

NORTHERN ILLINOIS UNIVERSITY

Putting effort into learning: Do evaluative focus and motivational
intervention play a key role in performance?

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Capstone Approval Page

Capstone Title (print or type)

Putting effort into learning: Do evaluative focus and

motivational intervention play a key role in performance?

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HONORS THESIS ABSTRACT

Abstract

This study examined two factors hypothesized to affect performance in a learning environment. Participants completed a tutorial about evaluating arguments under varying conditions in a 2 (evaluative focus) x 2 (motivational intervention) between-participants design. A personal evaluation focus was emphasized for some participants and not for other participants. Moreover, some participants were exposed to a motivational intervention highlighting room for skill development whereas other were not. After participants completed the tutorial, they completed a post-test that assessed their skills. According to prior research, it was expected that participants who felt either personally evaluated or exposed to a motivational intervention would exert more effort leading to better task performance. Results indicated that, participants performed better on the post test than the pretest regardless of condition. However, these factors may also have consequences for other variables such as task interest and performance anxiety. Therefore, we also measured task interest, and anxiety. Participants in the motivational intervention conditions showed slightly more interest in the task than participants in the no-motivational intervention condition. There was not a significant effect of motivational intervention on anxiety. While looking into the effects of anxiety, participants reported low levels of anxiety. In general, we hope that this study will inform instructors how to present tasks in order to maximize both performance and motivation.

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Putting effort into learning: Do evaluative focus and motivational
intervention play a key role in performance?

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Abstract

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Putting effort into learning: Does evaluative focus and motivational intervention play a key role in performance?

Learning is a basic part of life from the time that a baby takes its first steps to learning new processes or information in college. An individual will continually learn throughout life, as this becomes an ongoing process. When looking into what can help individuals learn new information one might want to assess levels of effort. When an individual is learning a new task it takes a certain amount of effort on the behalf of the individual to grasp new concepts, this is a basic part of learning new material. So when an individuals are not invested in a task and do not want to put forth effort, how do you motivate them to try?

Presence of Evaluative Focus on Performance

One factor that can increase the amount of effort that individuals are willing to put into a learning task is whether their performance will be evaluated by others. The evaluative focus defines the target of evaluation. Evaluative focus is referring to the fact that you are being evaluated with no emphasis on how you are compared just that you are being evaluated. Prior research has shown that when the evaluative focus is on the individual, individuals try harder and perform better (Harkin's, 2000; White, Mitchell, & Bell, 1977). For example, in one study (White, Mitchell, & Bell, 1977), participants completed a task believing that their performance was either anonymous or identifiable. During their experiment each participant worked for two hours. They were asked to sort through index cards containing personal information of "fictitious people who completed the surveys". The participants were asked to sort through the cards and place them in a corresponding area (12 areas total). Each participant was asked to finish a "previous

experiment” sorting 24 cards which was used as a practice run for the participants. Once they were finished they were asked to sort through 250 cards. During the study they introduced the presence of evaluation apprehension and goals to determine what effect’s performance. When participants were assigned to the evaluation apprehension condition, they were told that the researcher was interested in how well the individual actually performs on the given task, that their performance would be identifiable, and that they would evaluate their performance relative to others completing the task.

White et. al, (1977) used these instructions to make the individuals who participated feel personally identifiable to the researcher. White et. al, (1977) found, that when people were given a task to complete in the presence of others, they performed better because of the apprehension brought on by the possible evaluation of their work. This means that the results showed that participants performed better if they believed that they could be identified in relation to their performance.

In another study Harkins (2000) tested the effects of experimenter evaluation on performance. Participants were randomly assigned to one of two conditions that differed based on whether the experimenter would evaluate individuals’ performance or not. The participants were then asked to come up with as many uses as possible for a specific object. They were specifically told that, “quantity was the important criterion; the quality of their uses was not important (Harkins, 2000, pg. 104). Participants were allowed twelve minuets to complete as many possible uses as they could for their given object. Another important issue concerns the reason why personal evaluation tends to enhance performance. Individuals may perform better when they believe their performance will be personally evaluated because they try harder to perform well and exert more effort

(Harkins, 2000). An example of this was found in Harkin's (2000) study; he found that the participants in the evaluation condition created more uses for their given object than the non experimenter evaluation condition. It is human nature to try harder when you are concerned about what others will think. Another factor that concerns the reason why personal evaluation tends to enhance performance is perception. Perception is important when looking at evaluative focus because many people will work harder when they feel that they will be judged in relation to their performance (Harkins, 2000).

Motivations in Learning Situations

Perceived Importance

One factor that can increase the amount of effort that individuals are willing to put into a learning task is the extent to which the individual feels that the task is both desirable and necessary to learn. For example, it may be helpful to identify the reasons why it is important to learn particular material. In addition, it may also be necessary to highlight to learners that they still have room for skill development. When individuals are learning new information, even if the importance of a given task is emphasized, they may feel that they have already reached mastery of the material. This problem of overconfidence has been demonstrated by research showing that students who feel they have reached mastery of a task often still stand to learn new information, or replace existing incorrect information (Koriat, & Bjork, 2006; Sagarin, Cialdini, Rice, & Serna, 2002). This is virtually impossible to do if the individual feels that he or she does not have room to learn and therefore see no value in the task at hand. In fact, research has suggested that when an individual has a strongly held belief or attitude about a piece of information, it will become virtually impossible to correct misguided information later (Sagarin,

Cialdini, Rice, & Serna, 2002). Therefore, when a teacher needs to instruct a student and motivate him or her to learn new information it can become exceedingly difficult if the student has a predisposed idea or strongly held belief that is in conflict with the new information (Sagarin, et al., 2002).

Therefore, motivational intervention, which is whether participants receive information about how much they initially know about the task before the learning opportunity can become an important aspect in motivating individuals to learn new information. Motivational intervention can be an effective way for instructors to motivate students to learn correct information, and pay closer attention to detail, by showing students that they are vulnerable and still have room to learn. This vulnerability can create awareness for learning which can then lead to an increase in performance (Sagarin, et al., 2002).

Motivational Intervention on Learning

As previously stated above, emphasizing the importance of information to be learned is lost if people already think they have it (Koriat, & Bjork, 2006; Sagarin, et al., 2002). Because many individuals believe that they have mastered a task and often display exaggerated feelings of confidence they are less likely to learn new information (Koriat, & Bjork, 2006; Sagarin, et al., 2002). This is one potential reason why a motivational intervention becomes important in a learning environment. People need to feel slightly vulnerable in order to dispel misguided or incorrect information (Koriat, & Bjork, 2006; Sagarin, et al., 2002). One way to achieve this is to dispel exaggerated feelings of self competence. By doing this you can provide realistic information about the individual's level of current understanding (Sagarin, et al., 2002). It is expected that the presence of a

motivational intervention in a learning environment will lower exaggerated feelings of self competence thus, increasing a desire to learn. Once you increase the desire to learn in an individual you should see an increase in effort thus increasing performance levels.

However, there are two models of motivational intervention. One model, as stated above, hinges on an awareness of vulnerability. This vulnerability increases the desire to learn, which in turn increases effort and enhances performance levels. The alternative to this model is that by administering motivational intervention you can actually decrease an individual's self-efficacy. This can create a problem in learning environments because by lowering someone's feelings of competence you can actually decrease performance levels (Deci, & Ryan, 1985 as cited by Eccles, & Wigfield, 2002). The theory behind this is that by decreasing individual's feelings of competence they will decrease their effort and become less motivated. Once an individual shows a decrease in motivation they are more likely to decrease their level of engagement in the task because they no longer see the task as valuable. This means that if the student for example, no longer believes that an increase in effort will lead to a positive outcome the student can potentially give up, thus decreasing performance.

Current Study

Previous research has looked at the presence of evaluative focus in relation to performance levels (Harkins, 2000; White, Mitchell, & Bell, 1977) however; there is a gap in literature when looking at evaluative focus in a learning setting. Past research has also looked at motivational intervention in a learning setting; however, there is a gap in the literature when looking at motivational intervention in relation to performance levels. In fact, there is some reason to believe that a motivational intervention such as the one

tested here could have a positive or negative effect on performance in a learning environment. Therefore, evaluating whether or not a motivational intervention is a positive aspect of learning will give instructors a means of motivating and increasing learning in a scholastic setting. Finally, research has failed to look at these two specific components together and assess which will be the most effective in a learning environment for motivating students. Therefore, this study will investigate the effects between evaluative focus, and a motivational intervention on performance in a learning setting.

In an attempt to expand previous research found on performance in a learning setting participants were given a tutorial on argumentation. The tutorial was used to evaluate performance levels. This task was selected because the average person has not been systematically taught about argumentation. In fact research conducted by Larson, Britt, and Kurby (2009) state that, on average people display a 66% (baseline/starting point) of accurate knowledge on argumentation walking into this study. Their research indicates that after participants receive the argumentation tutorial they display .72 of accurate knowledge on argumentation. Additionally, they found a .10 correlation between someone's perceived competence (what they think they know) and their actual performance (what is accurate information). By using the motivational intervention in conjunction with the tutorial it was possible to convey to participants that learning about argumentation is useful, and that they might not be accurate in their assessment of how much information they know on the subject.

Additionally, some participants were instructed that their performance is the focus of evaluation (personal; evaluative focus), whereas, others were told that the

argumentation tutor is the focus of the evaluation (task; no evaluative focus). More specifically, we placed an emphasis on either the overall average of students scores on the posttest (task) or we told individuals that their specific score in relation to performance mattered (personal). Also, some participants were exposed to a motivational intervention designed to highlight that they have room to improve and learn new knowledge. Other participants were not provided this information. The study investigated a 2 (evaluative focus vs. no evaluative focus) x 2 (motivational intervention vs. no motivational intervention) x 2 (time; pretest vs. posttest) design with evaluative focus, and motivational intervention as between-subjects, independent variables. For the purpose of this study performance (proportion correct) will be the primary dependant variable.

Specifically the study looked at the following 4 hypothesis:

Hypothesis 1. According to prior research participants who believe they will be personally evaluated will perform better than participants who do not receive evaluation (Harkins, 2000; White, Mitchell, & Bell, 1997). Therefore it was predicted that there would be a main effect of evaluative focus on learning.

Hypothesis 2A. According to prior research receiving motivational intervention should allow participants to realize that they are vulnerable by not learning new information therefore, making them more likely to pay attention to detail, and increase the desire to learn (Koriat, & Bjork, 2006; Sagarin, et al., 2002). Therefore it was predicted that, there would be a main effect of motivational intervention on learning.

Hypothesis 2B. In an alternative model for motivational intervention, it was predicted that, participants who received the motivational intervention will show significantly more anxiety, and therefore perform worse than participants who were in the no-motivational intervention condition. This would be a main effect of motivational intervention on anxiety and interest levels.

Hypothesis 3. It was predicted that participants who received the evaluative focus condition, the motivational intervention condition, or both would show similar performance levels.

Method

Participants

Participants in the current study included 150 undergraduate students from a large Midwestern university. Participants ranged in age from 18 to 41 years old ($M = 19.49$, $SD = 2.36$). Participants included 72 undergraduate females and 71 males. Most of the population was European American students (48.1%), followed by African American students (23%), Hispanic American students (14.1%), Asian American students (8.1%), Native American students (0.7%), and other (5.9%). Participants who scored at ceiling on pretest (86% or higher) ($n = 4$) and those who did not correctly answer the question about the goal of the session after prompting ($n = 4$) were excluded.

Materials

Flawed judgment task. A flawed judgment task was used to assess participant's ability to evaluate arguments. The test presented of 32, 1-2 clause statements such as

Arguments 1-3 below. See Appendix A for example of arguments presented in the flawed judgment task.

Argument 1. Oil drilling in the Alaskan wildlife preserve should be allowed because the United States needs the oil.

Argument 2. Illinois should not require car emissions to be tested because air is constantly moving due to weather patterns.

Argument 3. Women need to be paid the same salary as men for doing the same job.

Participants were asked to mark whether the item was logically flawed or not. This was a simple forced choice task. They were to make the decision based on logical structure and ignore their own opinion and not consider how convincing it is given everything you know. Of the 32 items, 16 were minimally acceptable (see Argument 1 above) in that it had a reason and the reason was relevant. Eight items were unwarranted arguments (see Argument 2 above) in that the reason did not support the claim. Finally, 8 items were claim only meaning that the claim was not supported by a reason (see Argument 3 above). Two versions of this flawed judgment task were created so one version could be used as the pretest and a different version could be used for the posttest. The specific version serving as the pretest was counterbalanced such that half of the participants receive one version as the pretest and the other half of the participants receive that version as the posttest.

Argumentation Tutor. The participants worked through an argumentation tutorial, E.g. see Appendix B for example of items covered in the argumentation tutorial. The tutorial consisted of instructions on how to identify structurally flawed arguments.

The tutorial begins by explaining what a good argument should consist of. From there, the tutorial breaks down the various components of an argument and explains them in further detail (predicate, claim, what a good argument should consist of, and quality). After the tutorial thoroughly goes over the various components of an argument it begins to explain the difference between types of arguments. First claim only arguments are addressed as this is the easiest form of an argument for students to learn. From there participants learn the difference between unwarranted and warranted (good) arguments, as these are more complex forms of arguments. Throughout this process the tutorial creates an interactive learning environment by allowing students to first read an example of an argument, generate their own answer, then check their results with the tutorial (Larson, et al., 2009). Students are encouraged to read all material carefully and apply the knowledge they are learning while working their way through the tutorial. Originally the tutorial was only offered online however for the purpose of this study the tutorial was modified to be taken with paper and pencil

Motivation intervention. Participants assigned to the motivational intervention condition received a motivational intervention which is composed of 6 arguments. The participants were asked to evaluate the 6 arguments listed. See Appendix C for example of the motivational intervention. More specifically they were asked to look at the structure of the argument and indicate if it was flawed or ok. All of the arguments listed were structurally flawed however, the large majority of students indicated that at least one of the 6 arguments was ok. The participants assigned to this condition that indicated one of the 6 arguments were ok would then find out that they were wrong. By drawing attention to this it shows students that they are vulnerable because they did not know the

information presented as well as originally thought. The intervention was designed to help students realize they could benefit from the tutorial, and have room to learn.

Revised Intrinsic Motivation Inventory (IMI; University of Rochester, 2008)

We also looked at exploratory variables such as anxiety, self efficacy, and level of interest. See Appendix D for example of items presented in the intrinsic motivation inventory. This scale was originally devised to measure interest/enjoyment, perceived competence, effort, and value/usefulness, felt pressure and tension, and perceived choice while performing a task. For the purpose of this study we revised this scale to only include 4 sub scales on interest, effort, self-efficacy, and anxiety. Students also received a demographic questionnaire that asked about, age, ethnicity, and gender.

Procedure

First participants were asked to complete a consent form verifying that they agree to participate in the study. They were also asked to verify that they were at least 18 years old or older. After this step was completed participants received a pre-test on argumentation to assess their current level of knowledge on the task (baseline). All participants received this regardless of what condition they were assigned to. After the pre-test, participants received an evaluative focus manipulation that was generated for the current study. All participants were told the purpose of the session; however, the purpose varied depending on the condition the participant was assigned to (evaluative focus or no-evaluative focus). They either received instructions explaining that the purpose of the study was to evaluate how well students on average learn from the tutorial (everyone; Evaluative Focus condition) or they were instructed that the purpose of the session was to evaluate how well they individually learned from the tutorial (you; No evaluative

focus). More specifically, participants in the evaluative focus condition were told, “The purpose of this study is to evaluate how well you learn from a tutorial on argumentation skills”. The purpose of this manipulation was to make participants in this condition feel personally evaluated. Students in the no-evaluative focus condition were told, “The purpose of this study is to evaluate how well students on average learn from a tutorial on argumentation skills”. Participants read through the instructions and rewrote what the purpose of the current study was to verify that they understood the purpose of the study.

Following the manipulation participants were given a tutorial to read and work through. For participants in the motivational intervention condition, the argumentation tutorial asked them to assess their current skills given 6 practice items. These items were designed to help students realize they could benefit from the tutorial, and have room to learn. Participants in the non motivational intervention condition directly begin the tutorial without the 6 practice items. After students worked through the learning tutorial they completed a post-test with similar arguments to those on the pre-test to measure how effective the tutorial was. It is important to note that the pretest and post test were counterbalanced throughout the study.

Finally, participants completed the Intrinsic Motivation Inventory (IMI; University of Rochester, 2008) a self report scale asking participants to report on how much they can relate to a question using a likert type scale from (1) very strongly disagree, (4) somewhat agree, to (7) very strongly agree. At the end of the session, all participants completed a demographic questionnaire asking gender, age, and ethnicity. The intrinsic motivation inventory shows coefficient alphas ranging from .68 to .84. More specifically, coefficient alphas for task interest were at .78 while pressure and

tension (anxiety) shows coefficient alphas at .68. According to research the scale seems to be internally consistent.

Results

The purpose of the first analysis was to evaluate whether or not people experienced learning and to evaluate whether or not the manipulations affected learning. E.g. see Table 1 for means and standard deviations of the flawed judgment task by tutorial condition. To do this we conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Time; pretest vs. posttest) mixed ANOVA with time as the within participants factor. There was a main effect of time on performance, $F(1,139) = 292.17, p < .01$, showing that participants performed better on the post test ($M=.79, SD=.12$) than the pretest ($M=.58, SD=.13$). There were no other significant results.

Since the effects of the manipulations on performance overall were not significant, we looked to see if any patterns emerged when we broke down the different argument types and analyzed them separately. We tested whether or not the specific argument types affected proportion correct. We conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Time; pretest vs. posttest) mixed ANOVA on particular item type of good arguments. E.g. See Table 2 for example of mean and standard deviation of proportion correct on the flawed judgment task for good arguments. There was a main effect of time on proportion correct, $F(1,143) = 28.19, p < .01$, showing that participants performed better on the post

test 77% ($SD = 22\%$) than the pretest 67% ($SD = 17\%$). There were no other significant results pertaining to good arguments.

We conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Time; pretest vs. posttest) mixed ANOVA on particular item type of unwarranted arguments, E.g. see Table 3 for an example of mean and standard deviation of proportion correct on the flawed judgment task for unwarranted arguments. There was a main effect of time on proportion correct for unwarranted arguments, $F(1,143) = 38.93, p < .01$, showing that participants performed better on the post test 73% ($SD = 21\%$) than the pretest 60% ($SD = 20\%$). Further analysis of unwarranted arguments show there was a marginal main effect of motivational intervention on proportion correct, $F(1,143) = 8.93, p = .095$. There were no other significant results pertaining to unwarranted arguments.

We conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Time; pretest vs. posttest) mixed ANOVA on particular item type of claim only arguments, E.g. See Figure 1 for example of mean proportion correct on the flawed judgment task for claim only arguments. An analysis of claim only arguments; the items that tapped into effort for performing more than effort for learning showed, there was a main effect of time on proportion correct, $F(1,143) = 295.50, p < .01$, showing that participants performed better on the post test 88% ($SD = 18\%$) than the pretest 48% ($SD = 26\%$). Further analysis shows there was a significant 3-way interaction between no evaluative focus, and motivational intervention, on time, $F(1,143) = 3.90, p = .050$. The interaction showed that participants who received the 2 (Evaluative Focus) x 2 (Motivational Intervention) performed similar to

participants in the no motivational intervention condition, showing that the motivational intervention did not have an effect on performance. However, participants who received the 2 (No Evaluative Focus) x 2 (Motivational Intervention) performed better than participants in the no motivational intervention condition, showing that the motivational intervention effected performance in the no evaluative focus condition for claim only arguments.

We also conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Task Interest) mixed ANOVA, E.g. See Table 4 for example of means and standard deviations of task interest by tutorial condition. There was a marginal main effect of motivational intervention on task interest, $F(1,138) = 2.76, p < .01$. Participants in the motivational intervention conditions ($M = 4.41, SD = 1.0$) showed slightly more interest in the task than participants in the no-motivational intervention condition ($M = 4.15, SD = .83$).

Additionally, we conducted a 2 (Evaluative Focus vs. No Evaluative Focus) x 2 (Motivational Intervention vs. No Motivational Intervention) x 2 (Anxiety) mixed ANOVA, E.g. See Table 4 for example of means and standard deviations of anxiety by tutorial condition. There was not a significant effect of motivational intervention on anxiety. However, it is important to note that while looking into the effects of anxiety, participants reported low levels of anxiety ($M = 3.05, SD = .74$).

Discussion

We predicted that participants who felt personally evaluated would perform better than those who did not feel personally evaluated. We also predicted that participants who were exposed to the motivational intervention would perform better than those who were

not exposed to it. The effects of these manipulations on performance overall did not emerge. However, a large effect emerged showing that participants learned from the pretest to the posttest.

The results contradict prior research that found a positive effect of evaluative focus on performance. One explanation for the discrepancy may relate to the task used in the research. Prior research testing the effects of evaluative focus on performance have used simple tasks such as sorting cards, or asking participants to generate as many as possible uses for an object as they can (Harkins, White, & Utman, 2000; White, Mitchell, & Bell, 1977). In all of these experiments participants were not asked to learn new material but rather to use pre-existing knowledge. In contrast, we tried to extend research in this area to learning tasks. In the current study, participants spent considerable time learning from a tutorial and then were asked to demonstrate their skills on the post test. The results of this study on performance overall suggest that the effects of evaluative focus on performance found in prior research may not generalize to more complex learning tasks.

Although the effects of the manipulations on performance overall were not significant, a more specialized pattern emerged when subdividing performance on the current task into different components. When looking at specific argument types and performance, the results on the most simple items, items that were flawed because they only had a claim, yielded a 3-way interaction, showing that learning was affected by both level of evaluative focus and level of the motivational intervention. Specifically, among individuals in the no evaluative focus conditions, participants who received the motivational intervention learned more than participants who did not receive the

motivational intervention. It may be the case that participants in the no evaluative focus condition had very little reason to put effort into the task unless they were exposed to the motivational intervention. The motivational intervention led to higher performance only in the absence of personal evaluation. In contrast, participants in the evaluative focus condition might have been more concerned with performance in general, such that the presence of the motivational intervention did not add to their level of effort and performance.

when examining the effects of the manipulation on task interest we found that, participants in the motivational intervention conditions showed slightly more interest in the task than participants in the no-motivational intervention condition. It is important to note that, participants who received the motivational intervention did not necessarily perform better than any of the other conditions in relation to proportion correct. In fact, all participants learned from the tutorial increasing from pretest to posttest not just those in the motivational intervention condition. These results are contrary to previous research, the data was not significant, ultimately leaving the hypothesis unsupported.

Recall that the motivational intervention could have opposite effects. On the one hand, we had hoped that it would increase learners' desire to learn. However, it could also increase anxiety because the manipulation itself could lead individuals to feel unprepared for the task. Therefore, we tested the effect of the motivational intervention on several self-report measures in order to investigate its effects on how participants experienced the task. When examining the effects of the manipulation on anxiety we found that, there was not a significant effect of motivational intervention on anxiety. Although the results were not significant participants did report low levels of anxiety

after completing the task, contrary to what the alternate model suggested. This is important to note because if a teacher did implement this type of intervention in a classroom setting they would slightly increase interest in the task presented, and not increase anxiety in their students.

Finally, it was predicted that participants who received the evaluative focus condition, the motivational intervention condition, or both would show similar performance levels. An interaction was expected to occur; however, ultimately this hypothesis was not supported because overall learning occurred regardless of condition with no significant difference between the groups.

The results gained from previous studies (Harkins, White, & Utman, 2000) only looked at performance with simple tasks, one factor to take into account is that all participants regardless of condition were engaged and learning when presented with a complex task. It could be that the complex learning task (tutorial) would then cancel out the effects of the manipulation (evaluative focus). More research is needed to determine if the effects of evaluative focus can cross into a learning environment when dealing with complex learning tasks. Therefore, future studies should address this by implementing research that creates an environment that participants do not feel personally identifiable unless researchers want them to.

One limitation to the study might have been that participants could have felt identified (evaluative focus) even when we did not want them to. For example data were collected in a relatively small room which could have allowed for participants to realize their data were being tracked and thus resulting in feelings of identifiability. If participants

in the no evaluative focus condition felt they were personally identifiable it would cancel out the effects of the manipulation. This could have had an impact on our results as to why there were no significant results pertaining to performance across conditions. Future research should look into the effects of the manipulations to see if they are impacting how identified participants feel, and correct this for future studies.

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Table 1

Means and Standard Deviations of the Flawed Judgment Task by Tutorial Condition

	Pretest		Posttest
	<i>N</i>	<i>M (SD)</i>	<i>M (SD)</i>
No Evaluative Focus			
Motivational Intervention	36	.59 (.14)	.78 (.12)
No Motivational Intervention	36	.56 (.13)	.77 (.12)
Evaluative Focus			
Motivational Intervention	37	.57 (.13)	.81 (.14)
No Motivational Intervention	34	.61 (.12)	.79 (.11)
Total Population	143	.58 (.13)	.79 (.12)

Table 2

Mean and Standard Deviation of Proportion Correct on the Flawed Judgment Task for Good Arguments

	Pretest		Posttest
	<i>N</i>	<i>M (SD)</i>	<i>M (SD)</i>
No Evaluative Focus			
Motivational Intervention	36	66% (21%)	75% (21%)
No Motivational Intervention	38	67% (25%)	79% (14%)
Evaluative Focus			
Motivational Intervention	37	68% (21%)	75% (18%)
No Motivational Intervention	36	65% (23%)	80% (17%)
Total Population	147	67% (22%)	77% (17%)

Note: Each specific type of argument has 8 questions presented on the pre and post-test therefore, proportion correct is out of 8.

Table 3

Mean and Standard Deviation of Proportion Correct on the Flawed Judgment Task for Unwarranted Arguments

	<i>N</i>	Pretest	Posttest
		<i>M (SD)</i>	<i>M (SD)</i>
No Evaluative Focus			
Motivational Intervention	36	57% (20%)	70% (21%)
No Motivational Intervention	38	60% (20%)	73% (23%)
Evaluative Focus			
Motivational Intervention	37	58% (23%)	72% (19%)
No Motivational Intervention	36	64% (19%)	79% (20%)
Total Population	147	60% (21%)	73% (21%)

Note: Each specific type of argument has 8 questions presented on the pre and post-test therefore, proportion correct is out of 8.

Table 4

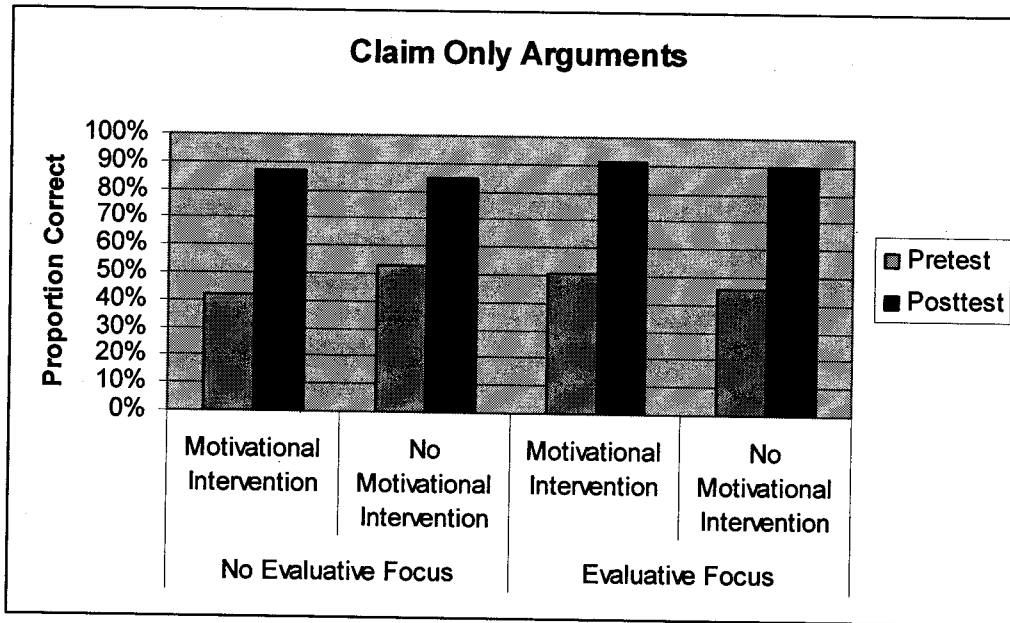
Means and Standard Deviations of Task Interest and Anxiety by Tutorial Condition

	Task Interest		Anxiety
	<i>N</i>	<i>M (SD)</i>	<i>M (SD)</i>
No Evaluative Focus			
Motivational Intervention	36	4.35 (.98)	3.19 (.81)
No Motivational Intervention	36	4.23 (.79)	2.93 (.64)
Evaluative Focus			
Motivational Intervention	37	4.46 (1.04)	3.04 (.77)
No Motivational Intervention	34	4.06 (.88)	3.04 (.77)
Total Population	143	4.28 (.93)	3.05 (.74)

Note: Participants completed the IMI, a self report scale asking participants to gauge how much they can relate to a question on a likert type scale from (1) very strongly disagree, (4) somewhat agree, to (7) very strongly agree.

Figure 1

Mean Proportion Correct on the Flawed Judgment Task for Claim Only Arguments



Note: Each specific type of argument has 8 questions presented on the pre and post-test therefore, proportion correct is out of 8.

Appendix A

Example of Arguments given on Flawed Judgment Task

1. Women need to be paid the same salary as men for doing the same job.
2. Oil drilling in the Alaskan wildlife preserve should be allowed because the United States needs the oil.
3. Illinois should not require car emissions to be tested because air is constantly moving due to weather patterns.
4. Everyone should keep a daily journal because it is a personal and private place to express feelings, emotions, and thoughts.
5. English-only instruction helps foreign students adjust to America faster.
6. Free trade creates American jobs because American companies can sell their products to a larger market.
7. Attending graduate school is worthwhile for most students because students usually have to pass an exam to enter a graduate program.
8. Illinois is wrong to require the use of seat belts because people will ignore the law.
9. Many pop stars do not make good role models because they don't promote images of self-respect.
10. American students should be required to learn a second language because people are impressed by such abilities.
11. New York is the best city in the world because of its rich culture, wide array of restaurants, and its status in the fashion industry.
12. Physicians should be allowed to assist terminally ill patients commit suicide because the treatment of the terminally ill costs society billions of dollars.
13. Diversity training should be required by large organizations because most organizations now have the resources to provide such training.

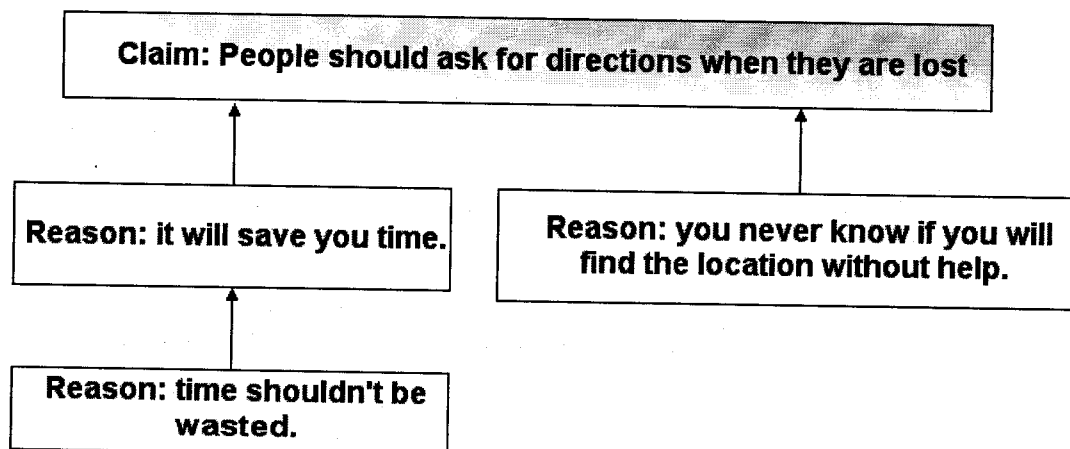
Appendix B (Argumentation Tutorial)

What is an Argument?

An argument is an attempt to persuade someone to change an attitude, belief, or behavior by providing one or more reasons. There are several parts to an argument. The most important part of the argument is the **claim**. The claim is a controversial statement that an author is trying to persuade you to accept.

Consider this argument:

- **People should ask for directions when they are lost because it will save you time and time shouldn't be wasted. More importantly, you never know if you will find the location without help.**



In this example argument, the **claim** is "People should ask for directions when they are lost".

Notice the argument is supported by two **reasons**: "it will save you time" and "you never know if you will find the location without help". A **reason** provides support for the claim by telling you why you should believe the claim to be true. Also notice that reasons can be considered claims in that you may feel the need to support a reason by another reason. For example, the reason "it will save you time" is supported by the reason that "time shouldn't be wasted".

Three parts of each claim

Claims can be broken into three parts:

Theme -- topic of the argument (E.g., "ask for directions", "gun control")

Predicate -- specific action or belief being argued (E.g., "should ask", "is wrong")

Side -- is whether the claim is taking a pro or con position (E.g., "in favor of gun control" or "opposed to gun control")

☐ **Good argument:** The death penalty **is ineffective** because criminals do not consider the consequences before committing most crimes.

So this is a good argument and the reason **supports the predicate**. In contrast, the same reason doesn't support the second claim. The reason (not considering consequences) doesn't have anything to do with whether or not a punishment is immoral. Morality is determined by standards of conduct or religion. Maybe you could work really hard to make a connection between the reason and the claim, but as stated, the connection doesn't make sense. If you have to work so hard to make a connection, then, generally, there is something flawed about the argument. Basically the reason does not lead to the conclusion that this punishment is immoral.

Flawed argument: The death penalty **is immoral** because criminals do not consider the consequences before committing most crimes.

So it is important to notice the predicate of the claim if you want to evaluate arguments.

Appendix C (Motivational Intervention)

Shortly you will see a list of simple arguments. Please read the material carefully then select each argument that is structurally flawed. Pay attention to the structure of the argument, NOT to how convincing it is or whether or not you agree with it

____ 1. Companies should not be permitted to use sweatshops because workers in sweatshops earn no money.

____ 2. Playing team sports in high-school is good for students because most students eventually want to go to college.

____ 3. Adventure sports are a thrilling way to exercise and more colleges should have adventure sports clubs.

____ 4. Most creators of computer viruses do not have malicious intent because the function of most human DNA is to harmlessly replicate itself.

____ 5. Cloning should not be allowed because cloning techniques are derived from technological advancements.

____ 6. Universities should censor all mail sent on university computers.

Manipulation in persuasion

People do not always argue fairly. In fact if you said that any of the arguments on the last page were good, you fell for common tricks that people use to persuade others. Were you fooled by any of these? If so, you are not alone. Arguers use certain reasoning tricks because they work. They often violate general "assumptions" of conversation in an effort to persuade people.

When we have conversations with others, there are some assumptions we make. These same assumptions are often made when our conversations involve arguments and opinions. First, we assume that people are not trying to deceive us by either being dishonest (see 1 below) or stating things we don't have evidence or support for (see 2 and 3 below).

- 1. Companies should not be permitted to use sweatshops because workers in sweatshops earn no money.**
- 2. Adventure sports are a thrilling way to exercise and more colleges should have adventure sports clubs.**
- 3. Universities should censor all mail sent on university computers.**

We also assume that others will provide support that is relevant (see 4, 5 and 6 below).

- 4. Most creators of computer viruses do not have malicious intent because the function of most human DNA is to harmlessly replicate itself.**
- 5. Playing team sports in high-school is good for students because most students eventually want to go to college.**
- 6. Cloning should not be allowed because cloning techniques are derived from technological advancements.**

In order to help you protect yourself from these types of unfair arguers, we want to teach you a bit about well-structured and flawed arguments.

Appendix D (Intrinsic Motivation Inventory)

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all			somewhat			very
true			true			true

- I felt very anxious while completing this task. (A)
- I would describe this activity as very interesting (IT)
- I did not feel nervous at all while completing this task (A)
- While I was doing this activity, I became anxious. (A)
- I was nervous while working on this task. (A)
- I felt calm while completing the task. (A)
- This activity did not hold my attention at all. (TI)
- This activity was fun to do. (TI)
- I thought this activity was quite enjoyable. (TI)
- I enjoyed doing this activity very much (TI)

Note: A-anxiety measures, TI- Task Interest