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Analysis of the Effects of Goal and Feedback Specificity on Subsequent Task Performance

Gregory Mark Van Dahm

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ANALYSIS OF THE EFFECTS OF GOAL AND FEEDBACK SPECIFICITY ON SUBSEQUENT TASK PERFORMANCE

by

Gregory Mark Van Dahm

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
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Western Michigan University
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ANALYSIS OF THE EFFECTS OF GOAL AND FEEDBACK SPECIFICITY ON SUBSEQUENT TASK PERFORMANCE

Gregory Mark Van Dahm, M.A.
Western Michigan University, 1986

The effects of goal and feedback specificity on subsequent task performance were examined to test the hypothesis that specific goals and feedback facilitate performance to a greater degree than general goals and feedback (Ilgen, Fisher & Taylor, 1979). Ten subjects, in each of the four conditions, were assigned one of two levels of goal specificity and feedback specificity and were then required to perform a simple assembly and sorting task utilizing multiple size and color fasteners. No significance was discovered between correctly assembled and sorted products of the four groups although there was a general trend in the hypothesized direction. Possible explanations for lack of significance are discussed and suggestions for future research are offered.
ACKNOWLEDGEMENTS

The assistance of Dr. John Nangle is gratefully acknowledged. Dr. Nangle never failed to follow through and offered many useful suggestions for improvement of this paper.

The assistance of Drs. Jack Asher and Dale Brethower who participated in the review of this thesis and were members of my committee is also gratefully acknowledged.

Appreciation is also extended to Dr. Timothy Sawyer, of Lake Superior State College, who assisted in the implementation of this study by providing subjects from his introductory psychology classes.

Gregory Mark Van Dahm
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CHAPTER I

INTRODUCTION

Throughout the literature, in journals related to both psychology and management, there has been extensive research reported dealing with goal setting and factors related to it. Goal setting has been repeatedly demonstrated to improve performance on any given task. The two dimensions of goal setting that have attracted the most attention and research to date are goal specificity and goal difficulty (Locke, Shaw, Saari, & Latham, 1981).

Goal Specificity

Experiments that deal with the effects of goal specificity on subsequent task performance date back to 1935 (Steers & Porter, 1974). Locke (1968) reported a series of studies that compared specific difficult goals to non-specific goals of the "do your best" nature (an implied difficult goal). This type of "do your best" goal is commonly used in psychological research and in organizational settings where it is either expressed or implied. In six of eight studies reported in the Locke paper, the subjects in the specific difficult goal conditions performed significantly better than subjects in the "do your best" conditions.
In a study performed by Mossholder (1980), subjects were either assigned to a specific goal condition or were assigned to a "do your best" type of condition or to a control condition with no assigned goal. The task was that of assembling Erector Set parts in an interesting manner or in a boring manner. Subjects in the interesting condition were instructed to assemble a car while subjects in the boring condition were required to merely assemble various parts in a specific order. The results demonstrated that in both the interesting and boring conditions, subjects with a specific goal performed significantly better than in those in a no specific goal condition. The results of this study support similar findings in both field and experimental settings, e.g., Dossett, Latham and Mitchell (1979), Latham and Kinne (1974), and Locke and Bryan (1969).

**Goal Difficulty**

Goal difficulty is the second important dimension which has been considered when studying the importance of goal content. Since the use of goals was initiated to improve and regulate performance, goal difficulty should play an active role in this regulation. If the goals that are set actually do regulate performance, then difficult goals must result in a higher level of performance than easy goals when implemented with comparable populations.
and similar tasks.

The literature has repeatedly supported the hypothesis that difficult goals result in higher levels of performance than easy goals. Locke (1968) reported on a series of studies that he performed with various colleagues. His experimentation consistently demonstrated increased performance levels with the application of difficult goals. The subjects in the difficult goal conditions reached their goals far less often than did the subjects in the easy goal conditions, but only because the difficult goals were often out of reach. This finding of the superiority of difficult goals over easy goals has been demonstrated in a variety of settings both in the field and in the laboratory, e.g., Latham and Saari (1979) with brainstorming, Locke and Bryan (1969) with addition, Latham and Locke (1975) with logging crews, and Yuki and Latham (1978) with typists.

Participative Goal Setting

Many books and papers have been written expounding the need for participation in management. This need for participation has been associated with the effective use of mutual goal setting in organizational settings to promote individual employee commitment to goals of the organization.

Latham, Steele, and Saari (1982) performed an
experiment attempting to ascertain whether or not goals in which difficulty was held constant would produce better performance when they were participatively set than when they were merely assigned. There was one participatively set goal condition and two assigned goal conditions in this experiment. Subjects in the participative goal condition were given practice on the task and then were asked to set difficult but attainable goals for themselves. Subjects in the first assigned condition were randomly assigned goals that were matched to the goals of the participative condition. Subjects in the second assigned condition were also assigned the same goals as in the participative condition; however, this assignment was based upon their performance during the practice session. The results of this study demonstrated that with equal levels of goal difficulty, participation does not improve performance over that found when goals were assigned.

Latham and Marshall (1982) carried the investigation one step further by investigating not only assigned and participatively set goals, but also self-set goals. The subjects in the self-set condition were instructed to set difficult but attainable goals. No other influence was exerted by the experimenter beyond providing these guidelines. The subjects in the participative condition were told to set difficult although attainable goals, but these goals required approval from the experimenter. Subjects
in the assigned condition were given the same goals as were set in the participative condition. No significant difference was found between the performance of the three groups in this experiment. These results clearly supported the hypothesis that participation makes no difference in subsequent performance when difficult goals are established. This study was also extended to include a condition allowing for the setting of completely self-imposed goals. When subjects had almost exclusive control over what goals were set, the performance still did not significantly deviate from the performance found where goals were assigned (provided that goal difficulty remained consistent).

Feedback

Another concept that has been widely researched as an important component of management techniques to promote worthy performance is feedback. This generally originates from one or more of the following three possible sources. The first of these sources is another individual who has observed the performer's behavior and is able to evaluate it. This includes supervisors, co-workers, and subordinates and may even include outsiders such as customers. The second source is the task itself. The feedback may be an unintentional aspect of the task, e.g., a tracking task, or it may be intentionally built into the task, such
as a digital counter attached to a machine. The third source is the individual him/herself. This may occur when the person possesses sufficient experience to judge the quality of his/her own performance (Ilgen, Fisher, & Taylor, 1979).

In order for feedback to be effective, however, it is necessary for the feedback message to contain some useful information. The effectiveness of this message for controlling behavior depends on how well the recipient is able to convert this message into information that is useful to him/her (Ilgen et al., 1979). When a supervisor pats the back of a subordinate, it is up to the subordinate to interpret that stimulus.

In a study performed by Cook (1968), four groups were employed in a management game or exercise that simulated twelve quarters of operations in a hypothetical industry. Each group was composed of an accounting class. The only difference in the treatment of the groups was the frequency of feedback. Two groups were given quarterly feedback, one was given annual feedback, and the other was given no feedback (during the simulated work year). The results of this experiment supported the hypothesis that feedback frequency is important in fostering improved performance. The groups with the frequent feedback performed superiorly compared to the group with less feedback and all three feedback groups performed superiorly to
the group receiving no feedback.

Another important aspect of successful performance improvement through use of feedback is that the feedback must be accepted. It has been amply demonstrated that positive feedback is accepted more often than negative feedback. Positive feedback has been demonstrated to be accepted from almost any source while negative feedback was accepted only from high status sources (Ilgen et al., 1979). This would imply that when offering feedback, one should do so in a manner that highlights the positive aspects of the performer's behavior to help ensure acceptance by the recipient and to enhance the likelihood that those reinforced behaviors will again be emitted.

In one well publicized field application of the use of feedback, group performance goals were assigned to employees along with continuous feedback through self monitoring and the posting of results based upon measures of group performance. Overall group performance increased from 45% to 95% as a result of this combination of feedback and goal setting. When feedback was decreased to one week out of four, or one out of five, performance decreased almost to the level at which it stood prior to intervention ("At Emery Air Freight", 1973). This intervention demonstrated the necessity for the use of feedback when attempting to reach a set goal. A number of studies were performed that validate the findings of the
aforementioned study, e.g., Komaki, Barwik, and Scott (1978) and Strang, Lawrence, and Fowler (1978). These studies indicate that goal setting is necessary but not sufficient to improve performance; goal setting alone is not effective for improving employee performance (Locke et al., 1981).

There have been several studies that have demonstrated that feedback alone, just as goal setting alone, does not affect behavior (Locke et al., 1981). In most of these studies it was found that feedback with no established goals provided no increase in performance over no feedback conditions. When specific, difficult goals were set combined with feedback, performance improved significantly (Latham et al., 1976).

In a study by Nemeroff and Cosentino (1979), managers were randomly assigned to either one of two training conditions (feedback or feedback in combination with goal setting) or to a control group. The feedback took the form of subordinates' perceptions of their manager's behavior during the last performance appraisal. In the goal setting condition, managers were encouraged to set specific goals to increase the use of acceptable behavior. The results indicated no difference between the control and feedback only groups during the subsequent performance review but, a significant improvement did occur with the combined feedback and goal setting group.
One consistent finding in the feedback and goal setting literature that appears to be undeniable is that both feedback and goals are interpreted as necessary to improve performance. Neither is likely to work alone.

One area in the feedback and goal setting field which has not been researched deals with the question of what effect feedback specificity has on established goals (Ilgen et al., 1979). In their review article on feedback research relating to organizational behavior, Ilgen et al. (1979) hypothesized that feedback specificity would interact with the specificity of the performance goal on subsequent task performance. They postulated that the optimum condition would combine specific goals with specific feedback. This would allow the performer to have clear, concrete information from which he/she could evaluate the adequacy of his/her present performance level. The individual could then modify his/her performance according to this information. Another prediction would be that with specific feedback and general goals, the performer will know specifically what he/she has done but will be uncertain about how to evaluate his/her performance. The ambiguity inherent in this condition may lead the individual to reevaluate his/her goals in more specific terms. The third prediction relates to specific goals paired with general feedback. It is predicted that in this case, the performer may interpret the general feedback in terms of
how well he/she is meeting specific goals. The performer would translate the general feedback into specific feedback, based upon that individual's perception of his/her performance, in order to apply it to the specific goals. The case of general feedback with general goals was predicted to be of little value. Performance in this case would probably remain the same when positive feedback is used and would improve (or the recipient would attempt to improve it) with negative feedback.

The Problem and Hypothesis

The specific purpose of the present study is to test the hypothesis of Ilgen et al., (1979) relating to feedback and goal specificity. The four hypotheses are: (a) Specific goals paired with specific feedback will produce the highest level of performance compared to the other three experimental groups, (b) general goals with general feedback will result in the lowest level of performance, (c) general goals with specific feedback will result in performance that is higher than the general goal general feedback condition but not as high as the specific goal specific feedback condition, and (d) the specific goals with general feedback will result in performance that is comparable to that of the general goals with specific feedback condition due to the inherent ambiguity in both of these conditions.
Subjects

The subjects consisted of 40 college students enrolled in an introductory psychology course in a northern Michigan college. The subject selection process was carried out with the assistance of the instructor of this course. Students in the course were informed that this experiment was going to take place and that their participation was being requested. A sheet was made available to the students for the purpose of scheduling them for experimental sessions. Subjects participating in this experiment received extra credit points toward their introductory psychology course grade. Participation was not a requirement of the course and alternate ways to receive extra credit were made available to those students who did not wish to participate in the present study. Subjects wishing to participate in this experiment were required to sign an informed consent form before their participation (Appendix A).

The 40 subjects employed in this experiment were comprised of 21 males and 19 females with the majority of them between the ages of 18-20 years. Subjects were
randomly assigned to one of the four treatment groups, without controlling for sex, using a table of random numbers. Ten subjects participated in each of the experimental conditions. All subjects participated to the conclusion of this experiment.

Materials

The materials consisted of one multiple compartment box, with each of the 12 individual compartments color coded either blue, green, yellow or red, and three sizes of nuts, washers and bolts which were also coded by color. The compartments of the box were arranged in a manner that resulted in three columns with four compartments in each. The four compartments in each column were coded with one of the four colors with each color being used once in each column. The color order of the compartments in each column was randomly selected.

The nuts, bolts and washers were of three sizes. In each size set, there were 16 nuts, bolts and washers that could be readily assembled into one product. The three sizes were sufficiently different so that the individual nuts, bolts and washers were not interchangeable by sizes, i.e., a small nut would not fit on a medium sized bolt. These nuts, bolts and washers were also color coded so that in each size group, four nuts, bolts and washers were blue, four were green, four were red, and four were
yellow. Two complete sets of these nuts, bolts and washers were used in this experiment with 16 of each size component present and color coded identically in each set. At the commencement of the experiment, each set of components were disassembled, randomly mixed together and placed in plastic bags.

Procedure

Four experimental conditions were employed in the present experiment. The conditions were (a) general goal and general feedback, (b) general goal and specific feedback, (c) specific goal and general feedback, and (d) specific goal and specific feedback. Subjects were run individually in the experiment. Each subject participated through six, five minute trials, the first of which was strictly for practice on the task. Five minutes was selected as the trial length because it was long enough to provide a good sample of behavior but short enough to allow the subjects to participate in multiple trials without becoming fatigued. All subjects were presented with identical general instructions at the beginning of the experiment which were immediately supplemented with instructions specific to the experimental condition administered (Appendix B). The instructions that all subjects received gave a general outline of the task. They were told that they were going to be sorting and assembling nuts, bolts
and washers in order to set standards for production for a manufacturing organization. The process was demonstrated for them by the experimenter. They were then told that there would be six, five minute trials and they were informed as to what would be considered a complete product, i.e., one nut, bolt and washer correctly assembled by size and color and placed in the corresponding compartment for that size and color. After the general instructions, the subjects were asked if they had any questions and if not, the specific instructions were administered.

In the general goal and general feedback condition, subjects were instructed to do their best and that after each trial they would be informed as to how well they were doing in reference to a comparison group. They were again able to ask any questions. After each trial, subjects were informed as to how their performance compared to the performance mean of a pilot group, i.e., slightly below average, about average or above average. Such feedback, however, was not always offered in a standardized fashion.

In the general goal and specific feedback condition, subjects were told to do the best that they could and that after each trial, they would be told exactly how many finished products were correctly produced.

In the specific goal and general feedback condition, subjects were told that they should be able to complete 40 products in each of the five minute trials if they worked
as fast as they could. They were also told that they
would be informed about how well they were doing in reff-
erence to a comparison group after each trial. The spe-
cific goal was selected after a pretest of eight subjects,
using only the general instructions, resulted in a mean of
25.5 completed products per trial with the score of 40 be-
ing obtained by only one subject in one of the trials.
The goal of 40 was selected so as to be difficult but po-
tentially attainable.

In the specific goal and specific feedback condition,
subjects were told that they should be able to complete 40
products in each trial if they worked as fast as they
could. They were also told that they would be informed
after each trial exactly how many finished products were
correctly produced.

After each subject completed all six trials, he/she
was debriefed on the purpose of the experiment and what it
was attempting to accomplish. Since subjects were ob-
tained from an introductory psychology class, several had
specific questions which were answered as completely as
possible.
CHAPTER III

RESULTS

A two factor analysis of variance was conducted to test for the significance of main effects associated with the goal setting and feedback manipulations and to determine whether or not there was a significant interaction between these two independent variables. Table 1 provides a summary of the results of the analysis of variance. For the purpose of data analysis, the data from the first trial were dropped, since it was a practice trial and the remaining data were summed across the five trials to

Table 1

Summary of ANOVA Analyzing the Effects of Two Levels of Feedback and Goals

<table>
<thead>
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<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
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<tr>
<td>Total</td>
<td>1013.775</td>
<td>39</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Feedback</td>
<td>30.625</td>
<td>1</td>
<td>30.625</td>
<td>1.131</td>
</tr>
<tr>
<td>Goal</td>
<td>4.225</td>
<td>1</td>
<td>4.225</td>
<td>0.156</td>
</tr>
<tr>
<td>Feedback x Goal</td>
<td>3.025</td>
<td>1</td>
<td>3.025</td>
<td>0.112</td>
</tr>
<tr>
<td>Error</td>
<td>975.900</td>
<td>36</td>
<td>27.083</td>
<td>-</td>
</tr>
</tbody>
</table>
obtain one overall score for each subject. No significant
difference was found between the overall performance of
the subjects in the feedback and goal setting groups,
$F(1,36) = 1.1308$, $p > .50$, $F(1,36) < 1$, $p > .50$, for feedback
and goal setting respectively. The analysis of variance
also indicated that there were no significant interaction
effects, $F(1,36) < 1$, $p > .50$.

Upon viewing the means of the four treatment groups
(Table 2), it can be seen that there is a very slight
trend in the hypothesized direction, i.e., the specific
goal with the specific feedback group had the highest per­
formance and the general goal with the general feedback
group had the lowest performance.

It is also apparent in Table 2 that the standard

<table>
<thead>
<tr>
<th>Goal</th>
<th>Feedback</th>
<th>Specific</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific</td>
<td>M</td>
<td>148.8</td>
<td>138.3</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>24.7</td>
<td>34.2</td>
</tr>
<tr>
<td>General</td>
<td>M</td>
<td>135.8</td>
<td>134.6</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>28.4</td>
<td>28.2</td>
</tr>
</tbody>
</table>
deviations for the performance measures in each of the four groups were quite high. Although the variance was high in all four groups, the group variance differed considerably from treatment group to treatment group. Bartlett’s Test for homogeneity of variance was performed to determine whether the group variances differed significantly but again, no significance was found.

Figure 1 depicts the mean performance for each of the four groups across the five trials. This figure demonstrates that performance in all four treatment groups steadily improved across the trials. An ANOVA was performed from the data of trial five to test the differences between the groups without the variation caused by practice effects. For this analysis, trial five was assumed.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
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<tr>
<td>Total</td>
<td>1162.975</td>
<td>39</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Feedback</td>
<td>70.225</td>
<td>1</td>
<td>70.225</td>
<td>1.624</td>
</tr>
<tr>
<td>Goal</td>
<td>30.625</td>
<td>3</td>
<td>30.625</td>
<td>0.708</td>
</tr>
<tr>
<td>Feedback x Goal</td>
<td>5.625</td>
<td>1</td>
<td>5.625</td>
<td>0.130</td>
</tr>
<tr>
<td>Error</td>
<td>1556.500</td>
<td>36</td>
<td>43.236</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 1. Mean Products Completed, by Trial, for Each Treatment Condition.
to be the trial of interest with the former five trials being practice trials. As is apparent in Table 3, the main effects were somewhat stronger for this analysis, although they remained far from significant.
Although it is interesting to note that there is a trend in the hypothesized direction which can be seen upon viewing the data, the results of this experiment failed to provide support for the general notion that the specificity of feedback and goals differentially affect task performance. There are a number of possible explanations for these findings, the most obvious of which is that feedback and goal specificity simply do not significantly affect subsequent task performance. The presence of both a goal and feedback, no matter how general, could facilitate positive performance almost as much as if the goals and feedback had been specific. This explanation would have to be discounted, however, if one accepts the published experimental evidence that goal specificity in fact does affect performance, e.g., Mossholder (1980), Dossett et al. (1979), and Latham and Kinne (1974). If the main effect for the goal specificity manipulation had been significant and the feedback specificity manipulation had not, one could be more certain in stating that feedback specificity has no effect on performance.

Since it is clear that more research is needed in this field to further investigate the effects of feedback...
and goal specificity, the remainder of this discussion will essentially deal with the possible causes of the present results and ways to modify procedures in future investigations of this nature in order to secure greater experimental control over relevant variables.

As is readily apparent from the results of the present experiment, there was a great deal of variability between the performance scores of the subjects within each of the four treatment groups, some of which can certainly be attributed to error variance. This within-group variance was such that it would likely have masked any systematic variance due to the experimental conditions themselves. Individual differences between subjects, whatever the cause, seems to be the primary reason why no significant differences were found between treatment groups.

One possible method for parcelling out a large portion of the variability associated with the individual differences of subjects (while still employing the same experimental task) may be to pretest subjects on a finger dexterity test. Subjects might be tested using the Crawford Small Parts Dexterity Test, for example, or on some other similar commonly used test. A matching technique could then be employed to assign subjects to the experimental treatment groups based upon this measured aptitude. The use of a matching procedure would help ensure that the majority of the variability is due to the experimental
manipulations and not to individual subject differences. An analysis of co-variance model could also be employed as the statistical procedure of choice here.

Other methods of reducing variability should also be explored. The first method that can be taken is to increase the sample size. In general, larger samples result in decreased variability. In this case, the size of each group could be doubled to 20 without greatly complicating the administration of the experiment.

Although the task utilized in the present experiment appeared simple, analysis of the results demonstrated that there was a great improvement across trials in all four treatment groups. This improvement could be attributed to practice effects caused by the subjects' learning how to effectively perform the task. The variability caused by this improvement might be reduced by providing more initial training on the task. The initial training could consist of providing additional practice as well as techniques of some of the more effective performers in the present experiment. This would help ensure that all subjects have the same initial knowledge base.

The experimenter noticed that the individual subjects varied considerably in their overt enthusiasm toward the specific task and the experiment in general. Several subjects in the general feedback condition actively sought specific feedback. Questions like, "How many did I
complete this time?" and, "Did I do better than last time? How much?", were not uncommon. One subject even went so far as to attempt to count his completed products as he went along. After one trial, he told the experimenter how many products were completed and he was within one of being correct (although he was not informed of this). This form of self-initiated feedback would act to blur the distinction between experimental groups, particularly if other subjects engaged in similar behavior. There were also several subjects in the specific feedback condition who did not appear to be interested in how many complete products they produced. When they were given specific feedback, they did not even acknowledge that they heard the experimenter (if asked, they said that they did hear). This "enthusiasm", or lack of it, may have had a confounding effect upon the goal setting and feedback manipulations of the experiment, thus making them more effective or less effective in influencing individual performance.

Although enthusiasm may be difficult to assess and control, the aforementioned matching procedures may inadvertently control for some of this effect. When subjects are pretested on a similar task involving finger dexterity, the subjects' skill and baseline motivation before exposure to the experimental conditions would complementarily affect the subjects' pretest score. It should be noted that skill and baseline motivation would be
hopelessly confounded, using this procedure, but it would not be important to know the individual effects of these variables taken separately. As long as these sources of variation are controlled, the resulting variation in the experiment could be better attributed to the experimental manipulations.

Perhaps the method of choice for attacking this problem would be to design and perform a field experiment in which the experimental task is the job itself. The subjects' baseline performance on the task for a period prior to the implementation of the experimental manipulations could be used as a basis for matching subjects. The subjects would have to be assigned to different shifts and/or departments, while performing essentially the same duties, to ensure that subjects in each of the four experimental conditions are not affected by any of the other three experimental conditions. Results could be analyzed by improvement over baseline or as the difference in final performance between the four treatment groups. An advantage of this method is that since all subjects would be thoroughly familiar with the task, there would be no learning effects across trials. Also, because baseline information is available, one could be more confident that the observed variation would be due to the experimental conditions and not to confounding extraneous variables. Another advantage of this method is that significant
results can be generalized to the work environment much more readily than results stemming from a laboratory experiment.

When assessing the significance of the various comments made by subjects participating in the general goal-specific feedback group and specific goal-general feedback group (see p. 24), it appears that some possible contamination between experimental groups was present. When subjects in the general goal-specific feedback condition sought ways to convert the general goal into a more specific goal, they were essentially creating a specific goal-specific feedback condition. When subjects in the specific goal-general feedback condition sought ways of altering general feedback so that it became more specific, and hence more useful in guiding subsequent task behavior, they were also creating a specific goal-specific feedback condition. In other words, an accommodation process might be posited to be operating in which a compatibility or "fit" is being sought between specific-general and general-specific conditions such that progress toward a specific-specific state would be achieved. This congruence already existed for subjects in the specific-specific condition. Under the general-general condition, congruence exists but not the need for specificity.

Future research efforts might profitably be directed at an examination of the manner in which workers faced
with ambiguous goals or feedback attempt to resolve such circumstances in the face of specific feedback and goals respectively.

The results of this study, then, highlight certain conceptual and methodological problems associated with an operational definition of both "goals" and "feedback" which in general have failed to be recognized in the research literature reviewed in Chapter I.

The above considerations also place into question the present generally accepted definitions for feedback and goals. That is, if a goal is not accepted or perceived as a goal, it is not really a goal as intended. If feedback is not accepted or perceived as feedback, it is not feedback in a functional sense. What appears to be needed is the acknowledgement that an operational definition for goals and feedback must incorporate a set of mutual conditions: acceptance, use, and demonstrable behavioral change subsequent to the manipulation of these independent variables.
APPENDIX A

INSTRUCTIONS TO SUBJECTS
GENERAL GOAL—GENERAL FEEDBACK INSTRUCTIONS

This experiment was designed to look as if a manufacturing firm was using the data generated to set standards for the production of simple assembly tasks. What you are being asked to do today is to sort out and assemble these nuts, bolts, and washers. There are four different colors and three different sizes. You will be required to first place a washer on a bolt and then twist on the nut to the bolt making sure each is of the same size and color. This is exactly how I would like you to assemble them (demonstrate). Once you have a completely assembled product, place it in the compartment of the box designated for that size and color.

You will be given six, five minute trials, the first of these being a practice trial to let you get the feel of the task. Only those products that are correctly assembled and color sorted will be considered complete. Are there any questions concerning this task?

After each of the five minute trials, you will be informed about how well you are doing compared to a group that was previously tested. Please do the best that you can throughout your participation in this experiment. Do you have any questions?
GENERAL GOAL-SPECIFIC FEEDBACK INSTRUCTIONS

This experiment was designed to look as if a manufacturing firm was using the data generated to set standards for the production of simple assembly tasks. What you are being asked to do today is to sort out and assemble these nuts, bolts and washers. There are four different colors and three different sizes. You will be required to first place a washer on a bolt and then twist on the nut to the bolt making sure each is of the same size and color. This is exactly how I would like you to assemble them (demonstrate). Once you have a completely assembled product, place it in the compartment of the box designated for that size and color.

You will be given six, five minute trials, the first of these being a practice trial to let you get the feel of the task. Only those products that are correctly assembled and color sorted will be considered complete. Are there any questions concerning this task?

After each of the five minute trials, you will be informed about how well you are doing. I will tell you exactly how many products you have correctly produced. Please do the best that you can throughout your participation in this experiment. Are there any questions?
This experiment was designed to look as if a manufacturing firm was using the data generated to set standards for the production of simple assembly tasks. What you are being asked to do today is to sort out and assemble these nuts, bolts and washers. There are four different colors and three different sizes. You will be required to first place a washer on a bolt and then twist on the nut to the bolt making sure each is of the same size and color. This is exactly how I would like you to assemble them (demonstrate). Once you have a completely assembled product, place it in the compartment of the box designated for that size and color.

You will be given six, five minute trials, the first of these being a practice trial to let you get the feel of the task. Only those products that are correctly assembled and color sorted will be considered complete. Are there any questions concerning this task?

After each of the five minute trials, you will be informed about how well you are doing compared to a group that was previously tested. You are being assigned a goal that was selected because past research has demonstrated that most people can reach it when they work as fast as they can. The goal you are trying to meet is 40 products completed within each five minute trial. Are there any questions?
SPECIFIC GOAL-SPECIFIC FEEDBACK INSTRUCTIONS

This experiment was designed to look as if a manufacturing firm was using the data generated to set standards for the production of simple assembly tasks. What you are being asked to do today is to sort out and assemble these nuts, bolts and washers. There are four different colors and three different sizes. You will be required to first place a washer on a bolt and then twist on the nut to the bolt making sure each is of the same size and color. This is exactly how I would like you to assemble them (demonstrate). Once you have a completely assembled product, place it in the compartment of the box designated for that size and color.

You will be given six, five minute trials, the first of these being a practice trial to let you get the feel of the task. Only those products that are correctly assembled and color sorted will be considered complete. Are there any questions concerning this task?

After each of the five minute trials, you will be informed about how well you are doing. I will tell you exactly how many products you have correctly sorted and assembled. You are being assigned a goal that was selected because past research has demonstrated that most people can reach it when they work as fast as they can. This goal that you will be trying to meet is 40 products completed within each five minute trial. Are there any questions?

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APPENDIX B
INFORMED CONSENT FORM
CONSENT FORM

DATE: ________________

I have been informed as to the nature and purpose of this experiment. I have the option to participate or not to participate. Voluntary participation in this experiment is not a requirement for this course, although it will result in the awarding of extra bonus points. I understand that failure to participate will not penalize my standing in this class, since other activities are also made available for obtaining extra credit. Further, I understand that the results of this experiment will be reported in such a way that protects the identity of all subjects.

Signed,

________________________

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BIBLIOGRAPHY


