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Success/Failure Feedback, Expectancies, and Approach/Avoidance Motivation: How Regulatory Focus Moderates Classic Relations

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Applying regulatory focus theory (Higgins, 1997), we hypothesized that success-related approach motivation and increased expectancies are more likely to occur when performers are in a promotion than a prevention focus and that failure-related avoidance motivation and decreased expectancies are more likely to occur when performers are in a prevention than a promotion focus. Study 1 used arm flexion pressure as an on-line measure of approach strength and arm extension pressure as an on-line measure of avoidance strength. Study 2 used a persistence measure of motivational strength. The "goal looms larger" effect of increased motivational strength as one moves closer to a goal was greatest for approach when there was success feedback and promotion focus framing and was greatest for avoidance when there was failure feedback and prevention focus framing. Performance expectancies were increased more by promotion than prevention success and were decreased more by prevention than promotion failure. These effects support the hypotheses and were independent of one another.

According to classic psychological theories of motivation, success feedback raises outcome expectancies and induces or maintains approach motivation, whereas failure feedback lowers outcome expectancies and induces or maintains avoidance motivation (Atkinson, 1964; Freud, 1920/1950; Lewin, 1935; McClelland, Atkinson, Clark, & Lowell, 1953; Mowrer, 1960). Similar proposals are also found in more recent models of self-regulation (see Bandura, 1986; Carver & Scheier, 1990, 1998). As statements reflecting the first-generation question, "Is there an effect?", these proposed relations among performance feedback, outcome expectancies, and approach/avoidance motivation have received substantial empirical support. Our research was directed to the second-generation "When" and "How" questions—when are these relations most likely to occur and what self-regulatory principles underlie their occurrence (see Zanna & Fazio, 1982). We addressed the "When" and "How" questions from the perspective of regulatory focus theory (Higgins, 1997, 1998). Regulatory focus is a principle of self-regulation that provides an understanding of *when* success feedback is more likely to increase expectancies and maintain (or induce) approach motivation and *when* failure feedback is more likely to decrease expectancies and maintain (or induce) avoidance motivation.

Regulatory focus theory distinguishes between promotion focus concerns with nurturance or a prevention focus concerns with security (Higgins, 1997, 1998). Individuals' self-regulation in relation to their hopes and aspirations (ideals) involves *promotion focus* concerns. Success and failure are experienced as the presence of positive outcomes (a gain) and the absence of positive outcomes (a nongain). Because of this positive outcome focus, the strategic inclination is

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approach in a state of *eagerness* (see Crowe & Higgins, 1997; Higgins, Roney, Crowe, & Hymes, 1994). Individuals' self-regulation in relation to their duties and obligations (oughts) involves *prevention focus* concerns. Success and failure are experienced as the absence of negative outcomes (a nonloss) and the presence of negative outcomes (a loss). Because of this negative outcome focus, the strategic inclination is *avoidance* in a state of *vigilance*. These different strategic motivations have been shown to be independent from performance expectancies (see Shah & Higgins, 1997; Shah, Higgins, & Friedman, 1998). Recent studies have found that momentary situations can also temporarily induce the eagerness of a promotion focus and the vigilance of a prevention focus (Crowe & Higgins, 1997; Friedman, 1999; Liberman, Idson, Camacho, & Higgins, 1999).

Idson, Liberman, and Higgins (2000) proposed that the eagerness in attaining a promotion focus goal is maintained following success and is reduced following failure, whereas vigilance in attaining a prevention focus goal is maintained following failure and is reduced following success. Idson et al. (2000, Study 3) found, as predicted, that the intensity of eagerness-related feelings ("happy") following successful feedback was greater for participants with a promotion than a prevention focus and the intensity of vigilance-related feelings ("tense") following failure feedback was greater for participants with a prevention than a promotion focus. A major purpose of the present studies was to extend these findings by examining more directly whether the approach motivational system associated with success feedback is maintained more for success in a promotion than a prevention focus and whether the avoidance motivational system associated with failure feedback is maintained more for failure in a prevention than a promotion focus.

There is evidence that regulatory focus, prior to feedback, influences motivational strength as reflected in the "goal looms larger" effect (Förster, Higgins, & Idson, 1998). This effect refers to the fact that motivation increases as the distance to the goal decreases (see Brown, 1948; Hearst, 1960, 1962; Lewin, 1935; Losco & Epstein, 1977; Miller, 1944, 1959; Miller & Murray, 1952). The value of each successive step toward a goal increases as its contribution to final goal attainment increases because each successive step reduces a higher proportion of the remaining discrepancy (Förster et al., 1998; see also Brendl & Higgins, 1995). The strategic motivations, however, are different for promotion and prevention. As the "goal looms larger," an increase in strategic approach motivation (increasing eagerness) should be more evident for people in a promotion than a prevention focus, whereas an increase in strategic avoidance motivation (increasing vigilance) should be more evident for people in a prevention than a promotion focus.

To test these hypotheses, Förster et al. (1998; Studies 1 and 2) used arm pressure as an on-line measure of motivational strength. Arm flexion (in which the direction of force is toward the self) has been shown to be more associated with consumption or approach, whereas arm extension (in which the direction of force is away from the self) is more associated with rejection or avoidance (see Cacioppo, Priester, & Berntson, 1993; Förster, 1998; Chen & Bargh, 1999; Förster & Strack, 1997, 1998; Priester, Cacioppo, & Petty, 1996; Solarz, 1960). Each participant solved two sets of seven solvable anagrams. While solving one set, they pressed on the flat surface of a machine on the bottom of a table inducing arm flexion (i.e., approach) and while solving the other set they pressed the machine on top of the table inducing arm extension (i.e., avoidance). Promotion versus prevention focus was either a chronic individual difference (Study 1) or an experimental variable manipulated by framing (Study 2). Both studies found that the approach gradient was more positive for participants with a promotion than a prevention focus and the avoidance gradient was more positive for participants with a prevention than a promotion focus. These effects were independent of participants' expectancies, and they were replicated in a third study that used persistence rather than arm pressure as the measure of motivational strength.

The present studies used the "goal looms larger" effect paradigm of Förster et al. (1998) but they addressed different issues concerning the effects of success and failure feedback on motivational maintenance and expectancies. For the reasons discussed above, we made the following predictions regarding motivational maintenance: (1) The approach motivational system associated with success feedback will be maintained more for success in a promotion focus than a prevention focus, as revealed in a more positive approach gradient following success feedback in a promotion focus than a prevention focus; and (2) the avoidance motivational system associated with failure feedback will be maintained more for failure in a prevention focus than a promotion focus, as revealed in a more positive avoidance gradient following failure feedback in a prevention focus than a promotion focus.

As discussed above, Förster et al.'s (1998) interpretation of the "goal looms larger" effect was in terms of each successive step toward the goal having greater value by reducing more of the remaining discrepancy. An alternative interpretation would be in terms of expectancies. It is possible that people's expectancies of goal attainment increase as the distance to the goal decreases and increasing expectancies increase underlying motivations. Study 1 was designed to control for this possibility. It was experimentally controlled by telling the participants at three different points during the first set of anagrams that their performance level was around the criterion of success. According to this input, their chance of succeeding or failing did not vary as a function of goal distance. By obtaining the participants' expectancies at different stages, we could also statistically control for expectancies in the analyses.

Upon completing the first set of anagrams, the participants were given either success or failure feedback. They then worked on a second set of anagrams. Their performance expectancies for this second set of anagrams were also obtained. We predicted that how regulatory focus moderated feedback effects on approach and avoidance gradients would be independent of participants' expectancies. It was possible, however, that regulatory focus would also independently moderate the classic relations between success and failure feedback and expectancies. The research by Idson et al. (2000) suggests that success feedback maintains eagerness but reduces vigilance and failure feedback maintains vigilance but reduces eagerness. This could influence postfeedback expectancies in a couple of ways. First, performers could infer after promotion success that future success must be likely because I am feeling eager, thus increasing expectancies, and infer after prevention failure that future failure must be likely because I am feeling vigilant, thus decreasing expectancies (cf. Schwarz & Clore, 1988). Second, the expectancies could serve a strategic function. Increasing expectancies after promotion success would continue the level of eagerness that fits a promotion focus, and decreasing expectancies after prevention failure would continue the level of vigilance that fits a prevention focus (see Higgins, 2000). In either case, success feedback would increase expectancies more in a promotion than a prevention focus, and failure feedback would decrease expectancies more in a prevention than a promotion focus.

STUDY 1

Method

Participants

Eighty-one Columbia University undergraduates (43 female and 38 male) participated in the study for $8 each (gender had no effects).

The Anagram Task

Participants had to solve two sets of 12 anagrams that each had more than one solution (e.g., NELMO and ANETLM). Each anagram was presented for 90 s. During this period, a sign appeared after 60 s, saying "***please press slightly***," for a duration of 6 s, reminding participants to continue pressing on a metal plate of a weight scale (see below) in front of them, measuring their arm pressure. For each set of anagrams, before each anagram appeared on the screen a sign announced its number and remained on the screen for 6 s.

The Weight Scale

A sophisticated looking weight scale was fixed with a tape either on the bottom or on the top of a table approximately 70 cm in height. While pressing on the plate, the participants sat on a chair approximately 46 cm in height.

Procedure

Participants began by filling out a mood questionnaire ["Right now, how _____ do you feel?", on a 10-point rating-scale from "1" (not at all) to "10" (extremely)] for four positive (happy, content, calm, and relaxed), and four negative emotions (discouraged, disappointed, tense, and worried). They were then asked to find solutions for 12 anagrams presented on a computer screen. They were also asked to press slightly on a scale that was a new machine for measuring motivation. Half of them began by pressing their right palm upward against the table (arm flexion), whereas the other half began by pressing their right palm downward against the table (arm extension). Beginning arm position was randomly assigned (order had no effects). The experimenter sat near them and was instructed to record the pressure from the display at the time that the announcement of the next anagram appeared on the screen. Order of the anagram sets was randomly assigned (order had no effects). The task instructions appeared on the screen, including either a promotion or a prevention framing. Participants were asked to provide as many solutions as they could to each anagram. The promotion instruction was "You will be paid $4 for each completed set of (12) anagrams. If you perform at the 70% level or better, you will earn an extra dollar, but if you do not perform at the 70% level or better, you will not earn an extra dollar." The prevention instruction was: "You will be paid $5 for each completed set of anagrams. If you perform below the 70% level, you will lose a dollar, but if you do not perform below the 70% level, you will not lose a dollar" (see Shah et al., 1998). It was made clear that the 70% level referred to the 70th percentile level of performance of other Columbia undergraduate participants. The participants were then asked "How likely do you think you are to perform above the 70% level?" on a scale from 1 (*not at all*) to 10 (*extremely*).

To prevent participants from experiencing success or failure throughout each set, after each subset of three anagrams (i.e., after anagram 3, 6, and 9), neutral input was given [e.g., "You are performing around the 70% level (the threshold criterion of success)"]. In the original study by Förster et al. (1998) it was not clear whether focus produced different experiences of success or failure *while* solving the task. By giving participants neutral input throughout the task, outcome expectancy was held constant. After each neutral input, participants were asked to indicate the likelihood that they would reach their goal.

After having finished all 12 anagrams, (false) feedback was given—either success feedback ("You performed above the 70% level") or failure feedback ("You performed below the 70% level"). Then, participants filled out the second mood questionnaire. Then, another questionnaire

TABLE 1

Mean Slope Coefficients for the First Set of Anagrams as a Function of Focus Framing and Arm Position before Feedback in Study 1

	Regulatory focus	
	Promotion framing	Prevention framing
Arm position		
Flexion (Approach)	.11	.01
Extension (Avoidance)	.08	.10

about their arm positions was given, measuring pleasantness of their arm positions, "How pleasant was the arm position to you?" on a 9-point rating scale from "1" (*very unpleasant*) to "9" (*very pleasant*), and the effort of their arm positions, "How effortful was the arm position?" from "1" (*not very effortful*) to "9" (*very effortful*).

Participants then worked on a 15-min filler task that involved filling out questionnaires unrelated to the study. Afterward, again, expectancies were measured and the third mood questionnaire was given. Participants then received the same instructions for the next anagram set, except that they were asked to perform the task in a different arm position presumably to find out the best arm position for measuring motivational strength. After completing the second anagram set, the participants filled out the fourth mood questionnaire and the second questionnaire about their arm positions. They were thanked and debriefed by the experimenter. When asked, all participants believed the cover story and none of them reported any hypotheses relevant to the true purpose of the study.

Results and Discussion

Analyses before Success/Failure Feedback

Steepness of the arm pressure gradients. Two separate curve analyses, one for approach pressure (arm flexion) and one for avoidance pressure (arm extension), were conducted over the 12 recorded values for the anagram set, from the first to the last anagram. Positive slope coefficient values indicate increasing arm pressure and a rising gradient; negative values indicate descending arm pressure and a falling gradient (see Table 1). Replicating Förster et al. (1998), a 2×2 ANOVA revealed a significant regulatory focus framing by arm position interaction, $F(1, 77) = 4.01$, $p < .05$, reflecting the fact that the approach gradient was steeper for participants with a promotion focus than a prevention focus, whereas the avoidance gradient was steeper for participants with a prevention focus than a promotion focus. There were no other significant effects.

Feelings. Mean differences between the first and the second mood questionnaires (mood rating 2 − mood rating 1) were computed separately for the negative and positive emotion scores. For negative emotions, promotion framing led to more negative mood change ($M = .32$) than prevention framing ($M = -.60$), $F(1, 77) = 5.10$, $p < .05$. No other effects were significant.

Arm flexion was rated less pleasant ($M = 4.5$) than arm extension ($M = 7.0$), $F(1, 77) = 10.31$, $p < .01$. Arm flexion was also rated as more effortful ($M = 5.5$) than arm extension ($M = 3.6$), $F(1, 77) = 24.90$, $p < .0001$. There were no other significant effects.

Additional analyses. As discussed above, the participants received neutral performance input throughout the first set of anagrams to control for the interpretation of the "goal looms larger" effect in terms of expectancies increasing with decreasing goal distance. The expectancy gradients obtained during the first anagram set clearly rule out this possibility because they generally decreased rather than increased. (This decrease was probably due to the participants being overconfident at the beginning.) More important, the expectancy gradients of the four regulatory focus × arm position conditions did not differ significantly from one another, and thus they cannot account for the motivational differences obtained. Finally, the arm pressure gradient differences remained significant when expectancy gradients, as well as mean expectancies, were included as covariates.

To test whether feelings mediated the effect on the arm pressure gradients, several additional analyses were conducted including as covariates: (a) positive mood changes, (b) negative mood changes, (c) pleasantness of the arm positions, and (d) effortfulness of the arm positions. Only negative mood changes slightly lowered the interaction effect, $F(1, 76) = 3.57$, $p = .063$. In sum, these analyses reveal that as predicted, and consistent with Förster et al. (1998), the effects were independent of participants' feelings and expectancies.

Analyses after Success/Failure Feedback

Steepness of the arm pressure gradients. Again, two separate curve analyses, one for approach pressure (arm flexion) and one for avoidance pressure (arm extension),

TABLE 2

Mean Slope Coefficients for the Second Set of Anagrams as a Function of Focus Framing and Arm Position after Feedback in Study 1

	Regulatory focus			
	Promotion framing		Prevention framing	
Arm position	Flexion	Extension	Flexion	Extension
Feedback valence				
Success	.12	.01	−.08	.04
Failure	−.03	.04	−.01	.09

TABLE 3

Mean Expectancy Ratings for the Second Set of Anagrams as a Function of Timing, Focus Framing, and Feedback Valence in Study 1

	Regulatory focus			
	Promotion framing		Prevention framing	
Timing	Prefeedback	Postfeedback	Prefeedback	Postfeedback
Feedback valence				
Success	5.99	6.62	5.34	4.95
Failure	5.76	5.45	5.89	4.86

Note. Expectancies ("How likely do you think you are to perform above the 70% level?") were measured on a scale from 1 (*not at all*) to 10 (*extremely*).

were conducted over the 12 recorded values for the anagram set. As shown in Table 2, a 2 × 2 × 2 ANOVA revealed a significant two-way interaction between regulatory focus framing and arm position, $F(1, 73) = 7.53$, $p < .01$, again replicating Förster et al. (1998). There was also a significant interaction between regulatory focus framing and feedback valence, $F(1, 73) = 6.31$, $p < .05$, which was qualified by a significant three-way interaction, $F(1, 73) = 4.48$, $p < .05$, showing that, as predicted, the approach gradient was most positive in promotion focus after success feedback, whereas the avoidance gradient was most positive in prevention focus after failure feedback (see Table 2). Further analyses revealed that the only positive slope coefficients that differed significantly from zero were in the promotion focus success arm flexion (approach) condition ($M = .12$), $t(10) = 2.26$, $p < .05$, and in the prevention focus failure arm extension (avoidance) condition ($M = .09$), $t(9) = 3.68$, $p < .01$. Thus, consistent with the between-valence effect reported in the literature, the only significant positive approach gradient occurred after success feedback (in promotion), and the only significant positive avoidance gradient occurred after failure feedback (in prevention). This feedback effect was moderated by regulatory focus, as reflected in the significant three-way interaction: for success feedback the approach gradient (arm flexion) was significantly more positive in promotion than prevention, $t(19) = 3.12$, $p < .01$; whereas for failure feedback the avoidance gradient (arm extension) was more positive in prevention than promotion, although not significantly, $t(18) = 1.26$, $p < .23$.

Expectancies. Participant's mean expectancies were calculated twice: before (for ratings 1–4 divided by 4) and after (for ratings 5–8 divided by 4) feedback. These are shown in Table 3. A 2 (Timing: before vs after feedback) × 2 (Focus framing) × 2 (Feedback valence) ANOVA for mixed factorial designs was computed, which revealed a significant main effect of Timing, $F(1, 77) = 4.49$, $p < .05$, and a marginal main effect of Focus framing $F(1, 77) = 3.27$, $p < .10$, which were both qualified by significant interactions between Timing and Focus framing $F(1, 77) = 11.27$, $p < .01$ and between Timing and Feedback valence, $F(1, 77) = 9.37$, $p < .01$. There were no other significant effects.

The interaction between Timing and Feedback valence replicates the classic between-valence finding in the literature that expectancies increase more after success than failure feedback. Moreover, the absence of a three-way interaction indicates that this basic finding did not vary by regulatory focus. Instead, regulatory focus moderated what happened within success feedback and within failure feedback. Within success feedback, expectancies increased more in promotion framing ($M = 0.63$) than in prevention framing ($M = -0.39$), $t(39) = 2.95$, $p < .01$. Within failure feedback, expectancies decreased more in promotion framing ($M = -1.03$) than in prevention framing ($M = -0.31$), $t(38) = 1.85$, $p < .08$. Because of these two effects, the expectancies were higher in promotion than prevention more after feedback than before (see Table 3), as reflected in the significant interaction between Timing and Focus framing. This critical interaction remained significant when extension and flexion arm pressure gradients, and extension and flexion mean arm pressure, were included as covariates in the analysis. Thus, independent of the approach and avoidance motivation effects, regulatory focus moderated the classic effects of success feedback and failure feedback on expectancies.

Slope coefficients were also computed separately for expectancies in the first and the second phase. They were introduced in a 2 (Timing) × 2 (Feedback valence) × 2 (Focus framing) ANOVA, yielding only a main effect for Timing, $F(1, 77) = 4.58$, $p < .01$, reflecting the fact that in the first phase, expectancies decreased more ($M = -.26$) than in the second phase ($M = .07$). All other effects were not significant.

Feelings. Mood scores were computed as before, for mood rating 4 − mood rating 3. For negative emotions, there was a two-way interaction between Focus framing and Feedback valence, $F(1, 73) = 7.72$, $p < .01$, indicating that participants' negative emotions increased only in promotion framing with failure feedback ($M = .09$).

Again, arm flexion was judged to be less pleasant ($M = 3.49$) than arm extension ($M = 5.35$), $F\text{med}(1, 73) = 12.32$, $p < .001$. There were no other significant effects. Arm flexion was also rated as more effortful ($M = 6.27$) than arm extension ($M = 4.55$), $F(1, 73) = 9.28$, $p < .01$. There were no other significant effects.

The relation between feelings, expectancies, and arm pressure gradients. Feelings and expectancies were again introduced separately as covariates in the analyses comparing the arm pressure gradients. None of the covariates weakened the significance of the effects reported above.

Finally, the relation between the slope coefficients was examined. The overall correlation between the slope coefficient for arm pressure and the one for expectancies was not significant, $r = .05$, $p > .50$, indicating that there was no relation between the two measures. Thus, there is no way to explain this "goal looms larger" effect by differences in participants' expectancies.

STUDY 2

Study 1 demonstrated that the "goal looms larger" effect was greatest for approach motivation after success feedback in a promotion focus, whereas it was greatest for avoidance motivation after failure feedback in a prevention focus. A second study with a more conventional measure of strategic approach and avoidance was conducted to conceptually replicate these results. A classic measure of motivational strength is persistence, defined as the amount of time an individual chooses to work on a task (see Weiner, 1972). In Study 2, we used the time participants spent working on each anagram (i.e., response duration) as the main dependent measure of motivational strength. In order to have separate strategic approach and strategic avoidance measures, participants were given two kinds of anagrams to solve (see Shah et al., 1998; Förster et al., 1998). For the "green" anagrams, participants "gained a point each time all of the solutions for an anagram were found, and thus the green anagrams involved strategic approach motivation for goal attainment. For the "red" anagrams, participants "avoided losing a point" each time all of the solutions for an anagram were found, and thus the red anagrams involved strategic avoidance motivation for goal attainment.

Since both types of anagrams appeared early, middle, and late in the task, we could examine participants' persistence on later relative to earlier anagrams separately for the green anagrams subset and the red anagrams subset. We predicted that the "goal looms larger" effect of greater persistence on later than earlier green anagrams would be strongest after success feedback in a promotion focus, whereas the "goal looms larger" effect of greater persistence on later than earlier red anagrams would be strongest after failure feedback in a prevention focus.

Method

Participants. One hundred nine Columbia University undergraduates (50 males and 59 females) were paid $9 for their participation. All participants indicated that English was their native language. Participants were run on Macintosh Power PC machines in separate soundproof chambers. Gender did not moderate any of the significant effects reported below.

Materials. Twenty red and green anagrams were presented. The anagrams were presented in one of four different orders, although their color always alternated in the same seemingly random pattern—an anagram appeared as one of the first 10 in two of the orderings and one of the last 10 in the other two orderings, and as a green anagram in two of the orderings and a red anagram in the other two orderings.

Procedure. Participants were directed to separate computer terminals where they were first asked to rate on a scale from 1 (*not at all*) to 9 (*extremely*) how relaxed, tense, discouraged, and happy they felt. After entering the ratings, participants were told that the task they would be performing involved unscrambling a series of letters to form as many words as possible using all the letters in the series and that they had as much time as they needed to complete each anagram. They were also told that the anagrams had no, one, or more solutions, and that if they thought that there were no solutions or no more solutions to an anagram they should proceed to the next one by pressing a specific key on the computer keyboard.

After completing three practice anagrams, participants were told that they had to solve 20 anagrams, 10 "red" and 10 "green" anagrams. They were told that, for each of the green anagrams, they would gain a point if they found all of the possible solutions but that they would not gain a point if they failed to find all of the possible solutions. They were also told that, for each of the red anagrams, they would not lose a point if they found all of the possible solutions but that they would lose a point if they failed to find all of the possible solutions. Participants were then randomly assigned to one of the two focus framing conditions. The framing instructions and manipulations were basically the same as those used in Study 1 (e.g., a 70th percentile success criterion). Ordering of the anagrams was randomly assigned (there were no order effects). After completing 10 anagrams (5 red and 5 green), participants received either (false) success or failure feedback regarding their performance.

Participants in the success feedback condition were told that their score based on their performance on the first 10 anagrams was at the 79th percentile, and those in the failure feedback condition were told that their score was at the 61st percentile. Following feedback, participants were asked to rate on a scale from 1 (*not at all*) to 9 (*extremely*) how relaxed, happy, tense, and discouraged they felt. They then went on to complete the remaining 10 anagrams. They were then fully debriefed and thanked for their participation.

Results

Since response durations can be influenced by extraneous general factors, we first *z* transformed the raw response time participants spent on each of the 10 postfeedback anagrams across participants. Then, individual slope coefficients were calculated for response durations from early to late anagrams, separately for the red anagrams and the green ana-

grams. Table 3 reports the mean slope coefficients as a function of promotion versus prevention framing and success versus failure feedback.

A 2 (Focus framing) × 2 (Feedback valence) × 2 (Type of Anagram) repeated-measures ANOVA revealed a significant interaction between focus framing and type of anagram, $F(1, 105) = 3.76$, $p = .05$, indicating that participants in the promotion framing condition persisted longer on later than earlier green (approach) anagrams, whereas those in the prevention framing condition persisted longer on later than earlier red (avoidance) anagrams, replicating Förster et al. (1998).

Further analyses revealed as in Study 1 that the only significant positive approach gradient (green anagrams) occurred after success feedback (in promotion), ($M = .12$), $t(26) = 2.42$, $p = .02$, and the only significant positive avoidance gradient (red anagrams) occurred after failure feedback (in prevention), ($M = .07$), $t(26) = 2.00$, $p = .05$. In addition to this classic between-valence effect of feedback on approach/avoidance motivation, there was also the hypothesized within-valence effect of regulatory focus. As reflected in a significant three-way interaction between framing, feedback valence, and type of anagram, $F(1, 105) = 3.80$, $p = .05$, for success feedback the approach gradient (green anagrams) was significantly more positive in promotion ($M = .12$) than prevention ($M = -.09$), $F(1, 52) = 7.24$, $p < .01$, whereas for failure feedback the avoidance gradient (red anagrams) was significantly more positive in prevention ($M = .07$) than promotion ($M = -.02$), $F(1, 53) = 4.37$, $p < .05$.[1] Meta-analyses revealed that these two planned contrasts between promotion and prevention focus within success feedback for the approach gradient and within failure feedback for the avoidance gradient were significant across Study 1 and Study 2, $z = 3.95$, $p < .001$, and $z = 2.28$, $p = .01$, respectively. (Table 4).

TABLE 4

Mean Slope Coefficients as a Function of Focus Framing, Red (Strategic Avoidance) and Green (Strategic Approach) Anagrams, and Feedback Valence in Study 2

	Regulatory focus			
	Promotion framing		Prevention framing	
Anagram	Green	Red	Green	Red
Feedback valence				
Success	.12	−.07	−.09	.03
Failure	−.03	−.02	.01	.07

CONCLUDING REMARKS

The results of the present studies indicate that classic relations among success/failure feedback, outcome expectancies, and approach/avoidance motivation are moderated by regulatory focus. We found that the approach motivation and increased expectancies associated with success feedback are more likely to occur when performers are in a promotion than a prevention focus and that the avoidance motivation and decreased expectancies associated with failure feedback are more likely to occur when performers are in a prevention than a promotion focus. We also found that the moderating effects of regulatory focus on approach/avoidance motivations and on expectancies were independent from one another. Both the nature of these moderating effects and their independence from one another suggest that traditional assumptions concerning the relations among feedback, expectancies, and motivation need to be revised. The notion that success feedback increases approach motivation because it increases expectancies and that failure feedback increases avoidance motivation because it decreases expectancies is too simple. Not only do these relations not always occur but there is greater independence among them than is captured in the classic model. Regulatory focus theory provides some initial answers to the second-generation "When" and "How" questions, but much remains to explore.

[1] Mood scores were computed as in Study 1 above, using mood ratings pre- and postfeedback. A 2 (Focus framing) × 2 (Feedback valence) ANOVA revealed that participants who received success feedback experienced more positive mood change ($M = .35$) than those who received failure feedback ($M = -.69$), $F(1, 105) = 4.24$, $p < .05$. For negative emotions, there was a tendency for participants in the promotion framing condition to experience more negative mood change ($M = .56$) than those in the prevention framing condition ($M = .14$), $F(1, 105) = 3.63$, $p = .06$. There were no other significant effects (all ps $< .10$). As in Study 1 above, emotions were introduced separately as covariates in the analyses of persistence. None of the covariates weakened the significance of the above effects, revealing once again that the predicted effects were independent of participants' emotions.

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