-specific feedback equally suits the learning styles of boys and girls.

### **Correlated Changes**

Of some significance is the finding that students in classes where AB4L was implemented who showed improvements in their reading comprehension also showed increases in their behaviors for learning. This would suggest that as many have argued that behaviors for learning are, indeed, mediating factors in the chain of influence leading to academic competence and achievement (e.g., McDermott, et. al., 2001).

Additionally, this evidence of correlated changes in reading achievement and behaviors for learning suggests that the positive impact of AB4L was a specific effect of explicit teaching of attitudes and behaviors for learning and the teaching practices employed rather than solely a general effect of teachers being more positive.

## Limitations

First, the study used a quasi-experimental design that made use of existing classes. Thus, baseline differences between groups and differences between teacher effectiveness may have influenced the results. Nonetheless, the use of a pre-testing in the current study and the focus on change scores provides some control. Second, the AB4L program only had a significant effect on objective reading performance of students in the lower 50% of reading performance. Benefits of the AB4L program for students competent in reading as well as attitudes and behaviors for learning cannot be ascertained from the present analyses. These findings cannot be generalized to students who have reading challenges but do not attend economically disadvantaged schools. A third limitation of the study is that it is impossible to discern which of the different teaching practices focused on positive attitudes and behaviors for learning were the most powerful.

## Conclusion

Based on these findings and previous research, student characteristics and their role in academic development and achievement needs to be in the center of the radar screen of education reform efforts to improve reading of students falling behind. Teacher preparation and professional development programs as well as the coaching and mentoring of principals and teachers should incorporate positive attitudes and behaviors for learning, especially as additional instructional support students who are most likely to be at risk for educational failure as well as those who are under-achieving in literacy and numeracy.

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