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Affective Reactions to Performance Feedback: The Role of Self-Esteem

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Abstract

This paper focuses on the relationship between performance feedback and affect within people across time. Applying multi-level methods, we investigated how performance feedback influences positive and negative affect within individuals across negative and positive feedback ranges. In addition, we examined whether self-esteem moderates individuals' relationship between negative feedback and affective reactions. Results showed that performance feedback did influence both positive and negative affect within individuals, and that feedback indicating goal nonattaintment (i.e., negative feedback) influenced negative affect more strongly than it influenced positive affect. The data offered some support for the prediction with respect to the moderating role of self-esteem derived from self-enhancement theory. Implications and directions for future research are discussed.

Affective Reactions to Performance Feedback: The Role of Self-Esteem

Studying the role of feedback in influencing motivation and performance has generated a large body of research, but the findings have often been contradictory or inconsistent (Kluger & DeNisi, 1996). In the applied area, building upon the work of Carver and Scheier (1981), researchers have studied how individuals react to feedback affectively focusing both on basic affective states (e.g., Kluger, Lewinsohn, & Aiello, 1994) or on affect-based work attitudes (e.g., Hollenbeck, 1989). Previous research on affective reactions to feedback, however, has largely focused on differences between individuals in such reactions, and has not studied the feedback-affect process within individuals and across time. In this paper, we review conceptual arguments explaining individuals' affective reactions to feedback, we test hypotheses concerning within-individual relationships between both negative and positive feedback and affect, and we also take a between-individual perspective and investigate whether different individuals react differently to performance feedback by examining the role of self-esteem in explaining between-individual differences in individuals' characteristic feedback-affect relationships.

Comparing the performance feedback with the performance standard and reacting to the outcome of this comparison (the discrepancy between standards and performance) is the simplest mechanism explaining how feedback influences future performance through motivation (Kluger & DeNisi, 1996). This mechanism is most useful in explaining the motivating effects of negative performance feedback, in that negative feedback should lead to increased effort because of its effect in motivating individuals to decrease the negative performance-standard discrepancy (Carver & Scheier, 1981; Kluger & DeNisi, 1996). The basic feedback-standard comparison mechanism is less useful in explaining the effects of positive feedback on future effort, as it predicts that people would tend to decrease effort to eliminate or minimize the positive

performance-standard discrepancy after meeting previous goals. This prediction is inconsistent with the goal setting, and social cognitive theories, and has not been supported empirically (e.g., Phillips, Hollenbeck, & Ilgen, 1996).

Conceptually, the link between performance feedback and effort regulation should be explained, at least in part, by individuals' affective reactions to feedback (Ilgen & Davis, 2000; Saavedra & Earley, 1991). Thus, a dynamic model of self-regulation would include performance feedback, affective reactions to the feedback, goals and behavior. Explaining the relationships among constructs from this model would advance self-regulation and motivation theory and would perhaps suggest interventions that could be used to enhance employees' motivation at work. Unfortunately, even though emotions and affect have a central role in behavioral theories of motivation, their role in explaining work motivation has been seldom studied. With respect to goal setting, Brockner and Higgins (2001) note that the emotional consequences of goal (non)attainment are an aspect of goal-setting theory that has been neglected by researchers. More generally, the most widely used theories of work motivation (goal setting [Locke & Latham, 1990]; expectancy theory [Vroom, 1964]; resource allocation theory [Kanfer & Ackerman, 1989]; and social cognitive theory [Bandura, 1986]) all have a cognitive focus, and tend to ignore basic emotional processes that may influence motivation.

Recently, however, the general interest in the role of affect and emotions at work has increased (e.g., Fisher & Ashkanasy, 2000; Lord, Klimoski, & Kanfer, 2002). Organizational researchers have started to study the effects of basic affective constructs on motivational components derived from classic theories of motivation (e.g., the effect of positive affect on expectancy theory constructs; Erez & Isen, 2002). Furthermore, stimulated by Weiss and Cropanzano' s (1996) affective events theory (AET), organizational scholars have started to

examine the consequences of momentary affective states and their temporal fluctuations at work (Alliger & Williams, 1993; Ilies & Judge, 2002; Weiss, Nicholas, & Daus, 1999).

In the AET framework, feedback can be considered an affective event that influences individuals' attitudes and behaviors through its influences on their affect and emotions. It is our contention that temporal fluctuations in individuals' affective states are partly influenced by the performance feedback they receive. Indeed, there is empirical evidence suggesting that goal attainment or goal progress is associated with positive affect, whereas nonattaintment or lack of progress is associated with negative affect (e.g., Alliger & Williams, 1993). In addition, research on feedback sign consistently found that positive feedback elicits positive mood and negative feedback elicits negative mood (Kluger et al., 1994). Summarizing these arguments, we propose that a similar process operates within individuals: across time, individuals' affective states will be influenced by the feedback they receive with respect to their ongoing performance.

H1: Within individuals, performance feedback will influence individuals' affective responses in terms of their positive and negative affect across time such that, across trials, feedback indicating better performance will be associated with increased positive affect and decreased negative affect.

A basic psychological theory that links affect to performance feedback is behavioral motivation theory, which specifies that two distinct neurobehavioral systems regulate appetitive and aversive motivation. The system regulating appetitive motivation and approach behaviors is called the Behavioral Activation System (BAS; Gray, 1981), or the Behavioral Approach System (BAS; Fowles, 1987), or the Behavioral Facilitation System (Depue & Iacono, 1989; Watson, 2000), and is activated by stimuli signaling reward (or relief from punishment) (Gray, 1981, 1990). The system regulating aversive motivation and avoidance behaviors is called the

Behavioral Inhibition System (BIS) and is activated by stimuli signaling punishment (or frustrative nonreward) (Gray, 1981, 1990).

Emotions play a central role in explaining how the behavioral motivation systems work. The BAS is believed to regulate the experience of positive emotions and moods, while the BIS regulates negative emotions and moods (Gray, 1990). Stimuli from the environment influence people's affective states, and the resulting affective states will reinforce behavioral motivation. For example, appetitive stimuli activate approach behaviors leading to rewards, which induce positive affect. The experience of positive affect will reinforce the approach response to such appetitive stimuli. Thus, favorable cues lead to positive affect which is associated with BAS activation, and individuals tend to engage in approach behaviors when they experience positive emotions or moods. Conversely, when individuals experience negative emotions that signal an unfavorable situation, these negative emotions will reinforce avoidance behaviors because negative emotions activate the BIS.

Because positive feedback is a rewarding affective event it should primarily activate the BAS and thus it should influence positive affect more strongly than negative affect. In contrast, negative feedback is an inhibiting event and thus it should influence negative affect more strongly than positive affect.

H2: (a) Feedback indicating that goals have not been met (negative feedback) will have a stronger influence on negative affect than on positive affect, and (b) feedback indicating that goals have been accomplished or exceeded will influence positive affect more strongly than negative affect.

So far in this paper, we have used the terms "affective reactions" and "emotional reactions" interchangeably. Furthermore, as it will be explained shortly, we use a mood survey to

measure these reactions. At this point, we would like to discuss the distinction between emotions, mood and affect. Like other authors (e.g., Ashforth & Humphrey, 1995; Kelly & Barsade, 2001), we see affect as an inclusive term that refers to both emotions and moods. Emotions and moods, however, are distinct phenomena. Emotions are more intense and shorter-lived than moods, and they are more likely to be caused by external events (mood states are subject to endogenous influences such as the circadian cycle; Watson, 2000). Emotion theorists (e.g., Eckman, 1992) focus on discrete emotions such as joy, fear, anger, and disgust. Mood theorists generally take a dimensional perspective on the study of affect, focusing on broad factors such as pleasantness-unpleasantness and activation (e.g., Larsen & Diener, 1992), or positive affect (PA) and negative affect (NA; e.g., Watson, Clark, & Tellegen, 1988). But emotions and moods are not conceptually unrelated; strong emotions can have an influence on one's mood. Here we measure affect as individuals' momentary mood with the PA and NA dimensions, and we do not study discrete emotions. It is implicitly assumed, though, that such discrete emotional reactions are reflected in the broad mood dimensions of PA and NA.

Feedback and Self-Esteem

Consequences of Negative Feedback

Despite the fact that negative feedback is generally employed with the intention to improve performance, all too often negative feedback has the opposite effect and undermines subsequent performance (e.g., Ilgen & Davis, 2000; Kluger & DeNisi, 1996). In general, one's perception of, and response to, negative feedback depends on: (a) the personal characteristics of the feedback recipient; (b) the nature of the message; and (c) the characteristics of the source of feedback (e.g., Ilgen, Fisher, & Taylor, 1979). A personal characteristic that has been shown to influence individuals' reactions to negative feedback is their general self-esteem (Kernis,

Brockner, & Frankel, 1989). Self-esteem is considered a motivational trait, in part, because it influences how individuals perceive and respond to negative feedback (e.g., Brockner, Derr, & Laing, 1987; Ilgen et al., 1979; Shrauger & Rosenberg, 1970). Though it has been studied mainly in connection with negative feedback, theoretical models linking self-esteem to how individuals react to both negative and positive feedback exist.

The Moderating Role of Self-Esteem

According to Moreland and Sweeney (1984), reactions to feedback can be viewed as a process that consists of six separate phases: (a) reception and retention of the evaluation; (b) assessment of the reliability and/or the validity of the source; (c) attributions of responsibility for success/failure; and (d) changes in self-evaluation, are (e) considered to be the *cognitive* reactions to feedback, whereas recipients' feelings of (dis)satisfaction with the content of the feedback and (f) subsequent task performance are considered *affective* reactions to feedback. In this paper, we focus on affective reactions to feedback, which, in our view, is the first mechanism through which individuals interpret feedback information. We attempt to identify individual differences in the magnitudes of the effects of feedback on affect, and we investigate whether individuals' scores on self-esteem predict such individual differences.

Research on the role of self-esteem in reactions to feedback has mainly focused on two motives: Self-consistency and self-enhancement (Jussim, Yen, & Aiello, 1995). According to the *self-consistency* theory, people react most favorably to performance evaluations that are in congruence with their self-image (Moreland & Sweeney, 1984). This implies that individuals with low self-esteem should have a stronger preference for negative feedback than high self-esteem individuals, because negative feedback is congruent with their self-image. Conversely, *self-enhancement* theory argues that individuals react most favorably to performance feedback

that enhances their self-image. According to this theory, low self-esteem individuals should have a weaker preference for negative feedback than high self-esteem individuals, because they have a stronger need for self-enhancement than their high self-esteem counterparts, and negative feedback does not address that need. Low self-esteem individuals will react more strongly to positive feedback than high self-esteem individuals because they will presumably experience the greatest self-enhancement as a result of the positive feedback.

When reviewing inconsistencies in research findings with regard to these theories, Shrauger (1975) noted that when cognitive reactions were assessed, findings favored the consistency model; whereas when affective reactions to feedback were considered, the results seemed to support the self-enhancement theory. Empirical evidence mainly supports Shrauger's contention, particularly with regard to affective reactions. For instance, Moreland and Sweeney (1984) found that low self-esteem students who received high scores on a midterm examination regarded the examination as fairer and were more satisfied than high self-esteem students that received high scores, whereas lower scores produced more dissatisfaction with the exam among the low self-esteem students than among high self-esteem students. Furthermore, it has been shown that following negative feedback, low self-esteem individuals (compared to high self-esteem individuals) felt worse about themselves (Bernichon, Cook, & Brown, 2003), experienced more negative affect (Kernis et al., 1989; Moreland & Sweeney, 1984), and had lower feelings of self-worth (Brown & Dutton, 1995).

Because most research on self-esteem and reactions to feedback has actually focused on negative feedback, in this paper we examine the moderating role of self-esteem on the negative feedback-affect and positive feedback-affect relationships separately. In sum, self-enhancement theory that predicts that self-esteem should be negatively associated with individuals'

magnitudes of their relationship between feedback and affect, for both negative and positive feedback ranges. In contrast, self-consistency theory predicts a positive relationship between self-esteem and the magnitudes of the within-individual relationships between feedback and affect. Even though previous research on affective reactions to feedback seems to favor self-consistency theory, we do not offer a formal hypothesis on the moderating role of self-esteem on the relationship between feedback and affect but rather we investigate this effect on an exploratory basis.

Method

The study was conducted in two phases. In the first phase, participants were asked to complete a personality survey that included a measure of self-esteem. In the second phase of the study, which started one week after the first phase, participants completed an 8-trial experiment in which they had to perform a task, they received feedback concerning their task performance and then were asked to report their affective state following the feedback.

Participants

Participants were 197 undergraduate students from the University of Florida. They were invited to participate in this study by an advertisement that was placed on the course web page of a large introductory course in management. Participation in the study was completely voluntary and individuals who participated received extra credit points in return for their participation.

Experimental Design and Procedure

Data for the experimental trials were collected through an Internet interface. Subjects logged on to an Internet site, read a detailed description of the task and procedure, were asked to report their momentary affective state and then to set a goal for the first trial task. After setting a goal for the first trial, participants were presented with the performance task and were given five

minutes to work on the task. After submitting their task solutions, participants were presented with manipulated feedback that ranged between 35% and 80% (e.g., "For this trial, you have performed better than 80% of the participants").[1] Feedback levels were randomized across trials for each participant. After receiving the feedback, participants were asked to report their affect, and then they started the subsequent trial.

Performance Task

We used a brainstorming task that asked participants to list as many uses of a specific common object (e.g., rubber tire) or material (e.g., wood) as they can. This type of task has been successfully used in prior laboratory research on goal setting motivation (e.g., Locke, 1982).

Measures

Affect. We used the 20-item Positive and Negative Affect Schedule (PANAS; Watson et al. 1988) for measuring positive affect (PA) and negative affect (NA). Respondents were asked to indicate their agreement with the items on a 5-point scale. The internal consistencies reliability of the PA scores ranged between .92 and .95 across the eight trials; the reliability of the NA sores was between .90 and .92 across the trials.

Self-Esteem. We measured self-esteem with Rosenberg's Self Esteem Scale (1965), consisting of 10 items on a 5-point scale. The internal consistency of the self-esteem scores computed on the present sample was .83.

Analyses

This study was designed to answer three main questions. The first question focused on whether feedback influences positive and negative affect, within individuals and across time. The second question asked whether negative and positive feedback impact negative and positive affect differentially (we hypothesized that negative feedback will have a stronger effect on

negative affect than on positive affect, and positive feedback will influence positive affect more strongly). The third question addressed the issue of whether self-esteem moderates individuals' affective responses to negative feedback.

To test the hypothesized within-individual effects and the cross-level moderating role of self-esteem, we used hierarchical linear modeling (HLM; Byrk & Raudenbush, 1992). We first investigated whether systematic within- and between-individual variance exists in individuals' positive and negative affect. To do so, we estimated two null models which calculated the within- and between-individual variance in positive and negative affect (see Table 2). Provided that the test of the null models reveals that there is substantial within- and between-individual variance in the criterion, tests of the other HLM models can be conducted. The equations for all the models are shown in Table 2 and Table 3. Below, we offer descriptions of analyses used to test the hypotheses.

Hypothesis 1. The within-individual relationship between feedback and affect was modeled by estimating Model 1. The feedback variable was centered relative to individuals' means, thus any between-individual variance in feedback was eliminated--i.e., by subtracting the individuals' means from their momentary scores, all individuals will have mean scores equal to zero and thus there will be no between-individual variance in these scores (Bryk & Raudenbush, 1992; Hofmann**,** Griffin, & Gavin, 2000). At level 1, the model estimates the individuals' intercepts and slopes for predicting positive or negative affect with feedback, and at level 2, because no predictors are included in the equations, the models estimates the pooled values for the level 1 parameters.

Hypothesis 2. To test whether negative feedback influences negative affect more strongly than it influences positive affect, and whether positive feedback similarly influences positive

affect more strongly, we estimated Model 2, which enabled us to estimate separate regression parameters for feedback indicating that performance fell short of the goal (coded as negative feedback) and feedback indicating that performance met or exceeded the goal (coded as positive feedback). The equations for Model 2 are shown in Table 3.

Exploratory question. To investigate whether self-esteem moderates the within-individual relationships between feedback and affect, we estimated Model 3, which is identical to Model 2 with the exception that self-esteem is included (at level 2) as a predictor of the level 1 parameters (see Table 4).

Results

Means, standard deviations, and inter-correlations for all variables measured in the study are presented in Table 1. Table 2 presents estimated parameter and variance components for the null models and the multi-level models testing the first within-individual hypothesis (H1). The null model analyses indicated that there was significant between-individual variance in both positive (τ_{00}=150.37, $p < .01$) and negative (τ_{00}=111.38, $p < .01$) affect and that a substantial proportion of the total variance in positive and negative affect was within individuals ($\rho^2/[\rho^2 + \tau_{00}]$) = 19% and 13%, for positive and negative affect, respectively). These results suggest that hierarchical modeling of these data is appropriate. Table 1 shows that, on average (across both participants and trials), participants' task goal was to perform better than 66.21% of the other participants. Given that the average feedback received by participants was 57.27%, it follows that participants received negative feedback more often than positive feedback.

The results for Model 1 show support for the first hypothesis (H1; see Table 2). The pooled slope for predicting positive affect with feedback was positive and significant (γ_{10} = .07, $p < .01$); the pooled slope for predicting negative affect was negative and also significant (γ_{10} = -

.04, $p < .01$). We should note that regression coefficients presented in Tables 2 and 3 are not standardized. These coefficients can be standardized using the standard deviation values presented in Table 1. To standardize the regression coefficient for predicting positive and negative affect with feedback with Model 1, for example, the standard deviations of positive affect, negative affect, and feedback scores – computed within individuals – should be used, which leads to a standardized coefficient $\gamma_{10}^{*} = .16$ for predicting positive affect with feedback and a standardized coefficient $\gamma_{10}^{*} = -.13$ for predicting negative affect with feedback. (Model 1, like the other models containing the continuous feedback variables as predictors, included a trial index, with values equal to the trial number, as a control variable at level 1 to account for eventual trends across trials.)

The second hypothesis predicted that negative feedback would influence negative affect more strongly than positive affect and that positive feedback would influence positive affect more strongly. Table 3 presents the results for Model 2 that estimated the impact of negative and positive feedback on the affect variables with distinct parameters.[2] Following the equations for Model 2 that are presented in Table 3, over the range of negative feedback the pooled regression coefficient for predicting positive affect is $\gamma_{PA\text{-}negative} = \gamma_{30\ (PA)}$; whereas for positive feedback the pooled regression coefficient for predicting positive affect is $\gamma_{PA\text{-}positive} = \gamma_{40\ (PA)}$. Similarly, the pooled regression coefficient for predicting negative affect with negative feedback is $\gamma_{NA\text{-}negative} = \gamma_{30\ (NA)}$, and the pooled regression coefficient for predicting negative affect with positive feedback is $\gamma_{NA\text{-}positive} = \gamma_{40\ (NA)}$. As shown in Table 3, the results offered some support for the second hypothesis, though this support was not strong. Whereas for the model predicting positive affect, the standardized regression coefficient for positive feedback was only slightly larger than the coefficient for negative feedback (.09 vs. .08), for the model predicting negative affect the

standardized coefficient for negative feedback was significant and double in size compared to the coefficient for positive feedback which was not significant (-.10 vs. -.05).

Finally, the data did offer some support for self-enhancement theory, which predicted that self-esteem should have a cross-level moderating effect on the within-individual effects of feedback on affect. For Model 3 (see Table 4), β_{3j} and β_{4j} represent the magnitudes of individuals' reactions to negative and positive feedback, as reflected in their subsequent affect. The parameter estimates for Model 3 (Table 4) show that the only significant cross-level effect was the positive association between self-esteem and the regression coefficient estimating the within-individual relationship between positive feedback and negative affect. This cross-level effect is consistent with self-enhancement theory: Because positive feedback predicts negative affect *negatively*, the cross-sectional effect shows that high self-esteem individuals react less strongly to positive feedback, in terms of their negative affect, as predicted by the theory. By multiplying the level 2 regression coefficient (γ_{41} = .01) by the standard deviation of the self-esteem scores, we obtain γ_{41}^{*} = .06. This coefficient shows the change in the level 1 unstandardized regression coefficient for predicting negative affect with positive feedback that is associated with a one standard deviation increase in self-esteem. To obtain the change in the level 1 regression coefficient in standardized points, we further multiply γ_{41}^{*} by the within-individual standard deviation of the positive feedback scores (see notes to Table 2) and then divide the result by the within-individual standard deviation of the negative affect scores: γ_{41}^{**} = .06 * 9.95 * 4.15 = .15.

Interestingly, whereas the relationship between positive feedback and negative affect is negative for the hypothetical individuals with self-esteem scores ranging between zero and the mean self esteem score (regression coefficients between -.28 and -.05; see Tables 2 and 3), when

individuals' self esteem scores are larger than about one third of a standard deviation above the mean, this relationship becomes positive (though not distinguishable from zero in our data). Thus, it seems that support for self-enhancement theory is only valid for those with relatively low self-esteem.

In sum, we did find some support for the moderating effect of self-esteem predicted by self-enhancement theory. However, because we did not detect a moderating effect on the positive feedback-positive affect relationship or on any of the two the negative feedback-negative/positive affect relationships, the evidence for the cross-level effect predicted by self-enhancement theory should be viewed with caution.

Discussion

We believe this study contributes to the general literature on feedback and affect and their implications for self-regulation. It does so by accomplishing four major objectives. First, the present results show that performance feedback does predict affect within individuals. We found evidence supporting within-individual effects of feedback on both positive and negative affect. Here we should point out that feedback was randomly distributed across occasions and participants, and that our feedback-affect regression analyses were estimated using only within-individual variance. Thus, our results *cannot* be explained by differences between individuals' propensity to experience positive or negative affect (i.e., those who tend to be happier on average also tend to receive more positive feedback because they perform better).

Second, the results presented here suggest that positive and negative feedback have differential effects on the two broad factors of positive and negative affect. More specifically, we found that negative affective reactions to feedback are stronger when feedback indicates goal nonattaintment, versus when the goal was met or exceeded. This finding suggests that people

process negative and positive feedback information differently. It then becomes important to study affective reactions to positive and negative feedback in the context of individual differences in motivational orientation (e.g., promotion- vs. prevention-focused individuals; Brockner & Higgins, 2001; Higgins, 1998), or individual differences in positive and negative affect induction susceptibility (e.g., Larsen & Ketelaar, 1989; Pickering, Corr, & Gray, 1999; Rusting & Larsen, 1997). Such research efforts are currently under way.

Another issue that should be examined in future research concerns the within-individual effect of feedback on the broad affect factors of pleasantness and arousal. Kluger et al. (1994), for example, have found that, across individuals, grade feedback had a linear influence on pleasantness and a curvilinear influence on arousal. It would be interesting to examine whether feedback has a curvilinear effect on arousal within individuals, or whether it has a diminishing within-individual effect on pleasantness across time (i.e., as feedback becomes increasingly positive, it has smaller effects on pleasant mood).

Third, we modeled the data with multi-level methods, which allowed us to examine the dynamic nature of the feedback-affect relationship. The within-individual relationship between feedback and affect is qualitatively different from the feedback-affect between-individual relationship: Whereas the within-individual relationship shows that the average individual's affect fluctuations are in part influenced by the feedback he or she receives, the between-individual relationships indicates that those who receive certain type of feedback (positive, for example) experience a different affective state (e.g., more positive mood) than those who receive a different type of feedback.

Fourth, the present results did offer some support for the prediction that following positive feedback, individuals who score low on self-esteem will have more pronounced

affective reactions than individuals who high lower on self-esteem because those low in self-esteem are in greater need for self-enhancement. However, high and low self-esteem individuals reacted similarly to negative feedback, and thus our results for positive and negative feedback ranges are inconsistent. It might be the case that high-self-esteem participants did not see a linkage between their performance and the feedback they received when the feedback was negative (indeed such linkage did not exist), as a result of which their affective reactions were similar to those who scored low on self-esteem. To investigate this possibility, future research should study the processes through which self-esteem may moderate the relationship between negative feedback and subsequent goal setting by using real performance feedback.

This investigation only examined the direct relationship between feedback and affect. Conceptually, this relationship should be moderated by causal attributions for performance (Ilgen & Davis, 2000; Weiner, 1985) and by the credibility and acceptance of the feedback (e.g., Ilgen et al., 1979). In addition, feedback should also have an influence on cognitive constructs such as self-efficacy (Saavedra & Earley, 1991), and such cognitive constructs are not independent of affect (Baron, 1990). It may be the case that performance feedback information influences self-efficacy both directly and indirectly through affect. We do not have the data to support these speculations; future research should examine the connection between feedback and affect within a more complete model of self-regulation that includes feedback attributes such as credibility and acceptance, cognitive constructs such as self-efficacy, and performance attributions.

Another area of investigation that may prove fruitful for future research concerns the role of anticipatory emotions in goal-directed behavior. Bagozzi, Baumbartner and Pieters' (1998) "emotional goal system" highlights the importance of both *anticipatory emotions* (elicited by prospects of goal success or failure) and *goal-outcome emotions* that are elicited by feedback.

Similarly, in the decision making literature, Mellers' decision affect theory (e.g., Mellers, 2000; Mellers & McGraw, 2001; Mellers, Schwartz & Ritov, 1999) takes into account the emotions that individuals anticipate they would experience as a result of the outcomes of their decisions: "people anticipate the pleasure or pain of future outcomes, weigh those feelings by the chances they will occur, and select the option with greater average pleasure" (Mellers & McGraw, 2001, p. 210). These conceptual models suggest that anticipatory emotions can be as important as feedback-induced emotions in the broader scheme of behavioral regulation.

Like all studies, this study has limitations that merit discussion. An important limitation of this research concerns the potential lack of generalizability of the findings associated with laboratory experiments that use student participants. However, we believe that the nature of the research question justifies an initial examination in controlled settings. Future research should examine whether these findings generalize to different participant populations. Another possible limitation concerns the performance task used in the experiment. Though the brainstorming task use in this study was extensively used in previous laboratory research on goal setting (e.g., Harkins & Lowe, 2000; Lee & Bobko, 1992; Locke, 1982), it is a very simple task, and thus the results may not generalize to other performance situations.

In this paper, we presented evidence showing that within individuals performance feedback is related, across time, to both positive and negative affect. Furthermore, we found support for the contention that feedback indicating goal nonattaintment is more closely associated to negative affect than to positive affect. Our findings contribute to literatures on feedback and affect, and they also lead to new questions, to be answered in future research.

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Footnotes

[1] The 35-80 percent range was established so that the negative feedback would not be extreme (e.g., 5%). This range implies that when setting their task goal at 90%, participants could receive only negative feedback. To investigate whether this affected the results we conducted analyses on a reduced data set from which the records containing goals of 90% were deleted, and the results were not substantially different.

[2] The feedback statement received by participants only provided participants with the percentage information (e.g., you performed better than 60% of participants) and did not indicate whether the goal was met or not (we assumed participants will make such comparison themselves).

Table 1

Means, Standard Deviations, and Intercorrelations for All Study Variables

	M	SD-w	SD-b	1	2	3	4	5
1. Average Self-Set Goal	66.21	11.73	16.30	1.00				
2. Average Performance Feedback	57.27	13.22	.09	.20**	1.00			
3. Average Positive Affect (PA)	29.01	5.91	12.26	.17*	-.01	1.00		
4. Average Negative Affect (NA)	12.38	4.15	10.55	-.13	-.15*	.03	1.00	
5. Self-Esteem	31.01	--	6.13	.19**	-.09	.29**	-.29**	1.00

Notes:

M=mean, SD-w=standard deviation computed within individuals, SD-b=standard deviation computed between individuals.

N = 197 * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed).

Table 2

Parameter Estimates and Variance Components for the Null Model and Model 1

Model Equations[a]	γ_{00}	γ_{10}	ρ^2	τ_{00}
Null Model (PA) [b]				
$PA_{ij} = \beta_{0j} + r_{ij}$	29.01**	--	34.87	150.37**
$\beta_{0j} = \gamma_{00} + U_{0j}$				
Null Model (NA) [c]				
$PA_{ij} = \beta_{0j} + r_{ij}$	12.38**	--	17.36	111.28**
$\beta_{0j} = \gamma_{00} + U_{0j}$				
Model 1 for (PA) [d]				
$PA_{ij} = \beta_{0j} + \beta_{1j}(Fd_{ij}) + r_{ij}$	29.03**	.07**	15.29	153.50**
$\beta_{0j} = \gamma_{00} + U_{0j}$				
$\beta_{1j} = \gamma_{10} + U_{1j}$				
Model 1 for (NA) [e]				
$NA_{ij} = \beta_{0j} + \beta_{1j}(Fd_{ij}) + r_{ij}$	12.38**	-.04**	9.88	112.36**
$\beta_{0j} = \gamma_{00} + U_{0j}$				
$\beta_{1j} = \gamma_{10} + U_{1j}$				

Notes:

* $p < .05$, ** $p < .01$. N=197. The regression coefficients presented in this table are *not standardized*; standardized estimates can be computed by using the appropriate standard deviation values provided in Table 1.

[a] All predictors were centered at the individuals' means. Model 1 included a trial index as a control variable at level 1, to account for eventual trends across trials. The regression coefficients for this index are not shown.

Table 2 Continues

Table 2 (Continued)

[b] PA=positive affect; β_{0j}=average PA scores for each respondent; γ_{00}= the grand mean of PA scores; ρ^2=variance(r_{ij})=within-individual variance in PA; τ_{00}=variance(U_{0j})=between-individual variance in PA.

[c] NA=negative affect β_{0j}=average NA scores for each respondent; γ_{00}= the grand mean of NA scores; ρ^2=variance(r_{ij})=within-individual variance in NA; τ_{00}=variance(U_{0j})=between-individual variance in NA.

[d] Fd=feedback; β_{0j}=level 1 intercept; β_{1j}=individuals' slopes for predicting trial PA with feedback; γ_{00}=grand mean of PA scores after the effect of feedback within individuals was accounted for; γ_{10}= pooled slope for predicting trial PA with feedback; ρ^2=variance(r_{ij})=remaining within-individual variance in PA; τ_{00}=variance(U_{0j})=between-individual variance in PA. The variance component for the slope (τ_{11}) was significant ($p < .01$) but it is not presented here.

[d] β_{0j}=level 1 intercept; β_{1j}=individuals' slopes for predicting trial NA with feedback; γ_{00}=grand mean of NA scores after the effect of feedback within individuals was accounted for; γ_{10}= pooled slope for predicting trial NA with feedback; ρ^2=variance(r_{ij})=remaining within-individual variance in NA; τ_{00}=variance(U_{0j})=between-individual variance in NA. The variance component for the slope (τ_{11}) was significant ($p < .01$) but it is not presented here.

Table 3

HLM Models Testing the Differential Effect of Negative and Positive Feedback on Negative and Positive Affect

Model Equations[a]	γ_{10}	γ_{20}	γ_{30}	γ_{30}^{*}	γ_{40}	γ_{40}^{*}	ρ^2
Model 2 (PA)[b]							
$PA_{ij} = \beta_{1j}(x\_n_{ij}) + \beta_{2j}(x\_p_{ij}) + \beta_{3j}(Fd\_n_{ij}) + \beta_{4j}(Fd\_p_{ij}) + r_{ij}$	33.74**	33.00**	.05**	.08**	.08**	.09**	14.55
$\beta_{1j} = \gamma_{10} + U_{1j}$							
$\beta_{2j} = \gamma_{20} + U_{2j}$							
$\beta_{3j} = \gamma_{30} + U_{3j}$							
$\beta_{4j} = \gamma_{40} + U_{4j}$							
Model 2 (NA)[c]							
$NA_{ij} = \beta_{1j}(x\_n_{ij}) + \beta_{2j}(x\_p_{ij}) + \beta_{3j}(Fd\_n_{ij}) + \beta_{4j}(Fd\_p_{ij}) + r_{ij}$	11.43**	11.03**	-.04**	-.10**	-.03	-.05	9.08
$\beta_{1j} = \gamma_{10} + U_{1j}$							
$\beta_{2j} = \gamma_{20} + U_{2j}$							
$\beta_{3j} = \gamma_{30} + U_{3j}$							
$\beta_{4j} = \gamma_{40} + U_{4j}$							

Notes:

* $p < .05$, ** $p < .01$. N=197. γ_{30}^{*} and γ_{40}^{*} are the standardized values for the level 1 regression coefficients γ_{30} and γ_{40} (the standard deviations of Fd_n_{ij} and Fd_p_{ij} variables, computed within individuals were 6.50 and 9.95, respectively; the standard deviations for PA and NA are presented in Table 1).

Table 3 Continues

Table 3 (Continued)

[a] The models included a trial index as a control variable at level 1, to account for eventual trends across trials. The regression coefficients for this index are not shown.

[b] PA_{ij}= individual j's PA score for trial i; x_n_{ij} = dummy variables equal to 1 when feedback sign was negative and zero otherwise; x_p_{ij} = dummy variables equal to 1 when feedback sign was positive and zero otherwise; Fd_n_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was negative, or zero otherwise; Fd_p_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was positive, or zero otherwise; β_{1j}= individuals' intercepts for predicting their PA score with feedback concerning their previous performance when such feedback was negative, across time; β_{2j}= individuals' intercepts for predicting their PA score with feedback concerning their previous performance when such feedback was positive, across time; β_{3j}= individuals' slopes for predicting their PA score with feedback concerning their previous performance when such feedback was negative, across time; β_{4j}= individuals' slopes for predicting their PA score with feedback concerning their previous performance when such feedback was positive, across time; γ_{10}=pooled slope for predicting PA with negative feedback; γ_{20}=pooled slope for predicting PA with positive feedback; γ_{30}=pooled slope for predicting PA with negative feedback; γ_{40}=pooled slope for predicting PA with positive feedback.

[c] NA_{ij}= individual j's NA score for trial i; x_n_{ij} = dummy variables equal to 1 when feedback sign was negative and zero otherwise; x_p_{ij} = dummy variables equal to 1 when feedback sign was positive and zero otherwise; Fd_n_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was negative, or zero otherwise; Fd_p_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was positive, or zero otherwise; β_{1j}= individuals' intercepts for predicting their NA score with feedback concerning their previous performance when such feedback was negative, across time; β_{2j}= individuals' intercepts for predicting their NA score with feedback concerning their previous performance when such feedback was positive, across time; β_{3j}= individuals' slopes for predicting their NA score with feedback concerning their previous performance when feedback was negative, across time; β_{4j}= individuals' slopes for predicting their NA score with feedback concerning their previous performance when such feedback was positive, across time; γ_{10}=pooled slope for predicting NA with negative feedback; γ_{20}=pooled slope for predicting NA with positive feedback; γ_{30}=pooled slope for predicting NA with negative feedback; γ_{40}=pooled slope for predicting NA with positive feedback.

Table 4
HLM Models Testing the Cross-Level Moderator Effect of Self-Esteem

Model Equations[a]	γ_{10}	γ_{11}	γ_{20}	γ_{21}	γ_{30}	γ_{31}	γ_{40}	γ_{41}	ρ^2
Model 3 for PA[b]									
$PA_{ij}= \beta_{1j}(x\_n_{ij}) + \beta_{2j}(x\_p_{ij}) + \beta_{3j}(Fd\_n_{ij}) + \beta_{4j}(Fd\_p_{ij}) + r_{ij}$	12.64*	.68**	10.86	.72**	.09	.00	-1.32	.01	14.51
$\beta_{1j} = \gamma_{10} + \gamma_{11}$ (SE) + U_{1j}									
$\beta_{2j} = \gamma_{20} + \gamma_{21}$ (SE) + U_{2j}									
$\beta_{3j} = \gamma_{30} + \gamma_{31}$ (SE) + U_{3j}									
$\beta_{4j} = \gamma_{40} + \gamma_{41}$ (SE) + U_{4j}									
Model 3 for NA[c]									
$NA_{ij}= \beta_{1j}(x\_n_{ij}) + \beta_{2j}(x\_p_{ij}) + \beta_{3j}(Fd\_n_{ij}) + \beta_{4j}(Fd\_p_{ij}) + r_{ij}$	27.66**	-.52**	25.25**	-.46**	.02	.00	-.28	.01*	9.03
$\beta_{1j} = \gamma_{10} + \gamma_{11}$ (SE) + U_{1j}									
$\beta_{2j} = \gamma_{20} + \gamma_{21}$ (SE) + U_{2j}									
$\beta_{3j} = \gamma_{30} + \gamma_{31}$ (SE) + U_{3j}									
$\beta_{4j} = \gamma_{40} + \gamma_{41}$ (SE) + U_{4j}									

Notes:

* $p < .05$, ** $p < .01$. N=197. The regression coefficients presented in this table are *not standardized*.

Table 4 Continues

Table 4 (Continued)

[a] The models included a trial index as a control variable at level 1, to account for eventual trends across trials. The regression coefficients for this index are not shown.

[b] PA_{ij}= individual j's PA score for trial i; x_n_{ij} = dummy variables equal to 1 when feedback sign was negative and zero otherwise; x_p_{ij} = dummy variables equal to 1 when feedback sign was positive and zero otherwise; Fd_n_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was negative, or zero otherwise; Fd_p_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was positive, or zero otherwise; SE=self esteem; β_{1j}= individuals' intercepts for predicting their PA score with feedback concerning their previous performance when such feedback was negative, across time; β_{2j}= individuals' intercepts for predicting their PA score with feedback concerning their previous performance when such feedback was positive, across time; β_{3j}= individuals' slopes for predicting their PA score with feedback concerning their previous performance when such feedback was negative, across time; β_{4j}= individuals' slopes for predicting their PA score with feedback concerning their previous performance when such feedback was positive, across time; γ_{10}=pooled intercept for predicting PA with negative feedback, controlling for SE; γ_{20}=pooled intercept for predicting PA with positive feedback, controlling for S E; γ_{30}=pooled slope for predicting PA with negative feedback, controlling for SE; γ_{40}=pooled slope for predicting PA with positive feedback, controlling for SE; γ_{11}=the level 2 regression coefficient for predicting individuals' intercepts from regressing their PA score on negative feedback at level 1 with their SE scores; γ_{21}=the level 2 regression coefficient for predicting individuals' intercepts from regressing their PA score on positive feedback at level 1 with their SE scores; γ_{31}=the level 2 regression coefficient for predicting individuals' slopes from regressing their PA score on negative feedback at level 1 with their SE scores; γ_{41}=the level 2 regression coefficient for predicting individuals' slopes from regressing their PA score on positive feedback at level 1 with their SE scores.

Table 4 Continues

Table 4 (Continued)

[c] NA_{ij}= individual j's NA score for trial i; x_n_{ij} = dummy variables equal to 1 when feedback sign was negative and zero otherwise; x_p_{ij} = dummy variables equal to 1 when feedback sign was positive and zero otherwise; Fd_n_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was negative, or zero otherwise; Fd_p_{ij}= individual j's value of feedback for performance on trial i-1 if such feedback was positive, or zero otherwise; SE=self esteem; β_{1j}= individuals' intercepts for predicting their NA score with feedback concerning their previous performance when such feedback was negative, across time; β_{2j}= individuals' intercepts for predicting their NA score with feedback concerning their previous performance when such feedback was positive, across time; β_{3j}= individuals' slopes for predicting their NA score with feedback concerning their previous performance when such feedback was negative, across time; β_{4j}= individuals' slopes for predicting their NA score with feedback concerning their previous performance when such feedback was positive, across time; γ_{10}=pooled intercept for predicting NA with negative feedback, controlling for SE; γ_{20}=pooled intercept for predicting NA with positive feedback, controlling for S E; γ_{30}=pooled slope for predicting NA with negative feedback, controlling for SE; γ_{40}=pooled slope for predicting NA with positive feedback, controlling for SE; γ_{11}=the level 2 regression coefficient for predicting individuals' intercepts from regressing their NA score on negative feedback at level 1 with their SE scores; γ_{21}=the level 2 regression coefficient for predicting individuals' intercepts from regressing their NA score on positive feedback at level 1 with their SE scores; γ_{31}=the level 2 regression coefficient for predicting individuals' slopes from regressing their NA score on negative feedback at level 1 with their SE scores; γ_{41}=the level 2 regression coefficient for predicting individuals' slopes from regressing their NA score on positive feedback at level 1 with their SE scores.