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WHEN BEING TOLD YOU'RE BAD CAN BE GOOD: THE INFLUENCE OF FEEDBACK SIGN AND TASK COMPLEXITY ON SELF-REGULATORY FACTORS AND PERFORMANCE

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RUNNING HEAD: FEEDBACK SIGN

Abstract

While the influence of feedback on performance has been extensively studied, theoretical models and empirical evidence appear to be contradictory. This study was conducted to resolve the ambiguity concerning the role of feedback in performance and to determine the interaction between feedback sign and task demands. Subjects completed a simple physical-effort task, an assembly task, and a complex analytical task under positive, negative, no-feedback and average (subjects were told that their performances were average) conditions. Self-regulating mechanisms were also measured. Results indicate that negative feedback creates greater dissatisfaction and performances improvements on the physical effort task while it lead to decrements in complex cognitive task performance. Positive feedback did not lead to performance improvements in any of the tasks beyond simple practice effects. Subjects in the average condition generally approximated the performances and reactions of subjects in the negative condition. Subjects given no feedback generally approximated subjects in the positive condition in their reactions and performances.

Much research has been conducted concerning the use and misuse of feedback and its regulatory role in motivation and performance. Most of this research has focused on the role of the feedback per se and not on the possible diverse consequences of feedback as it interacts with the different demands required by a variety of tasks. We do know that in organizational settings feedback is highly sought, especially in novel, new and ambiguous situations (Ashford, 1986). It is also well established that feedback does influence behavior (Ilgen, Fisher, & Taylor, 1979). Feedback is also influential in performance because it contains diagnostic information about a person's capabilities (Harackiewicz & Larson, 1986) and has been shown to be a component in managerial performance self-regulation (Ashford & Tsui, 1991).

While feedback sign is assumed to play a substantial role in performance, the results of studies are ambiguous and contradictory. While some theoretical models (e.g. Bandura, 1986) and empirical evidence (Sansone, 1986) suggest that positive feedback can enhance performance, recent empirical evidence suggests otherwise (Bandura & Jourden, 1991). Negative feedback has been shown to improve performance (Bandura & Cervone, 1983, 1986; Locke, Cartledge, & Knerr, 1970; Matsui, Okada, Kakuyama, 1982; Podaskoff & Fahr, 1989) but other evidence has also shown that negative feedback and reaction can have a detrimental effect on performance (Bandura & Jourden, 1991; Liden & Mitchell, 1985; Jourden, 1993).

A useful theoretical framework to understand the influence of feedback and the mediators through which this influence is exercised, is social cognitive theory (Bandura, 1986, 1988). In social cognitive theory, several self-regulators operate together to influence performance. These regulators are perceived self-efficacy, goal-setting, and affective self-reaction. Perceived self-efficacy is the belief which people have in their ability to summon

the motivation and personal capabilities to control situational factors. Beliefs about self-efficacy regulate motivation, effort and performance both directly and through influence on goal setting and affective self-reaction (Bandura & Wood, 1989b; Bandura & Jourden, 1991; Jourden, 1993; Wood, Bandura & Bailey, 1990). The greater the self-efficacy, the more challenging are the goals and the stronger their commitment to them (Locke & Latham, 1990; Wood & Bandura, 1989a).

Self-efficacy and personal goals provide a dual form of motivation operating through affective self-reaction. Expectation of achieving one's goals is a motivator but also when people believe that they possess the capability to achieve a personal performance standard yet fall short, the discontent arising from such a discrepancy motivates them to try harder. However, while trying harder may enable one to accomplish a higher level of performance on tasks which require solely physical effort (such as pushing or lifting a weighty object), trying harder may not aid in the performance of more complex, cognitive tasks. Such tasks require greater cognitive focus and intensity. Goal-performance discrepancy, in these types of tasks, may activate other concerns as to a lack of personal capabilities and therefore can be disruptive to the task (Bandura & Jourden, 1991).

Other researchers have found that positive affect engendered through small gifts or viewing comic material, for example, can influence several types of performance such as improving integrative negotiations and development of broader categorization (for a review see Isen and Baron, 1991). Therefore, feedback appears to influence performance through self-regulatory factors one of which can be affective self-reaction.

In life, a major and preferred way in which individuals receive feedback about their performances is through comparison with others (Suls & Miller, 1977). Social comparison provides us with a context in which to interpret our own performances. A grade of B+ on an exam may be gratifying until one learns that other members of the class have received an A. Even in situations in which a social-comparative context is not provided, such as a salary

adjustment, people tend to seek out information concerning others' salary adjustments. Even young children seek comparative contexts (Morris & Nemcek, 1982).

Previous studies have shown that social comparison can have substantial effect on complex cognitive performance. In one study various social comparison patterns which showed subjects to be superior, inferior, equal or initially inferior and then becoming superior, influenced several self-regulators which in turn influenced quality of performance (Bandura & Jourden, 1991). In another study, it was demonstrated that it was social comparison, not individual performance or standards which had accounted for this influence (Bandura & Jourden, 1993).

It is therefore possible to see that the role which social-comparative feedback can play will vary with task requirements. Trying harder on physical effort and cognitive tasks can lead to immediate improvement on the physical effort ones but not necessarily on the cognitive ones. In simple effortful tasks, a discrepancy between desired goal and current accomplishment, should lead to greater effort because the person can simply try harder and such trying harder is rewarded. However, in complex cognitive tasks, which require focus and concentration, a discrepancy between actual and desired achievement can be disruptive because such a discrepancy can suggest a lack of underlying ability which leads to a concern with personal failures and the consequences arising from such a lack of ability (Bandura & Jourden, 1991; Jourden, 1993; Wood & Bandura, 1989b).

The present study was designed to measure the effects of positive and negative feedback and the degree to which they are subject to situational or task demands. The study also hopes to shed light on the ways in which self-regulatory factors are also differentially influenced by such feedback. Additionally, the study was designed to measure the effects of "average" feedback, in which the subject was led to believe that their performance equaled others, and also a "no feedback" condition. The average feedback condition was suspected to provide a neutral contrast to the positive and negative conditions and the no feedback

condition was utilized to determine the role of practice effects and non-social comparison feedback.

Method

Subjects

The subjects were 60 male and 48 female students drawn from a course of advanced business studies. They ranged in age from 19 years to 24 years with a mean of 21.3 years. They were randomly assigned, balanced for gender to the different treatment conditions, *positive, negative, average and no-feedback.* To control for any possible carryover of condition from the previous task, the order in which subjects completed the three tasks was balanced across the subjects.

Procedure

In this double blind experiment, subjects completed each of three tasks over four trials. After the prefatory trial, experimenter one would record their result and would instate the appropriate condition. In the *no-feedback* condition, the subject's score was recorded and experimenter one left the room. In the *positive, negative* and *average* conditions, experimenter one recorded the subject's score and consulted a "national norms" book. Experimenter one would then classify, by appropriately marking the score sheet, the subject as much above average, much below average or average respectively in comparison to the "national norms". The subject then recorded their perceived self-efficacy as a percent between zero and 100 with 100% representing extreme confidence in their ability to perform the task, 50% as moderate confidence and zero as not at all confident in their ability to perform the task. The subjects then indicated their satisfaction with their performance also on a 10-point scale with 10 reflecting a very satisfied response, five moderately satisfied and

zero not at all satisfied. Lastly, subjects indicated their goal for the next trial by listing a percentage by which they were going to increase their performance. Experimenter one then left the room so that experimenter two, blind to the subject's condition, could then enter the room and complete the next three trials. After each of the trials, the experimenter recorded the score and the subjects again completed the reaction questionnaire in the same manner as after the prefatory trial above. The subjects were able to see their scores throughout the entire experiment.

The physical effort task required subjects to squeeze a hand dynometer as hard as they were able. Between all of the trials, subjects rested for one minute. The subject's score was the number of kilograms of weight that they were able to pull. The second task was to assemble a bolt, a nut, a flat washer, a locking washer, another flat washer, and lastly, another nut. The subject's score was the total number of individual pieces assembled within a two minute time period. Between each trial, the subject was given a one-minute rest period. The complex cognitive task was to solve a series of 10 GRE-styled analytical puzzles within a three minute period. The subject's score was the total number of correct answers. The four sets of puzzles were constructed so that the difficulty of each set was approximately equal to every other set. Between each set of puzzles, the subjects rested for one minute.

At the end of the experiment, the subjects were fully debriefed and assured that no "national norms" existed and that the performance rating they were assigned was not reflective of their ability or potential.

Results

The order in which subjects completed the tasks was not significantly related to prefatory trial performance. The tasks were sufficiently different that the subjects apparently

had different expectations for each of them thereby eliminating any carryover effects.

Gender differences in performance were found only, as would be expected, in the physical effort task. Because the assignment of subjects blocked for gender, the scores of men and women were pooled in the following analyses.

The differences between the subjects' self-reactive factors were assessed using a 4 x 4 analysis of variance (ANOVA) with condition as the between subjects variable and phase of assessment as the repeated measures variable. The differences between subsets of means were tested by the Newman-Keuls procedure.

The differences in task performance between the conditions was assessed using a 4 x 3 analysis of covariance (ANCOVA) with condition as the between subjects variable, with phase of assessment as the repeated measures variable and prefatory trial as the covariate. The differences between subsets of means were tested by the Newman-Keuls procedure.

Task 1. Physical Effort

Perceived Self-Efficacy. There was a significant main effect for condition, $F(3,104)=2.50$, $p<.04$ and over trials, $F(3,104)=4.27$, $p<.01$. These results are illustrated in the left panel of Figure 1. Post hoc tests indicate that the subjects in the positive condition had marginally greater self-efficacy than those in the no-feedback condition, $p=.10$ and that subjects' efficacy increased so that phases one, two and three significantly exceeded baseline, $p=.05$, $p=.01$, $p=.05$ respectively.

Insert Figure 1 about here

The no-feedback group's efficacy in their second and third phases was significantly above their prefatory trial ($ps=.05$). The negative group's efficacy increased so that by the third phase, it was marginally higher than either baseline or first phase ($ps=.10$). The

negative group also increased in efficacy so that by the final phase, their self-efficacy was marginally higher than in both the prefatory and first phases, $ps = .10$.

Affective Self-Evaluation. The left panel of Figure 2 illustrates the levels of subjects' affective reaction to their prior performances. Main effects were found for condition, $F(3,104) = 6.871$, $p < .0002$ and for experimental phase, $F(3,312) = 2.36$, $p < .04$. These findings are qualified by a significant interaction between condition and phases, $F(9,312) = 3.36$, $p < .001$.

Post hoc tests showed that subjects in the positive condition were significantly more satisfied than subjects in the average condition ($p = .05$), than those in the no-feedback condition ($p = .05$) and those in the negative condition ($p = .01$). Also the average condition subjects were marginally more satisfied than the negative subjects, $p = .10$. Over phases, subjects were marginally more satisfied with their performances after the prefatory trial, $ps = .10$.

The average group subjects were more satisfied in the second and final phases than they were in the prefatory trial ($p = .05$, $p = .01$ respectively) and were marginally more satisfied in the final phase than in the prefatory trial, $p = .10$. The negative group was more satisfied with their result in the three trial phases than in the prefatory trial $p = .05$, $p = .05$, $p = .01$, respectively).

Self-Set Goals. A significant effect was found for phase, $F(3,312) = 27.4$, $p < .0001$ which was qualified by a significant interaction between condition and phase, $F(9,312) = 2.06$, $p < .02$. Post hoc tests found that subjects set significantly lower goals in all phases after the prefatory trial, $ps = .01$.

Performance. These results are illustrated in the left panel of Figure 3. There was a significant main effect for condition, $F(3,103) = 5.79$, $p < .001$ and for experimental phase, $F(2,216) = 4.59$, $p < .01$. There was also a significant interaction between condition and

phase, $F(6,208)=3.42$, $p<.002$.

The average condition subjects increased their effort from baseline to phase one ($p=.05$), and to phases two and three ($ps=.01$). The no-feedback subjects increased their effort so that phases two and three were marginally higher than the baseline ($ps=.10$). The negative subjects consistently increased their effort so that all trials exceeded the baseline ($ps=.01$) and phase three exceeded both phase one ($p=.01$) and phase two ($p=.10$). The positive group showed no significant improvement over trials.

Relationships Between Variables. Immediate past performance consistently and significantly ($ps<.001$) predicted future performance ($rs=.91$, .96, .96, respectively). Perceived self-efficacy was related to both prior performance and future performance quite consistently (rs range from .31 to .39). Past performance was not related to satisfaction nor to goal setting but self-efficacy was linked ($ps<.0001$) to satisfaction, $rs=$ .39, .55, .46. Neither goals nor satisfaction were consistently linked to performance.

Task 2. Assembly

Perceived Self-Efficacy. Displayed in the central panel of Figure 1 are significant main effects for both condition, $F(3,104)=3.179$, $p<.02$, and for experimental phase, $F(3,312)=3.94$, $p<.005$. Post hoc analyses revealed that the negative group's perceived self-efficacy was marginally lower than the no-feedback group, $p=.10$, while the positive condition subjects' efficacy was significantly higher than the negative group's, $p=.05$. As experience with the task increased across phases, self-efficacy increased so that both

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Insert Figure 2 about here

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prefatory and first phases were significantly exceeded by the final phase, $ps=.05$. Subjects in the positive condition increased their increased in efficacy so that their prefatory trial was

marginally exceeded by the final trial, $p=.10$.

Affective Self-Evaluation. Analyses uncovered significant main effects for both condition, $F(3,104)=10.96$, $p<.0001$, and phase, $F(3,312)=3.46$, $p<.01$. These effects were qualified by a significant interaction between condition and phase, $F(9,312)=1.71$, $p<.05$. Post hoc analyses demonstrated that the positive group was more satisfied than the average, no-feedback, and negative groups, $ps=.01$. The no-feedback group was also more satisfied than the negative group, $p=.05$. Subjects were more satisfied in phases two ($p=.10$) and phase three ($p=.05$) than in the baseline trial. These results are pictured in the center panel of Figure 2.

The average condition group's level of satisfaction increased so that the baseline was exceeded by the first ($p=.10$), the second ($p=.05$), and the final phases $p=.10$). Subjects in the negative condition increased their satisfaction so that the baseline was exceeded by the first and second trials, $ps=.10$, and by the final trial, $p=.05$.

Self-Set Goals. Significant differences were found for condition, $F(3,104)=2.20$, $p<.05$, and for trials, $F(3,312)=35.33$, $p<.0001$. In the post hoc analyses, subjects in the negative condition set goals which marginally exceeded the goals set by the positive condition, $p=.10$. Over phases, set higher goals in the first, second and third phases than they did in the prefatory phase, $ps=.01$ and set higher goals in the third phase than they did in the first phase, $p=.05$.

The subjects in the average condition decreased their goals so that all subsequent phases were lower than the prefatory trial, $ps=.01$. No-feedback subjects goals were marginally lower in the final phase than in the prefatory trial, $p=.10$. Negative subjects lowered their aspiration so that all phases were lower than the prefatory trial, $ps=.01$, and the final phase was marginally lower than the final phase, $p=.10$. Subjects in the positive condition lowered their goals so that all phases were lower than the prefatory trial, $ps=.01$.

Performance. Analysis revealed a significant main effect for phase, $F(2,216)=28.89$, $p<.0001$. Post hoc tests revealed that the subjects improved their performance continuously throughout the task, $ps=.01$. This result is portrayed in the center panel of Figure 3.

Subjects in the average condition improved their performance so that all phases exceeded the prefatory trial, $ps=.01$, phases two and three exceeded phase one, $ps=.05$ and .01, respectively. No-feedback subjects consistently raised their performances from the prefatory to the first trial, $p=.10$, from the first to the second and from the second to the final trials, $ps=.01$. Negative and positive subjects improved their performance so that all phases exceeded the prefatory trial, $ps=.01$. Their positive subjects' final phase improved over both their first and second, $p=.01$ and $p=.05$.

Relationships Between Variables. Prior performance significantly predicted subsequent performance ($rs=.64$, .74, .73, respectively, $ps<.0001$), and efficacy ($rs=.17$, .14 and .23, respectively, $ps<.05$). Efficacy was consistently and significantly linked to satisfaction, $rs=.45$, .52, .63, $ps<.0001$.

Task 3. Complex Analytical Puzzles

Perceived Self-Efficacy. The right panel of Figure 1 displays the findings that there was a significant main effect for condition, $F(3,104)=2.35$, $p<.04$ qualified by an interaction between phase and condition, $F(9,312)=3,29$, $p<.001$.

Negative subjects lowered their self-efficacy so that both their second and third trials were lower than baseline, $ps=.05$ and .01, and the final phase was marginally lower than the

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Insert Figure 3 about here

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first phase, $p=.10$. The positive subjects strengthened their efficacy so that the final phase

was higher than any preceding phase, *ps*=.05.

Affective Self-Evaluation. As is shown in the right panel of Figure 2, significant main effects were found for both condition, $F(3,104)=6.83$, $p<.001$, and for experimental phase, $F(3,312)=2.43$, $p<.04$. Post hoc tests showed that the negative condition subjects were significantly less satisfied with their performances than those in the average condition ($p=.05$) or the positive condition ($p=.01$). The no-feedback subjects were marginally more satisfied ($p=.10$) than those in the negative condition.

Subjects in the positive condition increased their satisfaction so that both the second and third phases exceeded the first phase, *ps*=.10 and .05, respectively.

Self-Set Goals. A significant main effect was found for experimental phases, $F(9,312)=8.70$, $p<.0001$. Subjects lowered their goals in the first, second and third phases below those they set in the baseline, *ps*=.01.

The subjects in the average condition marginally decreased their aspirations so that all phases exceeded their baseline, *ps*=.10. Negative subjects also lowered their aspirations so that their baseline was higher than the first $p=.05$), the second $p=.05$), and their final trials $p=.01$). Positive subjects marginally lowered their goals so that the second and third phases were lower than the baseline, *ps*=.10.

Performance. Significant main effects were found for condition, $F(3,103)=17.77$, $p<.0001$, and for experimental phase, $F(2,208)=4.00$, $p<.01$. These results are qualified by a significant interaction between condition and phase, $F(6,208)=2.19$, $p<.03$. Post hoc analysis revealed that the negative condition under-performed all other conditions, *ps*=.01, and that subjects increased their performances from baseline in both phase one and two, *ps*=.05. These results are illustrated in the right panel of Figure 3.

No-feedback subjects improved their performance so that their final trial exceeded both their baseline ($p=.10$) and their first trial, ($p=.05$). Negative subjects' performance

deteriorated so that all subsequent trials were worse than their baseline, *ps*=.01. The positive group improved their performance so that their final trial exceeded both either baseline (*p*=.05) and their first trial (*p*=.10).

Relationships between variables. Baseline performance was not linked to subsequent performance but both satisfaction (*rs* range from .21 to .46) and perceived self-efficacy (*rs* range from .19 to .34) were consistently linked to performance (*ps*<.0001). Self-efficacy was consistently linked to satisfaction (*rs*=.16, .27, .33; *ps*<.001). Goals were not consistently linked to performance but were consistently linked to satisfaction (*rs* ranged from -.24 to -.35, *ps*<.05) and to efficacy in the first phase (*r*=.28, *p*<.002), in the second phase (*r*=.23, *p*<.01), and in the final phase (*r*=.16, *p*<.05).

Discussion

The results of this study provide strong support for the thesis that positive and negative feedback can have either positive or negative effects differentiated by the types of tasks in which individuals are engaged. Subjects in this study performed better when they were given negative feedback about their physical performances. Improving physical performance means trying harder and so they did. However, in complex cognitive tasks negative feedback was disruptive and led to much poorer performances. Negative feedback can therefore both aid and hamper performance. Positive feedback also played a dual role in performance. On physical tasks in which people believe that they are doing well, subjects were eventually willing to settle for a less strenuous effort that allowed them to remain "substantially above average." In more complex tasks, positive feedback allows for a full learning experience which results in higher performance levels which are not, however, greater than those which result from no feedback. In effect, positive feedback in complex cognitive tasks allowed for practice effects. In no case did positive feedback lead to

improved performance, it either led to poorer performance (the physical effort task) or it merely equalled the no-feedback condition (the cognitive task). It should be noted that subjects always received veridical performance feedback which they could confirm with their own observations.

Subjects debriefing comments were also supportive of the findings. In the negative condition subjects looked for excuses, *"You should take into account how people are dressed when they do this. I could have done much better had I dressed in casual clothes." "I stayed up late and was not alert today." "I have never been good at these types of things and I put pressure on myself to do better but this made it harder to concentrate on the puzzle task."* Subjects in the positive condition reported a very different experience, *"The tasks were easy and fun, I really liked the puzzles because I kept improving and learned how to solve them faster every time." "I enjoyed it, it was fun to test myself. I wouldn't mind doing it again."*

These results are satisfyingly intuitive. It makes sense that people can be stimulated to a greater effort when all they need to do is to try harder and they will achieve better results. It also makes sense that complex, cognitive tasks can be disrupted when people are told that they are performing poorly. When we are told that we are performing poorly, we shift focus from doing the task to thinking about ourselves and what such a poor performance can mean (Sarason, 1975). We imagine negative consequences, we become embarrassed and frustrated. None of these reactions allows for effective cognitive processing or consistent task focus, both of which are required for the difficult and complex task of developing and testing hypotheses to arrive at a correct solution.

What is surprising is that positive feedback does not lead to improved performance but can lead to poorer performance. Yet, this is sensible as well and replicates the finding of other research (Hoxworth, 1989). When we are already superior, and the task requires strenuous effort, why should we strain to become even more superior? Knowing that one is

superior seems to be enough and as long as we are improving or performing at a level which allows us to continue to feel superior, there is no reason for greater effort. Without the tension arising from concern over the quality of our performance, there is little motivation to strain harder.

In this study, positive feedback did lead to increased positive self-reaction, even when not warranted by actual performance, and negative feedback led to lower levels of self-satisfaction. This not only served as a manipulation check but also demonstrates that such reactions are not in response to performance but to the context in which that performance is judged. This study, therefore, joins others in supporting the thesis that individuals react to the relative, not absolute, properties of their performances (Bandura & Jourden, 1991; Jourden, 1993) and that evaluative contexts are important (Jackson & Zedeck, 1982). It also supports a recent study in which it was discovered that it is not the individual patterns of performance development that sustains and improves performance, it is rather the effects of comparing oneself to the performances of others (Bandura & Jourden, 1993).

The implications of this study for social cognitive theory are twofold. Firstly, perceived self-efficacy is influenced not just by a person's performance but by their interpretation of the context in which their performance is evaluated. In reaching this conclusion, these results are similar to those of an earlier study (Bandura & Jourden, 1991). In both of these studies, subjects modulated their levels of self-efficacy not based upon their actual performance results, to which they had continuous access, but rather to the social-comparative interpretation of their results.

Secondly, simply because one has a high level of self-efficacy does not mean that they will necessarily perform at a high level. In this study, subjects in the positive condition reported high levels of perceived self-efficacy but because they had already performed "very much above average", they had nothing left to prove and therefore their performances remained relatively stable. So a high level of self-efficacy may not be linked to high levels

of performance unless the circumstances are conducive to subjects increasing their performances. These subjects could have done better and believed that they could do well, but why should they have bothered?

In contrast, those subjects in the negative condition reported lower levels of self-efficacy and were able to improve their performances because they were motivated by the discrepancy between their status (as below average) and their desired performance (average or above). Motivation, in this study, therefore sprung not from high levels of self-efficacy alone but rather only when in tandem with discrepancy created by being "below average." As has been noted in other research, motivation takes both proactive and reactive forms. In the reactive form, people derive satisfaction from reaching desired goals and to maintain this motivation and they proactively create new goals which provide additional discrepancy between current and goal state (Bandura & Jourden, 1991).

Positive feedback did not lead to higher goals, to the contrary, it led to lower goals. Negative feedback often led subjects to set higher initial goals followed by a pattern of consistently lowering their goals. While this result appears incongruent with previous research on goal setting, a closer analysis reveals that these effects are largely a function of the study design. The subjects were never given an estimate of what level would indicate a much above average, much below average, or average performance. Without this anchor, and with feedback that suggested that they were much above or much below or average, they set initial goals consistent with their desire to achieve a different ranking or to maintain their current one. For example, subjects ranked below average set high goals in an attempt to reach the average or above average thresholds, while subjects in the above average condition set lower goals designed to allow them to remain superior taking into account possible ceiling effects (if I am already superior, how much can I improve?).

Subjects in all conditions calibrated their goals in response to their performances so that by the end of the trials, they were much more realistic in their goal setting. In general,

this result tracked actual performance quite well, demonstrating that individuals adjust goals to enhance their state of well being. That is, subjects in the below average condition set goals designed to bring them to the average level or above while subjects in the above average condition, set goals which allowed them to remain superior. This is generally consistent with previous findings that feedback sign has a strong pull on self-set goals but is moderated by a complex interplay between feedback magnitude and type (Vance and Colella, 1990). Taken together, these findings suggest that feedback couched in social-comparative terms distorts goals setting much as it disrupts perceived self-efficacy. Initial goals are set by the degree to which individuals think that they can and feel the need to improve. Individuals then engage in adjusting goals to allow for motivation within realistic ranges.

The results of the average and no-feedback conditions are interesting as well. Generally speaking, those who were told that their performances were average, had reactions and performances similar to those in the negative condition. Those who received no feedback generally had reactions similar to those whose performances who received positive feedback. Being told that one is average is not positive. That positive illusions exist in individuals is reflected by the no-feedback condition. In the absence of any interpretive context, people appear to assume that they are doing well. This is congruent with the work of Taylor & Brown (1988).

Previous researchers have found that a positive mood induction leads to more efficient processing and decision making, facilitates negotiations, and satisfaction (Isen & Baron, 1991). The results of this study extends and qualifies those findings. The positive and negative feedback provided in this study led to either positive or negative self-reaction, operationalized as satisfaction. However, a positive reaction did not lead to better performance in the physical effort task and it did not lead to better performance than could normally be expected from practice effects. Therefore task requirements are influential in the role positive affect plays in motivation and performance.

The pattern of relationships among the variables demonstrates that affective self-reaction is strongly related to later performance and to perceived self-efficacy levels, while prefatory performance is not. This suggests that affective self-reaction is a significant moderator of performance and is influential in individual judgments of self-efficacy.

These results are limited by the design of the study. Clearly, they apply to short-term situations. The continued application of negative feedback over longer periods of time would likely decrease negative feedback's potency to influence performance and regulate effort. However, the advice given to those who would wish to motivate others is clear. If individuals are performing physical tasks which simply require physical effort, negative (and not positive) feedback will help immediate performance. However, if individuals are performing complex cognitive tasks, feedback should not be negative.

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Footnote

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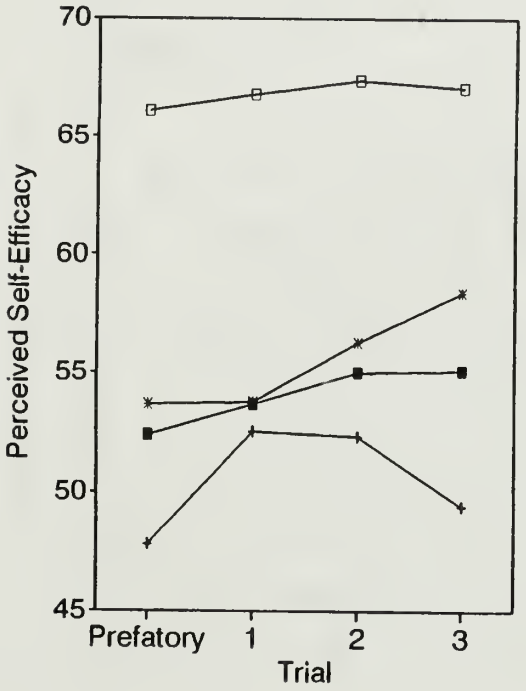
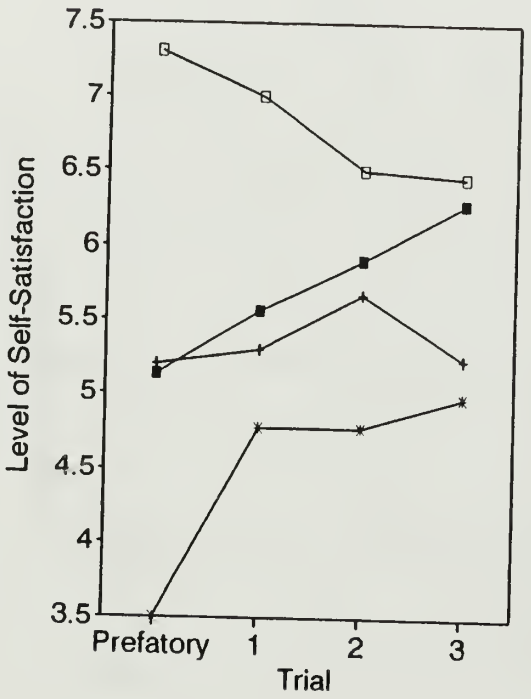
Figure Captions

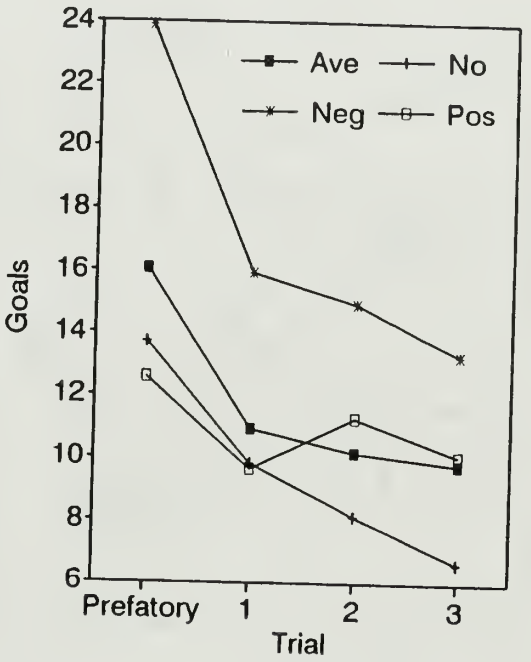
Figure 1. Results for the physical effort task. From left to right, the panels display perceived self-efficacy, satisfaction, self-set goals, and performance. Conditions are average (Ave), no-feedback (No), negative (Neg) and positive (Pos).

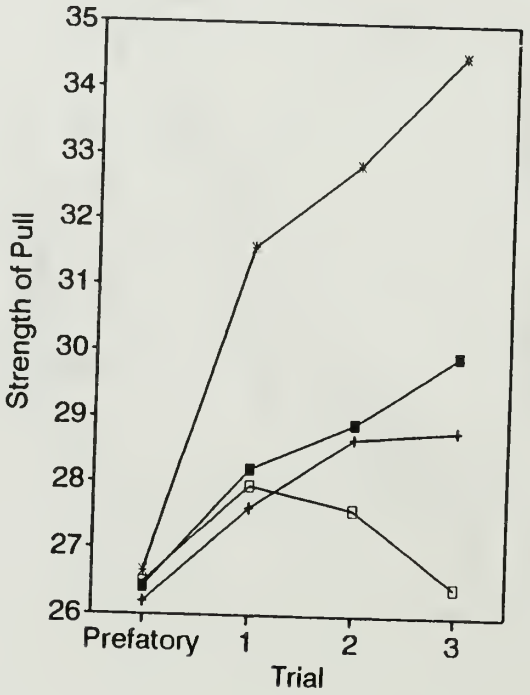
Figure 2. Results for the assembly task. From left to right, the panels display perceived self-efficacy, satisfaction, self-set goals, and performance. Conditions are average (Ave), no-feedback (No), negative (Neg) and positive (Pos).

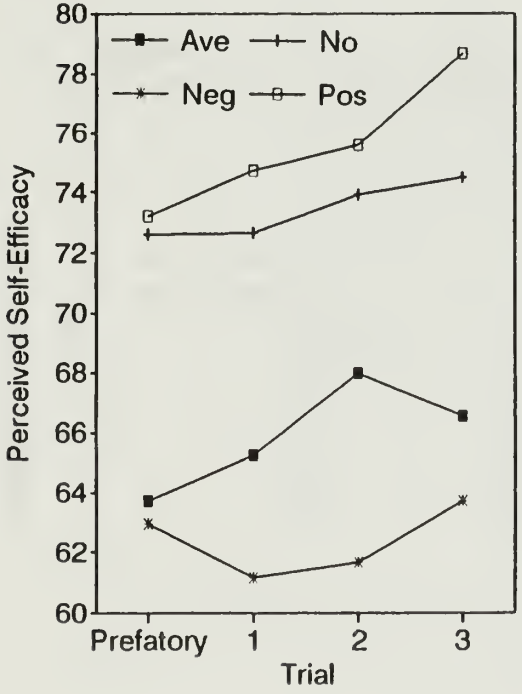
Figure 3. Results for the complex cognitive task. From left to right, the panels display perceived self-efficacy, satisfaction, self-set goals, and performance. Conditions are average (Ave), no-feedback (No), negative (Neg) and positive (Pos).

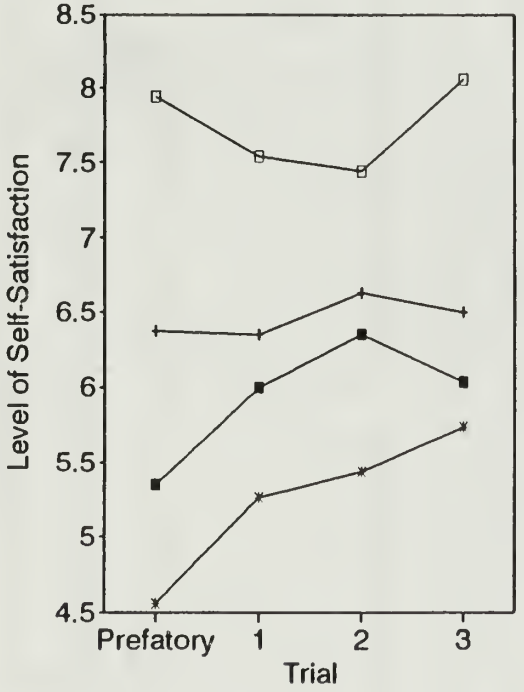

Perceived Self-Efficacy
70
65
60
55
50
45
Prefatory
1
2
3
Trial

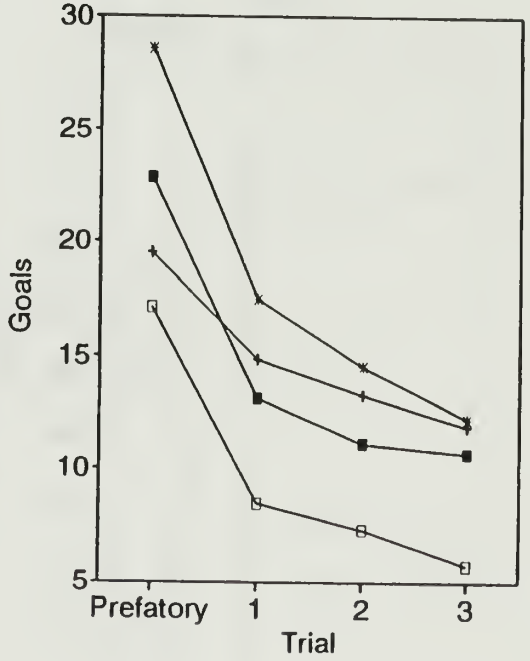

Level of Self-Satisfaction
7.5
7
6.5
6
5.5
5
4.5
4
3.5
Prefatory
1
2
3
Trial

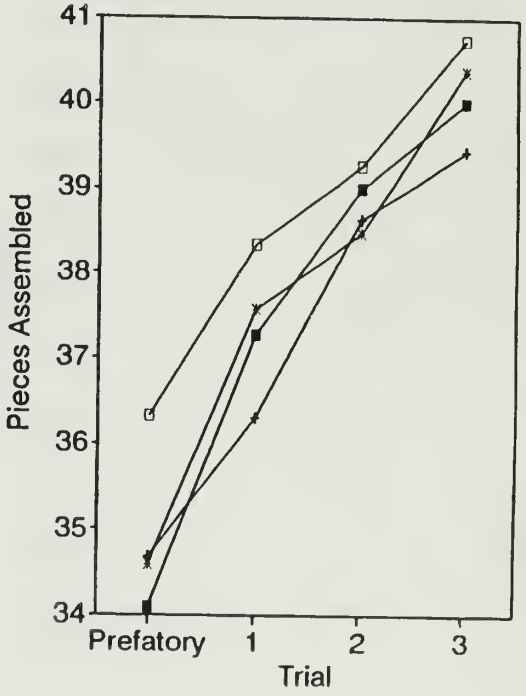

Goals
24
22
20
18
16
14
12
10
8
6
Ave
No
Neg
Pos
Prefatory
1
2
3
Trial

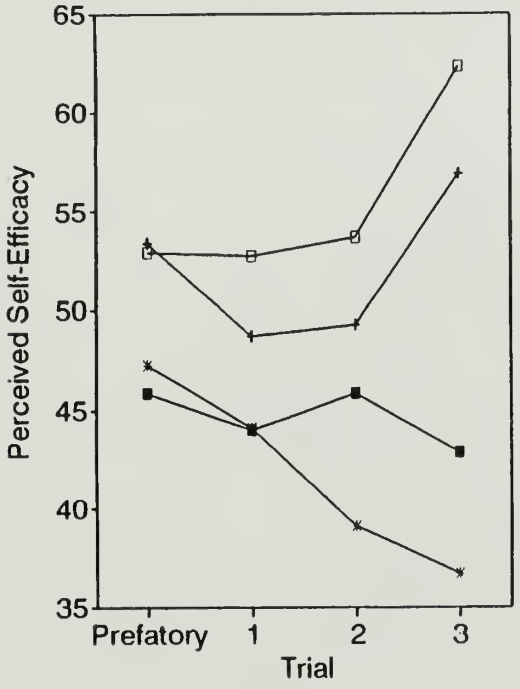

Strength of Pull
35
34
33
32
31
30
29
28
27
26
Prefatory
1
2
3
Trial

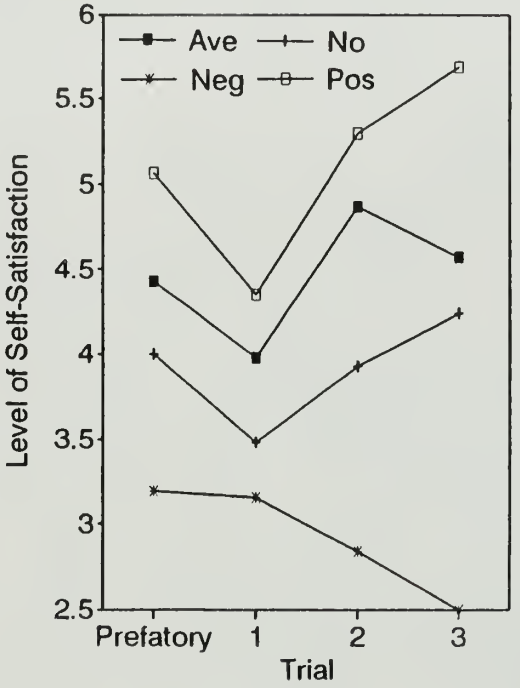

Ave
No
Neg
Pos
Perceived Self-Efficacy
80
78
76
74
72
70
68
66
64
62
60
Prefatory
1
2
3
Trial

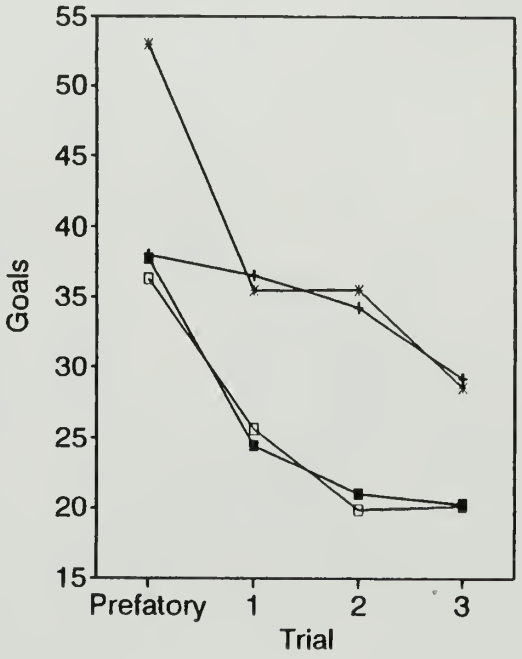

Level of Self-Satisfaction
8.5
8
7.5
7
6.5
6
5.5
5
4.5
Prefatory
1
2
3
Trial

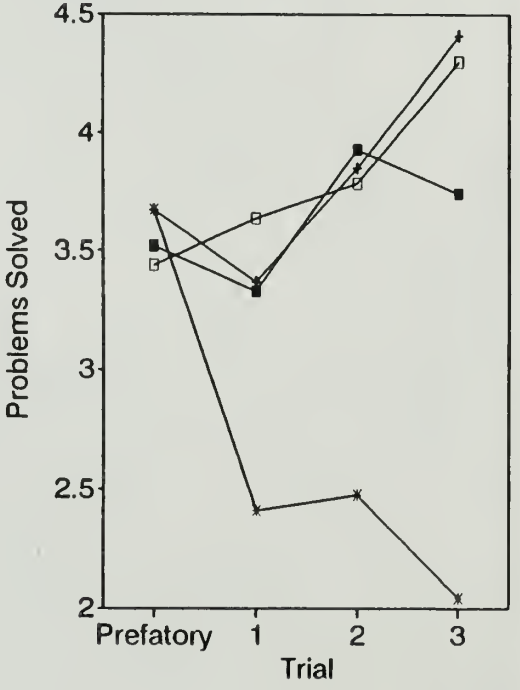

Goals
30
25
20
15
10
5
Prefatory
1
2
3
Trial


Pieces Assembled
41
40
39
38
37
36
35
34
Prefatory
1
2
3
Trial


Perceived Self-Efficacy
65
60
55
50
45
40
35
Prefatory
1
2
3
Trial


Level of Self-Satisfaction
Ave
No
Neg
Pos
6
5.5
5
4.5
4
3.5
3
2.5
Prefatory
1
2
3
Trial


Goals
55
50
45
40
35
30
25
20
15
Prefatory
1
2
3
Trial


Problems Solved
4.5
4
3.5
3
2.5
2
Prefatory
1
2
3
Trial