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# The Role of Self-Efficacy, Control Beliefs and Achievement Goals on Learning Among Distance Learners

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## 1. Introduction

Distance learners' motivation is inherently significant to distance learning. From the early days of distance education through correspondence courses to today's online delivery using internet technologies, distance educators often assume that distance learners will study learning materials, complete carefully designed activities, attend optional tutorials, seek help, and work on assessment items within a distance learning course. This assumption is valid when distance learners are motivated and self-regulatory. Nevertheless, the high dropout rate and low completion rate commonly found in different distance learning courses and programs warn us against making unrealistic expectation on distance learners (Rovai, 2003). A lack of motivation has often been taken as the main reason for early dropout among distance learners. Certainly, there is a need to understand what motivates learners to engage in distance learning and how to build on these motivational characteristics to develop an engaging learning environment for distance learners (Hurd, 2006).

Distance educators and researchers have already recognised the importance of motivation in distance learning (e.g. Morgan, Taylor & Gibbs, 1982). Several empirical studies (e.g. Dearnley & Matthew, 2000; Lyall & McNamara, 2000; Richardson, 2007; Sankaran & Bui, 2001) have confirmed the critical role of motivation for distance learners who often need to juggle various work and family commitments simultaneously while completing their studies. In a recent discussion, Simpson (2008) argued that it is important to incorporate motivation as an essential component for the provision of learner support within a distance learning system. Nevertheless, the study of motivational and learning processes has focused mainly on on-campus students. Until recently few studies have explored the complex relationships between motivation and learning among distance learners. The current study focused on understanding distance learners' goals and their relationship with strategy use and learning attitudes using an achievement goal framework. The research on distance learners' motivation using this dominant framework is at its beginning stage; few studies are available (e.g. Eppler & Harju, 1997; Ng, 2006 & 2008). Using a sample of Chinese distance learners, the current study contributed significantly to our understanding of distance learners' motivation from this important theoretical perspective.

## 2. Theoretical framework: Achievement goal theory

Achievement goal theory provides the theoretical framework guiding the design of the current study. Achievement goals are students' perceived cognitive purposes that define *why* and *how* students engage in learning. Different goals are associated with a different pattern of cognition, affect and behaviour (cf. Dweck, 1986; Kaplan & Maehr, 2007). Early studies on achievement goals focused on contrasting the effects of two *single* categories of achievement goals, mastery versus performance goals. Mastery goals orient students to learn for the sake of improvement and comprehension; whereas performance goals orient students to focus on achievement and relative ability. Previous studies consistently showed that mastery goals were always associated with adaptive learning outcomes such as higher levels of efficacy belief, persistence, effort expenditure, task value and frequent use of cognitive and regulatory strategies, and expectedly better achievement. In contrast, performance goals were less adaptive and tended to link with lower achievement levels (e.g. Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Greene & Miller, 1996; Meece, Blumenfeld & Hoyle, 1988; Nolen, 1988; Pintrich, 1989; Pintrich & De Groot, 1990; Pintrich & Garcia, 1991).

However, the effects of performance goals on learning and achievement are open to debate and research evidence is far from conclusive. Achievement goal researchers like Elliot and Harackiewicz (Elliot, 1997; Harackiewicz, Barron & Elliot, 1998) argued that the detrimental effects of performance goals should be confined to those focusing students on avoiding performance, such as avoiding revealing one's lack of ability. In contrast, performance goals with an approach orientation, such as getting a good result, should have positive effects on learning and motivation. The debate on the nature of performance goals has therefore led to the separation of performance goals into finer categories—performance-approach and performance avoidance goals. Subsequent empirical evidence (Elliot & Harackiewicz, 1996; Skaalvik, 1997) showed that negative effects of performance goals were confined to those with an avoidance orientation whilst positive effects were found among performance goals with an approaching orientation. Therefore adopting multiple goals, that is holding both performance-approach goals simultaneously with mastery goals will have enhancing effects on learning and achievement.

More recently, other goals researchers have proposed an extended multiple goal perspective and showed that students learn with goals in addition to those focusing on mastery and performance concerns. For example, Valle, Cabanach, Núñez, González-Pienda, Rodríguez, and Piñeiro (2003) found a group of multiple-goal Spanish undergraduates, endorsing mastery, performance and social reinforcement goals simultaneously, alongside with two groups of single-goal students, orienting towards performance and mastery respectively. This group of multiple-goal students used more deep strategies than did performance-oriented students and had a better achievement than did both mastery- and performance-oriented groups. The study of Suárez Riveiro, Cabanach & Valle (2001) provided another example in which they examined four goals, namely, task, self-enhancing, self-defeating and work avoidance goals. Suárez Riveiro and her colleagues found three groups of multiple-goal Spanish-speaking students, which differed in the use of cognitive, self-regulatory and motivational strategies. The current study aligned with these previous studies and examined distance learners' diverse goals for learning. It is believed that distance learners hold goals focusing not just on mastery and performance.

Another major development related to the debate on the nature of performance goals is the notion of mediation. Dweck in its initial formulation of achievement goals suggested that the effect of achievement goals may be mediated by students' self-efficacy level. Dweck (1986) hypothesised that performance goals link with a maladaptive learning pattern when self-efficacy is low. However, when self-efficacy is high, performance goals are more likely to link with a more adaptive pattern of learning. Dweck assumed that self-efficacy will not mediate the effects of mastery goals. Based on an experimental study, Elliot and Dweck (1988) found empirical support for Dweck's mediator hypotheses. However, subsequent studies (e.g. Harackiewicz *et al.*, 2000; Kaplan & Midgley, 1997; Miller, Behrens, Greene & Newman, 1993) failed to confirm the mediating role of self-efficacy on the effects of performance goals. Contrary to Dweck's prediction (1986), interaction effects between self-efficacy and mastery goals were found (e.g. Kaplan & Midgley, 1997). More recently, Braten, Samuelstuen and Stromo (2004) added to this line of research and explored the role of self-efficacy in mediating the effects of avoidance forms of performance goals on self-regulation. Self-efficacy is by far the most important variable mediating the effects of performance and other achievement goals. Other mediators such as task difficulties (Grant & Dweck, 2003) and level of uncertainty (Darnon *et al.*, 2007) have been examined. In the current study, the main concern was whether distance learners' efficacy beliefs will moderate the effects of goals on learning. In addition, the present study extended the current research on achievement goals and examined the role of another important mediator, control beliefs, on the effects of goals on learning.

## 2.1 The current study

To frame distance learning from an achievement goal perspective, distance learners' motivation is accordingly defined as cognitive purposes for learning and achievement. Few studies (e.g. Eppler & Harju, 1997; Ng, 2006 & 2008) in distance learning have utilized the achievement goal framework to researching distance learners and their learning processes. Ng (2008) used an extended multiple goal perspective and classified distance learners into different types of goal users. One of the most important contributions in this previous study is that distance learners have goals other than mastery and performance considerations. The extant literature on distance education shows that distance learners often learn with goals focusing on personal development, career advancement and different social considerations (e.g. Cochrane, 2000; Dearnley & Matthew, 2000; Cannon, Umble, Steckler & Shay, 2001; Lyall & McNamara, 2000; Miller & Smith, 1998; von Prummer, 1990; Wilson & Bagley, 1999).

According to the studies of Harackiewicz and her colleagues (e.g. Barron & Harackiewicz, 2001; Harackiewicz, Barron, Tauer, Carter & Elliot, 2000), different type of goals will have independent effects on learning. Different goals can provide different forms of motivational supports that help distance learners maintain their focuses or cope with the demands of learning in the midst of diverse life circumstances. For example, personal development goals orient distance learners to learn for the sake of developing confidence, opening up horizons and furthering one's development (cf. Dearnley & Matthew, 2000). Distance learners holding these goals will hold positive attitudes towards learning and be willing to expend effort and use adaptive strategies. Work-related goals focus distance learners on how their learning promotes career advancement and the development of work-related knowledge (Dearnley & Matthew, 2000; Lyall & McNamara, 2000). These goals heighten distance

learners' concerns with the products of learning in relation to important career considerations. As such, these goals drive distance learners to focus on the utility value of learning and therefore can be treated as extrinsic to the learning process. These goals will probably be associated with a less engaged pattern of learning characterized by effort retreat, the use of less adaptive strategies and the development of a less favourable attitude towards learning. Also, this study included social enhancement goals, which focus learners on enhancing their social status through distance learning. This social consideration is culturally significant for Chinese distance learners because bringing glory to one's family is an important cultural reason for learning in Chinese societies (Salili, 1997). These culturally significant social goals should provide learners with additional motivation. Because these social concerns focus more on the product of learning—enhancing social status, it is assumed that they will be associated with positive learning attitudes. However, their positive effects on learning and regulatory strategies will be limited.

In addition to examining the effects of these goals on learning, the second aim of this study is to examine the moderation role of efficacy and control beliefs on the effects of goals on learning and attitudes. Previous studies on achievement goals have focused exclusively on moderation effects of self-efficacy on performance-approach goals. Seldom other goals have been taken into consideration. This present study adds to this stream of research by examining the moderation role of efficacy beliefs on distance learners' mastery goals, work-related goals and social enhancement goals. Given the significant result in Kaplan and Midgley (1997), this present study assumed that efficacy beliefs will enhance the positive effects of mastery goals on strategy use and learning attitudes. In other words, a strong efficacy belief will boost the positive effect of mastery goals on effective use of adaptive strategies and development of a positive learning attitude. Previous studies have not considered mediation effect of efficacy beliefs on work related goals and social enhancement goals on learning. Work-related goals and social enhancement goals in this study were conceptualised as less adaptive goals and will direct learners to focus away from the learning process onto the product, therefore it was assumed that a strong sense of efficacy beliefs will dampen the negative impact of these goals on strategy use and learning attitudes. Finally, following Dweck's theorisation (1986), this study assumed that distance learners' performance-approach goals will be associated with adaptive strategies and attitudes when their efficacy beliefs are strong

Another important contribution of the present study was examining the mediation effects of control beliefs. Given that distance learners are expected to learn independently, it is essential for them to have strong control beliefs and consider that they are in control of their learning. Roblyer (2000) found that students who selected to take distance education considered control over learning pace an important factor. This present study assumed that distance learners' control beliefs will act as an important mediator. In particular, the hypothesised mediation effects of efficacy beliefs on goals discussed above were also held for control beliefs. In other words, a strong sense of control beliefs will enhance the positive effects of performance-approach goals and mastery goals on learning. When less adaptive goals like work-related goals are in question, a strong sense of control beliefs will dampen their negative effects on strategy use and learning attitudes. These hypothetical relationships are consistent with the study of Darnon et al. (2007) in which experimental results indicated that the effects of performance-approach goals were mediated by the level



of uncertainty manipulated through negative feedback on abilities and conflicting judgement offered by a disagreeing peer.

In short, this present study was among the few studies that have applied achievement goal theory to researching motivation in distance learning. It adds to the literature of distance learning in two important ways. First, this study explored goals in addition to those focusing on mastery and performance concerns. Second, it examined the interaction between motivational beliefs and goals on learning and attitudes. Currently, there is no published research that has investigated the complex interaction between motivational beliefs and goals among distance learners.

Two important research questions in this study were:

1. What are the relative importance of efficacy beliefs, control beliefs and various forms of achievement goals on learning?
2. To what extent the effects of achievement goals are moderated by efficacy beliefs and control beliefs?

### 3. Method

This study used a mailed survey method to collect distance learners' responses to a questionnaire examining their motivational beliefs, goals, strategies and attitudes towards learning of an educational psychology course.

#### 3.1 Participants

550 distance learners enrolled in an educational psychology course offered by a distance learning university in Hong Kong were asked to complete a questionnaire. This educational psychology course focused learners on understanding child development and learning. Distance learners were expected to study a set of self-instructed learning units and assigned readings covering important topics related to child development and learning. In terms of assessment, learners were required to complete four written essays and sit for an end-of-year examination. This course provided learners with optional bi-weekly tutorials held in different learning centres. Each tutorial group consisted of 25 learners and a tutor. The main focus of the tutorial was to provide learners with a chance to interact with other learners and discuss important issues covered in course materials, readings and assignments.

Together with an invitation letter, the questionnaire was mailed to the distance learners two months after the course started. Distance learners were required to send back the completed questionnaire using a stamped envelope provided within two weeks. 334 learners (60.73%) responded and sent back the completed questionnaires.

Distance learners in this sample were comprised of 274 (82%) female and 46 (13.8%) male learners. 14 (4.2%) learners did not give any information about their gender. Concerning age, 4 learners (1.2%) were below 20, 139 learners (41.6%) in 21-30 age band, 103 (30.8%) in 31-40 age band, 72 (21.6%) in 41-50 age band, 4 (1.2%) in 51-60 age band, and finally 1 (0.3%) learner was in the age band of 61 or over. 11 (3.3%) learners did not give any information about their age. The age spans were regrouped into three categories: young adults (30 or below), mature adults (30-40), and older adults (41 and above). A set of ANOVA analyses

showed that distance learners in these three age groups differed with each other in mastery-development goals ( $F_{(2, 318)}=6.97$ ;  $p<.001$ ), performance-approach goals ( $F_{(2, 320)}=5.30$ ;  $p<.005$ ), and social enhancement goals ( $F_{(2, 316)}=3.01$ ;  $p<.05$ ). The age factor was therefore controlled for in the regression analyses.

### 3.2 Measure

This section explains the measures used to assess different major constructs in this study. A questionnaire was designed to assess distance learners' motivational beliefs, goals, strategies and learning attitudes. Sample items for each constructs were included in the Appendix. Participants responded to each item on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Cronbach's alpha values of these constructs ranged between .65 and .83.

#### 3.2.1 Goals

This study assessed three achievement goals: mastery goals, performance-approach goals and performance-avoidance goals. These items were adapted from previous achievement goal research (Ames & Archer, 1988; Bouffard, Boisvert, Vezeau, & Larouche, 1995; Meece et al., 1988; Young, 1997). In addition, three important goals for distance learners were included in the survey: personal development goals, work-related goals and social enhancement goals. Items that assessed these three goals were taken from Ng (2008). A factor analysis using varimax rotation method was conducted to evaluate the underlying structure of these goals. The result produced 4 distinctive factors with eigenvalues of ranged between 1.32 and 4.39. In total, these four factors accounted for 53.85% of total variance. Factor 1 included a combination of items focusing on developing knowledge and promoting personal development. This factor was labelled as mastery-development goals. Factor 2 contained items solely on achieving a high level of performance and was therefore labelled as performance-approach goals. Factor three included mainly items assessing distance learners' concern for career advancement and attaining higher qualification. This factor was labelled as extrinsic work goals. The final factor contained items assessing the intention to meet parental expectation and social norms for high achievement. This factor was therefore labelled as social enhancement goals. Items with loading less than .40 were not included in forming these factors.

#### 3.2.2 Learning strategies

Learning strategies in this study included deep and surface strategies. Eight items assessing these contrasting strategies were taken from Biggs' SPQ (1987). Deep strategies focused distance learners on spending time and effort to ensure deep understanding and comprehension. Surface strategies draw distance learners away from learning engagement by expending minimal effort and time on learning.

#### 3.2.3 Regulatory strategies

Eight items were adapted from Pintrich's MSLQ (1993) to assess learners' use of self-monitoring strategies. In addition, this study included several important self-regulatory strategies: time management, effort management, and help-seeking strategies. Each strategy was formed by using corresponding items in Pintrich's MSLQ (1993).

3.2.4 Attitude

Attitudes involved items assessing learners’ interest, enjoyment and perceived values of the of doing the course they enrolled. 8 items were taken from Ng (2008).

3.2.5 Motivational beliefs

Motivational beliefs included learners’ efficacy and control beliefs. Efficacy beliefs assessed learners’ perceived confidence in completing the distance learning course they enrolled. Control beliefs assessed learners’ belief of their own abilities in pacing their studies and learning different concepts using appropriate strategies. Items assessing these motivational beliefs were taken from Pintrich’s MSLQ (1993).

4. Results

Table 1 shows the means and standard deviations for all the variables in this study. Table 2 shows the correlation findings among these variables. Mastery-development goals were positively associated with deep and all forms of self-regulatory strategies. They were also associated positively with learning attitudes, efficacy and control beliefs. As expected, these goals were negatively related to surface strategies. Extrinsic work-related goals were associated with the use of deep and effort management strategies. Also, these goals were

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Mastery-development goals	3.83	.51	--											
2. Extrinsic work goals	3.82	.76	.18*	--										
3. Performance-approach goals	3.32	.78	.11*	.22**	--									
4. Social enhancement goals	3.14	.63	.45**	.21**	.29**	--								
5. Deep strategies	3.19	.53	.45**	.13*	.19**	.17**	--							
6. Surface strategies	2.95	.70	-.19**	n.s.	n.s.	n.s.	-.28**	--						
7. Self-monitoring strategies	3.15	.48	.32**	n.s.	.24*	.17**	.63**	-.24**	--					
8. Time management	2.89	.76	.19**	n.s.	.19**	n.s.	.37**	-.16**	.47**	--				
9. Effort management	3.56	.62	.24**	.12*	.16**	n.s.	.38**	-.15**	.43**	.37**	--			
10. Help seeking	3.14	.72	.15**	n.s.	.13**	n.s.	.39**	-.21**	.38**	.27**	.28**	--		
11. Attitudes	3.57	.56	.65**	.21*	n.s.	.24**	.60**	-.28*	.41**	.21**	.29**	.21**	--	
12. Efficacy beliefs	3.07	.55	.32**	.16**	.33**	.19**	.42**	-.20**	.44**	.28**	.30**	.28**	.39**	--
13. Control beliefs	3.74	.54	.36**	.20**	.13**	.13**	.42**	-.17**	.33**	.19**	.32**	.30**	.49**	.51**

Note 1: \*  $p<.05$ ; \*\* $p<.01$

Table 1. Descriptive statistics, reliability scores and correlation analyses.



positively related to learning attitudes, efficacy and control beliefs. Performance approach goals were associated with the use of adaptive strategies including deep, self-monitoring, time management, effort management and help-seeking strategies. Despite that these performance considerations were correlated positively with efficacy and control beliefs, they were not associated with learning attitudes. Finally, the correlation analyses showed that social enhancement goals were associated with self-monitoring strategies only. These goals were positively related to learning attitudes, efficacy and control beliefs. Taken together these analyses showed that there was a close relationship between goals, the use of strategies, learning attitudes and motivational beliefs. Mastery-development goals had the strongest correlation with adaptive learning strategies, regulatory strategies and learning attitudes.

Prior research on achievement goals (e.g. Miller *et al.*, 1993; Kaplan & Midgley, 1997) showed that students' self-efficacy is an important predictor in the use of learning strategies and will moderate the effects of achievement goals on learning. In this study, both efficacy and control beliefs were assumed to moderate the effects of various goals on strategies and attitudes. Both efficacy and control beliefs were included in the regression models to assess their relative predictive ability as compared to different types of goals. Two sets of hierarchically ordered regressions were conducted: 1. *Regressing efficacy beliefs, mastery development goals, extrinsic work goals, performance-approach goals and social enhancement goals on learning strategies, self-regulatory strategies and learning attitudes*; 2. *Regressing control beliefs, mastery-development goals, extrinsic work goals, performance-approach goals and social enhancement goals on learning strategies, self-regulatory strategies and learning attitudes*. To control for the effects of age difference, two dummy-coded age variables were entered in the first step, followed by efficacy or control beliefs in step two, the four goals in step three, and the interaction terms were entered in the final step. Following Aiken and West (1991), all the predictor variables were centred and the interaction terms were constructed using these centred variables. Dependent variables were kept in their original metric. The centring procedure reduces multicollinearity among first order variables and the interaction terms. Table 2 shows the standardised coefficients in the regression equations. The predictors including dummy-coded age groups, efficacy or control beliefs, the four goals and goal x belief interaction explained a significant amount of variance (as indicated in  $R^2$ ) in the use of learning strategies, self-regulatory strategies, and learning attitudes.

This study expected to find significant interaction terms between efficacy beliefs and the four goals on the use of learning strategies, self-regulatory strategies, and learning attitudes. Contrary to our prediction, the current results did not provide any support to these hypothesised interactions. Regression analyses did not locate any significant interactions.

Table 3 shows the result when control beliefs was taken as a mediator replacing efficacy beliefs. As can be seen, the results showed that this variable moderated the effects of extrinsic work goals and mastery-development goals on learning strategies and attitudes. Following Aiken and West (1991) these significant interactions were interpreted first before examining the main effects. These significant interactions indicated the following:

1. Extrinsic work goals predicated negatively the use of deep strategies and such a relationship was less pronounced when control beliefs were strong;
2. Extrinsic work goals predicted positively the use of surface strategies and this relationship was weakened when control beliefs were strong;
3. Mastery-development goals predicted negatively the use of surface strategies and this relationship was more pronounced when control beliefs were strong;

Predictors	Deep	Surface	Self-monitoring	Time	Effort	Help seeking	Attitudes
Step 1							
Age 1	-.06	.13*	-.02	-.14	-.07	.06	-.16*
Age 2	.20*	-.08	.11	.09	.07	.15*	.07
Step 2							
Age 1	-.03	.12	.02	-.11	-.05	.08	-.13*
Age 2	.18*	-.07	.10	.08	.06	.14*	.05
Efficacy beliefs	.39**	-.19**	.43**	.28**	.28**	.27**	.36**
Step 3							
Age 1	.004	.07	.03	-.12	-.05	.08	-.04
Age 2	.16**	-.05	.10	.08	.02	.13*	-.01
Efficacy beliefs	.26**	-.17**	.34**	.21	.17*	.22*	.19**
Mastery-development goals	.34**	-.23**	.20**	.11	.23**	.09	.62**
Performance-approach goals	.08	.000	.13*	.15**	.17*	.07	-.08
Extrinsic work goals	.01	.08	-.11*	-.07	.08	-.01	.13*
Social enhancement goals	-.05	.16*	.01	-.06	-.20**	-.03	-.09
Step 4							
Age 1	.002	.08	.03	-.12	-.06	.07	-.04
Age 2	.16*	-.04	.11	.09	.02	.13*	-.01
Efficacy beliefs	.28**	-.16*	.35**	.22**	.17*	.22*	.20**
Mastery-development goals	.35**	-.22**	.20**	.11	.23**	.08	.63**
Performance-approach goals	.07	.000	.13*	.15*	.16*	.07	-.09
Extrinsic work goals	.01	.07	-.11*	-.08	.09	-.01	.14*
Social enhancement goals	-.07	.18*	-.01	-.07	-.21*	-.05	-.09
Efficacy x Mastery	.04	.04	-.05	-.003	.04	-.02	.000
Efficacy x Performance	-.09	-.03	-.03	.001	-.04	-.02	-.07
Efficacy x Extrinsic work	.03	-.10	-.01	-.02	.06	.05	.03
Efficacy x social enhancemen	.07	-.04	.11	.07	.04	.08	-.03

Note. \*\* p<.0001; \*p<.005  
(1) R<sup>2</sup> = .05, p<.0001 for Step 1; R<sup>2</sup> Δ = .15, p<.0001 for Step 2; R<sup>2</sup> Δ = .10, p<.0001 for Step 3; R<sup>2</sup> Δ = .01, p = .29 for Step 4  
(2) R<sup>2</sup> = .04, p<.005 for Step 1; R<sup>2</sup> Δ = .04, p<.001 for Step 2; R<sup>2</sup> Δ = .05, p<.005 for Step 3; R<sup>2</sup> Δ = .01, p = .33 for Step 4  
(3) R<sup>2</sup> = .02, p = .103 for Step 1; R<sup>2</sup> Δ = .18, p<.0001 for Step 2; R<sup>2</sup> Δ = .05, p<.0001 for Step 3; R<sup>2</sup> Δ = .01, p = .50 for Step 4  
(4) R<sup>2</sup> = .04, p<.005 for Step 1; R<sup>2</sup> Δ = .08, p<.0001 for Step 2; R<sup>2</sup> Δ = .03, p = .06 for Step 3; R<sup>2</sup> Δ = .005, p = .80 for Step 4  
(5) R<sup>2</sup> = .02, p = .10 for Step 1; R<sup>2</sup> Δ = .08, p<.0001 for Step 2; R<sup>2</sup> Δ = .07, p<.0001 for Step 3; R<sup>2</sup> Δ = .01, p = .53 for Step 4  
(6) R<sup>2</sup> = .02, p = .08 for Step 1; R<sup>2</sup> Δ = .07, p<.0001 for Step 2; R<sup>2</sup> Δ = .01, p = .56 for Step 3; R<sup>2</sup> Δ = .01, p = .67 for Step 4  
(7) R<sup>2</sup> = .04, p<.001 for Step 1; R<sup>2</sup> Δ = .13, p<.0001 for Step 2; R<sup>2</sup> Δ = .33, p<.0001 for Step 3; R<sup>2</sup> Δ = .01, p = .52 for Step 4

Table 2. Regression analyses 1.

Predictors	Deep	Surface	Self-monitoring	Time	Effort	Help seeking	Attitudes
Step 1							
Age 1	-.07	.14*	-.02	-.14*	-.07	.05	-.16*
Age 2	.19*	-.08	.11	.09	.07	.14*	.07
Step 2							
Age 1	-.04	.12	.01	-.13	-.05	.07	-.13*
Age 2	.16*	-.06	.09	.07	.04	.11	.02
Control beliefs	.36**	-.18*	.29**	.16*	.30**	.32**	.43**
Step 3							
Age 1	.02	.09	.01	-.13	-.05	.07	-.05
Age 2	.15*	-.04	.10	.08	.02	.12	-.02
Control beliefs	.23**	-.17*	.21**	.11	.21**	.29**	.24**
Mastery-development goals	.33**	-.23**	.22**	.13	.20*	.05	.60**
Performance-approach goals	.14*	-.04	.22**	.21**	.21**	.11	-.04
Extrinsic work goals	.00	.09	-.11*	-.07	.06	-.04	.11*
Social enhancement goals	-.03	.15*	.02	-.05	-.18*	-.01	-.07
Step 4							
Age 1	-.03	.10	.00	-.14*	-.06	.06	-.06
Age 2	.13*	-.03	.10	.08	.01	.11	-.04
Control beliefs	.20**	-.10	.19**	.10	.21*	.29**	.21**
Mastery-development goals	.34**	-.23**	.22**	.12	.21*	.06	.61**
Performance-approach goals	.12*	-.03	.21**	.20*	.19*	.11	-.05
Extrinsic work goals	.02	.07	-.10	-.06	.08	-.03	.13*
Social enhancement goals	-.04	.17*	.02	-.03	-.20*	-.04	-.08
Control x Mastery	-.08	.17*	-.04	.11	-.03	-.09	-.09
Control x Performance	.00	-.04	.02	-.03	.07	-.03	-.06
Control x Extrinsic work	.15*	-.17*	.08	-.002	-.06	.05	.08
Control x social enhancement	-.02	.001	-.01	-.09	.05	.07	-.02

Note. \*\*  $p < .0001$ ; \* $p < .005$

(1)  $R^2 = .06$ ,  $p < .0001$  for Step 1;  $R^2 \Delta = .13$ ,  $p < .0001$  for Step 2;  $R^2 \Delta = .11$ ,  $p < .0001$  for Step 3;  $R^2 \Delta = .02$ ,  $p < .05$  for Step 4

(2)  $R^2 = .04$ ,  $p < .005$  for Step 1;  $R^2 \Delta = .03$ ,  $p < .005$  for Step 2;  $R^2 \Delta = .05$ ,  $p < .005$  for Step 3;  $R^2 \Delta = .04$ ,  $p < .005$  for Step 4

(3)  $R^2 = .02$ ,  $p = .10$  for Step 1;  $R^2 \Delta = .08$ ,  $p < .0001$  for Step 2;  $R^2 \Delta = .10$ ,  $p < .0001$  for Step 3;  $R^2 \Delta = .01$ ,  $p = .63$  for Step 4

(4)  $R^2 = .04$ ,  $p < .005$  for Step 1;  $R^2 \Delta = .03$ ,  $p < .005$  for Step 2;  $R^2 \Delta = .05$ ,  $p < .005$  for Step 3;  $R^2 \Delta = .02$ ,  $p = .29$  for Step 4

(5)  $R^2 = .01$ ,  $p = .11$  for Step 1;  $R^2 \Delta = .09$ ,  $p < .0001$  for Step 2;  $R^2 \Delta = .07$ ,  $p < .0001$  for Step 3;  $R^2 \Delta = .01$ ,  $p = .58$  for Step 4

(6)  $R^2 = .02$ ,  $p = .10$  for Step 1;  $R^2 \Delta = .10$ ,  $p < .0001$  for Step 2;  $R^2 \Delta = .01$ ,  $p = .37$  for Step 3;  $R^2 \Delta = .01$ ,  $p = .53$  for Step 4

(7)  $R^2 = .04$ ,  $p < .005$  for Step 1;  $R^2 \Delta = .18$ ,  $p < .0001$  for Step 2;  $R^2 \Delta = .29$ ,  $p < .0001$  for Step 3;  $R^2 \Delta = .02$ ,  $p < .05$  for Step 4

Table 3. Regression analyses 2.

Now, let us examine the main effects shown in Table 2 and 3. In the case of efficacy beliefs, the analyses below focused on the regression model resulted from Step 3 because there was

no significant interaction effects between efficacy and goals. As for control beliefs, the analyses focused on the regression model in Step 4 in which several cases of significant interactions between control beliefs and goals were located.

These two regression models showed that efficacy and control beliefs were important predictors of learning strategies, regulatory strategies and learning attitudes. In particular, learners' efficacy beliefs predicted positively the use of deep strategies ( $\beta=.26, p<.001$ ), self-monitoring strategies ( $\beta=.34, p<.001$ ), time management strategies ( $\beta=.21, p<.001$ ), effort management strategies ( $\beta=.17, p<.001$ ), help-seeking strategies ( $\beta=.22, p<.001$ ), and finally a favourable learning attitude ( $\beta=.19, p<.001$ ). Learners' efficacy beliefs predicted negatively the use of surface strategies ( $\beta=-.17, p<.001$ ). A similar pattern of predicted relationships was found between control beliefs and learners' learning and attitudes. In particular, learners' control beliefs predicted positively the use of deep strategies ( $\beta=.20, p<.001$ , Step 4), regulatory strategies ( $\beta=.21, p<.001$ ), effort management strategies ( $\beta=.21, p<.001$ ), help-seeking strategies ( $\beta=.28, p<.001$ ), and finally, a favourable learning attitude ( $\beta=.24, p<.001$ ). In short, these findings confirmed that efficacy and control beliefs were significant cognitive factors in the learning process for distance learners.

Another major aim of the current study was to explore the relative importance of various goals on learning among distance learners. The relative importance of these goals in predicting the use of learning, self-regulatory strategies and learners' attitudes towards learning was analysed based on the main effects while taking into consideration the effects of efficacy and control beliefs in the regression equations. After controlling for the level of efficacy and control beliefs, mastery-development goals were the most important variable predicting the levels of deep strategies ( $\beta=.38, p<.001$  controlling for efficacy levels;  $\beta=.34, p<.001$  controlling for control beliefs), effort management strategies ( $\beta=.25, p<.001$  after controlling for efficacy beliefs;  $\beta=.21, p<.001$  controlling for control beliefs) and learning attitudes ( $\beta=.61, p<.001$  controlling for both efficacy and control beliefs). In addition, mastery-development goals predicted positively the use of self-monitoring strategies ( $\beta=.21, p<.001$  controlling for efficacy beliefs;  $\beta=.22, p<.001$  controlling for control beliefs). As expected these adaptive goals predicted negatively the use of surface strategies ( $\beta=-.23, p<.001$  controlling for both efficacy and control beliefs).

Performance-approach goals predicted positively the use of self-monitoring strategies ( $\beta=.13, p<.001$  controlling for efficacy beliefs;  $\beta=.21, p<.001$  controlling for control beliefs), time management strategies ( $\beta=.15, p<.001$  controlling for efficacy beliefs;  $\beta=.20, p<.001$  controlling for control beliefs), and effort management strategies ( $\beta=.16, p<.001$  controlling for efficacy beliefs;  $\beta=.19, p<.001$  controlling for control beliefs). These results suggest that distance learners focusing on outperforming others will learn in an organised and regulated manner.

Extrinsic work goals did not predict the use of learning and self-regulatory strategies. These work goals however predicted positively learning attitudes ( $\beta=.13, p<.001$  controlling for both efficacy and control beliefs). This result confirmed the extrinsic nature of these goals to learning. Distance learners holding these goals focused more on the product of learning in relation to their career concerns.

Finally social enhancement goals predicted positively the use of surface strategies ( $\beta=.16, p<.001$  controlling for efficacy beliefs;  $\beta=.17, p<.001$  controlling for control beliefs) but

negatively the use of effort management strategies ( $\beta = -.20$ ,  $p < .001$  controlling for both efficacy and control beliefs). These results suggest that these social goals will lead distance learners to reduce their effort in learning by using surface strategies. Unexpectedly, these social goals did not show to have positive effects on learning attitudes.

Taken together, regression analyses found that mastery-development goals were the most significant variable predicting an adaptive pattern of strategy use and learning attitudes. As expected, performance-approach goals were associated with an adaptive pattern of strategy use. Also as expected, extrinsic work goals did not predict significantly the use of learning and self-regulatory strategies. As for social enhancement goals, the current results showed clearly that these goals were maladaptive to learning. Overall, these results confirmed the relative importance of adaptive goals such as mastery-development goals and performance-approach goals on learning and attitudes among distance learners.

## 5. Discussion

This study set out to examine the role of various goals and motivational beliefs on learning among distance learners. It adds to the distance learning literature by examining different goals that distance learners hold and the complex interaction relationship between motivational beliefs and goals.

As expected, both efficacy and control beliefs were significant in predicting the use of learning and regulatory strategies, except for time management strategies. These results indicate that for this group of distance learners a strong sense of efficacy and control beliefs was associated with an engagement pattern that was characterised by adaptive strategy use. These two motivational beliefs also predicted distance learners' attitudes towards learning indicating that a stronger sense of efficacy and control beliefs was associated with learning enjoyment, interest and valuing of learning. To be motivated, distance learners need to feel efficacious and certain about their learning progress.

Another major aim of this study is to examine the moderation effects of efficacy and control beliefs on the impact of goals on strategy use and attitudes towards learning. This study found nonsignificant interaction effect between self-efficacy and various goals included in this investigation. In other words, a strong sense of efficacy beliefs would not enhance the positive effects of adaptive goals such as mastery and performance-approach goals. Neither would a strong sense of efficacy beliefs dampen the negative effects of less adaptive goals such as extrinsic work goals and social enhancement goals.

It should be pointed out that contrary to Dweck's experimental study (Dweck, 1986; Elliot & Dweck, 1988), the current study examined distance learners' perceptions of learning at a rather general level. Dweck's study found significant interaction between self-efficacy and performance-approach goals on learning by requiring students in an experimental setting to complete clearly-defined academic tasks. Subsequent studies (e.g. Harackiewicz *et al.*, 2000; Kaplan & Midgley, 1997; Miller *et al.*, 1993) using correlational design examining the moderation hypotheses at a rather general level did not find significant interaction between self-efficacy and performance goals on learning and achievement. The current nonsignificant results aligned with these correlational studies.

While the level of task specificity may be taken as an explanation for contradictory results between Dweck's study and the current study, a more critical factor may have been the



salience of performance emphasis. Elliot and Dweck (1988) have created a high level of performance salience focusing participants to their perceived abilities to complete a specific experimental task. In this type of highly controlled setting, one's performance concerns and the demand of performance demonstration are heightened. Students' perceived level of efficacy will therefore be a crucial factor in moderating their performance goals on learning and achievement. Similarly, Church, Elliot & Gable (2001) and Braten and colleagues (2004) based on empirical evidence argued that the mediation role of self-efficacy with goals on learning will be more salient in a highly competitive and evaluative learning environment that focuses on relative performance. The participants and their learning context in the current study were radically different from these previous studies that used on-campus undergraduate students learning in a competitive environment or completing experimental tasks according to a set explicit performance criteria. Rather, the distance learning environment in this study promoted a mastery-focused orientation. Distance learners in this study engaged in their courses through distance learning mode in which face-to-face contact with other learners were limited to optional fortnightly tutorials. Distance learners are expected to complete the assigned readings and learning materials on their own, taking into consideration a suggested time-schedule for monitoring the progress themselves. In other words, the chance for distance learners to compete with each other was limited. Therefore, it can be argued that a lack of emphasis on relative performance might have led to the nonsignificant mediation effect of efficacy beliefs with goals, especially performance-approach goals, on strategy use and learning attitudes.

Not only did the distance learning environment promoted mastery, the current sample of distance learners also held strong mastery goals ( $\bar{x} = 3.82$ ). A mastery-focused learning system coupled with mastery-focused personal motivation would probably allow learners in this study to engage in adaptive patterns of strategy use and attitudinal development regardless of their level of efficacy beliefs (Dweck, 1986; Kaplan & Midgley, 1997). Kaplan and Midgley (1997, p.431) when concluding their study examining the moderation hypotheses stated that *"in an environment in which learning goals were emphasised more, level of perceived competence might become less influential for students with a predominant learning goal orientation"*. In other words, mastery goals and mastery learning environment have predisposed distance learners to an adaptive pattern of strategy use and learning attitudes regardless their level of efficacy beliefs.

In contrast, the present study found several counts of significant interaction results between control beliefs, extrinsic work goals, and mastery goals. These significant results, though limited, confirmed the hypotheses set for the interaction between control beliefs and goals. These significant mediation effects indicate clearly that control beliefs will enhance the positive effects of adaptive goals such as mastery-development goals and dampen the negative effect of less adaptive goals, in this case, extrinsic work goals. These results suggest that control beliefs are critically important for distance learners. Within a distance learning system, distance learners are free to determine as to when they learn, how they learn and for what reasons they learn. A strong sense of control for distance learners means that they will be able to regulate their learning pace, determine the appropriate use of learning and regulatory strategies and adopt different goals for learning. This study showed that a strong sense of control beliefs enabled learners to use fewer surface strategies and more deep strategies even when holding extrinsic work goals that draw them away from engaging in the learning process. As for the case of mastery-development goals, a strong sense of control

beliefs simply enhanced the positive effects of these adaptive goals and led the learners to use fewer surface strategies.

Previous studies have examined the moderation effects using middle school students and young adolescents (e.g. Harackiewicz *et al.*, 2000; Kaplan & Midgley, 1997; Miller, Behrens, Greene & Newman, 1993). The current study provided empirical evidence on the moderation hypotheses among mature distance learners, which certainly added to our limited knowledge on the role of mediators on the effect of goals on learning. The present results focused us on the critical role of different moderators in distance learning. While the current study failed to find significant interaction between efficacy beliefs and goals on learning, the discussion above has highlighted the mastery-oriented nature of distance learning as an important factor that needs to be considered in examining the interaction effects. Certainly more research is needed to tease out the moderation effects of efficacy beliefs with goals among distance learners. In particular, our knowledge on extrinsic work goals and social enhancement goals are still rather limited. More research is required to understand how these goals operate in the learning process among distance learners.

The significant moderation effects of control beliefs reminded us the importance of considering additional mediators salient in a specific learning context. An experimental study conducted by Darnon and colleagues (2007) provided relevant empirical evidence showing that different forms of uncertainty created through negative feedback on performance or conflicting evaluation moderated the effects of performance-approach goals on learning. Within a distance learning system, tutor's disconfirming feedback on assessment may pose a significant threat to control beliefs (cf. Ng, 2009) and heighten a certain level of uncertainty. In addition, future research should extend the current investigation to cover different type of dependent measures and examine the moderation hypotheses within different level of task specificity. Two important dependent measures are distance learners' persistence and achievement levels. Will strong efficacy or control beliefs act as a buffer against the negative impact of less adaptive goals such as extrinsic work goals on persistence and achievement? In addition, the current study focused on learners' motivation and learning at the course level without referring to specific academic tasks. Future studies should consider the moderation hypotheses using more specific academic tasks such as sitting for an end-of-course examination that highlights performance demonstration and the critical importance of efficacy and control beliefs.

With regard to the predictive importance of goals, the regression models consistent with past achievement goal research showing that mastery-development goals, and to a lesser extent performance-approach goals, were associated with adaptive patterns of strategy use and learning attitudes. These results were achieved after controlling for the effects of both efficacy and control beliefs. The significance of mastery-development goals was demonstrated in the associated engaged pattern characterising by adaptive use of strategies. The use of regulatory strategies, and more specifically, effort management strategies indicate that distance learners focusing on mastery and development goals will be more likely to persist and continue investing effort on learning despite obstacles and problems. Performance-approach goals in this study were also positively related to these strategies. In addition these goals focused learners on time management and organisation. Extrinsic work goals did not predict any of the strategies. The interaction results indicated that extrinsic work goals were probably associated with a maladaptive pattern of strategy use, which to a

certain extent, would be moderated by control beliefs. However these goals were not utterly detrimental to learning. Distance learners' career concerns were associated with a positive attitude towards learning. In other words, while a concern for career advancement will not associate learners with effective use of strategies, such a concern helps learners develop a positive attitude towards learning. Finally, social enhancement goals were found to have negative impact on learning as these goals were associated with surface strategies and the decrease in effort management. These associations seem to go against the Chinese collectivistic culture that places motivational significance on meeting social norms and fulfilling parental expectation on academic achievement. While it is not clear whether these social concerns would have positive impact on learners' achievement in this study, the present results indicate that a focus on enhancing social status and meeting social expectation will draw learners away from meaningful engagement and persistence.

Barron and Harackiewicz (2001) in a seminal paper argued that different achievement goals will have independent effects on learning and achievement, which can be assessed using the main effects of predictors in regression analyses. The current results clearly indicate that different goals had significant independent effects on learning and attitudes. Overall, the current findings suggest that goals that focus distance learners on the learning process are associated with adaptive use of strategies. In contrast, goals that draw distance learners away from the learning process and focus on the learning product do not predict the use of learning and regulatory strategies. Pintrich (2000) when discussing the nature of multiple goals argued that different goals will lead to different learning pathways and hence resulting in different learning experiences. The current results clearly support this notion of "multiple-goals, multiple-pathways". Distance learners focusing on mastery-development goals will certainly engage in and experience distance learning differently compared to those focusing on various career considerations (Ng, 2008).

Barron and Harackiewicz (2001) also proposed that different goals may interact with each other. An additional regression analysis was conducted examining the interaction effects between different goals in this study. The result was nonsignificant, indicating that these goals did not interact with each other. In other words, a high level of performance-approach goals would not enhance the positive effects of mastery-development goals. However, Ng (2008) using a clustering procedure found that distance learners are capable of endorsing a multitude of goals simultaneously. Future studies should continue to explore the potential interaction effects between goals on learning and engagement among distance learners.

## 6. Conclusion

This paper looked into the significant role of motivation in distance learning using an achievement goal framework. The results showed that conceptualising distance learners' motivation as motivational beliefs and goals adds to our understanding of distance learners' motivational and learning characteristics. Of course, the correlation nature of the current study does not allow for the analysis of causal ordering between beliefs, goals, strategies and attitudes. The culturally-specific and female-dominated sample prevents generalisation of the current findings. Further research should examine the relationship of these important variables using longitudinal design and include distance learners from other cultural contexts. The lack of achievement data was another major limitation in the current study.

Future studies need to examine the effects of these important motivational variables on distance learners' achievement level. In particular, it will be interesting to examine if extrinsic work goals will be associated with a high level of achievement.

Understanding distance learners' motivation will have practical implications for designing an engaging learning environment to support distance learners. In particular, the current findings suggest that building a distance learning system that promotes a mastery focus, encourage high performance, addresses personal development needs, and reinforces efficacy and control beliefs are fundamental to motivating distance learners to learn.

Ames (1992) have discussed various classroom dimensions that promote mastery and engagement, such as the nature of task, authority, evaluation, and recognition. Using this perspective, distance educators can engage in a self-reflective process and ask critical questions, such as: Will distance learners find the learning units, activities and assigned readings interesting, challenging and helpful in developing their self-efficacy? Have the course and assessment items designed in such a way that distance learners are given abundant opportunities to develop independence, autonomy and choice? Is the learner support system effective in assisting learners to regulate their learning and progress? Are timely feedback on their progress and performance in the course provided to distance learners?

These are important questions for distance educators who intend to create a motivating and engaging distance learning environment. Certainly, more research is required to look into the nature of distance learners' motivation in order to inform distance educators to make evidence-informed decisions on these critical questions. The current study has contributed to this effort by researching distance learners' motivation using an achievement goal perspective.

## 7. Appendix

*Mastery-development goals (5 items; Cronbach Alpha value=.75)*

- I do in this course because I want to learn something new.
- I found a sense of personal satisfaction in doing this course.

*Performance-approach goals (2 items; Cronbach Alpha value=.65)*

- In this course, I would like to show that I am more capable than other students.
- I want to get a good result in this course.

*Extrinsic work goals (3 items; Cronbach Alpha value=.77)*

- I take this course because it helps my career advancement.
- I take this course because I want to gain the related professional qualification.

*Social enhancement goals (4 items; Cronbach Alpha value=.66)*

- Acquiring the knowledge in this course will enable me to help others and contribute to the society.
- I believe that my parents will be honoured when I do this course and its associated degree programme.

*Deep strategies (4 items; Cronbach Alpha value=.70)*

- While studying this course, I think of real life situations to which the materials that I am learning would be useful.
- In reading new materials, I find that I'm continually reminded of the materials I'd already viewed before I am satisfied.

*Surface strategies (2 items; Cronbach Alpha value=.66)*

- I think browsing around is a waste of time, so I only study what's given out in tutorials or in the course outlines.
- I learn the materials in this course mainly by rote, going over and over them until I know them by heart.

*Self-monitoring strategies (8 items; Cronbach Alpha value=.77)*

- When I am confused, I'll read the relevant topics again.
- When I find it difficult to understand some of the topics, I'll change my usual study pattern and re-read the materials again.

*Time Management (2 items; Cronbach Alpha value=.68)*

- I make good use of the study time for this course.
- I find it hard to stick to a study schedule.

*Effort Management (2 items; Cronbach Alpha value=.61)*

- Even when the study materials are dull and uninteresting, I manage to keep working until I finish.
- I work hard to do well in this course even if I don't like what we are doing.

*Help seeking (2 items; Cronbach Alpha value=.76)*

- When I don't understand the materials in this course, I ask my tutor or others for help.
- I try to identify students in my group whom I can ask for help if necessary.

*Learning attitudes (7 items; Cronbach Alpha value=.83)*

- I think the materials in this course are relevant to my job.
- The content of this course promotes personal development and is relevant to my daily lives.
- I found this course very interesting and enjoyed the time spent on it.

*Efficacy Beliefs (3 items; Cronbach Alpha value=.72)*

- I believe I will receive an excellent grade in this class.
- I'm certain I can understand the most difficult concepts and theories presented in the course.

*Control beliefs (3 items; Cronbach Alpha value=.65)*

- If I study in appropriate ways, then I will be able to learn the materials in this course.
- If I try hard enough I will understand the course materials.

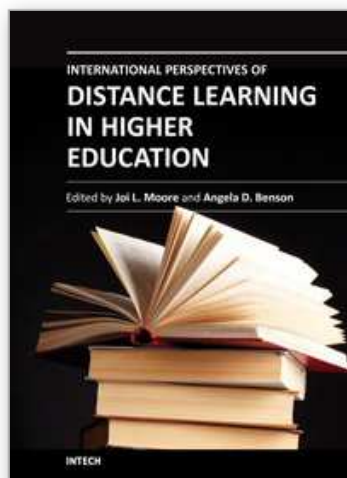


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