Changing Preservice Teachers' Beliefs about Motivating Students

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We examined the effects of an educational psychology course on students' beliefs about motivating students. After providing opportunities to engage in systematic intentional inquiry of their beliefs about teaching and learning, we expected that students' beliefs would become more soundly based in theory and research. Following several classes on motivation, students increased their endorsement of theory-based motivational strategies such as promoting cooperation; giving choice; offering stimulating tasks; showing interest and giving responsibility; and making attributions to students' thought and effort. However, they also increased their endorsement of strategies that emphasized performance goals. Results are discussed within the context of motivation theory, teaching educational psychology, and methodological considerations.

In the past several decades our understanding of motivation has increased considerably as researchers have realized the vital role of motivation in student learning. This research, emanating from a variety of theoretical perspectives (e.g. self-efficacy, self-determination, and goal orientation) has provided important implications for the crucial role that teachers play in fostering positive motivation. There has also been a large body of research on preservice and in-service teachers' beliefs about teaching. Surprisingly, however, little research has examined preservice or in-service teachers' beliefs about motivation (Patrick & Pintrich, 2001). This study was designed to examine how preservice teachers' beliefs about motivating students change as a result of taking an educational psychology course that helps them reveal and challenge their beliefs.

The Role of Teacher Education in Developing Preservice Teachers' Beliefs

Teachers' beliefs are thought to have an important influence on their teaching decisions and practices (Pajares, 1992; Richardson & Placier, 2001) and how they learn from their professional experiences (Borko & Putnam, 1996; Pajares, 1992; Richardson, 1996; Woolfolk Hoy, Davis, & Pape, 2006). Teachers' beliefs also influence how they respond to reform efforts (Borko & Putnam, 1996; Gregoire, 2003; Gregoire-Gill, Ashton, & Algina, 2004; Richardson, 2003; Woolfolk Hoy et al., 2006). For example, teachers who hold the belief that teaching is transmitting information to students have difficulty adopting constructivist teaching strategies called for in recent reforms and reflected in professional standards (Raths & McIninch, 2003).

A large body of research has also documented that beliefs play an important role in the education of preservice teachers. Many studies have documented the now familiar "apprenticeship of observation" (Lortie, 1975): Preservice teachers enter their programs with firmly established beliefs based on prior classroom experiences (Ashton, 1990; Ashton & Webb, 1986; Brookhart & Freeman, 1992; Pajares, 1992; Richardson, 1996; Wideen, Mayer-Smith, & Moon, 1998; Wilson, 1990; Wubbels & Korthagen, 1990). Furthermore, these firmly established

beliefs are often implicit and difficult to articulate (Nespor, 1987; Richardson, 2003; Torff & Sternberg, 2001). Research also shows that the beliefs of preservice teachers serve as filters that influence what they learn (Borko & Putnam, 1996; Hollingsworth, 1989; Holt-Reynolds, 1992; Nespor, 1987; Pajares, 1992; Richardson, 2003; Sugrue, 1996; Weinstein, 1989). Thus, they tend to graduate with their beliefs intact (Borko & Putnam, 1996; Pajares, 1992; Rust, 1994; Sugrue, 1996; Tillema & Knol, 1997; Torff & Sternberg, 2001; Zeichner, Tabachnick, & Densmore, 1987). In other words, graduates of teacher education programs teach like they were taught (Darling-Hammond, 2006).

The tenacity of preservice teachers' beliefs becomes problematic when aspiring teachers are expected to learn to teach in ways that are fundamentally different from the ways in which they were taught. As a result, teacher educators have struggled to develop ways to facilitate belief change, since tenaciously held beliefs, if unsupported by theory and research, can prevent teachers from best facilitating their students' learning and motivation. In fact, Darling-Hammond (2006) has identified the importance of helping students confront their naïve conceptions about teaching as one of the three most powerful challenges for teacher education. We have found in our previous research that providing students with opportunities to reveal and challenge their beliefs helps them modify or abandon beliefs that are not supported by theory and research. Furthermore, even when preservice teachers hold beliefs that are well-supported and result in effective teaching practice, they still benefit from revealing and challenging those beliefs. When given the opportunity and support to do so, these teachers develop beliefs that are more sophisticated and well-grounded in theory and research, and as a result, they make more effective teaching decisions (Peterson & Moss, 2006; Peterson & Moss, 2007).

Preservice and In-service Teachers' Beliefs about Motivation

Research on beliefs about motivation suggests that preservice and in-service teachers tend to view motivation as a relatively stable trait that resides within students: Students are either motivated or they are not (Holt-Reynolds, 1992; Moss & Peterson, 2007; Nespor, 1987; Patrick & Pintrich, 2001; Peterson & Moss, 2006; Weinstein, 1989). For example, a preservice teacher in one of our classes noted, "My conception of motivation was limited to a simple definition of natural effort and desire. In other words, I believed that motivation was largely a natural ability that one either possessed or did not" (Peterson & Moss, 2006). Whereas both preservice and in-service teachers tend to believe that motivation is determined by factors outside of their control (Patrick & Pintrich, 2001), they also tend to believe that a teacher's role is to try to motivate students, and the way to do so is with interesting and fun activities (Blumenfeld, Hicks, & Krajcik, 1996; Calderhead, 1996; Holt-Reynolds, 1992; Woolfolk Hoy & Murphy, 2001). There is also some evidence that novice teachers expand upon their previous beliefs about motivation as a result of their teacher education courses. For example, Condon, Clyde, Kyle, & Hovda (1993) found that novice teachers not only built on students' interests, they

also provided opportunities for choice and responsibility.

Whereas most of the research on teachers' beliefs has relied on qualitative methodologies such as interviews, observations, and case studies, Nolen and Nicholls (1994) developed written surveys that asked preservice and in-service teachers to rate the effectiveness of a variety of motivational strategies. Elementary teachers in their study reported that theory-based strategies such as cooperation, choice, and attributing students' achievement to effort were useful motivational strategies. These teachers also tended to agree with researchers that certain motivational strategies could be harmful, such as social and public comparisons, rewarding special privileges to high achievers, and attributing failure to lack of effort. Nolen and Nicholls suggested that teachers may be able to demonstrate more sophisticated beliefs when asked to indicate agreement or disagreement with statements of motivational strategies as opposed to being asked to articulate their beliefs through the more open-ended data collection techniques common in other studies.

In our previous research, we have used graduate-level preservice teachers' papers to provide evidence that they had supported or changed their beliefs about motivating students as a result of taking a course in theories of teaching and learning and completing graduate study focused on the application of motivational theory to the classroom (Moss & Peterson, 2007; Peterson & Moss, 2006; Peterson & Moss, 2007). In the current study, our goal was to extend this research by examining how an educational psychology course helps undergraduate preservice teachers reveal and challenge their beliefs about motivating students. In addition, we wanted to quantify changes in their beliefs by using a questionnaire adapted from the previously mentioned Nolen and Nicholls (1994) study in which they measured beliefs about the effectiveness of theory-based motivational strategies. Specifically, our study addressed the following question: How do preservice teachers' beliefs about motivational strategies change as a result of taking an educational psychology course designed to help students engage in systematic intentional inquiry of their beliefs about learning and teaching?

Method

Participants

Participants included 98 sophomore education majors enrolled in educational psychology at a private mid-Atlantic university. They were equally divided among elementary and secondary education majors, 80% were female, 93% were Caucasian, and their mean age was 19 years. Our educational psychology course used a systematic and intentional learning process that engaged preservice teachers in revealing and challenging their underlying assumptions through the lenses of theory and research (Moss, 2002; Moss & Schreiber, 2004; Schreiber, Moss, & Staab, 2005). The major learning objective of the course was to develop an understanding of relevant theory and research operating in effective teaching practice. We wanted students to: (a) understand theories of human development, learning, and motivation as lenses through which to consider practice; (b) reveal and challenge assumptions about teaching and learning; and (c) use theory and research to evaluate, defend, and/or modify their teaching decisions.

In order to situate learning within the context of authentic instructional planning, we asked each student to develop a learning project to serve as the context for investigating educational theory and research. Learning projects consisted of a unit or program students intended to teach in their future professional positions. Students began by writing an overview of the learning project that included a description of the targeted learners, intended learning goals, major learning activities, and products and/or performances used to assess achievement of the learning goals. Throughout the semester, students used theories and research to analyze and refine their projects by submitting three learning project analyses, which focused on development, learning, and motivation respectively.

In order to assist their learning, we developed a set of key theoretical principles (McCown & Moss, 1996; Moss, 2001; Moss, 2002) that were broad, integrative statements designed to help students synthesize the large amount of theoretical concepts and research into a few big ideas. Several key principles of learning and motivation were taught that might have informed our students' beliefs about motivational strategies as measured by the questionnaire. These principles included: (a) The availability and quality of models influence student learning and motivation; (b) Self-efficacy and self-regulation develop as learners set their own goals, monitor their own progress, and evaluate their own performances; and (c) Effective teachers create learning environments that foster intrinsic motivation in all students. Whereas the first two of these key principles were clearly based in Bandura's social cognitive theory, instructors had flexibility in the theories they chose to emphasize for teaching the third key principle. Based on the text, the instructors could choose to emphasize social constructivism, self-efficacy, self-determination theory, goal orientation theory, personal and situational interest, and attribution theory, or some combination of these.

In each learning project analysis, we asked students to use theoretical concepts and research underlying the key principles to analyze decisions of practice in their learning projects. We asked them to reveal and examine their assumptions that came to light as a result of their new learning, to consider the validity of these assumptions, and to discuss specifically how they could use theory and research to justify sound decisions in their projects and to change those decisions when warranted to make their project more theoretically sound and research-based. The third learning project analysis focused specifically on key principles of motivation. At the end of the semester, students submitted a final summary report describing their learning projects using theory and research to support their teaching decisions.

Instrumentation and Procedures
Students responded to a two-part questionnaire developed by Nolen and Nicholls (1994). The questionnaire included two hypothetical scenarios, one that described disaffected students and one that described able and motivated students. The scenario for disaffected students read as follows:
You are teaching a class (at the grade level you would like to teach) that has a few children who lack all interest in learning. They are not at all disruptive. But, they daydream, are slow to start

assignments, do not work hard, and are falling further and further behind the other students. Below are some possible things you could say or do to improve the motivation of such students. Indicate how useful you think each thing would probably be for improving the motivation of these students.

The scenario for able and motivated students read as follows:

You have some students who are very able and eager to learn and who complete all assignments accurately and quickly. Below are some things you could say or do to maintain (or even improve) the motivation of these students. Indicate how useful you think each thing would be for keeping these students well- motivated.

Following each scenario, students rated the effectiveness of motivational strategies on a 5-point scale (5 = *very useful*, 3 = *neutral,* 1 = *very harmful*). The lists of motivational strategies were based on recommendations by researchers and textbook authors (40 items for disaffected students and 33 items for able and motivated students). Students responded to the questionnaire during the first and last week of the semester.

Data Analyses

Using factors from the Nolen and Nicholls (1994) study, we calculated pre- and posttest scores for each factor: praise, attributing failure to low effort, negative reinforcement for task completion, using task extrinsic rewards, promoting cooperation, giving choice, offering stimulating tasks, showing interest and giving responsibility, attributing accomplishments to thought and effort, and minimizing pressure. We then tested for significant differences between pre- and posttest scores for each factor by conducting paired t-tests, with alpha set at $p < .01$.

Results and Discussion

Results for motivational strategies for disaffected students are summarized in Table 1. Asterisked factors were significantly different at $p < .01$. Based on our key principles, we hypothesized that students would maintain or increase their support of the following factors: praise, attributing failure to low effort, promoting cooperation, giving choice, offering stimulating tasks, showing interest and giving responsibility, and attributing accomplishments to thought and effort. We hypothesized that they would decrease their support for using task-extrinsic rewards.

As hypothesized, students increased their endorsement of promoting cooperation, giving choices, offering stimulating tasks, and showing interest and giving responsibility. All of these strategies were supported by theories that were emphasized in our educational psychology class. Also as expected, students did not increase their endorsement of using task extrinsic rewards. Because our key principles emphasized the benefits of intrinsic motivation, we did not expect them to increase their endorsement. It is also interesting to note, however, that they did not decrease in their endorsement of task extrinsic rewards as we hypothesized. This result may be due to the fact that the textbook (Ormrod, 2006) acknowledges that extrinsic rewards are sometimes necessary and can be used in ways that do not diminish intrinsic motivation. It is also possible that some of the instructors endorsed the use of extrinsic rewards.

Table 1. *Beliefs about Motivational Strategies for Disaffected Students*

Motivational Strategy	Pretest					Posttest				
	N	min	max	M	SD	N	min	max	M	SD
Praise	98	4.00	14.00	**9.07**	2.22	85	4.00	15.00	**9.33**	2.45
Attribute failure to low effort	94	7.00	28.00	**16.79**	4.54	82	7.00	32.00	**16.39**	4.65
Negative reinforcement for task completion	97	3.00	14.00	**7.49**	2.21	83	3.00	14.00	**7.54**	2.31
Use task- extrinsic rewards	96	5.00	19.00	**12.43**	2.66	82	4.00	20.00	**11.94**	3.23
Promote cooperation*	97	6.00	15.00	**1.76**	1.97	84	10.00	15.00	**13.02**	1.47
Give choice*	98	6.00	19.00	**13.55**	2.87	84	9.00	20.00	**15.48**	2.51
Offer stimulating tasks*	98	5.00	10.00	**7.58**	1.32	83	4.00	10.00	**8.27**	1.34
Show interest and give responsibility*	98	10.00	20.00	**15.82**	2.14	84	13.00	20.00	**17.07**	1.71
Attribute thought and effort	98	10.00	20.00	**16.05**	7	83	12.00	20.00	**16.43**	2.06
Minimize pressure	96	4.00	15.00	**9.58**	2.17	83	7.00	15.00	**10.07**	1.82

Note. *Means differed significantly at p < .01

Contrary to our hypotheses, students did not increase their endorsement of attributional strategies. We believe this result is most likely because instructors reported not having adequate time to address attribution theory. In addition, the wording of the attribution items did not make it readily apparent that these strategies were based on attribution theory. For example, one of the items for attributing to failure to low effort stated, "Tell them, 'You will have to do better if you are going to get a good job when you leave school.' " One of the items for attribute thought and effort stated: "Occasionally give them a smile or a pat on the back when they are trying hard." It is not surprising that students who had perhaps been introduced only briefly to attribution theory would use what they had learned to make decisions about how strongly they would endorse these strategies. Contrary to our hypothesis, students also did not increase their endorsement of using praise. We believe that this is most likely due to the wording of two items in this factor, both of which refer to students as "good boy/girl." Given that many of our students were secondary majors, they may have objected to calling students good boys and girls.

In summary, our results for beliefs about motivating disaffected students showed that our preservice teachers increased in their endorsement of four strategies that we expected to increase. Even though they did not increase their endorsement of using extrinsic rewards, they also did not decrease.

Results for motivational strategies for able and motivated students are summarized in Table 2. Pairs of means that are shaded were significantly different at *p* < .01. Based on our key principles, we hypothesized that students would increase their endorsement of praising ability and effort, offering stimulating tasks, attributing thought and effort, promoting cooperation, and offering choice. We hypothesized that students would decrease their endorsement of publicized superior performance.

Table 2. *Beliefs about Motivational Strategies for Able and Motivated Students*

Motivational Strategy	Pretest					Posttest				
	N	min	max	M	SD	N	min	max	M	SD
Publicize superior performance*	98	3.00	12.00	**6.99**	2.07	85	3.00	14.00	**7.98**	2.50
Praise ability and effort	95	5.00	19.00	**11.05**	3.27	84	5.00	23.00	**11.24**	3.94
Use task-extrinsic rewards	98	4.00	18.00	**10.97**	3.30	85	4.00	19.00	**10.94**	3.33
Offer stimulating tasks*	97	9.00	20.00	**15.61**	2.36	85	8.00	20.00	**16.19**	2.30
Attribute thought and effort*	98	3.00	15.00	**10.51**	2.30	85	3.00	15.00	**11.01**	2.67
Promote cooperation*	98	9.00	25.00	**19.91**	2.95	84	5.00	25.00	**20.80**	3.14
Offer choice*	98	3.00	14.00	**9.81**	2.41	85	3.00	15.00	**11.49**	2.55
Enter academic competitions*	98	3.00	5.00	**4.29**	0.67	85	3.00	5.00	**4.53**	0.65

Note. *Means differed significantly at $p < .01$

As we hypothesized, students increased their endorsement of offering stimulating tasks, attributing thought and effort, promoting cooperation, and offering choice. These strategies are supported by theories such as attribution theory, social constructivism, and intrinsic motivation theory, and results confirmed our expectations. Students also increased their endorsement of publicizing superior performance. Because this strategy promotes performance goals rather than mastery goals, we had hypothesized that students' endorsement of this strategy would decrease. At the same time, it should be noted that in spite of the increase, our students' endorsement of these items still remained lower than all other strategies with the exception of entering academic competitions. There are several reasons for the unexpected increase in endorsement of this strategy. First, students may have developed misunderstandings about goal orientation theory due to time constraints in addressing the complexities of motivation. On average, the instructors devoted two or three class periods to motivation. Students' understanding might have also varied due to differences among instructors in emphasis placed on motivation theories. Their understanding was also likely dependent on the instructors' own implicit assumptions about the value of various motivational strategies.

Our hypothesis that students would increase their endorsement of praising ability and effort was not supported. However, again we found that the wording of the items may not have accurately reflected what students had learned about attributions to ability and effort. For example, one item stated, "Tell them, 'I'm so glad that you aren't lazy.' " Even though we hoped that our preservice teachers would endorse strategies of making attributions to ability and effort, we would not have hoped that they would endorse this specific item as an acceptable way of praising ability and effort.

As with strategies for motivating disaffected students, we hypothesized that we would see a decrease in endorsement of using task-extrinsic rewards since our key principles emphasized the benefits of intrinsic motivation. This hypothesis was not supported, but our students did not increase their endorsement of using task-extrinsic rewards for maintaining motivation in able and motivated students. All of the items in this factor are clear with respect to offering task-extrinsic rewards, so we must assume that our students' beliefs were not

influenced by their instructors. The textbook devoted two paragraphs to ways in which extrinsic reinforcers should be used only selectively, so it is possible that the results for this factor reflect the conditional recommendations concerning extrinsic reinforcers (Ormrod, 2006).

In summary, results for beliefs about motivating able and motivated students were mixed with respect to our hypotheses. Although students endorsed several strategies that we would have expected and hoped for, they also endorsed publicizing superior performance, a strategy which we had hoped would decrease because it emphasizes performance goals.

Looking across the results for both disaffected and motivated able students, we note that students did not significantly decrease their endorsement of any motivational strategies. This suggests the possibility that in one semester of instruction using our theoretical framework, students are more likely to strengthen their existing beliefs than they are to abandon them. This result is consistent with previous research showing that it is difficult to change beliefs in just one semester (Wideen et al., 1998). Another possibility is that the questionnaire items were not sensitive to the nuances of how our students would use theory and research to support effective decisions of motivational teaching practice. For example, students in our class might continue to endorse the task-extrinsic reward item, "Give them stars or stickers for improved effort or performance." However, after learning about goal orientation theory, they might explain their response by pointing out that emphasizing improvement would be one way to encourage mastery goals rather

than performance goals. This example illustrates one of the limitations in using structured questionnaire items to understand students' beliefs about motivation.

Results of this study have implications for the methods used in future research on belief change in preservice education. First, we suggest that researchers examine the match between the methods they use to capture preservice teachers' beliefs about issues of motivation and the utility of those methods to uncover sophisticated and nuanced understandings. In a class such as our educational psychology course where students learn to articulate theoretical support for their teaching decisions, the qualitative methodologies used in much of the research on teachers' beliefs are more likely to capture the rich nuances of our students' learning. This is especially true given the fact that our students were accustomed to articulating their beliefs in relation to an authentic context—a learning project that they designed and analyzed in detail. Our students might have produced more evidence, or at least richer evidence, of belief change if they were able to respond to questions situated in a more realistic teaching situation.

However, we also know from our experiences that regardless of the particular research method used, many students have difficulty articulating their beliefs, so it may be valuable to combine methods. For example, students might be asked to respond to statements such as those in the Nolen and Nicholls (1994) questionnaire, but also to add a brief rationale for their response. Another possibility is to have students respond to strategies embedded in rich and detailed scenarios. Even with a mixed methods approach, it is important that strategy

statements be written in detailed and unambiguous language that are clearly supported or not supported by educational theory and research. Given the complexities of fostering motivation in diverse students, this is not an easy task. However, the potential benefits to the preparation of quality teachers make it a worthwhile endeavor.

Our results also have important implications for teaching educational psychology. Because we used an existing questionnaire, some of the motivational strategies did not reflect what we teach, sometimes making it difficult to draw conclusions about our students' beliefs about motivation as a result of our teaching. Even so, our results have provided useful information with which to stimulate further discussion among colleagues about our priorities for student learning given the short amount of time that can be devoted to motivation (or any other important topic in educational psychology). With greater clarity on the beliefs we wish to target, we can improve the ways in which we foster, capture, and assess these beliefs.

Overall, our results suggest that providing preservice teachers with opportunities to reveal, examine, and challenge their beliefs can help them develop more theoretically sound beliefs and make more effective teaching decisions. For the most part, our students were more likely to endorse theoretically supported motivational strategies at the end of the course than they were at the beginning of the course. As a result, we believe there is definitely promise in our theoretical framework that fosters systematic and intentional inquiry into beliefs about teaching.

However, our results also indicate that students may change their beliefs in an unintended direction or develop misunderstandings, as in the case of endorsing publicized superior performance. These findings point to specific areas where we must become increasingly vigilant in checking the soundness of our students' beliefs, particularly when we are attempting to foster belief change. Our results also highlight the critical need for us as teacher educators to carefully consider how we can best help our students examine their beliefs about motivation in ways that help them clearly understand the complexities involved in using sound motivational practices. Finally, our results point to the need to develop ways to capture and analyze the beliefs that our students hold about the complexities of motivating students.

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