

Approaches to Learning, Attributions, Goal Orientations and Achievement: A Developmental Perspective

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Abstract

This paper examines the relationship between achievement and the three motivation constructs of approaches to learning, attributional beliefs and goal orientations in upper primary, high school and TAFE students. The relative prominence of these three motivation constructs in explaining variation in student achievement at different age levels is also explored. Results are discussed in terms of developmental changes in students' motivational patterns as they progress through their education. Implications for instruction are also addressed.

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Developmental Perspective

While in the past much attention has been given to teacher performance and how it influences student learning, there has recently been a shift of emphasis. This has involved the formulation of various motivational constructs to examine learning from the students' perspective. Three main motivational constructs are being explored in this paper. These are Causal Attributions, Goal Orientations and Approaches to Learning.

Causal Attributions

The construct of causal attributions refers to what students perceive as the cause of their successes or failures in school, such as ability, effort, task difficulty and luck (Elig & Frieze, 1979; Weiner, 1991). These attributions can be classified along three dimensions: locus, stability and controllability (Weiner, 1984). For example, ability attributions have an internal locus, are stable but uncontrollable; whereas effort attributions have an internal locus, are unstable (can be changed) but are controllable. If students are to succeed, they must believe that when they expend effort - something they completely control - they will experience success (Bloom, 1985; Gardner, 1983). However, if students believe that success or failure is the result of a cause over which they have no control, they will consider it pointless in making the effort for that task (Greene, 1985).

Students who attribute success or failure to something which is unstable, such as luck, may not know what to expect about their future performance. However, if failure is attributed to a stable but uncontrollable factor, such as low ability, then expectations of future failure will become high. In extremes, such attributions may lead to "learned helplessness" (Miller & Norman, 1979; Reid & Borkowski, 1987). That is, they 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 who perceive that they have control over school successes or failures are likely to have high expectations of success and are motivated to work hard because they realise that success or failure will depend on their own effort and appropriate use of strategies (e.g., Borkowski, Carr, Rellinger & Pressley, 1990). Perceptions of internal control have also been shown to be positively related to achievement (Chan, 1992; Klein & Keller, 1990; Marsh, 1986; Skinner, Wellborn & Connell, 1990).

Several factors have been shown to relate to different attributions. Females tend more than males to attribute their success to luck rather than to ability, and to rate their ability lower (Bar-Tal, 1978). Individuals with low self-esteem tend to make more internal attributions following failure (Marsh, 1986). As might be expected, high

need-achievers attribute their success to internal factors - ability and effort. Alternatively, low need-achievers attribute their failure to lack of ability and their success to luck or an easy task (Scapinello, 1988). The most inhibiting factor in school learning is fear of failure (Jagacinski & Nicholls, 1990). Teachers need to explain to students the

importance of effort, persistence, and the use of effective strategies in school learning and that these are more critical determinants of success than inherent abilities.

Goal Orientations

Proponents of achievement goal theory focus attention on the goals students hold as they approach their work (Ames & Archer, 1988; Dweck, 1986; Elliott & Dweck, 1988; Nicholls et al., 1985). Two major goals have been identified: a learning (or mastery) goal and a performance goal. Students who hold a performance goal want to demonstrate their ability to others by being successful, particularly by doing well with the expenditure of little effort (so that success may be attributed to ability rather than to effort). Students who hold a learning goal want to develop skills or a deeper understanding of an area. Here, what the student values is the process of learning rather than demonstrating ability, so there is no shame attached to working hard.

A third non-academic goal has been added to mastery and performance goals. It is referred to as a work avoidance goal (Meece et al., 1988; Nicholls et al., 1985; Nolen, 1987) or an academic alienation goal (Archer et al., 1991). For students who hold this goal, the intention is to do just enough academic work to "get by."

Orientation toward a goal is presumed to be a function of individual differences or to be induced by situational constraints. There is evidence that achievement goals are an important motivational construct. It has been demonstrated that adoption of a goal has consequences for beliefs about the nature of achievement (Ames & Archer, 1987; Nicholls et al., 1985); attributions for and affective response to success and failure (Ames et al., 1977; Ames & Archer, 1988); and behaviours such as choosing tasks (Elliott & Dweck, 1988; Ames & Archer, 1988) and using effective learning strategies (Ames & Archer, 1988; Archer et al., 1991; Nolen, 1987; Meece et al., 1988).

Approaches to Learning

The construct of approaches to learning refers to the sets of motives and strategies that learners bring to any learning task. These have been categorised as surface, deep, and achieving (Biggs, 1987; Biggs & Moore, in press). A surface approach is characterised by attention to detail rather than to meaning, and putting in minimum effort in order to satisfy task demands. A deep approach, on the other hand, is characterised

by attention to meaning, and putting in as much effort as is required in order to satisfy personal needs to understand the material. The essence of an achieving approach is ego enhancement and both temporal and spatial organisation for learning (Biggs, 1987).

The rather extensive literature on approaches to learning and their relationship to learning consistently shows the surface approach to be negatively related to performance (Cantwell & Moore, 1990; Moore & Telfer, 1992; Ramsden & Entwistle, 1981). Deep approaches tend to lead to more complex responses (Biggs, 1989) and higher self-estimates of achievement (Watkins & Hattie, 1990) while the achieving approach also relates positively to achievement and self perceptions (Watkins & Hattie, 1990). Programmes that have attempted to change students' approaches to

learning have generally shown that movements towards deep and achieving approaches are accompanied by increased academic performance (Biggs & Rihn, 1984; Edwards, 1986; Moore, 1991).

The present study aims to address the following questions:

1. How do the three motivational constructs of causal attributions, goal orientations and approaches to learning change across the years of schooling and TAFE and what are the associated gender differences?
2. How does the pattern of relationships between gender, motivational orientation and achievement change across the years of schooling and TAFE?
3. What is the relative contribution of these three motivational constructs in explaining variations in achievement at the primary, secondary and TAFE levels?

METHODOLOGY

Subjects

Three separate school populations were used. The Primary school sample consisted of 59 Year 4 (34 males, 25 females) and 81 Year 6 (38 males, 43 females) students. The secondary school sample consisted of 69 Year 7 (34 males, 35 females), 89 Year 9 (44 males, 45 females), and 46 Year 11 (24 males, 22 females) students. The TAFE sample consisted of 46 students (16 males, 30 females) studying an Associate Diploma in Applied Science (Hospitality Management).

Assessment Instruments

The scales used for assessing motivation and achievement are described below. Table 1 presents the reliability estimates (Coefficient Alpha) for the various scales on the present sample of subjects.

Causal Attribution Questionnaire (Chan, 1992). The Causal Attribution Questionnaire is a ten-item instrument designed to assess students' attributions to learning. Four basic attributions are examined in the context of both success and failure: effort, ability, strategy use and luck, yielding eight causal attribution measures. Five items describe success incidents and five describe failure incidents. For each item, the four different attributions are listed and students are required to rate each on a four point scale to indicate how true they considered that particular item to be for them.

Goal Orientation Questionnaire (adapted from Nicholls et al., 1985). This is a 24-item, 4-point Likert scale instrument designed to assess students' performance, learning (or master), and academic alienation goals in school situations. The stem for each item was "I feel most successful when."

Learning Processes Questionnaire - LPQ (Biggs, 1987a). The LPQ provides measures of three approaches to learning: Surface, Deep, and Achieving. For this study, two versions of LPQ were employed. For the Primary sample, an 18 item questionnaire was developed from the original 36 item LPQ. The focus was on approaches to learning from a strategic

perspective and the wording reflected the language levels of the students. For the secondary sample, the original 36 item LPQ was employed. Both the modified version and the original questionnaire required subjects to respond on a five-point Likert scale for each question.

Study Processes Questionnaire - SPQ (Biggs, 1987b). The SPQ is the tertiary version of the LPQ and was employed with the TAFE sample. It consists of 42 items with each to be responded to on a five point Likert scale. Three approach scores are obtained: Surface, Deep, and Achieving.

Grade Point Average for Achievement. A five-point scale was used to assess student academic achievement in English and Mathematics. For the Primary sample, the teachers were instructed to give each child a grading from 1 (worst) to 5 (best) for their overall achievement in Mathematics and English using whatever data they had at their disposal. Whether the class was streamed, parallel or composite was not to be considered. The Grade Point Average was to be given as a comparative mark within the grade. A similar arrangement applied to the secondary sample. Data on achievement from the TAFE sample were gathered from end-of-semester results in a management theory test and an accountancy test. As for the primary and secondary groups, a five-point scale was used for each student.

A total achievement measure, the average of the two ratings for each student was used in the data analysis.

Procedure

All subjects completed the LPQ (or SPQ), Causal Attribution Questionnaire, and Goal Orientation Questionnaire during normal class time

over a period of several days. Teacher ratings of student performance were gathered at the end of the first semester.

Results

Data were obtained on eight causal attribution variables, three approaches to learning variables, three goal orientation variables and a combined measure of student performance in English and Mathematics as rated by the students' teachers. The data were analysed using SPSS, Release 4.1. It should be noted that caution is required in interpreting the results, particularly from the path analyses and regression analyses, due to the small sample sizes.

Grade and gender differences

The motivational measures, except for the Approaches scores, were subjected to separate Grade(6) x Gender(2) analyses of variance. Table 2 lists the means and standard deviations of all the variables for male and female students in each grade.

For the attributions and goal orientations scores, significant Grade x Gender interactions were observed on four measures: effort attribution for success, luck attribution for success, ability attribution for failure, and academic alienation measures. Years 6 and 11 female students were more likely than their male peers to attribute success to effort, Years 6, 7 and 11 female students were less likely than their male peers to attribute success to luck, and Year 11 female students were less likely than their male peers to attribute failure to lack of ability, but there were no significant gender differences on these measures for the

other year levels (see Figures 1 & 2). For academic alienation, male students scored higher than their female peers in Years 6 and 11, but scored lower in Year 7 (see Figure 3).

Significant grade differences were indicated on strategy and ability attributions for success, effort and luck attributions for failure, as well as mastery and performance goal orientations. Results suggest that as students progress through their schooling to TAFE, they are more likely to attribute success to use of effective strategies or failure to insufficient effort, but are less likely to attribute success to ability or failure to bad luck (see Figures 1 & 2). Performance goal orientations increase till Year 11 then reduce somewhat at TAFE. Mastery goal orientations decrease from Year 4 to 7 and 9, then increase at Year 11 but again reduce slightly at the TAFE level (see Figure 3).

Gender differences were significant on the effort and strategy attributions for failure and mastery goal orientation measures. Regardless of grade level, female students were less likely to attribute failures to insufficient effort or use of ineffective strategies, and tended to have

higher levels of mastery goal orientations than male students.

For the approaches to learning scores, the primary school data were analysed using Grade (2) x Gender (2) analyses of variance, and for the secondary data, Grade (3) x Gender (2) analyses of variance. For the TAFE sample, one way analyses of variance were conducted with gender as the independent variable.

Significant grade x gender interactions were observed on the surface and achieving approaches measures for the secondary sample. The secondary school interactions were due to Year 11 females having higher achieving scores and lower surface scores than males, with no significant gender differences at the other two year levels (Figure 4). There was a significant grade difference on the deep approach measure, with Year 11 students having scoring higher than the younger students.

In the primary sample, there was a significant gender difference on the achieving approach measure, with males scoring higher than females. Significant grade differences were indicated on surface and deep approaches with Year 6 more likely to be more surface than Year 4, and the opposite trend for deep.

The TAFE results showed no significant gender differences on the approaches to learning measures.

Path analysis

Separate path analyses were run for each grade level to examine the relationship between gender, motivational orientations and achievement. Results are presented in Figures 5 to 10. For the Year 4 group, gender was found to be related to effort attributions for failure and achieving approach, but no reliable relationship was observed between the motivational variables and achievement. For Year 6 students, indirect links from gender to achievement through effort attributions for success and mastery goal orientations were observed. Strong links from ability and luck attributions for failure, deep approach to learning and performance goal orientations to achievement were also indicated.

For Grade 7 the strongest relationship is the direct link between gender and achievement, which is a feature observed only in this grade. There were also strong links from effort and ability attributions for failure and performance goal orientations to achievement. For Grade 9 while there are gender differences on some variables, there is no further extension of influence on achievement. There are strong links from ability attributions for failure and strategy attributions for success to achievement. Two relatively strong indirect links from gender to achievement were evident in Year 11, through the mediating variables of ability attributions for failure and the surface approach to learning.

Few significant relationships were observed in the TAFE data, apart from the link between a surface approach to learning and achievement, probably because of the small sample size.

Relative prominence of motivation constructs

Several hierarchical regression analyses were run in order to calculate the relative contribution of each set of motivation construct variables to explaining variations in achievement at primary, high school and TAFE levels. The total percentage of variance explained by each set (including the common variance it shared with the other sets) and the unique contribution of each set (that is, additional variance explained by each set over and above that explained by the other sets) are reported in Table 3. Results indicate that the relative prominence of motivation constructs varies across different levels of schooling and TAFE studies. At the primary level, failure attributions (explaining 13.7% of total variance and 9.8% of unique variance in achievement) seem to be more prominent, followed by goal orientations. During high school years, both failure and success attributions become prominent (explaining 21.3% and 15.7% of total variance and 9.8% and 4.8% of unique variance, respectively). At TAFE level, it is approaches to learning and success attributions (explaining 31% and 26.9% of total variance and 12.7% and 14.2% of unique variance, respectively) that are relatively more prominent in their influence on achievement.

DISCUSSION

Three basic research questions drove this research. The first question focussed upon changes in the three motivational constructs across the years of schooling. The second examined the relationship between gender, motivational orientation and achievement across the years of schooling and the third addressed the relative contribution of the three motivational constructs in explaining variations in achievement across primary, secondary and TAFE levels of schooling.

Changes in the motivational constructs across the grades showed, for the attributional data, that as students developed and were subjected to more schooling, including TAFE, they were more likely to attribute their success to the use of strategies, and failure to lack of effort. Correspondingly, the students were less likely to attribute failure to bad luck or success to ability. The findings show that as the students progress through school, they perceive more control over their learning. This internal locus of control increases expectations of success and increases persistence as the students realise that their achievement will depend on their own effort and use of strategies. Females, particularly in Years 6

and 11 have more internal control than males whose academic alienation in Years 6 and 11 is relatively high. It would seem that females are less

affected by the competitive goal structure of their schooling and are able to focus more on their own learning.

The goal orientation results showed a number of conclusions, and revealed some gender differences. More particularly, students' performance goal orientation increases across the years of schooling but dropped somewhat during studies in TAFE whereas students' mastery goal orientation decreased across the school years but peaked in Year 11, only to drop during TAFE studies. Female students showed more steady growth in performance orientation during school years than did male students. This is considered to be a possible result of females being less affected by the competitive goal structures in most schools, as discussed earlier. On the other hand, males experience the most academic alienation, particularly in Years 6 and 11. These findings on goal orientations are consistent with the findings on causal attributions discussed earlier.

The results from the approaches to learning data, for Primary students (on the modified questionnaire), indicate that males have a more achieving approach than females and that Year 4 students tend to be less surface and more deep, a trend that is reversed by Year 6. There may be a number of things at work here. As they progress through the school system, students may come to realise the benefits of a surface approach given the way schools assess and progress their students. Another fact is that curricula have been set up, although this is changing now, to encourage course coverage at a superficial level rather than the pursuit of fewer topics in depth. The explanation for the difference between males and females with regard to the achieving approach may be related to some of the well documented differences in the ways teachers respond to boys and girls and their differing sets of expectations. Secondary students become more deep in their approach at Year 11, possibly in response to the need to treat material in a more thorough and well integrated way. By Year 11, females are more achieving and less surface in their approaches than their male counterparts.

Overall, findings on students' changes in motivational orientations across their years of schooling suggest that over time students, particularly females, tend to perceive themselves having greater personal control over learning outcomes, are less surface in their approach to learning and are more likely to hold mastery goals, that is, aiming to develop skills and achieve deep understanding when approaching tasks.

To answer the second question, path analyses were conducted with the results showing that, for Years 6, 7, 9, and 11 there are strong links between ability attributions for failure and achievement, implying learned helplessness. This is the most consistent pattern to emerge. In addition, for Year 6 and 11 there are indirect links between gender and achievement through the mediating motivational variables. These findings provide further support for the changes in motivational orientation across the years of schooling discussed in the above. Further, the detrimental effect of learned helplessness on achievement is highlighted.

Using the data which identifies the unique contribution of each motivation construct in explaining variations in achievement, certain distinct trends are obvious. In the primary years of schooling failure

attributions and goal orientations are the most prominent motivational force. Within the high school population both failure and success attributions are the most prominent. At the TAFE level the motivational force seems to come from students' approaches to learning and success attributions. These findings suggest the usefulness of the different motivation constructs at different levels of students' schooling.

It is recognised that, as mentioned earlier, the small sample size and the pilot nature of the study restrict firm conclusions to be drawn from the above findings. However, the consistent trend observed across the several analyses is encouraging and provides a useful basis for further research with larger samples.

Implications

There are two main implications for instruction flowing from this study. Firstly, schools need to address the learned helplessness patterns of attribution which results in poor academic achievement. This could be done by paying more attention to combined strategy and attribution training and making teachers more aware of students' attributions for their learning outcomes and what they can do to train students to make more appropriate attributions. Secondly, schools need to ask why males are more academically alienated than females and why this is particularly so in Years 6 to 11. On this latter issue, there may be broader sociological agendas to be taken into consideration.

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Table 1

Reliability Estimates (Coefficient Alphas) of the Motivation Scales

Success Attributions¹

Effort Male 16.883.2215.583.5514.832.9715.163.2913.863.0015.88 2.58
Female 17.062.4917.582.0115.582.6915.272.3016.912.1715.613.12

Strategy Male 13.763.6811.842.8112.283.1412.432.8312.232.9814.19
2.23
Female 13.123.2612.252.3512.362.8912.141.8113.521.7813.702.46

Ability Male 13.603.3812.032.5311.482.5611.862.4011.272.6812.25 2.11
Female 13.592.9612.331.9811.562.3511.842.4613.052.0411.462.08

Luck Male 9.603.0810.183.4810.003.229.162.5310.272.907.88 2.06
Female 11.293.228.983.148.811.589.162.408.482.508.612.70

Failure Attributions¹

Effort Male 10.863.0711.033.6210.693.8012.303.4611.093.3313.13 4.03
Female 8.653.418.934.1310.383.809.583.1310.233.2911.753.64

Strategy Male 10.763.4810.812.9410.592.0310.362.1311.612.6810.69
2.27
Female 10.292.919.522.6210.312.319.471.979.572.0610.542.57

Ability Male 9.243.618.462.989.072.658.052.679.963.896.94 1.91
Female 8.062.568.332.748.172.708.022.436.672.087.642.13

Luck Male 9.902.309.303.298.382.327.642.418.703.156.501.37
Female 9.712.809.143.168.512.667.422.137.332.337.682.23

Approaches to Learning²

Surface Male 20.204.3922.174.1638.696.2036.155.7139.106.2447.40
7.65
Female 20.402.9321.673.3337.975.7237.00 6.2835.367.1345.455.12

Achieving Male 22.803.8822.463.7137.417.7135.638.8734.765.1341.93
7.41
Female 19.505.4121.484.4138.007.8936.837.8542.097.3040.938.94

Deep Male 23.643.4520.864.1436.726.0632.936.9736.955.5342.07 9.11
Female 22.704.0421.604.5934.975.6235.197.1638.918.3639.858.22

Goal Orientations³

Mastery Male 27.213.5925.085.0423.943.8723.923.2625.293.5424.31
4.05

Female 27.483.1127.263.7224.504.1225.853.2627.143.2326.294.68

Performance Male 23.146.2724.575.7923.425.8324.084.4224.865.1622.50
5.15

Female 20.385.7022.575.9623.675.5723.935.0925.764.7122.754.43

Academic

Alienation Male 15.896.0020.196.0717.104.2118.924.7319.005.3115.50
3.61

Female 14.523.8414.984.1418.634.6916.224.2514.713.4415.794.01

Note: 1 Maximum score = 20

2 Maximum score = 30 for Years 4 - 6, 60 for Years 7 - 11, 70
for TAFE

3 Maximum score = 32

Table 3

Percentage of Total and Additional Achievement Variance Explained by Each
Set of
Motivation Variables

	Total Contribution			Unique Contribution	
	Primary	Secondary	TAFE	Primary	Secondary
TAFE					

N14220446

Success attributions 5.715.7**26.9**1.54.8**14.2*

Failure attributions 13.7** 21.3** 19.09.8** 9.8** 2.3

Goal orientations 7.7* 4.6* 5.55.6* 2.84.9

Approaches to learning 2.65.4* 31.0** 2.42.812.7*

Total variance explained
by all 4 sets of
variables 22.831.754.8

* $p < .05$

** $P < .01$