PART I: BACKGROUND

Title: Students' Understanding of How Beliefs and Context Influence Motivation for Learning

Authors: Tesia Marshik, Bill Cerbin, Katy Kortenkamp, and Robert Dixon

Contact: Tesia Marshik (tmarshik@ulax.edu)

Discipline or Field: Psychology

Submission Date: June 1, 2012

Course Name: Educational Psychology

Course Description:
This course examines the application of psychological principles to school learning. Topics covered include theories of learning, individual differences, motivation, classroom management, measurement and evaluation, and effective teaching. Content is discussed in relation to current educational issues and problems and students are encouraged to apply educational and psychological theories to these issues as well as to reflect upon the ways that course materials pertain to their personal and professional experiences. The course is an elective for students majoring in Psychology but is required for most students majoring in Education (all subjects and all levels). In order to register for the course, students must have successfully completed a developmental psychology class. As a result, the course consists primarily of upper-level Education students from across the University.

Abstract:
Our overarching goal for this lesson study was for students to understand and perceive the relevance of motivation theories and to be able to apply these theories to their lives (as students and as future teachers). From a specific lesson standpoint, our goals were for students to correctly identify different achievement goal orientations (i.e., mastery, performance-approach, and performance-avoid goals), to experience how such orientations affect students' behaviors and performance in the classroom, and to understand how personal and contextual factors shape individuals' goal orientations. To meet these ends, we developed a 2x2 between-participants experiment in which we attempted to manipulate students' goal orientations and performance on an anagram task. Each student received one of two different sets of anagrams to solve: the last word for each group was the same ("cinerama"), but the preceding words were either solvable ("melon" and "baker") or unsolvable ("whirl" and "slapstick"). Furthermore, students were given two different sets of instructions: one set promoted performance goals while the other set promoted mastery goals. As a class, students completed the anagrams one-at-a-time and publicly indicated when they solved each anagram. Afterwards, students answered a series of questions about the task regarding their personal enjoyment, persistence, efforts, etc. Students were then debriefed and we had small-group and full-class discussions about the relevant motivation theories. Through observations and analyses of students' responses in-class and via the questionnaires, we found that the lesson was overall successful in terms of increasing students' understanding of the effects of different achievement goals. The lesson seemed to be especially salient/powerful for students in the "performance goal and unsolvable task" condition (who likely experienced learned helplessness during the activity). On the other hand, students in the "mastery goal and easy task" condition seemed to be the least engaged.

PART II: THE LESSON

Learning Goals:
A major challenge in teaching educational psychology is to help students use theoretical concepts to inform their future teaching practices. This is especially difficult in the area of *motivation for learning*, where there are

multiple, overlapping theoretical perspectives. Our concern is that students may learn the theories well enough to pass a test but lack the deeper understanding needed to use the concepts in practice. We wanted to develop a lesson in which students have firsthand experience of classroom conditions that affect motivation for learning. We reasoned that if students have a salient, first hand *motivation* experience in the classroom, they will be better able to reflect on and map abstract theoretical concepts onto personal experience.

A major element of the current lesson was an anagram task intended to induce or support different goal orientations in our students--the same goal orientations we want them to understand and incorporate in their own teaching pedagogies. By varying the level of task difficulty (i.e., specifically inducing *failure* for some of our students) and simultaneously providing different instructions to students (i.e., some that promoted mastery/learning goals, and some that promoted performance goals) we hoped that our students would develop greater understandings of different achievement goal orientations and their corresponding effects on students' behaviors in the classroom. For example, we expected that performance-oriented students who were given difficult anagram lists (and who thus experienced failure on the first part of the task) would be more likely to give-up and less likely to enjoy the activity compared to students who were mastery-oriented, who would be more likely to persist and enjoy the challenge. Essentially, our goal was to induce a state of learned helplessness in some of our students and to use their experiences (contrasted with their peers' experiences) as a basis for our discussion of these concepts. See Ames & Archer (1988) or Dweck and Legget (1988) for an overview of achievement goal theory.

Consistent with lesson study literature recommendations, we divided our learning goals into three levels. Our **broad goal** was for students to experience and reflect upon the relevance of course material to their roles as future teachers and also to their current roles as students. Our **discipline based goal** was for students to understand the relevance of and apply motivation theories to their roles as future teachers and current students. And our **lesson-specific goals** were threefold: 1) for students to be able to identify and describe the different achievement goal orientations, 2) for students to understand how goal orientations affect individual's performance, motivation, etc. and how they relate to other motivation constructs such as self-efficacy and attribution theory, and 3) for students to be able to develop strategies to foster optimal orientations in their roles as future teachers and current students. To accomplish these goals, we designed an activity to manipulate students' goal orientations and motivation on a task and to induce a state of learned helplessness.

Lesson Plan:

Pre-lesson:
The lesson was designed to help students better understand and apply achievement goal theories of motivation, so prior to this lesson, a brief introduction to motivation research was provided. The introduction included an overview of historical perspectives on motivation and a brief discussion of intrinsic vs. extrinsic motivation. Students were also primed to begin thinking about their own motivation in past and current classes (e.g., "Think of your favorite and least favorite classes—what about them motivated you or made you less motivated?") and how they might interpret other students' motivational states based on classroom behaviors (via a series of brief case studies).

Lesson Study Preparations:
We developed several materials for this lesson: anagram booklets, lesson questionnaires, goal orientation frame worksheets, and a post-activity learning assessment.

Anagram Packets:
We developed four different versions of stapled booklets of notecards that contained a total of 5 anagrams, one on each page. The four versions of the booklets differed in two ways: the lists of anagrams and the instructions (creating a 2x2 between participants experimental design). Each student received only one version of the anagram booklet.

In terms of the anagrams, there were two different lists: an "easy" list that included four relatively easy-to-solve anagrams (PINES, SLIME, LEMON, and BAKER) followed by a more difficult anagram (CINERAMA), and a "difficult" list that included four *unsolvable* anagrams (ORANGE, TULIP, WHIRL, and SLAPSTICK) followed by the same difficult (but solvable) anagram (CINERAMA). Thus, the final anagram for all students was the same. The purpose of including four unsolvable anagrams was to induce a state of learned helplessness in students who received this list, so that they would be more likely to give up and less likely to try to solve the final anagram

In terms of the instructions, there were two different sets: one designed to elicit mastery goals on the anagram task and another set designed to elicit performance goals on the task. The mastery instructions indicated that students' abilities to solve anagrams could be improved with effort and practice and stated that the purpose of the activity was for students to see how their ability improved over time (thereby fostering incremental beliefs about ability and encouraging students to focus on their personal progress and efforts). The performance-oriented instructions indicated that the ability to solve anagrams was a sign of intelligence and stated that the purpose of the activity was to compare students' performance (thereby fostering entity beliefs and encouraging students to focus on competition and proving one's intelligence). (see Appendix A)

Lesson Questionnaire:
We also developed a brief questionnaire designed to elicit information about students' initial reactions to the anagram task immediately after completing it. The questionnaire consisted of two open-ended questions about students' thoughts, emotions, and attributions for the task and four items where students rated their enjoyment, ability to solve anagrams, confidence that they could improve their ability (incremental beliefs), and future task difficulty preferences using 6-point Likert-type scales.

The last page of the questionnaire consisted of open-ended questions designed to elicit information about students' overall impressions from the lesson and any questions they had about the topic. Specifically, students were asked to indicate what they learned or "took away from" the activity/lesson and if they had further questions about motivation theories (including clarification and application questions). (See Appendix B)

Goal Orientation Frame Worksheet:
We developed a goal orientations frame designed to organize and facilitate discussions about the relative effects of different goal orientations on several outcomes and their relationships to other motivation constructs. The frame organized the major goal orientations (mastery, performance-approach, and performance-avoid) into six columns by pairing them with difficult or easy tasks and students indicated how each goal–task pair would likely influence individuals' performance, attributions, self-efficacy, enjoyment, persistence, and choice of future activities. (See Appendix C)

Post Activity Learning Assessment
We developed a brief quiz to assess students' understanding of the major points from the lesson. The quiz consisted of 3 multiple choice questions about the relative effects of different goal orientations and environmental factors. After selecting their answer to each question, students were also instructed to provide a brief explanation so that we could better gauge their understanding of the content. (See Appendix D)

Lesson Study Implementation:
Prior to students entering the classroom, they were divided into four groups and the room was divided into quadrants (one group/quadrant for each experimental condition). We intentionally placed the groups with difficult anagram lists in the back of the room so that they would be able to see other students more easily, thereby increasing the likelihood that learned helplessness was induced in those students. The anagram packets and questionnaires were placed face-down on the students' desks. Students were then allowed to enter the room and were instructed to sit in certain quadrants and not to look at any of the materials.

Once class began, students were told that they would be participating in an activity to start the day (which was not an uncommon occurrence). The instructor told them that they would be solving a set of anagrams and ensured that students understood what an "anagram" was prior to beginning. The instructor also gave an easy example on the board (i.e., "tab'). At that point, students were instructed to turn over their anagram booklets, read the directions, and then work on solving one anagram at a time (following the teacher's cues). (Time: approximately 5 minutes)

Students were given approximately 30 seconds to solve each anagram and were instructed to raise their hands (and keep them up) once they had the answer. During this time, the instructor made a vocal effort to keep track of how many people had their hands raised. The purpose of having students raise their hands and the instructor acknowledging that some students had solved the anagrams was to increase the pressure of the situation and thus the likelihood that learned helplessness was induced in students who had the difficult lists. After the allotted time for each anagram was up, the instructor would tell students to proceed to the next one, until the task was completed. (Time: approximately 5 minutes)

Immediately at the conclusion of the last anagram, the anagram booklets were collected and students were instructed to take a few minutes to fill-out the questionnaires about their experiences on the task (approximately 5-10 minutes).

After students had time to reflect on their experiences, the instructor inquired as to what they thought the purpose of the activity was (including if any of them had suspicions about possible conditions), and then revealed the conditions, one at a time. First the instructor revealed the different anagram lists, then different instructions, by projecting it simultaneously on a large screen. After each reveal, students were encouraged to reflect upon how the different conditions influenced their enjoyment and behaviors on the task. The instructor made a point of noting that significantly more people in the "easy' list condition solved the last anagram compared to students in the "difficult" condition, even though the anagram was identical for both groups. Students were then introduced to the goal orientations frame and asked to work in small groups (within their conditions) to fill it out. (Time: approximately 30 minutes)

We also had a YouTube video available to show students after the anagram task was completed, which illustrates a simpler version of this activity in a high school classroom: http://www.youtube.com/watch?v=gFmFOmprTt0. The video was initially intended to be part of a "back-up plan' in case the manipulation didn't work, but we found that it was also helpful for our students to see the activity from another vantage point. The video helped to clarify and reinforce our explanation of the activity and it also seemed to encourage more discussion (as students related their own experiences during the activity to the students' behaviors in the video).

After approximately 20 minutes elapsed the class reconvened as a whole, and the instructor invited students to share and explain their answer for each cell in the frame. The instructor encouraged students to reconcile different answers and provided explanation as needed. The instructor also encouraged students to begin thinking about how various classroom factors and teacher behaviors support different achievement goals. Students' responses and experiences were connected back to lesson as much as possible. (Time: approximately 25 minutes)

At the conclusion of the discussion, students completed the final page of the questionnaire, where they reported their overall impressions of the lesson, what they learned, and if they had any remaining questions. (Time: approximately 5-10 minutes)

PART III: THE STUDY

Approach:
In studying the lesson, we collected data in several ways. Copies of all of the forms or exercises relevant to the study of our lesson are available in the Appendices.

First, we developed and collected the anagram booklets so that we could see how many students successfully completed each anagram in each condition. We also collected the questionnaires that contained open- and close-ended responses about students' reactions to the anagram task, as well as students' completed goal orientation frame worksheets. Furthermore, we collected students' open-ended responses regarding their overall impressions and questions about the lesson and motivation theories.

In addition to the lesson materials, a set of observation guidelines were prepared to assist with data collection. Observers were instructed to record things such as students' behaviors and facial expressions during the anagram task, the number of students who successfully solved each anagram and their location in the classroom, the number of students that participated in the small-group and whole-class discussions, and the quality of students' participation (e.g., on-task, insightful or off-topic comments, etc.). These data were used in conjunction with the questionnaire responses and goal orientations frame to gauge the success of the lesson.

Finally, post-activity quiz and exam questions were designed based on the lesson content to assess students' ability to apply what they learned, as well as their understanding of the material given new scenarios.

Findings/Discussion

We found that the lesson was overall successful in terms of increasing students' understanding of the effects of different achievement goals. Student feedback was mostly positive and they reported that the goal orientations frame was helpful in fostering their understanding of motivation research, including the relationships between environmental factors (such as task difficulty and instructions) and individual factors (such as goals and beliefs). Many students reported having a greater appreciation for the complexity of motivation issues in the classroom and the need for teachers to consider multiple influences and interactions.

In the first iteration, students' performed very well on the post-activity quiz, with an average score of 84%. In the second iteration, students performed very well on exam items relevant to motivation theories and the goal orientation frame (scores ranged from 68-100% correct, M = 90.9%).

We did, however, note some differences between the four conditions/groups in how they rated the activity and their experience.

Based on our in-class observations, the lesson seemed to be especially salient/powerful for students in the "performance goal and unsolvable task" condition (who likely experienced learned helplessness during the activity). On the other hand, students in the "mastery goal and easy task" condition seemed to be the least engaged and their open-ended responses reflected ambivalence towards the activity, perhaps because they didn't experience the same degree of pressure or failure on the task. Our manipulation of learned helplessness was not quite as powerful as we expected (as several students in the "difficult anagram list" groups correctly solved the last anagram--perhaps evidencing a reactive response), but we *did* note a general pattern that more students in the "easy anagram lists" conditions solved the last anagram. Main effects or differences among the "instructions" groups were not apparent in our observations.

A between-subjects multivariate analysis of variance (MANOVA) was conducted to explore the effects of the anagram lists and instructions on students' self-reported enjoyment, perceived ability, incremental beliefs about their ability, and preference for future tasks.. The MANOVA revealed a significant multivariate main effect for anagram list, $F(4, 61) = 5.89$, $p < .001$. The multivariate main effect for instructions was not significant, $F(4,$

61) = .69, p = .60, nor was the interaction between anagram list and instructions, F (4, 61) = 1.67, p = .17. Given the significance of the overall test, the univariate main effects of the anagram lists were examined. Significant univariate main effects for anagram list were obtained for students' enjoyment F (1, 69) = 15.58, p <. 001, perceived ability, F (1, 69) = 21.19, p <. 001, and preference for future tasks, F (1, 69) = 14.76, p <. 001. Specifically, students who received the difficult anagram list reported significantly lower levels of enjoyment (M = 2.78, SD = 1.24) than students who received the easy anagram list (M = 4.06, SD = 1.39), significantly lower levels of perceived ability (M = 2.28, SD = 1.05) than students who received the easy anagram list (M= 3.56, SD = 1.25), and preferred easier future tasks (M = 2.73 SD = 0.98) compared to students who received the easier list (M= 3.76, SD = 1.21).

Consistent with achievement goal orientation theory and research, students in the "performance goal-easy task" group reported the highest levels of enjoyment (M = 4.11) and perceived ability (M= 3.89) whereas students in the "performance goal-difficult task" group reported the lowest levels of enjoyment (M= 2.67) and perceived ability (M= 2.07), although the interaction was not statistically significant.

From the open-ended responses, most students reported feeling pressure from the time constraints and social comparisons, but these experiences appeared to be more intense for students who were in the performance and difficult task conditions (consistent with our expectations). Students in the "mastery-easy task" group were less likely to report feeling frustrated due to these constraints and, instead, focused more specifically on their reactions to the challenge of the last anagram. Most were unpleasantly surprised by the difficulty of the last anagram, but they also reported feeling confident in their abilities to solve it, if given additional time. Students in the performance conditions reported more negative views of the activity overall, whereas students' perceptions in the mastery conditions were more varied. This finding suggests that a competitive atmosphere reduced those students enjoyment of the task, for both groups, but especially when they had difficult anagram lists.

Lessons Learned and Future Considerations

From their open-ended responses, we found that students rarely mentioned the instructions as having influenced their behaviors or performance on the anagram task. This raises the question of whether the different instructions are salient or effective in manipulating students' goal orientations on the task. On the one hand, the instructions may subconsciously influence students' behaviors. However, statistical analyses revealed that there were no significant differences in outcomes between students who received the mastery instructions and performance instructions, so it is more likely that one set of instructions on one class activity is simply not powerful enough to have significant impact on students' goal orientations, especially in a class where the instructor encourages effort and cooperation (rather than performance and competition) overall. In the future, a direct assessment of students' goal orientations before and after the activity might be useful.

We also noted that when completing the goal orientations frame in small groups, some students seemed to approach it with the mindset of "finish it quickly" rather than really taking the time to discuss the answers, to note patterns, or to reflect on the overall similarities and differences among the goal orientations. As a result, there appeared to be great variability in the amount and quality of discussion that occurred within the small groups. In addition, we noted that each group tended to be dominated by one or two students and not everyone participated in the discussion. Furthermore, once the class reconvened as a whole to discuss the frame, there was variability in students' engagement and some students seemed to be more focused on simply copying the correct answers (as necessary) rather than discussing and trying to understand the patterns. (As further evidence that this occurred, we noted multiple erasure marks and scribbles on some of their goal orientation frame worksheets after we collected them, which suggested to us that some students/groups were more confused than they let on.) Perhaps this is a reflection of students' *actual* goal orientations for the lesson, or perhaps the discussion itself easily clarified some of their misunderstandings, but this tendency could also be due to the limited time frame for the discussion. In the future, we might alter the frame so it's smaller, or have students

complete it one column at a time, or ask students to complete it individually *first* (perhaps as homework) before discussing their answers with others.

Another potential weakness lies in the complexity of the discussion that follows the anagram task. We believe the discussion is important to help students synthesize and integrate multiple motivation constructs and therefore develop more sophisticated understandings of these issues. The goal orientations frame appears to be a useful tool for organizing the relationships among several motivation constructs. However, for some students the discussion appears to be somewhat overwhelming, while for other students, the discussion becomes somewhat redundant.

In sum, we believe that this lesson was beneficial for promoting students' understanding of goal orientations and their effects on motivation and behavior. Through multiple iterations, honest reflection, and critical examination of our teaching practices, we believe that instruction on these motivation constructs has been improved with the addition of these materials. Our ultimate goals were to increase the relevance of course materials to our students and we believe we did this by making them experience and/or witness first-hand the effects of different achievement goal orientations on students' behaviors. The beauty and power of this lesson lay in the fact that we were able to induce a state of learned helplessness in a relatively short amount of time and on a rather innocuous activity. Many students were surprised at how easily they succumbed to the situational pressures and gave-up on the task or, conversely, at their own resolve to persist even in the face of challenges and after failure. We believe this experience made the motivational constructs more salient, which prompted a more productive and insightful discussion of how teachers and students can promote motivation in the classroom. The content itself is complex and students will likely need additional opportunities to further develop their understanding of these concepts, but we believe that this lesson serves as a useful starting point or component of course curriculum.

References:

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology*, 80, 260–267.

Dweck, C., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256–273.

APPENDIX A
ANAGRAM LISTS & INSTRUCTIONS

"Easy" List:
PINES
SLIME
LEMON
BAKER
CINERAMA

"Difficult" List:
ORANGE
TULIP
WHIRL
SLAPSTICK
CINERAMA

Mastery Instructions:
Some research shows that the ability to solve anagrams can be improved through practice. The purpose of this activity is to give you practice with solving anagrams and to see how your own ability improves over time. When the instructor tells you, flip to the next card and solve the anagram. Write the answer in the space provided and raise your hand as soon as you have the answer.

Performance Instructions:
Some research shows that the ability to solve anagrams is a sign of general intelligence. The purpose of this activity is to give us a sense of how good you are at solving anagrams compared to your peers. When the instructor tells you, flip to the next card and solve the anagram. Write the answer in the space provided and raise your hand as soon as you have the answer.

In the space provided below, please take a few moments to explain how you **felt** and/or what you were **thinking** while you were working on this activity.

What factors do you **attribute** your performance to? (In other words, what do you believe caused you to succeed or struggle on this task?) Explain.

Using the scales below:

A) Please rate how much you enjoyed this activity (CIRCLE ONE):

1	2	3	4	5	6
did not enjoy at all					really enjoyed

B) In general, how would you rate your ability to solve anagrams? (CIRCLE ONE)

1	2	3	4	5	6
very low ability				very high ability	

C) How much do you agree with the following statement: "I believe I can improve my ability to solve anagrams." (CIRCLE ONE)

1	2	3	4	5	6
strongly disagree					strongly agree

D) If asked to complete another list of anagrams, what difficulty level would you choose? (CIRCLE ONE)

1	2	3	4	5	6
very easy					very challenging

What is one thing you learned today about motivation?

What is one thing you learned about yourself?

What is one question you have about today's lesson?

APPENDIX C
GOAL ORIENTATIONS FRAME WORKSHEET

Ratings:	Conditions					
	Perf-approach goal w/ easy task	**Perf-approach goal w/ difficult task**	**Perf-avoid goal w/ easy task**	**Perf-avoid goal w/ difficult task**	**Mastery goal w/ easy task**	**Mastery goal w/ difficult task**
Likely Performance: *Low, moderate, or high?*						
Possible (likely) *attributions* **for performance?**						
Self-efficacy for anagrams? *Low, moderate, or high?*						
Enjoyment: *Low, moderate, or high*						
Persistence: *Low, moderate, or high?*						
Choice of future anagrams (or similar tasks): *(easier, harder, or the same?)*						

POST-ACTIVITY LEARNING ASSESSMENT

Name:_____

Anagram Task Learning Outcomes Quiz:

1. In general, which students are most likely to have the lowest motivation, enjoyment, and persistence?
    a. Students with mastery goals who are working on difficult tasks
    b. Students with mastery goals who are working on easier tasks
    c. Students with performance goals who are working on difficult tasks
    d. Students with performance goals who are working on easier tasks

    In one sentence, explain your answer:

2. Imagine, as a teacher, that you have a group of students who are performance-goal oriented and who are used to completing easy assignments and earning high grades on them. What effects would you likely see if you suddenly challenged them with harder material?
    a. Students' motivation and performance would most likely increase
    b. Students' motivation and performance would most likely decrease
    c. Students' motivation and performance would not change

    In one sentence, explain your answer:

3. Imagine, as a teacher that you have another group of student who are mastery-goal oriented who have been completing easy assignments and earning high grades on them. What effects would you likely see if you suddenly challenged them with harder material?
    a. Students' motivation and performance would most likely increase
    b. Students' motivation and performance would most likely decrease
    c. Students' motivation and performance would not change

    In one sentence, explain your answer: