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Motivational Effects of Goal Orientation

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ABSTRACT

According to achievement goal theory, individuals set mastery or performance goals to accomplish challenging tasks. In addition, they can either approach or avoid the goal they are achieving. Mastery goals show positive correlation to intrinsic motivation while performance goals are linked to extrinsic motivation. Goal setting also affects motivation for completing tasks and perception of self-efficacious behavior while performing tasks. Receiving feedback has been positively correlated with success in learning and intrinsic motivation. The present research manipulates goal orientation through the accomplishment of a word find in an online experimental setting to test the effect on feedback, intrinsic motivation, choice, and self-efficacy. Positive versus highly positive feedback conditions were used after the word find to test effects on perceived competence following a task. For the approach-mastery goal condition, we found main effects for intrinsic motivation, perceived choice, task choice, and views of task importance. Additionally, we found a main effect for perceived competence for our highly positive feedback condition versus giving just positive feedback. These results demonstrate support for accomplishing challenging tasks with mastery goals versus performance goals and the usage of more positive feedback in a feedback condition.

Keywords: motivation, perceived choice, self-efficacy, goal orientation, feedback

Elliot and Harackiewicz (1996) note that behavior is not a passive reaction to forces. Individuals actively set goals in response to internal (intrinsic motivation) and external forces (extrinsic motivation) according to their research. They describe that intrinsic motivation entails an individual perform a task out of inherent satisfaction, where extrinsic motivation involves attainment of a separate external outcome. Elliot and Harackiewicz identify goals as either approach or avoidance in nature, as individuals are striving to accomplish or avoid something. Approach-goal strivings increase perceived competence to complete challenging tasks, especially when accompanied by feedback. Individuals competitively can compare their task performance to others, which indicates

approach-goal setting through motivating competition.

Achievement goals are oriented as a mastery goal or a performance goal, based on the desired outcome of the individual accomplishing it (Ames, 1992; Dweck & Leggett, 1988). Mastery goals are correlated with intrinsic motivation, while extrinsic motivation tends to relate more to performance goals (Elliot & Harackiewicz, 1996). Mastery goals contribute to a focus on learning and accomplishing the task for self-improvement (Ames, 1992; Dweck & Leggett, 1988). They encompass developing new skills, improving competence, or accomplishing challenging tasks. Performance goals represent a focus on demonstrating competence or ability, and how ability is judged relative to others.

Performance goals are about winning.

Goals can be operationalized as internal or external aspects that guide a person to see more or fewer choices in his or her environment (Cordova & Lepper, 1996). Free choice can be manipulated through having participants persist on an experimental task according to their own choosing, through the free-choice paradigm (Chen & Risen, 2010). Elliot and Harackiewicz (1996) suggest that individuals might see less choice in completing a task in a public scenario due to social comparison, highlighting the value of free choice on intrinsic motivation. Classroom or public settings worsen intrinsic motivation as compared to the free-choice paradigm, which has a participant complete a task privately. Even when individuals choose what task to work on, they may pursue different types of goals, either approach or avoidance goals (Elliot & Harackiewicz, 1996).

Negative Effects of Performance Goals

Performance goals encompass three parts: normative performance standards, attempting to best others, or using casual comparative standards. For normative standards, individuals compare their performance to information about others. This, however, is counterproductive; one study showed that decreasing emphasis on social and normative comparisons improved goal-setting in classrooms, wherein before students regularly compared themselves (Ames & Archer, 1988). The effect of performance goals on intrinsic motivation is contingent on whether the person is striving to attain a positive outcome or avoid a negative one (Elliot & Harackiewicz, 1996). This negative avoidance effect decreased intrinsic motivation, lessened participants' perceptions to complete tasks by choice, and lessened self-reports of interest and

enjoyment. In contrast, performance approach orientations do not undermine intrinsic motivation, as participants are still free to approach and work on tasks by themselves in free-choice.

Performance-approach goals have no immediate negative effect on intrinsic motivation but may undermine individuals' intrinsic interest and enjoyment of achievement activities over the long term (Elliot & Harackiewicz, 1996). This might be due to decreased perceived choice and task persistence in performance goal conditions. The researchers found that individuals pursuing performance goals evidenced levels of free-choice persistence equivalent to that of people with mastery goals through having participants set goals for challenging tasks. However, in contrast to individuals with mastery goals, they found people pursuing performance goals were likely to persist on the task out of a sense of pressure and urgency rather than continued interest and enjoyment. Participants experienced this state as psychologically aversive thus creating a sense of anxiety. Elliot and Harackiewicz's (1996) findings suggest that introducing a performance goal condition in experimental settings will cause less persistence on a task.

However, discouraging all forms of performance goals may be counterproductive. Levine (1983) noted that students tend to adopt normative mind sets and compete with each other even when learning environments are structured to minimize competitive regulation, such as in experimental studies. Barron and Harackiewicz (2003) demonstrate the positive effects of using both mastery and performance goals in classroom settings. They found it is optimal for classroom intervention strategies to have dual aims: the facilitation of self-improvement and the

promotion of task mastery in an approach focus (as opposed to an avoidance focus).

Performance Feedback

Performance goals are less detrimental when individuals are provided with competence-confirming feedback than when they are provided negative or no performance feedback. Rawsthorne and Elliot (1999) found the pursuit of performance goals produced significantly less free-choice task persistence and self-report interest and enjoyment relative to those who had mastery goals. This suggests that the feedback for performance goals may increase task persistence more than mastery goals, but individuals who set mastery goals regularly report higher intrinsic motivation in a mastery goal condition.

Richard Ryan's (1982) administering of informational versus comparison feedback provides a great example that can show effects on motivation. Ryan describes informational feedback as feedback that would simply allow participants to see their scores on the puzzle in comparison to the average normed performance. Ryan also describes the norm as a "said-to-be" maximum defined by the researcher on the task utilized. For example, a researcher could describe normed performance feedback as the average amount of math problems corrected by others. To control for feedback in experiments, Ryan suggests adding statements such as "you should keep up the good work" or "very poor" in a completely separate condition. However, this study indicated measuring feedback against a control group of no feedback produces a negative effect on intrinsic motivation and task competence versus providing feedback to participants. This effect might suggest that feedback should be manipulated very positively and less positively to test the

differences between goal orientations for perceived task competence. This feedback condition would support the effect of having differing types of positive informational feedback following a task.

Goals incorporating specific performance standards (e.g. "Other participants did well") are more likely to enhance learning and activate self-evaluations than general goals (e.g. "Do your best"; Dweck & Leggett, 1988). Specific goals (e.g. "I need to solve ten problems") promote self-efficacy because progress is easier to gauge for participants. Dweck and Leggett (1988) found regardless of whether individuals view their ability as high or low, they persist and expend effort because they believe this effort enhances their abilities when under a specific (mastery or performance) goal rather than a general goal. Therefore, a mastery goal condition might positively affect self-efficacy, or perhaps even positively affect motivation type over time due to persistence.

Identifying Self-Efficacy

Self-efficacy is defined as strength of belief in one's ability to complete tasks and reach goals (Bandura & Schunk, 1981). Therefore, a student's self-efficacy tends to be stable (Niehaus, Rudasill, & Adelson, 2011). Due to this finding, self-efficacy should appear similar in both approach goal conditions. However, the manipulation of self-efficacy in learning situations has a significant effect on motivation. Schunk (1990) found that self-efficacy and goal setting are significantly affected by self-perception. Perceived satisfactory goal progress and self-efficacy leads students to set new, challenging goals in the future. Participants' perceptions of choice to complete tasks are highest in a free-will situation, or the free-choice paradigm, thus

emphasizing the importance of measuring self-efficacy following tasks. Presumably in lab studies, participants always have the option of not completing the task, so researchers manipulate the perception of free will by using the free-choice paradigm to enable participants to work on a task freely on their own accord. Bandura and Schunk (1981) measured performance, student problem solving, and perceived self-efficacy after goal setting. Students with proximal (short-term) goals had higher levels of self-efficacy and better performance on problems. However, this study did not test approach-mastery or approach-performance goal setting. Self-efficacy predicted problem-solving accuracy and the more competent participants were at computation and problem solving, the more problems they completed in a free-choice situation. Perception of choice shares a positive statistical relationship with mastery, intrinsic motivation, and accomplishment (Elliott & Story, 2016).

Komarraju and Nadler (2013) found that students who are self-efficacious achieve academically because they monitor and self-regulate their impulses. Allowing students to experience success in the form of opportunities enhances students' academic self-efficacy, as well as making these opportunities easier to access. Also, providing students with support and tools for learning shows increases in intrinsic motivation and self-efficacy (Komarraju & Nadler, 2013). Self-efficacy in a performance goal condition can also be manipulated by means of bogus feedback and graphs depicting contrived normative data, as well as expectations being manipulated via false performance feedback (Elliot & Thrash, 2001).

Present Research

In a previous study (Elliott & Story, 2016), we examined correlations among free will, autonomy, perceived choice, and motivation. These correlations were significant in guiding us to future research where we could answer questions about the way that these variables interact in the experimental setting. We left the previous study with a primary hypothesis: approach goals that encourage mastery may increase motivation more than performance-based approach goals.

The purpose of the present research is to test whether an approach-mastery goal orientation condition significantly increases intrinsic motivation, task choice, and perceived choice in an experimental free-will setting. Our previous study (Elliott & Story, 2016) only identified correlation to explore the relationship about how individuals see more choices and are motivated more intrinsically by free will situations. The relationship of perceived choice and motivation have been researched in academic settings (Cordova & Lepper, 1996), but further experiments may help generalize intrinsic effects to individual settings. We decided to explore methodology that allowed participants to complete a puzzle self-efficaciously and in an individual online setting. In the present study, participants were asked to complete a word find puzzle for ten minutes and then answer questions related to perceived choice, self-efficacy, intrinsic motivation, and extrinsic motivation. We manipulated goal orientation by having participants either write in a target number of words they thought they could find on the puzzle (mastery goal) or receive performance-based normative comparisons about other participants (performance goal). Participants also received either positive or

very positive feedback about their performance.

We hypothesized that participants who were given the opportunity to write a goal of their own would perceive more choices and have a higher sense of accomplishment compared to participants with externally derived performance standards. Additionally, participants who set mastery goals should perceive the task as more interesting compared to those who set performance goals, based on their positive relationship. Because our previous study (Elliott & Story, 2016) examined the significant relationships among free will, choice, motivation, and self-efficacy, we planned to further our research by producing experimental results that will help to show causation with manipulating goal orientation on perceived choice, motivation, self-efficacy, and experimental tasks. Specifically, the means for intrinsic motivation and perceived choice should not be identical between the two goal conditions. A secondary hypothesis is that both condition's tasks should require the same approach-goal orientation due to acting on their own to complete the study. An approach-mastery goal is hypothesized to produce higher levels of intrinsic motivation and perceived choice compared to an approach-performance goal on a challenging task. Our hypothesis about the feedback conditions is that very positive feedback will increase perceived competence more than positive following the completion of the puzzle. A two (goal orientation: mastery; performance) by two (feedback: positive; very positive) between-subject analysis of variance will be utilized to test goal and feedback conditions on the dependent variables after the puzzle activity.

Method

Participants

We recruited 100 Kennesaw State University students online to participate in the study. All students were taking entry level undergraduate psychology courses. Due to missing data entry by participants and cases missing individual values, this number was reduced to 69 participants with usable data. Out of these students, 11 men did not complete the word find long enough for data to be recorded. As a result, the total usable sample was then reduced to $n = 58$ for the study. There were significantly more women than men recruited (28 men; 41 women). The age range varied between 18 and 46 with 41% of students identifying as eighteen years of age. The mean age for all participants was nineteen years old. In terms of race, 50% of students reported as white, 36.2% as African American, and 13.8% as mixed, Hispanic, or other. Participants were offered half a point of extra credit toward their final grade in the introductory class. All participants filled out the consent form and were debriefed about the study once completed.

Materials

Experimental task. A task was chosen that would be challenging enough to engage, but also familiar and related to students in college. A college word find puzzle was selected for the task that had a maximum of 55 words in a 27 by 25 matrix. This task was constructed to allow participants to find familiarity and competency in its vocabulary of college major words because of being college participants. Because using the free-choice paradigm is important in measuring perceived choice, we planned to model a situation with a word find puzzle in a setting where participants would perform the activity

alone and set goals on their own accord. A classroom setting could create a confound where participants might be affected in the mastery condition by normative comparisons. Because the task needed to be challenging, participants had to spend ten minutes total to complete the word find. Our puzzle was approved for usage in this study via email by the publisher, *All-Star Puzzles*.

Intrinsic and extrinsic motivation.

The *Academic Motivation Scale* (AMS-28; Vallerand et al., 1992) was adapted by isolating 24 questions measuring extrinsic and intrinsic motivation. Participants responded by indicating on a scale of one to seven, with one being not at all true, and seven being very true about how true each statement was regarding motivation. Participants viewed sets of selection bubbles and a list of one to seven next to each bubble for each item. The scales separately demonstrated strong reliability when tested under analyses (Cronbach's $\alpha > .9$ for intrinsic measures; Cronbach's $\alpha > 0.8$ for extrinsic measures). Higher numbers on the AMS-28 indicates a higher level of intrinsic or extrinsic motivation, with some items being reverse coded. The scale contained statements like "because I experience pleasure and satisfaction while learning new things" (intrinsic) or "in order to have a better salary later on" (extrinsic) in regards to students going to college.

Perceived choice. The *Intrinsic Motivation Inventory* (IMI; Ryan, 1982) was adapted to use two scales: The Perceived Choice scale and the Task Evaluation Questionnaire. Both of these scales utilized measurements of choice (perceived and task) in regards to intrinsic motivation. The Perceived Choice scale from the IMI was adapted to measure participants' perceptions of choice in the puzzle and enjoyment for the puzzle. The scale contained 28 items

measuring different statements concerning perceived choice in completing the puzzle. Participants viewed sets of selection bubbles and a list of one to seven next to each bubble for each item. Participants responded by indicating on a scale of one to seven, with one being not at all true, and seven being very true about how true each statement was regarding perceived choice. The higher number on the Perceived Choice scale indicates a higher level of perceived choice, with some items being reverse coded. The reliability analysis for the Perceived Choice scale items demonstrated Cronbach's $\alpha > .9$, after reverse coding. The Perceived Choice scale contained statements like "I did this activity because I had to" or "I believe I had some choice about doing this activity" in regards to completing the puzzle.

Task choice, interest, and enjoyment.

The Task Evaluation Questionnaire (TEQ) was adapted from the IMI and measured interest, perceived competence, and choice in performing the task. The scale contained 28 items measuring different statements concerning the individual task participants completed. Participants viewed sets of selection bubbles and a list of one to seven next to each bubble for each item. Participants responded by indicating on a scale of one to seven, with one being not at all true, and seven being very true about how true each statement was regarding to different aspects of intrinsic motivation (interest, enjoyment, and perceived competence). The higher number on the TEQ indicates a higher level of interest, perceived competence, and individual task choice, with some items being reverse coded. The reliability analysis for the TEQ items demonstrated Cronbach's $\alpha > .9$, after reverse coding. The TEQ contained statements like "doing the task was fun" or "I think I did pretty well at this activity, compared to other students" in regards to accomplishing the

task itself, and not about completing the study.

Self-efficacy. The *General Self-Efficacy* scale (GSE; Schwarzer & Fuchs, 1996) is a 10-item scale that has been used across many multicultural studies to measure an individual's strength in their belief in accomplishing goals (Luszczynska & Schwarzer, 2001). We used this scale to measure self-efficacy in our respondents. Participants viewed sets of selection bubbles and a list of one to seven next to each bubble for each item. Participants responded by indicating on a scale of one to seven, with one being not at all true, and seven being very true about how true each statement was regarding self-efficacy. Strong reliability was demonstrated after performing reliability analysis on the items of the scale (Cronbach's $\alpha = 0.85$). Higher numbers on the GSE indicate a higher level of self-efficacy. The scale contained statements like "it is easy for me to stick to my aims and accomplish my goals" or "I can usually handle what comes my way" in regards to participants' views of themselves.

Perceptions of the task and demographics. A 7-item measure about how participants viewed the task was constructed by the researchers. Participants answered questions about enjoyment, interest, tension, pressure, and effort performing the task as well as how they perceived the worth and importance in regards to the task and following activities. This measure also contained demographical items for the study. Participants viewed sets of selection bubbles and a list of one to seven next to each bubble for each item. Participants responded by indicating on a scale of one to seven, with one being not at all true, and seven being very true about how true each statement was.

Procedure

Goal orientation condition. Participants consented to the study online and were randomly assigned a set of instructions via computer. These instructions dictated the condition the participant was in. Participants assigned to the *mastery* condition ($n = 23$) were given a set of instructions that informed them to write a goal of how many words they would find, with the maximum number possible indicated (Appendix A). Participants assigned to the *performance* condition ($n = 35$) were given a set of instructions that informed them about contrived normative data in completion of the same puzzle, also informing them of the maximum number possible. Participants were given ten minutes to complete the college major word find puzzle (Appendix B) with none of the word banks shown. Participants had to spend at least ten minutes on the puzzle for the task to be considered challenging.

Feedback condition. Participants were randomized to two separate feedback conditions: less positive or very positive. The participants in both conditions manually wrote the words found in the area provided on the instructions (Appendix C). No participants from the pre-tests found fewer than five words; therefore, we constructed a "very positive" condition in which participants were told that "most participants found 5 words." For the "positive" condition, participants were told that "most participants found 15 words." Ryan (1982) indicated measuring feedback against a no feedback control produces an effect versus providing feedback to participants general. Therefore, we did not include a "no feedback" condition in the study to attempt identify a unique difference between positive and very positive feedback. The informational feedback had participants write in how many words they found compared to the normed values

described above. The participants in the performance condition set normative performance goals based on how well other students did on the task previously, and then received the informational feedback after the task was complete. The participants in the mastery condition set a goal of their own and then participants received the informational feedback after the task was complete.

Task perceptions and demographics. Ryan (1982) suggested questions be asked directly after the puzzle so that participants’ responses to the task can be measured. We made simple adjustments to the feedback used in Ryan’s study, but also accounted for other suggestions that Ryan made like adding in the questionnaire. Providing participants with no feedback in a separate condition in the study had a negative interactive effect on the the enjoyment of solving puzzles. Therefore, after the task was completed, we crafted questions (Appendix D) about enjoyment, interest, tension, pressure, and effort performing the task as well as how they perceived the worth and importance of the task. We then measured age, gender, race, and ethnicity at this time. Participants were then thanked and debriefed

about participating in the study. The study took approximately 25 minutes to complete, on average 10 of those minutes being the word find task.

Results

Descriptive Statistics for Conditions

Our total useable sample consisted of 58 participants, who were randomized by Qualtrics into two groups, either mastery or performance. The mastery condition had 23 participants and the performance condition had 35 participants each. After the puzzle was complete, participants were randomized into two feedback conditions of very positive or positive feedback. The positive condition had 33 participants and the very positive condition had 25 participants randomized each. Out of the participants randomized to the mastery condition, ten received very positive feedback, while thirteen received positive feedback. Out of the participants randomized to the performance condition, fifteen received very positive feedback and twenty received positive feedback.

Table 1. Means and Standard Deviations for Performance Condition (n = 35)

	Very Positive		Positive		Total	
	M	SD	M	SD	M	SD
AMS - Intrinsic Motivation	51.2	17.2	52.9	18.2	52.1	17.7
AMS - Extrinsic Motivation	70.9	10.4	70.2	12.0	70.6	11.2
PC - Perceived Enjoyment	30.9	10.5	28.4	11.9	29.6	11.2
PC - Perceived Choice	34.7	12.0	36.5	13.5	35.6	12.8
TEQ - Perceived Competence	18.5	6.1	21.5	6.7	20.0	6.4
TEQ - Task Choice	21.5	7.9	21.6	8.0	21.6	8.0
TEQ - Task Interest	25.7	9.4	24.1	10.8	24.9	10.1
GSE - Self-Efficacy	48.2	7.4	47.4	6.4	47.8	6.9
Interest	25.7	9.4	3.3	1.7	14.5	5.6
Importance	4.1	1.7	3.6	1.5	3.9	1.6
College Words	9.6	2.6	10.6	4.2	10.1	3.4
Total Words	11.7	4.8	15.0	7.1	13.4	6.0

Table 2. Means and Standard Deviations for Mastery Condition ($n = 23$)

	Very Positive		Positive		Total	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
AMS - Intrinsic Motivation	60.5	15.2	61.9	15.9	61.2	15.6
AMS - Extrinsic Motivation	76.9	6.8	70.8	12.0	73.9	9.4
PC - Perceived Enjoyment	33.8	13.6	34.2	13.1	34.0	13.4
PC - Perceived Choice	43.1	13.3	43.3	9.3	43.2	11.3
TEQ - Perceived Competence	25.5	6.1	18.8	7.3	22.2	6.7
TEQ - Task Choice	25.1	9.4	27.8	6.5	26.5	8.0
TEQ - Task Interest	29.3	11.5	30.5	12.5	29.9	12.0
GSE - Self-Efficacy	47.1	7.0	48.7	6.8	47.9	6.9
Interest	4.4	2.1	5.0	1.4	4.7	1.8
Importance	4.6	2.0	4.5	1.9	4.6	2.0
College Words	10.9	3.2	10.1	5.7	10.5	4.5
Total Words	11.0	2.9	10.5	5.3	10.8	4.1
Mastery Goal Words	28.5	12.3	26.2	12.3	27.4	12.3

Intrinsic and Extrinsic Motivation

A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect of the conditions on intrinsic and extrinsic motivation. Results (Tables 1 and 2) revealed a main effect of the goal orientation on intrinsic motivation, $F(1,56) = 4.132$, $p = 0.04$. As hypothesized, those who were in the mastery condition showed higher levels of intrinsic motivation compared to those who had been randomized

to the performance condition (Figure 1). There were no main effects in either groups in terms of extrinsic motivation ($p = .313$). Participants in the performance condition responded similarly in extrinsic motivation compared to those in the mastery condition. There were no other main effects or interactions for intrinsic or extrinsic motivation, including for the feedback conditions.

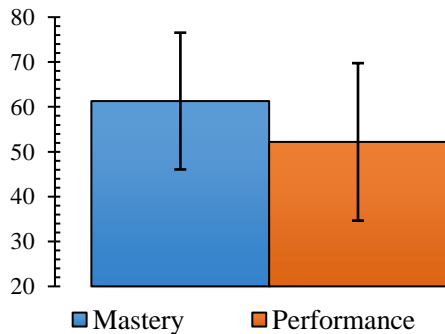


Figure 1. Means for Intrinsic Motivation Between Goal Conditions

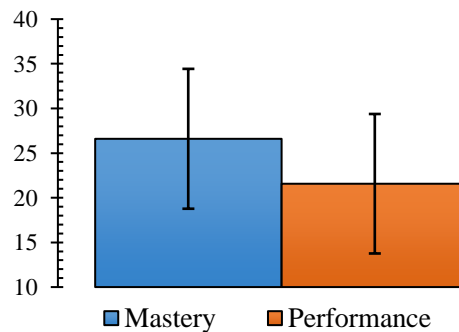


Figure 2. Means for Task Choice Between Goal Conditions

Task and Perceived Choice

A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect of the conditions on task and perceived choice. Results indicated a main effect of task choice in the mastery condition, $F(1,56) = 5.76, p = 0.02, \eta^2 = 0.139$. The participants in the mastery condition reported a greater amount of choice in the task compared to those who had been randomized to the performance condition (Figure 2). There was also a main effect in the mastery condition for perceived choice in the task, $F(1,56) = 5.441, p = 0.02$. Participants in the mastery condition had higher levels of choice perception than those in the performance condition (Figure 3). There were no other significant main effects or interactions for task or perceived choices, including for both feedback conditions.

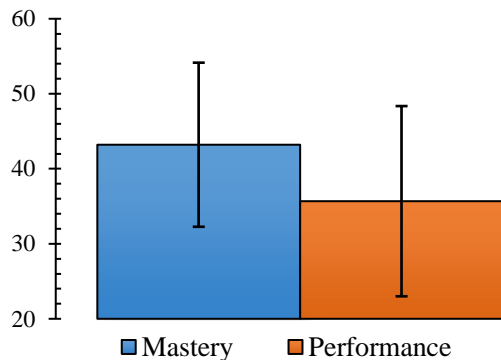


Figure 3. Means for Perceived Choice Between Goal Conditions.

Perceived Interest and Enjoyment

A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect of the conditions on task interest and enjoyment. Results indicated those who were in the mastery condition showed similar levels of perceived

task interest compared those who had been randomized to the performance condition ($p = 0.07$). Participants in the mastery goal condition also responded similarly in perceived enjoyment compared to those who were in the performance goal condition ($p = 0.16$). These results support the hypothesis that the goal orientation condition had no effect on enjoyment or interest from the IMI, but on choice and intrinsic motivation. There were no significant main effects or interactions for interest and enjoyment from the IMI.

Interest and Importance of Task

The effect of goal orientation on the task itself was measured with a questionnaire that asked participants how they felt about the word find task in various ways. A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect of the conditions on interest and importance from the questionnaire we created, $F(1,56) = 7.079, p = 0.01$. This finding indicates that participants in the mastery condition found their participation more interesting than those in the performance condition. Participants in the mastery condition found the study of similar importance to learning as those in the performance condition ($p = 0.11$). This supports the hypothesis that participants who experience mastery goals during tasks find similar importance in performance goals. Results also revealed that participants saw similar levels of enjoyment, pressure, effort, and tension while completing the study, supporting the hypothesis that these variables did not affect the study as confounds.

Self-Efficacy and Perceived Competence

A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect on self-efficacy. Participants in the performance condition responded similarly in self-efficacy compared to those in the mastery condition ($p = .888$). This supports the hypothesis that both goal conditions had challenging tasks with a valid approach-goal orientation. A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance tested the effect of the conditions on perceived competence. There was a significant main effect of feedback for perceived competence. Those in the very positive feedback condition rated more highly in perceived competence compared to those in the positive condition, $F(1,56) = 6.689$, $p = 0.01$ (Figure 4). This supports the hypothesis that feedback can be competence confirming when informational and more positive. There were no other significant main effects or interactions for any dependent variable in either feedback condition.

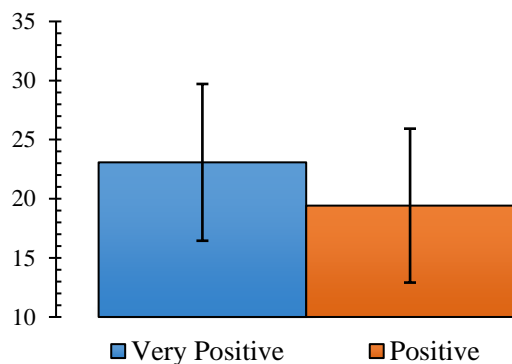


Figure 4. Means for Perceived Competence Between Feedback Conditions.

Word Challenge/Performance Analyses

A 2 goal (mastery; performance) X 2 feedback (very positive; positive) analysis of variance for words found was performed to assess task challenge. Participants in the mastery condition found a similar number of college words as those in the performance condition ($p = 0.81$). There were no main effects or interactions between the conditions in words found, which demonstrates each condition had equal level of task challenge in finding college words. Additionally, participants in the mastery condition found a similar number of total words (including “doe”, “my”, and “run”) as those in the performance goal condition ($p = 0.06$). There was a significant difference in goal words and college words found in the mastery condition, $t(22) = 10.81$, $p < .0001$. This indicates participants found significantly fewer words than they set a goal for in the mastery condition, demonstrating challenge ($M_d = 16.74$).

Words Found and Activity Analyses

We performed a regression analysis on the time participants last clicked (word find activity) and the total amount of words found. There was a significant positive linear relationship between the time participants were active and total words found, $F(1,56) = 9.868$, $p = .003$. Additionally, there was a significant linear relationship between total words found and the last recorded click of the participant in the mastery condition by itself, $F(1,21) = 7.998$, $p = 0.01$. However, there was no significant linear relationships between activity and total words found in the performance condition ($p = .134$). The difference between these tests help illustrate the difference in intrinsic motivation and task choice for goal setting over time as participants completed the task. Coincidentally, there was a moderate

relationship ($r = .617, p = .002$) between the total words found and the goal words in the mastery condition, indicating that the number of words participants wrote in shared a strong and positive numerical relationship with the amount of words found in total.

Discussion

The importance of mastery goals remains clear: they affect both task and perceived choice during challenging tasks; increase intrinsic motivation after performing challenging tasks; and participants find mastery goals more interesting. Based on the 55-item word find, participants only found an average of ten words, demonstrating an equal task challenge on completing the word find for the conditions. The effect of the feedback itself may have lessened perceived competence in the positive condition, because participants who received greater positive feedback had higher levels of competence compared to those who received less positive feedback. Additionally, participants in the goal conditions reported similar levels of enjoyment and had similar extrinsic motivation in the study. The mastery and performance goal conditions allowed participants to approach their own goals and participants reported similar levels of self-efficacy.

As noted by Lavine (1983) participants in this study tended to adopt normative mindsets and compete with each other when instructed of normative performance standards. Because of the introduction of the performance goal condition, participants had lessened intrinsic motivation compared to participants who set mastery goals. However, there was no difference between groups in extrinsic motivation to complete the word find task. The participants in both conditions were exposed to two separate types of approach

goals, therefore minimizing the usage of avoidance goals.

Komarraju and Nadler's (2013) hypothesis about choice and motivation remained supported, wherein students were self-regulating their motivational behavior while completing the study. Participants who found more perceived choice and task choice also responded higher in intrinsic motivation for the task. Also, the mastery goal condition increased the level of intrinsic motivation participants reported. A main difference in the method of the present study and Komarraju and Nadler's study is the manipulation of a private versus an academic setting for an approach goal orientation, thus solidifying the effect of self-regulation in different settings.

The hypothesis about task persistence posed by Dweck and Leggett (1988) remained supported. Participants who spent ten minutes persisted because they believed their effort enhanced their abilities based on the level of self-efficacy measured after both goal conditions, regardless of whether they viewed their ability as high or low. The effect of self-efficacy manipulated through specific instructions in our design incorporated goal-specific performance standards (e.g. "Other participants did this well"), and enhanced learning perceptions compared to general goals. Specific goals (e.g. "I need to find 55 words") posed by the mastery condition participants promoted self-efficacy because their progress was easier to gauge.

The present research supports that providing increased positive and informational feedback can have an effect on perceived competence after completing a challenging task. This hypothesis was supported in that feedback had an effect when competence confirming, informational, and more positive compared to just positive. This

was demonstrated through showing participants very positive informational feedback about how many words on average other participants found. These words were then compared to others, and on average, five more words were found than the feedback that was provided. Since participants were shown this informational feedback, they later reported increased levels of competence in their abilities to complete challenging tasks.

Some variables of interest in the study were not statistically different between the groups, as hypothesized. Our hypothesis that participants should find similar levels of task interest, task enjoyment, and task challenge, remained supported. The participants who experienced mastery goals during learning found similar importance in performance goals. Additionally, participants found equal levels of task interest and enjoyment while accomplishing the word find. This hypothesis remained supported by finding a challenging enough word find that both groups could set the appropriate approach goal to achieve.

It is important to identify that in an experimental setting, or a free-choice paradigm, participants might self-report personality differently because of lessened social evaluative concerns. We must further our investigation in manipulating the setting so that these effects can be better pinpointed. In understanding the effect that self-efficacy had on both the approach-performance and approach-mastery conditions equally, we know now that the manipulation of an academic setting versus an individual setting is needed where further generalizations about the effect of goal setting behavior can be examined in terms to performance compared to others (not just the individual) and mastery for the individual (without performance comparisons). A goal of future studies will be to test these hypotheses also in a real world face-to-face setting.

Limitations and Future Research

The power of the study was greatly reduced by the lack of active participants recruited during a summer semester at Kennesaw State University. Because there was no active recruitment pool for this semester, we conducted the study online in hopes to gain more participants. However, this resulted in a low turnout and additional participants would be needed to further generalize the effect of these results under a power analysis in the future (*each factor* > 93 participants). A smaller sample size in each group is known to increase the likelihood of type II error. This issue can raise questions about the validity of results. Nevertheless, we demonstrated persistent effort to repeatedly recruit additional participants throughout the semester.

Because of the nature of incomplete responses and failure to follow instructions, we had to remove eleven cases from the dataset resulting in a smaller sample of usable participants ($n = 58$). Of the 100 recruited participants, some simply opted out, had incomplete data, had missing cases, or showed patterns that invalidated responses. Some participants also did not spend ten minutes actively (did not record a click for at least five minutes). Nonetheless, these were impartial attempts or incorrect for the challenge of the task, thus significantly lowering the power of the sample we had previously chosen ($n = 100$). Additionally, the study only examined an individual online setting where classroom behavior could not be fully assessed. In the future, a face-to-face environment could improve the study of goals inside of educational or organizational settings. Additionally, conducting an experiment face-to-face would lessen the risk a response would not be recorded correctly.

In the future, we plan to examine the effects of multiple goal orientations and feedback conditions in academic settings. These settings will include in-person responses from the participants to reduce invalid entry, where they can be observed more easily, and where the effects of the challenging task can be manipulated further. The online setting provided some limitations in the randomization of the study, in that the study relied on Qualtrics to randomize the order in which participants were placed into conditions online. While this remained a valid way to randomize our conditions, we found that participants were assigned to conditions unequally due to there not being an ability to select randomly in person. A face-to-face session with participants could also help alleviate this issue.

In addition to being able to manipulate public versus private feedback and goal orientations, the in-person setting will also provide another powerful manipulation tool for goal-setting research: implicit goals. Huang and Bargh (2014) have manipulated unconscious goals and found that they operate on certain goal-relevant content found in the environment, even if that content is not the intended focus of the conscious goal. Based on these findings, providing a prime in the academic environment could further enhance the effects of goal setting on academic motivation in a priming condition.

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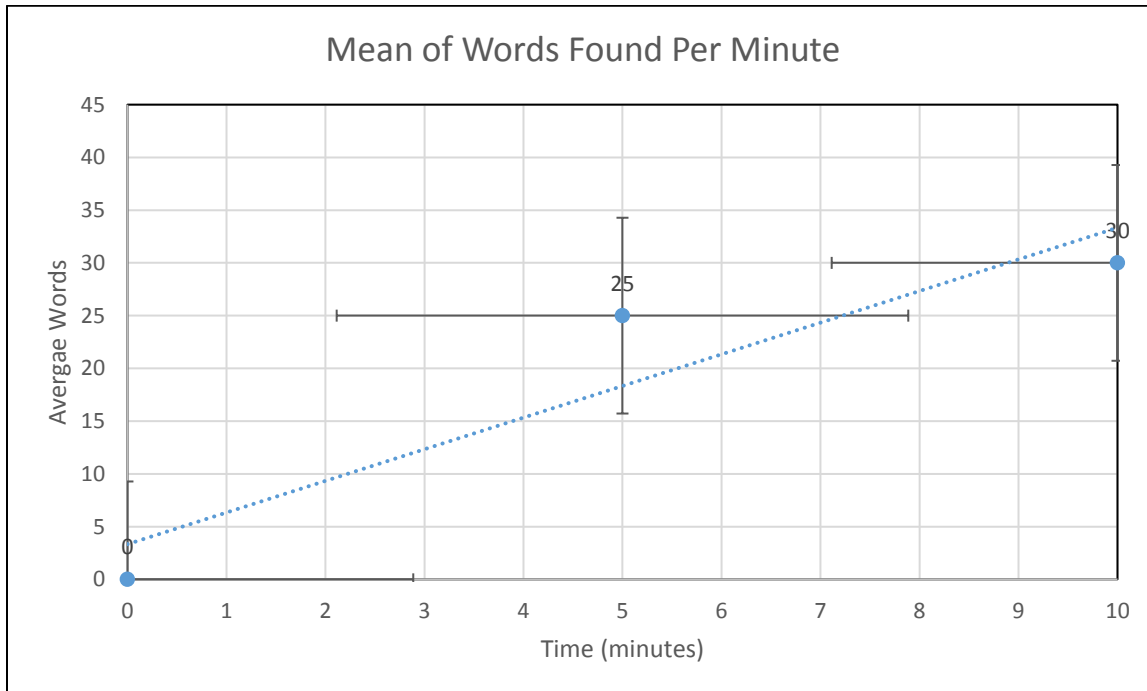
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APPENDIX A: INSTRUCTIONS

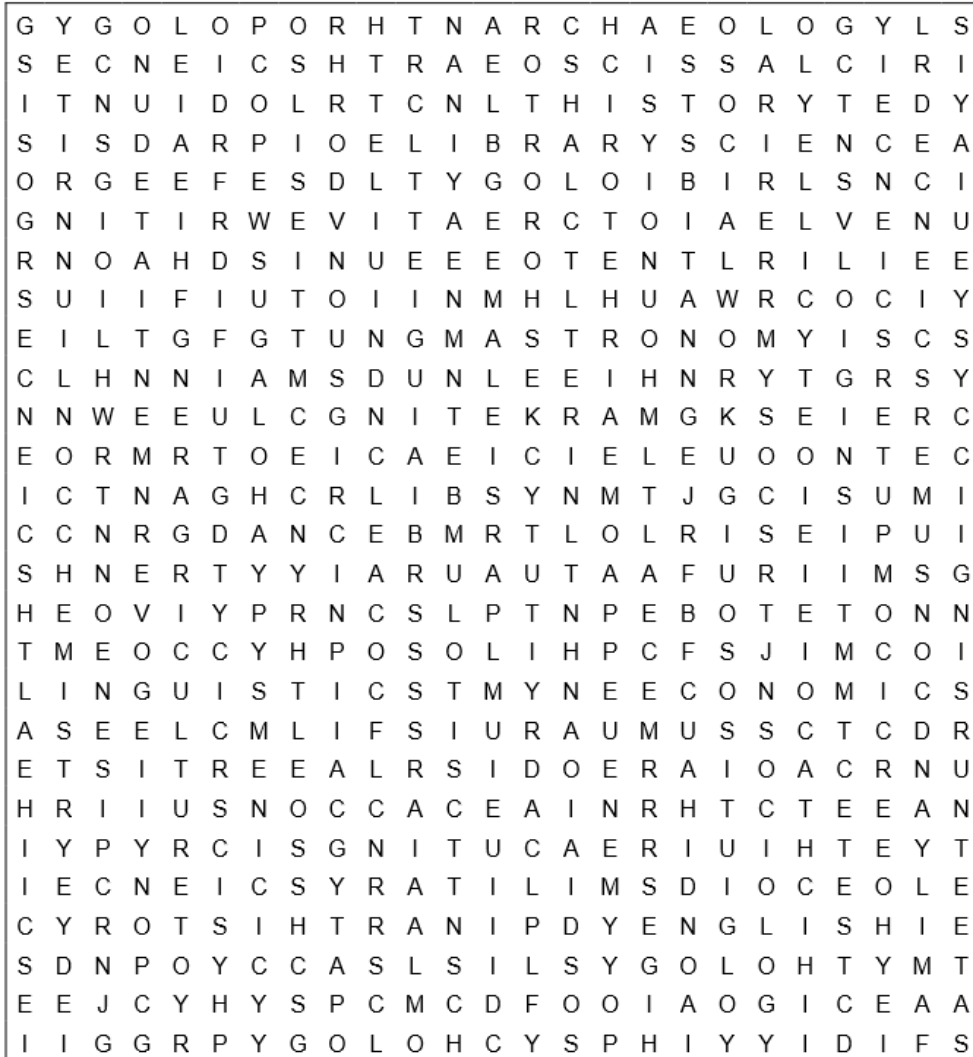
Mastery Instructions: Please indicate a goal of words to find while solving the word find puzzle. You will have 10 minutes to complete the puzzle: **I will find _____ Words.**
MAXIMUM WORDS: 55.

Performance Instructions: Please solve the following puzzle at the best of your ability. Below is data from a previous study about **how students did on this activity**. You will have 10 minutes to complete the puzzle:
MAXIMUM WORDS: 55



College Majors

As students return to campuses across America, we recommend these 55 field of study as possible Majors.



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APPENDIX C: INFORMATIONAL FEEDBACK

Positive: You found ___ words. On average, most participants found 15 words.

Very positive: You found ___ words. On average, most participants found 5 words.

APPENDIX D: QUESTIONNAIRE

TASK INTEREST AND IMPORTANCE QUESTIONNAIRE:

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

1 = Not at all true 3 = Somewhat true 5 = Moderately true 7 = Very true

This task was very interesting to me. _____

I enjoyed this task very much. _____

I felt as if there was tension while completing this task. _____

I felt as if there was pressure to complete this task. _____

This task required a lot of effort. _____

I felt this task was very worthwhile. _____

I felt as if this task was important to complete. _____

DEMOGRAPHICAL QUESTIONNAIRE:

What is your gender? _____

What is your age? _____

Which of the following best describes your ethnicity?

____ African American

____ Asian

____ Hispanic

____ Native American

____ White

____ Mixed

____ Other