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MATCHING THE RIGHT FEEDBACK TO THE RIGHT PERSON:

THE INTERACTION OF PROCESS AND OUTCOME

FEEDBACK WITH GOAL ORIENTATION

A THESIS

SUBMITTED TO THE GRADUATE FACULTY

In partial fulfillment of the requirements for

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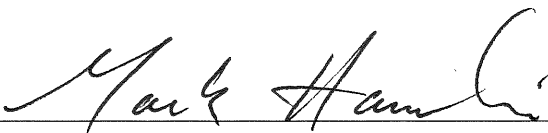MASTER OF ARTS IN PSYCHOLOGY

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Abstract

Types of performance feedback are discussed and compared. An overview of the goal orientation literature is provided. The author hypothesized that outcome feedback is congruent with a performance orientation, and that process feedback is congruent with a learning orientation. 92 undergraduate students participated in the study. Participants completed a goal orientation survey and a scheduling task. Participants received outcome feedback, process feedback, or no feedback during the task. Results are analyzed and discussed. Evidence for the hypotheses was not found. Limitations and future research directions are set forth.

Matching the Right Feedback to the Right Person: The Interaction

of Process and Outcome Feedback with Goal Orientation

Researchers in the field of organizational psychology seek to understand human behavior in work settings. Leaders can apply these findings in organizations to improve organizational outcomes. A central aim of organizational psychology is to discover how leaders can influence workers to increase their level of effort and performance, and this research draws heavily from the psychology literature on motivation. One area of interest is the effects of feedback on workers, which is central to organizational psychology as it is the primary means by which managers can influence the performance of employees. Researchers have sought to discover the types of feedback that are most likely to improve employee performance. The present study aims to compare the effects of two different types of feedback on people completing a performance task. The results may prove useful to organizational leaders as they seek ways to improve worker productivity.

Many aspects of feedback have been studied throughout the last century, and the results have been inconsistent. A feedback intervention (FI) is a term used in the literature to refer to an action taken by an external agent to communicate information about an aspect of one's performance (Kluger & DeNisi, 1996). The earliest research on FIs focused on knowledge of results interventions. Brown (1932) studied knowledge of results by using groups of middle school students who completed arithmetic tasks. The experimental group was given knowledge of their results after the first task, and they improved significantly more than the control group. Manzer (1935) studied college students performing a muscular strength task. The experimental group was given the results of their work and they also performed significantly better than the control group. Similar studies have demonstrated that knowledge of results interventions improve performance (Arps, 1920; Gilliland, 1925). The literature contains inconsistent findings, however, as early studies reported a negative effect of knowledge of results on performance, or no effect at all. Judd (1905) found that knowledge of results caused a decrease in performance and led to an increase in errors. Researchers have also found that knowledge

of results did not significantly affect learning or retention (Crafts, & Gilbert, 1935). Recent authors have suggested that the inconsistencies in the early literature are attributable to methodological problems and an inaccurate operationalization of knowledge of results (Kluger et al., 1996). Despite the inconsistent results in the literature, most researchers began to ignore the findings which indicated a negative effect of knowledge of results, and viewed knowledge of results interventions as an enitrely positive approach. Ammons (1956) published an influential paper which contained a series of generalizations drawn from previous experiments on knowledge of results. Ammons concluded that knowledge of results generally increases motivation and rates of learning. He also declared that more specific knowledge of results will cause more rapid improvements in performance. Ammons, like many authors of his day, largely ignored empirical evidence to the contrary and relied on findings that indicated a positive effect of knowledge of results.

Researchers began to focus on understanding the mechanism by which feedback influences performance, rather than simply asking whether feedback causes a change in outcomes. Locke (1967) hypothesized that the positive effects of knowledge of results were mediated by goal-setting. He asserted that in many of the popular FI experiments, the experimental groups that received feedback were more likely to set goals for themselves, which then caused their performance to improve. Locke divided participants into four groups. Half of them received knowledge of results and the other half did not. Half of them also set specific goals and the other half did not. Locke's results supported his hypothesis that goal setting was responsible for the difference in performance and not the knowledge of results.

The feedback research, from its inception through the 1970's, dealt with feedback from the perspective of a manager. Feedback was seen as a resource that managers could use to improve the performance of their employees. There was a shift in perspective during the 1980's as many researchers began to consider feedback from the perspective of the employee. Ashford and Cummings (1983) studied the way in which employees seek feedback as a means of improvement. Many researchers

began to study "feedback seeking behavior." This research seeks to understand why employees seek feedback, the method by which they seek feedback, and other related questions. Ashford et al. (1983) wrote one of the first articles on feedback seeking behavior and developed a model to explain the value of feedback to employees. Ashford et al. posited that an individual must experience some level of uncertainty about their job in order for feedback to be valuable to them. Feedback only benefits an individual if it contains information that was not previously known. The researchers divided the uncertainty that employees experience into two categories: uncertainty about what actions they should perform, and uncertainty about how well they are performing these actions. They used the term referent information to refer to feedback that indicates which behaviors are most appropriate for reaching a particular goal. Appraisal information refers to information about how one's behavior is perceived and evaluated by others. Employees are motivated to seek feedback, therefore, to reduce their uncertainty concerning which task to perform and how well they are performing it. The reduction of this uncertainty can enable workers to achieve their goals more effectively.

Despite the value of feedback for employees, there are also reasons for employees to avoid feedback. Research has indicated that workers who under-perform are likely to avoid feedback because they desire to view themselves in a positive light, and negative feedback would discourage them (Zuckerman, Brown, Fox, Fischler, Lathin, & Minasian, 1979). Avoiding feedback can thus protect the self-esteem of people who perform poorly. Feedback could have a positive effect on someone who performs well, and such a person may seek feedback only to boost their own self-esteem.

Kluger et al. (1996) connected feedback intervention theory to goal setting theory and proposed that people compare received feedback to a previous standard or goal. When a person receives feedback indicating that their performance is below the standard, then they are motivated to reduce the feedback-standard discrepancy. Kluger et al. (1996) proposed four strategies for eliminating the feedback-standard gap. The first strategy is to include a goal-setting intervention along with the feedback intervention. Combining these interventions means the person compares their goal to their

previous performance and focuses on how much they need to improve to eliminate the discrepancy. The second strategy is to eliminate the goal or standard if it is unlikely to be attained. The third strategy is to change the standard to make it more attainable. The fourth strategy is to reject the feedback. These four processes describe how people self-regulate in response to a feedback intervention. Kluger et al. (1996) asserted that feedback interventions affect people's performance by influencing task-motivation processes, task-learning processes, and meta-task processes. If the feedback suggests that the person's performance is below the standard, it is considered a negative feedback sign. If the feedback indicates that the performance is above the standard, it is a positive feedback sign. A negative feedback sign can influence people to put forth more effort in order to attain the desired level of performance. If increasing one's effort does not lead to the desired performance improvement, then the FI may cause one to seek to learn a better approach to the task. Thus FI can affect task-learning processes. Meta-task processes include other ways in which the feedback can influence the recipient, such as directing attention to the self. For example, a negative feedback signal may cause someone to focus their attention on their low self-efficacy and decide to avoid the task altogether. Kluger et al.(1996) laid the foundation for much of the feedback research that has been conducted since then.

<u>Process vs. Outcome Feedback</u>

Annett (1969) drew a distinction between feedback about the results of a performance and feedback about the performance itself. The terms "outcome feedback" and "process feedback" have become common to refer to feedback about results and feedback about processes, respectively (Earley, Northcraft, Lee, & Lituchy, 1990). Outcome feedback is simply a report of the results obtained, such as the number of widgets produced or sales made. Process feedback focuses on the method used by the worker, and may include information about how to improve one's strategy. The majority of the research on feedback interventions has considered the effects of outcome feedback, while few studies have investigated process feedback. Outcome feedback can communicate a need to adjust one's effort or method, but does not contain information about what type of adjustment is needed. Outcome feedback

may be all that is needed in a task in which the worker is already familiar with the changes that are needed to improve performance. When a worker is doing a new or complex task, however, process feedback is more likely to benefit them, as they seek to find the connection between their effort and the desired result (Campbell, 1988).

The positive effects of outcome feedback on performance have been documented in several studies (Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988). Buchheit, Dalton, Downen, and Pippin (2012) found that accounting students who were given outcome feedback during a numeric decision task demonstrated more improvement than those who received no feedback. Outcome feedback can influence worker performance through the three mediators set forth by Kluger et al. (1996): task motivation, task learning, and meta-task processes. Outcome feedback can affect task motivation by communicating that an individual's effort is not producing results consistent with their goal; the individual may then put forth more effort into the task to decrease the gap between their attained result and their desired result. Outcome feedback also affects task learning, as an individual may infer that a change in behavior is necessary to improve their results, and may continue making changes until they discover a method to improve their performance. Meta-task processes occur when outcome feedback directs an individual's attention away from the task and to something else, such as the self. This meta-task process can have a positive or negative effect on performance. In one experiment, negative outcome feedback increased self-focus and performance on a simple memory task but decreased performance on a complex memory task (Mikulincer, Glaubman, Ben-Artzi, & Grossman, 1991).

Process feedback has not been tested as thoroughly as outcome feedback, and it is not as commonly implemented in organizations. Geister, Konradt, and Hertel (2006) examined the effects of process feedback on teams of participants while performing a business consulting case-study task. Fifty-two virtual teams were asked to create solutions for clients of a consulting company. Half of the teams received process feedback during the task through an online-feedback-system, and the other half did not receive feedback. The participants in the feedback condition received three types of process

feedback: motivational feedback, task-related feedback, and relationship-related feedback. The teams that received the feedback performed significantly better than those that did not. The results indicated that all three types of feedback cause an improvement in team performance. The study suggested that motivation mediated the effects of process feedback on performance. In a different study, participants engaged in a task of detecting defects in a printed circuit board, and the participants received process feedback, outcome feedback, or no feedback (Lam & Schaubroeck, 1999). The participants who received process feedback improved significantly more than those who received outcome feedback or no feedback.

In addressing the question of whether outcome or process feedback is more effective, researchers have compared them across different types of tasks. The research comparing the two types of feedback has supported a theory that process feedback is more beneficial when a task is new or complex, and outcome feedback is preferred when a task is familiar to the workers (Campbell, 1988). Another approach to comparing process and outcome feedback is to study the relationship between certain personality characteristics of people and their responses to various types of feedback (Merriman, Bernardi, & Clariana, 2012). The purpose of these studies is to explore whether certain types of feedback are more effective for certain types of people (VandeWalle, 2003). Merriman et al. measured participants' goal orientations and studied the effects of outcome feedback across different goal orientations. The following section provides a summary of the literature on goal orientation, followed by a more in-depth discussion of the study by Merriman et al.

<u>Goal Orientation</u>

Goal orientation was a focus of much educational research before it began appearing in the organizational literature. Dweck (1986) proposed that people tend to have either a learning goal orientation or a performance goal orientation. Goals were divided into the two general categories of performance goals and learning goals (Elliott & Dweck, 1988). A performance goal is a goal in which the objective is to attain a certain measured result such as a score or grade. A learning goal is not

focused on an external result but on mastering the task or lesson. An individual is said to have a performance goal orientation (PGO) if he or she is naturally inclined to set performance goals as opposed to learning goals (Heyman & Dweck, 1992). A performance goal oriented person would define success in terms of only measurable results that can be observed by others. Performance goal oriented people are concerned with how their achievements compare to those around them. A learning goal oriented (LGO) person is inclined to focus on the learning and developing aspects of a task and would define success as mastering the strategy of a task, regardless of the measured result. Educational researchers have focused on goal orientation rather than specific situational goals, although someone with a particular goal orientation could set a goal that is consistent with the opposite orientation (Seijts, Latham, Tasa, & Latham, 2004). For example, in organizations a manager commonly sets goals for the entire organization, and the goals may be performance or learning goals, regardless of the goal orientations of the individuals within the organization. Researchers in the educational field have assumed that if an individual has a high performance or learning goal orientation, his or her orientation will remain consistent across different types of activities. Each orientation has been shown to exhibit certain behavioral patterns that extend beyond goal setting (Button, Mathieu, & Zajac, 1996). Performance goal oriented people tend to view ability as fixed and unchanging. Such individuals therefore avoid tasks that they believe they are not capable of performing well, and focus on activities that they know they can succeed at. Learning goal oriented people tend to believe that ability can change with practice or study, and as a result they seek after challenging tasks and enjoy developing new skills (Janssen & Prins, 2007).

The earliest studies on goal orientation conceptualized goal orientation unidimensionally (Dweck, 1986). Researchers would administer a survey and record a single score to assess whether a participant was learning or performance oriented. Later researchers treated goal orientation as a two-factor construct (Button et al., 1996). In these later studies, participants could score high in both learning and performance orientations. Most recent studies, however, use a three-factor model of goal

orientation that was put forth by VandeWalle (1997). He further divided the performance goal orientation into "prove" and "avoid" orientations. A prove performance orientation is characterized by a desire to gain favorable judgments about one's performance. Prove performance oriented people are driven to perform better than their peers. An avoid performance orientation is defined as a desire to avoid unfavorable judgments of one's ability. Avoid performance oriented people are motivated to avoid being worse than their peers. VandeWalle's (1997) three-factor goal orientation survey measures participants across all three orientations, and this measure is the most commonly used in recent research.

Seijts and Latham (2005) hypothesized that learning and performance goals are each better suited to different situations, and setting the wrong goal for certain tasks can have negative effects on performance. They argued that learning goals are superior to performance goals when the task being performed is challenging or new. They reasoned that a performance goal in such situations distracts the worker from their task and thereby limits their ability to learn and improve. A performance goal is more effective for a simple task in which the primary determinant of results is effort and persistence. These findings on goal types parallel Campbell's (1988) findings on feedback types, specifically that process feedback is better suited for complex tasks and outcome feedback is better suited for familiar tasks. The parallel between both studies suggests a connection between a learning goal orientation and process feedback and between a performance goal orientation and outcome feedback, and it is this connection that is the focus of the present study.

Feedback and Goal Orientation Congruence

Merriman et al. (2012) used the goal orientation survey used by Niemivirta (1998) to measure participants' goal orientations on both performance and learning dimensions. The participants then engaged in a series of self-directed study sessions to prepare for a math and English standardized test. Half of the participants received outcome feedback in the form of a progress report half-way through the study program, and the other half received no feedback. The dependent variables in the study were

test scores and participant effort. The authors hypothesized that outcome feedback is congruent with a performance goal orientation, such that outcome feedback would have a more positive effect on the performance of the PGO students than on the performance of the LGO students. They also expected that a learning goal orientation is incongruent with outcome feedback, and therefore outcome feedback would have a negative effect on a LGO student's performance or no effect at all. Out of the students that scored low on the LGO measure, the ones in the feedback condition did better than those in the no-feedback condition. Of the students that scored high on the LGO measure, those that received feedback performed worse than those that did not receive feedback. The findings supported the prediction that outcome feedback will have a more positive effect on a PGO student than it will on a LGO student.

The study by Merriman et al. (2012) investigated the effects of outcome feedback on PGO and LGO students but did not include process feedback in the experiment. Since outcome feedback has been shown to be more effective for PGO people, it is expected that process feedback is more effective for LGO people. These assumptions form the basis of the following hypotheses:

Hypothesis 1: For those who receive process feedback, learning orientation will be positively correlated with task improvement.

Hypothesis 2: For those who receive outcome feedback, performance orientation will be positively correlated with task improvement.

Method

Participants

Ninety students from a large regional university participated in the study. The participants were enrolled in an introductory psychology course and voluntarily participated in the experiment for course credit.

Research Design

The design is a multiple regression with four predictors and one criterion variable. The predictor variables are: type of feedback, learning orientation, and performance orientation. The dependent

variable is the amount of improvement on the task. Participants were randomly assigned to one of three feedback conditions: no feedback, process feedback, and outcome feedback. Thirty participants were assigned to each feedback condition.

<u>Procedure</u>

Participants completed the study individually at a desk in the psychology laboratory. Each participant performed the task alone in a private room. Participants first read and signed the study consent forms (see Appendix A). Participants then completed a goal orientation measure, and then completed the class scheduling task task.

<div align="center">Goal Orientation Measure</div>

Participants completed a goal orientation questionnaire on paper. The goal orientation measure was developed by Button et al. (1996) and is included in Appendix B. The measure consists of 8 items to measure learning goal orientation and 8 items to measure performance goal orientation. Button et al. (1996) reported an α of .79 for the learning goal orientation scale and an α of .73 for the performance goal orientation scale. The performance and learning goal orientation items are alternated, and participants rate each item on a scale from 1 (strongly disagree) to 7 (strongly agree). Each participant's mean rating for the learning and performance sections was calculated and used in the analysis.

<div align="center">Class Scheduling Task</div>

After completing the goal orientation measure, participants read the instructions for the task (see Appendix C). The task was a class scheduling task adapted from Earley and Kanfer (1985). Participants were required to create class schedules for hypothetical college students. A class list was provided with several classes and sections to choose from (see Appendix D). Participants were instructed to write as many class schedules as possible in ten minutes. Each schedule needed to conform to the following four rules to be valid: (1) each schedule must include the course subject, course number, and meeting time for each of the five classes, (2) each schedule must have five different

class subjects scheduled, (3) no class times can overlap within a schedule, and (4) each class "section" can only be used in one schedule. The instructions included an example of a correct and an incorrect schedule and a short explanation for both. Participants were then presented with the class list and several blank sheets to write the schedules on (see Appendix E). The participants were informed that they would perform this task for 10 minutes and then perform a second part of the task for another 10 minutes. Participants were then instructed to begin, and the experimenter left the room. After ten minutes the experimenter entered the room and collected the forms from the participant. The participants in the "no feedback" condition then waited one minute and then were instructed to do the task again for another 10 minutes, and were given new scheduling sheets to fill in. The experimenter then left the room and the participant began the second trial. The participants in the "process feedback" condition were given a document with the following feedback on it:

"An effective strategy that you can use to create schedules quickly is to always schedule the first class time that fits into the schedule, for each subject. If the first class time does not fit in the schedule, try the second one, and so on. It is also effective to cross off each class time on the list after you use it so that you do not repeat it."

The participants in the "outcome feedback" condition were given a document containing a report of the number of schedules they created and the average number of schedules created among participants. The following is an example of the outcome feedback:

"You created a total of _5_ valid class schedules. The average number of valid schedules among participants has been 4."

After reading the feedback, the participants then completed the same task for another 10-minute session. After the second session, the experimenter returned to the room to thank and excuse the participant.

Results

A standard multiple regression was performed between task improvement as the dependent variable and learning goal orientation, performance goal orientation, and feedback type as independent variables. Cases 37 and 89 contained outliers in the difference score variable, and these values were replaced with the minimum value from the data that did not constitute an outlier. The removal of these outliers was necessary to meet the assumption of normality. No other outliers were detected and no cases contained missing data, $N = 92$. The data did not violate the assumption of homogeneity of variance and did not require transformation. A non-significant regression equation was found, $F(4, 87) = .753$, $p > .05$, with an R^2 of .033. Table 1 displays the correlations between the variables, the unstandardized regression coefficients (B), the standardized regression coefficients (β), and the semipartial correlations (sr^2).

Table 1

Descriptive Statistics and Correlations for Study Variables.

	M	SD	1	2	3	4	B	β	sr^2
1. LGO	5.69	.62					-.698	-.081	.027
2. PGO	5.74	.74	-.041				.526	.073	.016
3. Feedback	2.01	.819	.165†	.125					
4. Improvement	8.03	5.94	.057	.057	.147				.022
5. Gender (0 = fem., 1 = male)	.30	.46	.096	.181	.128	.143			

Note. n = 92.

†dummy coded feedback, multiple r.

Independent-samples *t* tests were conducted to compare the improvement scores from the two feedback conditions to the improvement score from the control condition. The improvement score from

the process feedback condition ($M = 9.03$, $SD = 5.00$) was higher than the improvement score from the no feedback condition ($M = 7.20$, $SD = 4.64$), but this difference did not reach significance, t(59) = 1.48, $p > .05$. The improvement score from the outcome feedback condition ($M = 7.84$, $SD = 7.73$) was higher than the improvement score from the no feedback condition ($M = 7.20$, $SD = 4.64$), and this difference did not reach significance, t(59) = .39, $p > .05$.

A dependent samples t test was conducted to compare the performance of participants in the outcome feedback condition before and after they received feedback. The number of schedules created after participants received outcome feedback ($M = 31.32$, $SD = 8.20$) was higher than the number of schedules created before they received feedback ($M = 23.48$, $SD = 6.84$). The difference was statistically significant, $t(30) = 5.65$, $p = < .05$.

Discussion

The results of the multiple regression did not provide support for the hypotheses. The first hypothesis was that learning orientation would correlate positively with task improvement within the process feedback group. There was no significant correlation found between learning orientation and task improvement among the process feedback condition. The second hypothesis was that performance orientation would positively correlate with improvement within the outcome feedback group. The correlation between performance orientation and improvement in the outcome feedback condition also failed to reach significance. There were no main effects found for feedback type, learning orientation, or performance orientation.

This study was created as an extension to Merriman et al's (2012) study of goal orientation and feedback congruence. They reported that among participants who received outcome feedback during a task, task achievement was positively related to performance orientation and negatively related to learning orientation. They concluded that outcome feedback is congruent with a performance orientation and not with a learning orientation. Merriman et al. did not include process feedback in their study, and the present study was developed to explore the phenomenon in relation to process feedback.

There are a few differences between the Merriman et al. study and the present study which may help explain why the present results failed to reach significance. Merriman et al. classified participants as either high PGO or low PGO by a median split. Participants were also labeled as either high LGO or low LGO. The participants' exact goal orientation scores were not used in the analysis beyond simply determining whether each participant fell into the high or low group. Merriman et al. also used the goal orientation measure used by Niemivirta (1998) rather than the measure used in the present study. Merriman et al. provided half of the participants with outcome feedback and the other half with no feedback, and performed an ANOVA to analyze the relationship between feedback, goal orientation, and subsequent achievement. The present study differs in that the individual learning and performance orientation scores of each participant were used in a multiple regression, rather than using the scores to group participants into a high or low condition. Merriman et al. studied eighth grade students' performance on mathematics and language arts tasks over the course of multiple months. The participants in the present study were undergraduate college students, and the task was a short scheduling task completed in one sitting. Perhaps if the task used in this study was more long-term such as the one used my Merriman et al., then the results may have been different.

Seijts and Latham (2005) found that learning goals are more effective for complex tasks and performance goals are more effective for familiar tasks. Campbell (1988) reported that process feedback is more beneficial during complex tasks and outcome feedback is more beneficial during familiar tasks. The scheduling task used in the present study would likely be considered simple compared to most work-related tasks. If the hypothesis set forth by Seijts and Latham is correct, than perhaps using a more complex task would have provided an environment for people to improve more as a result of process feedback. The absence of a correlation between learning orientation and improvement in the process feedback condition of this study may be attributed to the simple nature of the task. Certain work tasks may be more conducive to people that are high in learning orientation, while other tasks may be suited to those high in performance orientation. It is unknown whether the

task used in this study is more conducive to one of the two orientations. Another possible reason for the failure to support the hypothesis is the type of process feedback used in the present experiment. There is no established norm for how informative or helpful process feedback should be. The process feedback used in this study was a short hint about how the participant could improve in the task. A more helpful form of process feedback would likely cause participants to improve more during the second trial. The process feedback used in the present study may not have been sufficiently helpful to cause the level of improvement needed to detect a significant result in the multiple regression. There are also many ways in which the outcome feedback could have been delivered. The outcome feedback used in this study consisted of a simple report of the participants' results relative to that of the average participant. More specific outcome feedback may have resulted in a main effect for outcome feedback on improvement, and the results of the multiple regression may have been different.

There is also the possibility that the hypotheses were not true. Merriman et al. (2012) is the only study that has tested the idea that performance orientation is congruent with outcome feedback, and perhaps this finding will not prove replicable in future research. The hypothesis needs to be tested more times to detect whether the findings in the present study are attributable to a poor choice in task type, method, or a false hypothesis. While the literature on goal orientation is well established and supported, the idea that certain types of feedback are congruent with certain goal orientations is very recent and not well documented, and therefore the present study is exploratory in nature. The goal orientation construct has been useful in a variety of contexts, but perhaps it should not be used to determine whether an individual should receive process or outcome feedback. The results of this study indicate that goal orientation does not help to predict how well people will improve as a result of process or outcome feedback. There may be another personal characteristic that can help predict the type of feedback that would be most beneficial for a person, but goal orientation does not seem to be that characteristic.

This study was designed in part to help managers of organizations determine how to most effectively deliver feedback to improve worker performance. If the hypotheses had been supported by the data, then the results would have suggested that managers should measure their employees' goal orientations and then tailor their job feedback to their orientation. Outcome feedback could be given to performance oriented people and process feedback could be given to learning oriented people to improve productivity at the optimal rate. Since the results of this study were not significant, there are no specific recommendations that can be made to practitioners. Perhaps providing employees with both process and outcome feedback would cause more improvement than only one type of feedback, but future research could explore this question.

Several directions for future research are now suggested. There are many individual characteristics that can be measured in addition to goal orientation, and future studies could look at the relationship between process and outcome feedback with other individual traits such as the Big Five personality traits and other personality dimensions. Other traits may be found to be congruent with certain types of feedback, and this research would be valuable in applied settings. There are also more ways to categorize feedback than simply process and outcome feedback, and future research could examine the relationship between goal orientation and other types of feedback. As stated previously, this study could be repeated with modifications to certain elements of the method. Specific aspects of the method that could be manipulated are the task type, task length, number of trials, goal orientation measure, feedback content, and choice of statistical test. Changes to any of these aspects of the method could potentially lead to different results.

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Appendix A: Informed Consent Form

University of Central Oklahoma
INFORMED CONSENT FORM

Research Project Title: Matching the right person with the right feedback: The interaction of process and outcome feedback with goal orientation.

Researcher: Bryce Linford

Information about This Study

    The purpose of this experiment is to study the effects of feedback during a task and how this effect differs across different types of people. I will be required to complete a 16 item survey, and then perform a scheduling task during two 10-minute sessions. The entire experiment will take about 30 minutes. The information I provide will be kept confidential and will not be traceable to myself. I am a volunteer and I am free to discontinue the task at any time if I desire.

    If I have any questions about this study, I may contact Bryce Linford blinford@uco.edu or Mark Hamlin, Ph.D. mhamlin@uco.edu. I may also contact the Research Administrator at uco-admin@sona-systems.net. I may also contact the Research Administrator by phone (405) 974-5707, or by email, at experimentrak@uco.edu. If I have any questions about my rights as a research participant, I may contact the UCO Institutional Review Board by phone, at (405) 974-5479 or by email at irb@uco.edu.

AFFIRMATION BY RESEARCH SUBJECT

    I hereby voluntarily agree to participate in the above listed research project and further understand the above listed explanations and descriptions of the research project. I understand that any information collected from me will only be used in an analysis as part of a larger group of participants. Thus, I understand that the researchers cannot refer me to anyone based on my answers to the materials, but if I would like to visit with someone regarding sensitive or special concerns, I may contact the UCO Student Counseling Center by phone at (405) 974-2215 or via the website at http://www.uco.edu/student_counseling. I also understand that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty. I acknowledge that I am at least 18 years old. I have read and fully understand this Informed Consent Form. I sign it freely and voluntarily. I acknowledge that a copy of this Informed Consent Form has been given to me to keep.

Research Subject's Name: _____

Signature: _____ **Date** _____

Appendix B: Goal Orientation Questionnaire

Rate each statement on a scale from (1) "Strongly Disagree" to (7) "Strongly Agree." Circle the chosen number.

	Strongly Disagree		Disagree		Agree		Strongly Agree
1. The opportunity to do challenging work is important to me.	1	2	3	4	5	6	7
2. I prefer to do things that I can do well rather than things that I do poorly.	1	2	3	4	5	6	7
3. When I fail to complete a difficult task, I plan to try harder the next time I work on it.	1	2	3	4	5	6	7
4. I'm happiest at work when I perform tasks on which I know that I won't make any errors.	1	2	3	4	5	6	7
5. I prefer to work on tasks that force me to learn new things.	1	2	3	4	5	6	7
6. The things I enjoy the most are the things I do the best.	1	2	3	4	5	6	7
7. The opportunity to learn new things is important to me.	1	2	3	4	5	6	7
8. The opinions others have about how well I can do certain things are important to me.	1	2	3	4	5	6	7
9. I do my best when I'm working on a fairly difficult task.	1	2	3	4	5	6	7
10. I feel smart when I do something without making any mistakes.	1	2	3	4	5	6	7
11. I try hard to improve on my past performance.	1	2	3	4	5	6	7
12. I like to be fairly confident that I can successfully perform a task before I attempt it.	1	2	3	4	5	6	7
13. The opportunity to extend the range of my abilities is important to me.	1	2	3	4	5	6	7
14. I like to work on tasks that I have done well on in the past.	1	2	3	4	5	6	7
15. When I have difficulty solving a problem, I enjoy trying different approaches to see which one will work.	1	2	3	4	5	6	7
16. I feel smart when I can do something better than most other people.	1	2	3	4	5	6	7

Appendix C: Task Instructions

Please read the following instructions carefully.

You will be required to create class schedules for several hypothetical UCO students. You will be presented with a list of all of the available classes and times. Your job is to write down schedules consisting of five different classes, and to write as many of these schedules as possible in the given time. A schedule is only valid if it complies with the following rules:

(1) Each schedule must include the course subject, course number, and meeting time for each of the five classes.

(2) Each schedule must have five different class subjects scheduled.

(3) No class times can overlap within a schedule.

(4) Each class "section" can only be used in one schedule. For example, if you use BIO 1314: TR 12 – 1:50 in the first schedule, you cannot use that specific time of BIO 1314 in another schedule, but you can use the different times of BIO 1314 in the other schedules.)

The following is an example of a valid schedule:

Class Subject/Number	Class Times
MATH 1244	TR 8 – 9:15
BIO 1314	TR 12 – 1:50
HIST 1222	MW 2 – 3:15
ECON 1203	MW 11 – 12:15
PSY 1156	TR 2 – 3:15

The above schedule is valid because it conforms to all of the rules. The following is an example of an invalid schedule:

Class Subject/Number	Class Times
MATH 1244	TR 8 – 9:15
BIO 1314	TR 12 – 1:50
HIST 1222	MW 2 – 3:15
BIO 1314	MW 3 – 4:15

The above schedule is invalid because it contains only 4 classes, the subject BIO is listed twice, and two of the class times overlap.

Appendix D: Class List

(You may write on this sheet)

BIO 1114	**HIST 1023**	**PSY 1103**	**HUM 2113**
TR 8 - 9:50	TR 8 - 9:15	TR 8 - 9:15	TR 11 - 12:15
TR 12 - 1:50	TR 12:30 - 1:45	TR 9:30 - 10:45	TR 12:30 - 1:45
TR 2 - 3:50	TR 5:45 - 7	TR 11 - 12:15	TR 2 - 3:15
TR 4 - 5:50	MW 11 - 12:15	TR 12:30 - 1:45	MW 8 - 9:15
MW 10 - 11:50	MW 2 - 3:15	TR 2 - 3:15	MW 11 - 12:15
MW 2 - 3:50		MW 4:15 - 5:30	MW 2 - 3:15
MTWR 8 - 8:50		MWF 9 - 9:50	MWF 9 - 9:50
MTWR 12 - 12:50		MWF 12 - 12:50	MWF 10 - 10:50
MATH 1513	**ECON 1103**	**ENG 1113**	**GEO 2303**
TR 8 - 9:15	TR 9:30 - 10:45	TR 8 - 9:15	TR 8 - 9:15
TR 9:30 - 10:45	TR 11 - 12:15	TR 9:30 - 10:45	TR 12:30 - 1:45
TR 11 - 12:15	TR 2 - 3:15	TR 11 - 12:15	TR 5:45 - 7
TR 2 - 3:15	TR 4:30 - 5:45	TR 2 - 3:15	MW 11 - 12:15
MW 1 - 2:15	MW 8 - 9:15	MW 8 - 9:15	MW 2 - 3:15
MW 2 - 3:15	MW 11 - 12:15	MW 2 - 3:15	
MW 2:30 - 3:45	MW 2 - 3:15	MW 3:30 - 4:45	
MW 5:45 - 7	MW 5:45 - 7	MWF 11 - 11:50	
MWF 12 - 12:50	MWF 9 - 9:50		

Appendix E: Schedule Sheet (includes 12 schedule templates)

Schedule: 1

Class Subject/Number	Class Times

Schedule: 2

Class Subject/Number	Class Times

Schedule: 3

Class Subject/Number	Class Times

Schedule: 4

Class Subject/Number	Class Times

Schedule: 5

Class Subject/Number	Class Times

Schedule: 6

Class Subject/Number	Class Times