Causal Attributions, Strategy Usage and Reading Competence

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ABSTRACT

This paper reports on a study that examined the relationship among attributional beliefs, self-perception of competence, knowledge and reported use of reading strategies, and performance in reading comprehension in Year 5, 7 and 9 students. Results confirmed that motivational styles and metacognitive abilities were significant factors in mediating learning outcome. Further, a pattern of learned helplessness was observed among the group of poor readers in the study, characterised by low levels of perceived cognitive competence, a tendency of attributing success to luck and failure to lack of ability, and inferior metacognitive abilities. Implications of these findings for instruction are discussed.
In recent years there has been a great deal of research on metacognition, defined as the awareness and regulation of one's own cognitive processes (Flavell, 1979; Baker & Brown, 1984). Metacognitive activities are considered critical for effective learning and scholastic achievement. The learning problems of many students who achieve poorly in school have been found to be related to their inferior metacognitive abilities (Chan, 1991). Much recent research is directed at developing among students greater awareness of and better control over their own thinking and learning processes. In other words, the aim is to enable students to adopt a strategic approach to learning: acquiring an appropriate repertoire of cognitive strategies and being able to monitor and regulate use of these strategies to enhance learning.

More recently, the close relationship between the concepts of motivation, cognition and learning has been emphasized and the proposition is made that metacognitive theory is particularly suited for understanding more about the interface of motivation, cognition and learning (Borkowski, Carr, Rellinger & Pressley, 1990). It is suggested that "strategy-based actions directly influence self-concept, attitudes about learning, and attributional beliefs about personal control. In turn, these personal-motivational states determine the course of new strategy acquisition and, more importantly, the likelihood of strategy transfer and the quality of self-understanding about the nature and function of mental processes" (Borkowski et al, 1990, p.54).

The issue of motivation is particularly critical for students with learning difficulties who have very often developed learned helplessness (Borkowski et al, 1990; Cullen, 1985; Paris & Winograd, 1990). These students are unlikely to try alternative ways of solving a problem when encountering difficulties in task completion, believing that there is nothing they themselves can do in such situations. Students with learning difficulties tend to attribute failures to uncontrollable causes, such as their own lack of ability, task difficulty or teacher bias, and success to luck or help from the teacher (Cullen, 1985). According to attribution theory (Weiner, 1984), the frequent and repeated failures experienced by poor learners can lead to the development of beliefs of inevitable helplessness and low levels of perceived competence in school learning. One way to deal with the problem is to raise these students' expectations of success, that is, raise their self-perceptions of competence and belief that outcomes are attributable to factors under their personal control.

Studies that attempt to modify inappropriate causal attributions, that is, attributional retraining programmes, for students with learning difficulties tended to focus on attributing successes to increased effort (see review by Licht & Kistner, 1986). These have not been entirely successful. Very often these students find themselves keep on failing in spite of increased effort (particularly if they do not know how to try harder), which would even further reinforce their beliefs in the lack of
ability, and thus increase feelings of helplessness (Craske, 1988). Probably a more fruitful direction is to try getting these students to attribute failures to both insufficient effort and ineffective task strategy (Licht & Kistner, 1986). One potentially effective technique is to combine such an attributional retraining programme with cognitive strategy training (Borkowski, 1992; Cole & Chan, 1990; Borkowski, Weyhing & Carr, 1988; Reid & Borkowski, 1987).

As yet little research has been done in the development of causal attributions with respect to the use of strategies. Most of the work in the area focused on attributions to ability versus effort (e.g., Cooley & Ayres, 1988; Kistner, Osborne & LeVerrier, 1988; Wigfield, 1988). Even in pioneering studies on simultaneous use of attributional retraining and strategy training (Borkowski, Weyhing & Carr, 1988; Reid & Borkowski, 1987), subjects were only instructed to attribute success to effort. Getting students to attribute their success (resulting from using the learned strategy) to use of effective strategy may be more convincing in these cases. Of course such an approach would necessarily require extending our current knowledge on the development of attributions of strategy use. Nicholls' studies (1978, 1984) have shown that younger children sometimes do not distinguish different causes such as ability and effort until seven or eight years of age. It is critical to find out when strategy attributions would become prominent in students' motivational orientations.

Further, given the recent focus on the interface of motivation, cognition and learning (Borkowski et al, 1990; Chan, 1991; Paris & Winograd, 1990), the relationship among causal attributions, self-perceptions of competence (another construct relating to expectations of success as a motivational component), metacognitive abilities and achievement needs to be examined.

To summarise, the aims of the present study are twofold. First, it was designed to examine the developmental pattern of causal attributions with respect to ability, effort, luck and strategy use of students with and without learning difficulties as they progress through school. Secondly, the relationship among expectations of success (causal attributions and perceived competence), metacognitive abilities and achievement in reading was explored.

METHOD
Subjects

The subject sample consisted of a total of 104 Year 5, 133 Year 7 and 101 Year 9 students from two primary and two high schools in the Hunter Region in New South Wales, Australia. Students in these schools were mainly from educationally disadvantaged backgrounds. Of these, 18 Year 5, 43 Year
7 and 25 Year 9 students were classified by the Support Teacher (Learning Difficulties) in the school as having difficulties in learning. In New South Wales, the Support Teacher (LD) in each school provides in-class support services to students with learning difficulties (LD) through team teaching with the regular class teacher. Identification of LD students in high school was normally conducted at the beginning of Year 7 when students first started high school through standardised screening (mostly using group reading tests). Regular review of progress and referrals from class teachers were conducted through the school year.

Assessment instruments

Four different scales were used to obtain measures of motivation and metacognitive abilities, and one test for a measure of reading achievement. These are described in the following.

Causal Attribution Scale. This is a ten-item scale designed by the researcher to assess students' tendency of attributing their school success and failure experiences to the four likely reasons of effort, ability, strategy use and luck. Five items describe success incidents (such as doing well on a test) and the other five, failure incidents. For each item, four different reasons are listed and students are required to rate each on a four-point scale to indicate how true they consider that particular reason to be for them. Two versions were constructed, one for high school students and one for primary students. The content in both versions was the same, only the wording was modified to suit students' level. A sample item from the high school version is presented in Table 1. The ratings for each of the four types of reasons (effort, ability, strategy use and luck) are summed across the five success items and the five failure items respectively, thus giving eight separate sub-scores, each ranging from 4 to 20. For example, a high score on the Failure-Ability subscale indicates greater tendency of attributing school failure experiences to lack of ability. Cronbach's coefficient alphas were computed on the eight subscales scores separately for subjects in the different year levels. The reliability estimates obtained ranged from 0.63 to 0.81.

Perceived Competence Scale. This scale was adapted from Harter's (1982) scale for use in earlier studies (Chan, 1988; Cole, Chan & Lytton, 1989). It consists of four subscales, each with 7 items, for assessing self-perceptions of competence in four different domains: cognitive competence, social competence, physical competence, and general self-worth. A sample item is included in Table 1. The reliability estimates ranged from 0.73 to 0.84.

Reading Strategies Scale. This scale was also designed by the present researcher to assess students' knowledge and usage of specific cognitive
strategies, in this case, those for reading. There are 20 items, each
describing a student using a particular strategy for reading, such as
"summarising the main ideas in her own words as she reads" (see sample item
in Table 1). Negative items describing ineffective strategies are also
included. After each description, students are required to rate the
strategy on two separate four-point scales in terms of firstly, how helpful
they consider that strategy to be; and secondly, how often they read that
way. Again, two versions were constructed, one for high school students and
one for primary students. Ratings on the two questions were summed
separately, providing a 'knowledge' score and a 'reported usage" score,
each with a minimum possible score of 20 and a maximum of 80. Again,
Cronbach's coefficient alphas were computed on the two subscale scores for
the subject sample in the present study, yielding reliability estimates of
0.80 and 0.88.

Tests of Reading Comprehension (TORCH). The TORCH (Mossenson, Hill
& Masters, 1987) is a set of fourteen untimed graded reading tests for use
with students in Years 3 to 10. Each test consists of a passage of 200 to
900 words together with a retelling of the passage in different words. The
retelling of the passage contains gaps corresponding to information in the
original text. Students are required to read the passage and then complete
the retelling by filling in the gaps in one or more of their own words. It

was constructed in Australia using the Rasch model. The tests used in the
present study include the passages "Lizards Love Eggs" for Year 5, "Iceberg
Towing" for Year 7 and "The Red Ace of Spades" for Year 9.

Procedure

The four scales and the comprehension test were group administered
to
the subjects in class in three separate sessions within two weeks. All
assessment was conducted by four graduate research assistants following
standard procedures within a period of five weeks in the last few weeks of
the school year (November) in 1990. Apart from the comprehension test, all
items were orally read to the class one by one, and students were required
to mark in their response.

RESULTS AND DISCUSSION

Data were obtained on eight causal attribution variables, four
perceived competence variables, two reading strategies variables and a
measure of comprehension competence. Sample sizes for the variables may
differ because of student absences during some testing sessions. The means
and standard deviations of these variables are depicted in Table 2. All
statistical analyses were conducted on SPSSx, Release 3.1.

Comparisons of grade levels and LD versus non-LD students
Separate 3 (Grade) x 2 (Group) MANOVAs were run on the four sets of variables. Results on the reading comprehension measure were as expected. The group main effect was significant, $F(1, 331) = 131.49, p<.001$, with the LD group demonstrating much lower scores than the non-LD group. The grade main effect was also significant, $F(2, 331) = 59.21, p<.001$, with higher scores for higher grade levels.

Results on the perceived competence variables revealed that the LD group scored significantly lower than the non-LD group on both perceived cognitive competence and perceived social competence, $F(1, 278) = 7.63, p<.01$ and $F(1, 278) = 6.81, p<.01$, respectively.

Results on the eight causal attribution variables are graphed in Figure 1 (as a function of group membership) and Figure 2 (as a function of grade level). No significant Grade x Group interactions were found. Significant univariate F ratios are reported in Table 3. Most of the significant differences come from LD versus non-LD comparisons. Results indicate that relative to the non-LD group, LD students were more likely to attribute successes to luck, but less likely to attribute successes to effort or use of effective strategies. On the other hand, relative to the non-LD group, LD students were more likely to attribute failures to lack of ability, bad luck or non-use of effective strategies. These findings suggest that relative to non-LD students, LD students were more likely to believe that school failures and successes were due to external or uncontrollable factors such as luck and ability; but were less likely to believe that successes could be due to factors under their personal control, like effort and use of effective strategies.

Significant grade level main effects were observed for effort attributions for both success and failure, and strategy attributions for failure only. In all these three cases, only the Year 7 and 9 contrast was significant, but not the Year 7 and 5 comparison. Year 9 students were found to be more likely than the Year 7 students to attribute failures to lack of effort or non-use of effective strategies but less likely to attribute successes to good effort. These findings suggest that by Year 9 students may begin to have greater awareness of their personal control over learning outcomes, tending to believe that school successes and failures are dependent on their own effort and use of strategies, and that should they fail, it would have been because of a lack of effort or non-use of effective strategies.

For the reading strategies scale, there was a significant group main effect on the knowledge score, $F(1, 321) = 5.30, p<.02$. Results indicate that the LD group had less knowledge of reading strategies than their non-LD counterparts. No group differences were observed for the reported usage score. However, Year 7 students were found to report greater usage of
reading strategies than Year 9 students, F(1,321) = 5.81, p<.02.

Overall, comparisons across age groups revealed no significant differences between the Year 5 and Year 7 students on any of the perceived competence, causal attributions and reading strategies measures. Relative to Year 7 students, Year 9 students were found to be more likely to attribute learning outcomes to factors under their personal control, such as effort and use of strategies. Yet they reported less use of reading strategies than the younger students even though their knowledge of such strategies was not inferior. Results suggest that strategy attributions do not seem to be prominent in students' attributional beliefs before Year 9.

Comparisons of the LD and non-LD groups reveal a general pattern of the LD group perceiving themselves to be cognitively and socially less competent, thus more likely to attribute failures to lack of ability and successes to luck, and having less confidence in their own control over successes or failures in school tasks (control over the amount of effort to put in and the use of strategies), having less knowledge of reading strategies, and indeed attaining lower levels of reading achievement. These findings confirmed the description of learned helplessness discussed earlier in this paper.

Relationship among expectations of success, metacognitive abilities and achievement

Three separate path analyses were conducted, one for each grade level, using Group and Gender as the exogenous variables and the causal attribution, perceived competence, knowledge and usage of reading strategies and reading achievement measures as the endogenous variables. The resultant path diagrams, with standardised Beta weights indicated, are presented in Figures 3 to 5.

Different patterns of relationships are observed for the three grade levels. At the Year 5 level, no clear consistent pattern could be discerned (see Figure 3). There were no significant links from the causal attribution and perceived competence variables to strategy knowledge. The link from strategy knowledge through usage to achievement was not strong. There were a few direct links from failure attributions and perceived competence to reading achievement and strategy usage, but their influence seemed to be isolated. The only major indirect path from gender to achievement suggested that Year 5 girls with higher levels of general perceived competence tended to report greater use of reading strategies and subsequently attained higher comprehension scores.

For the Year 7 group (Figure 4), significant links from attributions and perceived competence through to knowledge and use of strategies were
observed. There were significant paths from group membership (LD versus non-LD) and gender through strategy attribution for failure and strategy knowledge to strategy usage, and another from strategy attribution for success through strategy knowledge to strategy usage. But these were not linked to achievement. Significant paths were also observed from group membership direct to, and through effort attribution for success and perceived social competence to achievement, but without involving strategy knowledge nor usage.

A clearer pattern of the relationship among the variables examined in the present study was indicated in the Year 9 data (Figure 5). A significant path was observed from group membership through strategy attribution for failure, strategy knowledge, and strategy usage to achievement. Another negative path went from group membership through luck attribution for success to achievement. The path from strategy attribution for success through strategy usage to achievement was also significant. Results support a link between tendency of attributing learning outcomes to use of strategies and reading achievement, mediated by knowledge and usage of reading strategies.

Implications for instruction

The findings of the present study have again demonstrated the phenomenon of learned helplessness in students with learning difficulties. Developmentally, the results also indicate that the younger students (primary and lower secondary) are not yet aware that they can have control over learning outcomes through effort and use of strategies. Further, such motivational problem was shown to be related to students' non-strategic approach to learning and subsequently, lower levels of achievement. The need for attributional retraining is supported.

Further, findings from grade level comparisons, LD versus non-LD comparisons and path analyses together indicate that while such motivational variables as self-perceptions of competence and causal attributions in respect to use of strategies, and metacognitive abilities in the form of knowledge and reported usage of reading strategies, were significant factors in mediating learning outcome, they were not particularly prominent for students in primary and lower secondary classes and for students with learning difficulties. This highlights the need for combining attributional training and strategy instruction for these groups of students.

REFERENCES


Review, 91, 328-346.


Table 1
Sample items

1. Causal Attribution Scale

If you got a bad school report, RARELY  SOMETIMES  OFTEN  ALMOST it was likely because
a. you aren't very bright at school  
    1  2
    3  4
b. you were lazy and didn't try  
    1  2
    3  4
c. you didn't use good study methods  
    1  2
    3  4
d. you were very unlucky that year  
    1  2
    3  4

2. Perceived Competence Scale

Really  Sort Of
Sort Of  Really
True  True
For Me  For Me
For Me
Some students but Other students find it difficult to do things with things with their classmates. Some students but Other students find it easy to do things with their classmates.

3. Reading Strategies Scale

Mary knows that a paragraph often has a key sentence which sums up what the paragraph is about. As she reads, she looks for these sentences.

How helpful is it? How often do you read this way?

Not Sometimes A little Often Almost Quite Very Never Always

1 2 3 4 1
2 3 4

Table 2

Means and Standard Deviations of the Dependent Measures for Students with (LD) and without (non-LD) Learning Difficulties in Years 5, 7 and 9

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Note:
1 Maximum possible score for all 8 attributions = 20
   Higher scores indicate greater tendency of attributing
   success/failure to the particular cause.
2 Maximum possible score = 80
3 Maximum possible score = 28

Table 3

Significant univariate F-ratios for the 3(Grade) x 2(Group)
MANOVAs on the Causal Attributions Variables

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