

A Latent Class Analysis of Teacher Candidates' Goal  
Orientation, Perception of Classroom Structure,  
Motivation, and Self-regulation

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## **Abstract**

The purpose of this study was to examine whether teacher candidates with mastery- and performance-approach orientations would perceived their education courses as depicting a goal structure consistent with their personal orientations, use of self-regulatory strategies, and motivation for learning. A latent class analysis procedure was used to identify teacher candidates' goal orientations. The results of this study suggested that teacher candidates' perception of class structure, motivational beliefs, and self-regulation of learning differ as a function of their personal goal orientations. Evidently, with regard to teacher candidates all academic goals are not created equal. There are clear differences between the four groups of teacher candidates, identified by the latent class analysis.

## **A Latent Class Analysis of Teacher Candidates' Goal Orientation, Perception of Classroom Structure, Motivation, and Self-regulation**

In accord with AERA's 2010 theme, *Understanding Complex Ecologies in a Changing World*, the purpose of this paper is to present theoretical and empirical research examining the associations between teachers candidates personal goal orientations, their perception of classroom structures, and their motivation and self-regulation for learning.

Motivational determinants of teacher candidates, such as self-efficacy beliefs, outcome expectancy, intrinsic motivation, and use of self-regulated learning strategies, are known to be associated with their task engagement and choice (Bembenutty, 2005; Bembenutty & Chen, 2005; Bembenutty & Karabenick, 1998).

However, these associations may be explained by teacher candidates' task and/or performance-goal orientations; that is, their engaging in their academic training for the sake of mastery of a task or for the sake of demonstrating ability and avoiding failure (Butler, 1998; Retelsdorf, Butler, Streblow, & Schiefele, 2010). Until recently, the relationship between teacher candidates' goal orientations was not investigated (Butler, 1998). In particular, teacher candidates' goal orientations have not been fully explored in relation to their perception of classroom structures and self-regulatory tendencies.

Consistent with the goal orientation theory (Ames, 1992; Dweck, 1998; Elliot, 1999; Maehr & Midgley, 1991; Pintrich, 2000a), teacher candidates' motivations for learning and self-regulatory practices are expected to differ as a function of their preferential goal orientations. Learners' goal orientation is concerned with why students approach learning. Three major goal orientations have been identified in the literature: 1) task-

goal orientation (also called mastery- and learning-goal orientation); 2) performance-goal orientation (also called ego- and ability-goal orientation) (see Ames, 1992; Dweck, 1998; Maehr & Midgley, 1991); and 3) performance-avoidance orientation, which delineates learners' tendencies to evade academic tasks.

It was expected that teacher candidates with mastery- and performance-approach orientations would perceive their courses as depicting a goal structure consistent with their personal orientations, use of self-regulatory strategies, and motivation for learning. A latent class analysis procedure was used to identify teacher candidates' goal orientations

## **Theoretical Framework**

### ***Goal Orientations:***

Researchers following the goal orientation theory have demonstrated that students in secondary schools and college adopt goal orientations that lead them to either academic success or failure. Not all goals are created equal. *Task-goal orientation* refers to students' engagement in challenging schoolwork for the sake of mastering the tasks (Elliot, 1999). Task-goal oriented students focus their attention on understanding class work, selecting challenge tasks for themselves (Ames, 1992). High task-goal-oriented learners are known to be self-efficacious and are concerned with improvement, progress, effort regulation, and intrinsic motivation.

*Performance-goal orientation* refers to students' engagement in academic tasks in order to demonstrate high ability or to avoid failure. Performance-goal-oriented learners are driven to protect the self. Performance-goal orientation has two different components: performance-approach goal orientation and performance-avoidance goal orientation (Middleton & Midgley, 1997). Performance-approach goal orientation

learners engage in learning to demonstrate competence and ability. In contrast, performance-avoidance goal orientation refers to students' engagement in academic tasks primarily to avoid demonstration of incompetence or lack of ability. They choose easy tasks, are motivated to avoid failure, and have a low level of achievement (Elliot, 1999).

In a recent study assessing achievement goals among fifth and sixth-grade students, Meece and Holt (1993) classified students by using a cluster analysis according to their task-mastery, ego-social, and work-avoidance goal orientations. The cluster analysis identified three types of goal-oriented learners. Cluster 1, labeled "high mastery," contained students with a high tendency for mastering academic tasks. Cluster 2, labeled "combined mastery-ego," identified students high in both task-mastery goals and ego-social goals. Cluster 3, labeled "low mastery-ego," identified students high in work-avoidance goal orientation.

Despite the important implications of goal theory for learners, little is known about teacher candidates' goal orientation tendencies.

### *Self-regulation of Learning*

Based on the social cognitive theory, self-regulation of learning is a pivotal component of major academic endeavors. *Self-regulation of learning* refers to a learner's beliefs about their ability to engage in appropriate action, thoughts, feelings, and behavior in order to pursue valuable academic goals. To achieve academic excellence, learners must understand how to regulate their behavior, set, and maintain appropriate academic goals despite attractive distractions.

Self-regulation of learning encompasses learners' setting specific and manageable goals, identify appropriate learning strategies, generate and maintain appropriate level of motivation, monitor their academic progress,

and reflect on their academic improvement and level of satisfaction with goals attained. Despite the important implications of self-regulation for learners, little is known about teacher candidates' self-regulatory tendencies.

## **Method**

### ***Participants:***

Participants in this study were 169 secondary education preservice teachers enrolled in an educational psychology course at an urban college in New York City. Some of the students were pursuing an initial teacher certification while others have recently obtained it. In terms of instructional practices, the focus of the course was on theories of learning and development as they are relevant to teachers' preparation and practice, and classroom management. The instructor of the course emphasized in the course the important role of sustaining motivational beliefs and self-regulation among preservice teachers. The administration of the instruments took part during regular instruction in the classroom.

### ***Instruments:***

*Personal Goal Orientations.* Students' task-, performance-approach, and performance-avoidance goal orientations were measured with an adapted version of the Patterns of Adaptive Learning Survey (PALS; Midgley et al. 1997). The PALS contains three subscales that examine students' goal orientations in their classroom. First, the *Mastery-Goal Orientation* scale (Cronbach Alpha = .92 (for this study); five items; measures students' task engagement for the sake of developing competence and mastery (e.g., "I do my schoolwork in math because I am interested in it"). Second, the *Performance-Approach Goal Orientation* scale (Cronbach Alpha = .93 (for this study); three; measures students' engagement in the

tasks to demonstrate competence and skills (e.g., "I want to do better than other students in this class"). Third, the *Performance-Avoidance Goal Orientation* scale (Cronbach Alpha = .76, three; refers to students' intention to avoid demonstration of lack of skills (e.g., "The reason I do my work is so others won't think I'm dumb"). Responses format consisted of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me").

*Perception of Classroom Goal Structure.* Students' perception of classroom goal structures assesses their tendencies to perceive their educational psychology classroom and instructor disposition as reflecting primarily one of the three goal orientations. The scales were taken from the Patterns of Adaptive Learning Survey (PALS; Midgley et al. 1997). The PALS contains three subscales: First, the *Classroom Mastery-Goal Orientation* scale (Cronbach Alpha = .84 (for this study)). Second, the *Classroom performance-approach goal orientation* scale (Cronbach Alpha = .66 (for this study)). Third, the *Classroom performance-avoidance goal orientation* scale (Cronbach Alpha = .88 (for this study)), Responses format consisted of a 7-point Likert scale (1 = "Not at all true of me" and 7 = "Very true of me").

### ***Motivation and Self-regulation***

*Self-efficacy for learning* was obtained from the PALS (PALS; Midgley et al. 1997). An item was "I am certain I can master the skills taught in this class" (Cronbach Alpha = .79). *Outcome expectancy* was obtained from Bembenuddy (2005). An item was "Doing well in this class will help me to attain my future academic goals" (Cronbach Alpha = .75). *Intrinsic Motivation* was obtained from Bembenuddy (2005). An item was "I find studying for this class very motivating" (Cronbach Alpha = .89). *Self-regulation* was obtained from Bembenuddy (2005), an item was How often

do you plan your daily schedule to be sure your complete your studying for this class” (Cronbach Alpha = .91).

## **Results**

The relationships between all the variables used in this study were examined. As Table 1 displays, mastery-goal orientation was not significantly related to performance-approach or performance-avoidance goal orientations. However, performance-approach was highly and positively related to performance-avoidance goal orientation ( $r = .60, p < .001$ ). Mastery-goal orientation was significantly related to perception of classroom mastery, but it was not related to classroom performance or classroom avoidance. Classroom performance was related to classroom avoidance. Mastery goal orientation was related to outcome expectancy, intrinsic interest, and self-regulation while performance and avoidance goal orientations were not related to these constructs.

A latent class analysis was conducted to grouping cases in clusters. The latent class analysis is an alternative method to the traditional cluster analysis. An advantage of the latent class analysis over the cluster analysis is that it produces direct evidence that could assist the researcher to determine with certain degree of probability the different classes/clusters that distinguish the participants. Latent class analysis uses an iterative function to designate cases to categories. The latent class analysis output provide several indicators to assist in determining the effectiveness of the class iteration: 1) the Lo-Mendel-Rubin likelihood ratio test (LMR), which is used to compare the fit of the models; a small  $p$ -value indicates a better fit; 2) the Bayesian information criterions (BIC) is used to compare models with lower values indicate a better fit; 3) the entropy statistic (ranging from 0 to 1); higher values indicate better classification of the cases.

As Table 2 displays, a model with three clusters is a better fit than a model with two clusters. However, based on the BIC, four clusters are better than three and its BIC is reduced significantly from 1073 to 1019, but its entropy is slightly lower (.89) than the three-cluster model (.91) and the adjusted LMR indicates that the four clusters are not better than the three clusters ( $p = .11$ ). The results indicated that five clusters are not a better fit than four clusters. Thus, considering the indicators, a model fit and classification, and based on theoretical grounds, a four-cluster solution was adopted. Cluster 1 represents teacher candidates with a moderate mastery and avoidance and a low performance goal orientation. Cluster 2 included teacher candidates with a high mastery and low performance and avoidance goal orientation. Cluster 3 included teacher candidates with high mastery, low performance, and moderate avoidance goal orientation. Cluster 4 included teacher candidates with high mastery, and moderate performance and avoidance goal orientation.

MANOVA analyses followed by Bonferroni post hoc analyses conducted to confirm the classification of cases, and as Table 3 displays, indicated that there are differences between the clusters with regard to the goal orientations. With regard to teacher candidates' perception of classroom goal orientation, those with a personal goal orientation perceived the educational psychology classes as having primarily a mastery structure while those with a personal performance approach tended to perceive the classroom as displaying a performance structure. Likewise, teacher candidates with an avoidance tendency, perceived the classroom as containing an avoidance structure.

With regard to motivation, teacher candidates in cluster 3 are significantly different from Cluster 1 in all the motivation variables. With regard to self-regulation, teacher candidates in Cluster 3 reported higher

tendencies to use self-regulatory strategies than teacher candidates in Cluster 1.

### **Discussion**

The results of this study showed that teacher candidates' perception of class structure, motivational beliefs, and self-regulation of learning differ as a function of their personal goal orientations. Evidently, with regard to teacher candidates all academic goals are not created equal. There are clear differences between the four groups of teacher candidates, identified by the latent class analysis. Of particular interest are the significant differences between Cluster 4 (high mastery, moderate performance, and moderate avoidance) and the other cluster with regard to their perception of classroom structure. They perceive the classroom as having a high mastery structure and performance structure but a moderate classroom avoidance structure. Cluster 1, with teacher candidates displaying primarily a mastery focus while diminishing performance and avoidance are unique since they also report having a high self-efficacy, outcome expectancy, and self-regulation. The cluster with apparent more concern is Cluster 1; they have high self-efficacy beliefs, moderate outcome expectancy but some how low-to-moderate intrinsic motivation and self-regulation.

These results clearly show that students with a combined high task-goal orientation and high performance-approach orientation have a balance between goal orientations, motivational determinants, and use of self-regulatory strategies. At the same time, they are low in performance avoidance goal orientation. This balance appears to function well in pursuing long-term goals and dealing with distractions.

These findings suggest that having a mastery-goal orientation is positively and significantly related to self-regulation, outcome expectancy,

and intrinsic motivation. This means that teacher candidates who like the schoolwork, who like to learn new things, and who engage in a class task because it is interesting, reported greater preference for self-regulation. These students are self-regulated learners (Pintrich & De Groot, 1990; Zimmerman, 1998). Equally important, students with high mastery-goal orientations believed that their classroom are more conducive to mastery rather than to performance.

This study shows that there are teacher candidates who are oriented to demonstrate their competence, and at the same time that they engage in schoolwork for the sake of mastering the tasks. These results support previous findings that indicate that having a performance - or extrinsic-goal orientation is not necessarily detrimental to academic learning (Pintrich, 2000a; Pintrich & Garcia, 1994).

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**Table 1**  
**Intercorrelations, Coefficient Alphas, Means, and Standard Deviations for Scores on Goal Orientations, Motivation, and Self-regulation**

Measure	1	2	3	4	5	6	7	8	9	10	<i>M</i>	<i>SD</i>
1. Mastery	<b>.92</b>										6.29	1.05
2. Performance	-.05	<b>.93</b>									2.21	1.54
3. Avoidance	-.05	.60**	<b>.76</b>								3.63	1.62
4. Classroom Mastery	.85**	-.03	.07	<b>.84</b>							6.22	.97
5. Classroom Performance	-.06	.32**	.45**	-.01	<b>.66</b>						5.24	1.28
6. Classroom Avoidance	-.06	.63**	.81**	-.05	.53**	<b>.88</b>					2.85	1.58
7. Self-efficacy	.15	-.00	.01	.18*	.01	-.09	<b>.79</b>				6.45	.65
8. Outcome Expectancy	.47**	-.11	.01	.44**	.07	-.04	.16*	<b>.75</b>			5.92	1.35
9. Intrinsic Motivation	.46**	-.03	.12	.49**	.03	.08	.21**	.52**	<b>.89</b>		4.42	1.56
10. Self-regulation	.59**	-.03	.10	.61**	.00	-.01	.19*	.40**	.51**	<b>.91</b>	5.27	1.15

*Note.* Coefficient Cronbach alphas are presented in boldface along the diagonal. \*  $p < .05$ ; \*\*  $p < .01$

**Table 2.**  
**Fit and Entropy Indices for the Selection of the Number of Profiles of Goal Orientations**

Number of profiles	BIC	Adjusted-LMR ( <i>p</i> -value)	BLRT ( <i>p</i> -value)	Entropy	Cluster sizes
1	1358	-	-	-	169
2	1124	262.37 ( <i>p</i> <.001)	<i>p</i> <.001	.87	78/91
3	1073	85.21 ( <i>p</i> <.001)	<i>p</i> <.001	.91	75/15/79
4	1019	174.81 ( <i>p</i> = .11)	<i>p</i> <.001	.89	70/11/64/24
5	1014	44.99 ( <i>p</i> = .25)	-	.86	47/32/17/15/58

*Note.* BIC = Bayesian Information Criteria; Adjusted-LMR = Adjusted Lo-Mendell-Rubin test; BLRT = Bootstrapped Likelihood Ratio Test.

**Table 3**  
**Cluster Analysis**

Variables	ANOVA					<i>F</i>	Partial Eta Squared	Bonferroni Post hoc *
	MANOVA (Pillai's Trace)	Cluster 1 (n = 68) Moderate Mastery Low Performance Moderate Avoidance	Cluster 2 (n = 11) High Mastery Low Performance Low Avoidance	Cluster 3 (n = 64) High Mastery Low Performance Moderate Avoidance	Cluster 4 (n = 24) High Mastery Moderate Performance Moderate Avoidance			
1. Mastery		5.43 (1.18)	6.87 (.18)	6.94 (.10)	6.72 (.38)	46.93***	.46	1 < 2, 3, 4
2. Performance	<i>V</i> = 1.29 <i>F</i> = (9,489) = 41.23, <i>p</i> < .001	2.10 (1.18)	1.00(.00)	1.44 (.58)	5.11 (1.07)	97.96***	.64	1, 2, 3 < 4 2 < 1, 3
3. Avoidance		3.40 (1.34)	1.00 (.00)	3.61 (1.45)	5.54 (.80)	33.76***	.38	1, 2, 3 < 4 2 < 1, 3
4. Classroom Mastery		<i>V</i> = .59 <i>F</i> =	5.62 (1.19)	6.22 (.97)	6.72 (.31)	6.59 (.32)	20.58***	.28
5. Classroom Performance	(9,489) = 13.19, <i>p</i> < .001	5.28 (1.11)	4.24 (1.76)	5.04 (1.33)	6.08 (.89)	6.76***	.10	1, 2, 3 < 4
6. Classroom Avoidance		2.79 (1.41)	1.29 (.72)	2.47 (1.38)	4.76 (1.19)	23.07***	.30	2 < 1, 3 1, 2, 3 < 4
7. Self-efficacy		6.34 (.66)	6.16 (1.15)	6.65 (.43)	6.53 (.57)	3.62*	.07	1 < 3
8. Outcome Expectancy	<i>V</i> = .32 <i>F</i> = (12,453) = 4.52, <i>p</i> < .001	5.35 (1.48)	6.50 (1.58)	6.33 (.94)	6.09 (1.35)	7.00***	.12	1 < 3
9. Intrinsic Motivation		3.53 (1.43)	4.12 (1.71)	5.15 (1.30)	5.15 (1.49)	15.99***	.24	1 < 3, 4
10. Self-regulation		4.82 (1.23)	5.56 (1.00)	5.55 (1.02)	5.52 (1.01)	5.35**	.10	1 < 3

Note <sup>A</sup> \* *p* < .05; \*\*; *p* < 01; \*\*\* *p* < .001

Figure 1

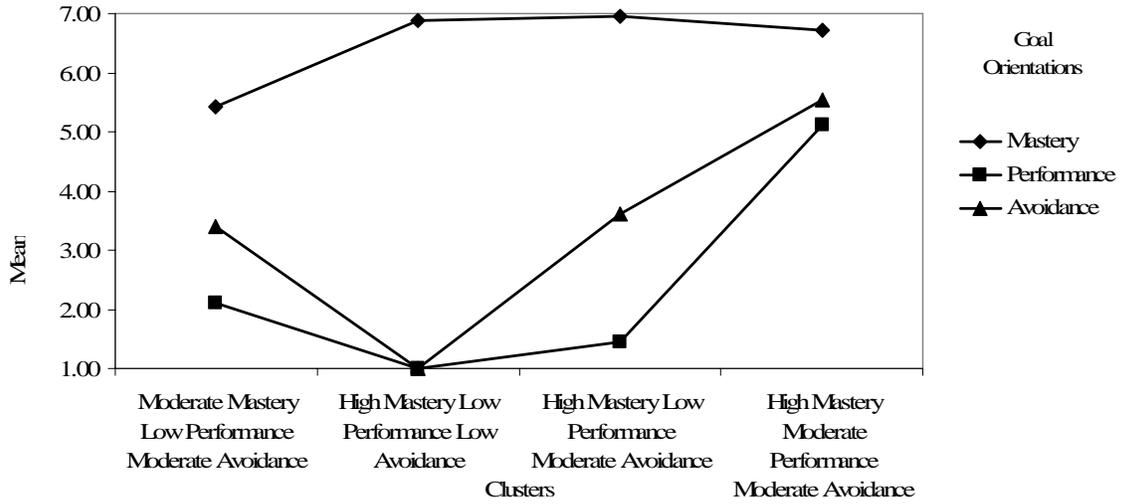


Figure 2

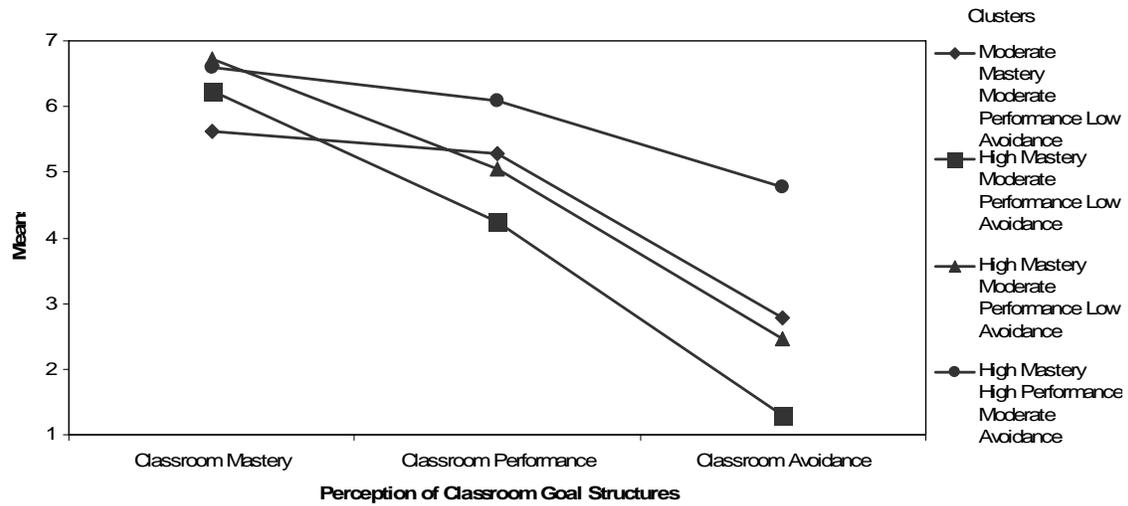


Figure 3

