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A Path Model for Adult Learner Feedback

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ABSTRACT *A path model of adult learner feedback that combined aspects of students' conceptions of learning and motivation was developed. Students that were high on achievement motivation and in their belief of their own competence or competency expectations showed high graded performance. Students that were high on competency expectations and on mastery goals were also high on intrinsic motivation. Significant gender differences were not found on any of the variables used in this study, and adult learners' assessment of their own ability to do well agreed with their actual performance. Suggestions are made for further study that could elaborate on the proposed path model.*

Introduction

In a recent study of achievement motivation, Elliot & Church (1997) fit a hierarchical model of approach and avoidance achievement motivation using feedback from undergraduates on their motive dispositions, competence expectancies and achievement outcomes. This hierarchical model posits that the effects of motive dispositions and competence expectancies on achievement outcomes are mediated by one's achievement goals. To fit their model, Elliot and Church used achievement motivation and fear of failure as measures of motive dispositions, competency expectations as a measure of competence expectancies, and intrinsic motivation and graded performance as measures of achievement outcomes. The purpose of this study was to fit a somewhat modified version of this hierarchical model that seemed more appropriate for adult learners.

Adult learners present educators with unique challenges. Not only are they older than their typical undergraduate counterparts, but also they are more mature in terms of their life and professional work experiences.

Obviously, programmes of study for adult learners need to be flexible in terms of time commitments and evaluation criteria. These programmes also must be practical in terms of furthering adult learners' career goals. For example, MacKinnon-Staney (1994) found that adult learners were self-directed and pragmatic about their learning

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that for them learning was of significance if it was valued, and expanded their skills and abilities. Sutherland (1995) felt that job and family commitments forced adult learners to be more pragmatic in their approach to learning. Stoney & Oliver (1998) noted that adult learners demanded more self-paced resource-based learning.

In contrast to adult learners' practical orientation towards achieving their learning objectives, Livingston & Gentile (1996) found that using Bloom's (1971) learning for mastery (LFM) approach with adult learners was effective in teaching cognitive objects, with students favouring this approach, and in developing a positive attitude towards mastery learning. Schraw & Nietfeld (1998) found that adult learners possessed general self-monitoring skills that were independent of any domain specific knowledge suggesting that adult learners should be skilled learners. Reiman (1999) suggested that adult learners could show substantial learning by creating disequilibrium in learning situations that would gradually move them from familiar knowledge to new knowledge, along the lines of Vygotsky's (1978) zone of proximal development.

Thus, adult learners present a clear dichotomy of learning needs—the practical and the mastery. However, any attempt to model approach and avoidance achievement motivation in adult learners given this dichotomy of learning needs and motive dispositions needs to take into account what adult learners think about the learning process itself. That is, adult learners' conceptions of learning should be taken into account. The work of Marton *et al.* (1993) seem particularly relevant here. They identified six conceptions students have of learning:

- increasing one's knowledge;
- memorising and reproducing;
- applying;
- understanding;
- seeing something in a different way;
- changing as a person (p. 283).

In this study, a modified version of Elliot & Church's (1997) hierarchical model was fit that combined aspects of students' conceptions of learning in a mastery goals measure and related it to achievement motivation, perceived competence, intrinsic motivation and graded performance. Also Elliot and Church's achievement goal variables—performance-approach goal and performance-avoidance goal—were not included in the model because the goals of outperforming peers and fear of failure were not seen to be particularly relevant to the adult learners. This is because adult learners tend to be a highly select group of professionals, the majority of whom already have degree qualifications. They are concerned primarily with obtaining further degree qualifications, usually at a graduate level, and in maintaining a positive self-image, especially with respect to peers and colleagues. So, for example, fear of embarrassment resulting form doing poorly would seem to be a more relevant performance-avoidance goal for adult learners than, say, fear of failure.

Methods

Participants

A total of 78 (28 males, 40 females, and 10 unspecified gender) adult learners in the BEd (13) and MEd (65) part-time degree programmes at the University of Hong Kong provided feedback. Their age range was from 25 to over 40, with 60.3% (47) falling

between the ages of 31 and 40. All participants were experienced teachers, with 87.2% (68) having over 5 years of teaching experience.

Procedure

All participants were registered in a module on educational research in the first term of the 1999–2000 academic year. Assessment was based on a written research proposal. Proposal length varied from 10 to over 20 pages. Extensive written feedback was provided to the students on their assignments, which were handed back to them in the second term during the standard 1 hour module feedback session.

After students had gone over their work and asked questions on the feedback provided to them, they in turn were asked to provide feedback about their assignment. Since all participants were adult students coming to the university after a hard day's work and since they had other module feedback sessions to attend, it was necessary to keep the student feedback questionnaire short. Consequently, a brief 18-item questionnaire was constructed to assess how confident they were in doing well, what grade they expected, what their achievement motivation was, what their mastery goals were and what intrinsic motivation they showed. It took students about 5 minutes to fill in this questionnaire.

Measures

Participants used a 5-point Likert scale from *strongly disagree* (1) to *strongly agree* (5) to respond to 16 of the 18 items. The last two items asked participants to indicate their expected and actual letter grade. Table I lists items 1 to 17.

Since the concepts measured in this questionnaire were similar in many ways to those measured by Elliot & Church (1997), the same or similar names for these measures were used here to facilitate comparisons with that work.

Mastery Goal. Six items (8, 11, 13, 14, 15, 16) based on the 'conceptions of students' learning' identified by Marton *et al.* (1993) assessed participants' mastery goals. The focus of these items was mainly on educational research and asked about increasing one's knowledge, applying what one had learned, deepening of one's understanding, broadening one's outlook and stimulating one's interest. The mean of participants' responses to these six items was used as a mastery goal variable (Cronbach's alpha = 0.86).

Competence Perception and Expectancy. Three items (1, 6, 17) were used to assess participants' confidence in their ability to do well on the assignment. One item asked them to indicate what grade they expected to receive (F = 1, D = 2, C = 3, B = 4, A = 5). The mean of their three-item score served as a measure of their overall confidence to do well (Cronbach's alpha = 0.74).

Intrinsic Motivation. Four items (2, 4, 5, 10) about assignment enjoyment and interest tapped participants' intrinsic motivation. The mean of this four-item score served as a measure of intrinsic motivation (Cronbach's alpha = 0.77).

Achievement Motivation. One item (7), 'I always do my best on an assignment even if I am not that interested in it', served as a measure of achievement motivation.

TABLE I. Varimax rotated principal component solution of questionnaire items showing item component correlations

Items	Component			
	1	2	3	4
1. I had complete confidence in my ability to do well on this assignment		0.71		
2. I enjoyed the time I spent on this assignment.			0.63	
3. Doing poorly on this assignment would be a real embarrassment to me.				0.60
4. This assignment gave me a real chance to do something I was interested in.			0.69	
5. Doing this assignment was a real waste of my time. (R)			0.71	
6. I was determined to get a good grade on this assignment.		0.74		
7. I always do my best on an assignment even if I am not that interested in it.				0.71
8. I learned a lot by doing this assignment.	0.72			
9. I was really worried about this assignment. (R)		0.57		
10. Doing this assignment was a really boring exercise. (R)			0.71	
11. Doing this assignment increased my knowledge of educational research.	0.77			
12. Doing this assignment meant following a standard procedure for writing an educational research proposal.				0.57
13. Doing this assignment has allowed me to apply what I have learned about educational research.	0.65			
14. Doing this assignment has deepened my understanding of the educational research process.	0.82			
15. Doing this assignment has broadened my outlook on educational research.	0.77			
16. Doing this assignment has stimulated my interest in educational research.	0.65			
17. The grade I expected to receive for my assignment was.		0.66		

Notes: $n = 78$. Items with loading of less than 0.50 have been blanked. (R) = reverse coded item. Item 18, participant's grade, was excluded from the component analysis.

Fear of Embarrassment. Since the final module grade was based on the assignment and since participants were experienced teachers, it was felt that fear of embarrassment of doing poorly on their assignment was of greater concern to them than fear of failure, which was a rather remote possibility. Thus, one item (3), 'Doing poorly on this assignment would be a real embarrassment to me' was used to measure fear of embarrassment.

Graded Performance. Assignment letter grade, item 18, served as the final module grade. A five-point scale was used to assign letter grades (F = 1, D = 2, C = 3, B = 4, A = 5).

Results

Descriptive Analysis

Data Reduction. Although the data set was too small for a conventional factor analysis to be reliable, data reduction with principal component analysis, however, was appropriate (Jolliffe, 1986) and, therefore, was used to see if the logically constructed item groups had empirical validity. A scree plot suggested that four principal components be retained. Table I displays the varimax rotated principal component solution, which accounted for a little over 60% of the variance in the data. Only item component correlations greater than 0.5 are shown, as it was felt that these would be the most robust in any subsequent studies. Clearly, Component 1 corresponds to mastery goals. Component 2 to confidence or competency perceptions and expectations, and Component 3 to interest or intrinsic motivation. Component 4 presented some problems in interpretation at first since these items were not considered to fit together logically. An item analysis of item 3, 7 and 12 (see following) confirmed that they did not fit together. Therefore, it was decided to use item 3 to assess fear of embarrassment and item 7 to assess motivation to achieve, while item 12, which had little relationship with the other items, was dropped from any further analysis.

Item Analysis. An item analysis of the items defining Components 1–3 showed that all six items of the mastery goal scale (Component 1) had high corrected item-total correlations (greater than 0.5) as did the four items of the interest or intrinsic motivation scale (Component 3). However, item 9 of the confidence or competency scale (Component 2) had a corrected item total correlation of just over 0.3 and was subsequently dropped. This increased the internal consistency reliability of the competency scale by about 9% from 0.68 to 0.74.

Expected Grade Versus Performance Grade

The correlation between expected grade and graded performance was 0.47 ($p < 0.001$). A paired *t*-test on the 78 difference scores between expected grade and performance grade was not significant ($p = 0.64$). Thus, student expectations matched their actual performance well.

Gender Differences

Table II shows that the mean scores for all six measures were similar in the total sample, and also in the male and female subsamples. Since most of these measures

TABLE II. Descriptive statistics for all variables by total sample and by gender

	Total n = 78		Males n = 28		Females n = 40	
Variable	M	SD	M	SD	M	SD
1. Achievement motivation	3.7	0.95	3.6	1.00	3.8	0.87
2. Competency perceptions	3.6	0.71	3.6	0.70	3.6	0.70
3. Fear of embarrassment	3.8	0.96	3.6	0.97	3.8	0.94
4. Mastery goal	4.0	0.48	4.0	0.52	4.0	0.44
5. Intrinsic motivation	3.9	0.64	3.9	0.55	3.8	0.70
6. Graded performance	3.8	0.80	3.8	0.76	3.5	0.84

Note: *N* for males and females do not add up to the total because some participants failed to indicate their gender.

showed significant intercorrelations, Hotelling's T^2 was used to test the mean differences between gender on all these measures at once. No significant differences were observed, $F(6,61) = 0.41$, $p = 0.867$. Therefore, subsequent analyses were based on the entire sample.

Regression Analyses

Correlations among the variables (Table III) ranged from a low of 0.08 to a high of 0.55. Achievement motivation was significantly correlated with graded performance ($r = 0.47$, $p < 0.001$) as was competency expectations ($r = 0.48$, $p < 0.001$). Elliot & Church (1997) also reported significant positive relationships between achievement and graded performance, and between competency expectations and graded performance. Achievement motivation was significantly correlated with all variables except intrinsic motivation, while competency expectations showed strong positive correlations with all variables. Fear of embarrassment and mastery goal were significantly correlated with all variables except graded performance.

A regression analysis of achievement motivation, competency expectations, fear of embarrassment, and mastery goals on graded performance using the backward elimination method in SPSS resulted in a regression model that retained achievement motivation and competency expectations as statistically significant predictors of performance, $F(2,75) = 18.00$, $p < 0.001$, $R^2 = 0.32$.

Similarly, a regression analysis of achievement motivation, competency expectations, fear of embarrassment, and mastery goals on intrinsic motivation using the same

TABLE III. Zero-order correlations among learner variables

Measure	1	2	3	4	5
1. Achievement motivation	—				
2. Competency perceptions	0.35**	—			
3. Fear of embarrassment	0.24*	0.36**	—		
4. Mastery goal	0.22*	0.43***	0.36**	—	
5. Intrinsic motivation	0.08	0.50***	0.29*	0.55***	—
6. Graded performance	0.47***	0.48***	0.10	0.18	0.24*

Note: $n = 78$. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

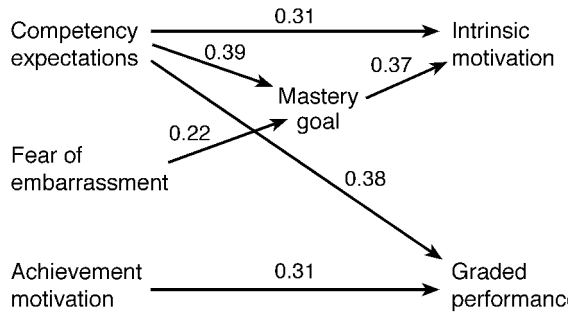

FIG. 1. A path model for adult-learner feedback. Path coefficients are standardized regression coefficients. Only significant path coefficients are shown ($P < 0.05$).

backward elimination method resulted in a regression model that retained competency expectations and mastery goals as statistically significant predictors of intrinsic motivation, $F(2,75) = 18.98$, $p < 0.001$, $R^2 = 0.34$.

A third regression analysis of achievement motivation, competency expectations, and fear of embarrassment using backward elimination resulted in a regression model that retained competency expectations and fear of embarrassment as statistically significant predictors of mastery goals, $F(2,75) = 12.54$, $p < 0.001$, $R^2 = 0.25$.

Path Model

The previous three regression analyses suggested the path model in Fig. 1. Competency expectation, fear of embarrassment and achievement motivation were exogenous variables, while mastery goal, intrinsic motivation and graded performance were endogenous variables. Table III gives the intercorrelations between the three exogenous variables. Achievement motivation had a positive direct effect only on graded performance. Fear of embarrassment had a positive direct effect only on mastery goal and a positive indirect effect on intrinsic motivation mediated by mastery goal. Competency expectations had positive direct effects on both graded performance and intrinsic motivation, and it had a positive indirect effect on intrinsic motivation through mastery goal. Mastery goal had a positive direct effect on intrinsic motivation but no direct effect on graded performance.

Thus, individuals high on competency expectations and achievement motivation were high on graded performance. Those high on competency expectations and fear of embarrassment were high on mastery goal. Those high on competency expectations and mastery goal were high on intrinsic motivation.

Discussion

Although the path model presented here bears some similarity to Elliot & Church's (1997) model of approach and avoidance achievement motivation, there are important differences. In their model, the effects of motive dispositions (achievement motivation and fear of failure) and competency expectancies on achievement related outcomes (intrinsic motivation and graded performance) are mediated through achievement goals (mastery goal, performance-approach goal and performance-avoidance goal). In our model, fear of failure was replaced with fear of embarrassment to better reflect the

reality of the adult learners used in this study. Similarly, the achievement goal variables—performance-approach goal and performance-avoidance goal—were not included because the goals of outperforming peers and fear of failure were not seen as particularly relevant to the adult learners in this study.

The adult learners in this study were a highly select group of professional teachers the majority of whom were pursuing a MEd degree. Their goals were to learn the basics of the educational research process and to learn which research methods would be the most appropriate to use in their own research and for completing the module assignment.

Thus, the path model presented here seems appropriate for describing the interrelationships among these six variables in these adult learners. Further research on adult learner feedback using larger sample sizes might wish to include the mediating variables of performance-approach goal and performance-avoidance goal of Elliot & Church (1997) but to define these variables so that they reflect the reality of the adult learner. To that end, adult learning styles or approaches to learning could be measured using modified versions of the revised 'Approaches to Study' inventory of Entwistle & Tait (1990) or Biggs' (1992) 'Study Process' questionnaire that are more suitable for adult learners in terms of both item content and wording.

Some research on adult approaches to learning using Entwistle's 'Approaches to Studying' inventory (Entwistle *et al.*, 1979) has been done by Sutherland (1995), who found that adult learners were strategic in their learning approach and had a low interest in informal learning. However, more research is needed here.

Subsequent studies also might consider expanding on the intrinsic motivation variable used here by placing greater emphasis on adult learner feedback in terms of learning enjoyment. Ferris & Gerber (1996) have done qualitative work on mature students' enjoyment of the learning experience and have identified seven dimensions of attributes associated with this concept. Items could be developed to measure these attributes, which then could be included in a revised path model.

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