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Emotional reactions to achievement outcomes: Is it really best to expect the worst?

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Expectancies of success are widely thought to influence people's emotional reactions to performance outcomes: The lower one's expectancies, the more delighted one should be following success and the less disappointed one should be following failure. Although this proposition has been accepted almost as a truism, a review of the literature reveals that it has not been tested adequately. In this paper, we report two tests of this hypothesis, finding little evidence that low expectancies are beneficial. The discussion considers the implications of these findings for theories of emotion and the costs and benefits of positive thinking.

> Make thy claim of wages a zero, then hast thou the world under thy feet. (William James, 1890, p. 311)

Quoting Thomas Carlyle, William James (1890) outlined a prescription for achieving emotional well-being. Instead of earning such feelings through success, James argued, feelings of self-worth can be achieved just as easily by expecting less. ''To give up pretensions'', he wrote, ''is as blessed a relief as to get them gratified'' (p. 310).

Though offered over a century ago, James's point remains dear to the hearts of many social psychologists and personality theorists. Numerous research areas, including counterfactual thinking (Medvec, Madey, & Gilovich, 1995), relative deprivation (Stouffer, Suchman, DeVinney, Starr, & Williams, 1949), social comparison (Festinger, 1954), and framing effects (Tversky & Kahneman, 1981)

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share the belief that how a person feels about an attained outcome is not simply a function of the outcome itself—it depends on the standards the person uses for gauging success and failure.

Expectancies of success are thought to be one such standard. The lower our expectancies, the more satisfied we should be with a positive performance and the less dissatisfied we should be with a poor performance. From this perspective, low expectancies are beneficial: They heighten positive emotional reactions to success and they lessen negative emotional reactions to failure.

The usual way to test this hypothesis is to compute a discrepancy score (performance − expectancy) and then compare the emotional reactions of people who fall short of their goals with those who have met or exceeded their goals. Summarising this approach, Schul (1992) wrote:

> ... satisfaction following performance reflects the discrepancy between performance and expectations, so that for a set level of performance, individuals with high expectations are less satisfied with their performance than those with low expectations (p. 167).

Unfortunately, the use of discrepancy scores is fraught with interpretative problems. Rather than clarifying the nature of the relation between objective outcomes and subjective standards, discrepancy scores obscure this relation. To illustrate the problem, consider the hypothetical data shown in Table 1. Looking left to right, the columns show: (a) actual task performance; (b) performance expectancies; (c) a discrepancy index (computed by subtracting the expectancy from the performance); and (d) the emotional reactions of four hypothetical people.

The correlation between the discrepancy index and emotion is .76. This very sizeable correlation suggests that people feel good when their performances exceed their expectations. But this relation is entirely spurious; all of the variance is carried by performance scores themselves. People who achieve a high score feel better than people who achieve a low score, and expectancies add

TABLE 1
Problems in using discrepancy scores (hypothetical dataset)

Performance	*Expectancy*	*Discrepancy index (Performance − expectancy)*	*Emotion*
3	5	−2	3
4	5	−1	2
5	5	0	7
6	5	1	6

nothing. This is the problem with using discrepancy scores: It is entirely possible that only one variable matters.[1]

One way to overcome this problem is to include both main effects (expectancies and task performance) in an analysis, followed by an interaction term. If the interaction is significant, we have evidence that the match between performance and expectancies predicts emotion. In our search of the literature, we could not find a single study that used this analytic approach. Thus, the manner in which expectancies affect emotional reactions to performance outcomes is open to investigation.

Of course, any statement one makes about the relation between expectancies and emotion depends on which emotions one is considering. Some emotions are certain to be influenced by expectancies. Almost by definition, people are surprised when they experience an unexpected outcome. The same is probably true for disappointment, as this emotion also arises from the mismatch between anticipations and realisations.

What remains to be seen, however, is whether this is true of other emotions. In particular, are people happier, more relaxed, and prouder of themselves when they expect to fail but succeed, and sadder, more agitated, and ashamed of themselves when they expect to succeed but fail? Although James and others suggest that this will be the case, we believe there are good reasons to wonder.

First, there is an extensive body of research showing that negative thinking and a lack of confidence are liabilities when it comes to psychological health and physical well-being (Bandura, 1997; Carver et al., 1993; Taylor & Brown, 1988). Across a broad range of domains, people who hold negative self-relevant beliefs about themselves and their future fare worse than those who are more sanguine. This effect extends to task performance in achievement situations. Most research shows that individuals who expect to fail perform more poorly than those who are more optimistic (for a review, see Marshall & Brown, 2004). Collectively, these research areas provide little reason to believe that low expectancies are beneficial.

Research on self-esteem and emotional reactions to performance outcomes bears even more directly on this issue. Low self-esteem people almost always hold lower expectancies of success than do high self-esteem people, yet they feel worse about themselves when they fail (Brown & Dutton, 1995; Brown & Marshall, 2001). This would not be so if expectancies guided their emotional reactions to success and failure (Dutton & Brown, 1997).

Finally, there is reason to believe that expectancies are one aspect of a more general tendency to experience positive or negative emotions. Watson and colleagues (Watson & Clark, 1984; Watson & Tellegen, 1985) have identified

[1] An alternative approach is to compute a ratio score (outcomes/expectancies). The ratio measure suffers from the same interpretive problem as the discrepancy score used by prior researchers.

two broad dimensions of emotional experience. The first dimension, termed positive affectivity, reflects the degree to which a person generally feels a zest for life. People who score high in positive affectivity feel enthusiastic, active, and alert, and tend to take a positive view of themselves and their world. The second dimension, termed negative affectivity, measures affective distress. People who score high in negative affectivity are prone to experience a variety of negative emotional states, and tend to view themselves and their world in negative terms. Expectancies of success may well be one component of these emotional dimensions, such that people who are optimistic about success generally feel better than those who are more chronically pessimistic (Scheier, Carver, & Bridges, 1994). If so, expectancies and emotion would be positively (not negatively) correlated: The greater one's expectations, the more positive one's emotional reaction.

To summarise, whether low expectancies of success provide emotional benefits is empirically uncertain and theoretically debatable. Accordingly, we conducted two investigations to more carefully examine the link between expectancies, performance, and emotion. In these studies, participants were first introduced to a novel intellectual task by previewing some sample problems. They were then asked to indicate how many problems they expected to solve. Subsequently, they took the test and their emotional reactions to their performance were assessed.

STUDY 1

Method

Participants

A total of 81 University of Washington undergraduates participated in exchange for extra course credit. Two additional participants failed to follow directions and their data were discarded.[2]

Procedure and materials

Participants were tested in small groups, with each participant seated at a separate computer in such a way that they could not see each other's computer screen. All instructions and experimental measures were presented on the computer.

Participants completed an 18-item emotion scale at two points during the experiment: At the beginning and at the end. The first time, they were asked to indicate to what extent they ''usually feel'' each emotion (1 = *not at all*, 5 = *very*

[2] Due to a clerical error, we failed to collect demographic information (e.g., age or sex) on participants in this study and in Study 2.

much). Based on previous theory and research, these items were used to form four scales.

1. *Feelings of self-worth*. Four items measured self-relevant emotional reactions to positive and negative events (ashamed, humiliated, pleased with myself, proud) (pretest α = .62; posttest α =.77).[3] We call these emotions ''feelings of self-worth'', as they represent how people feel *about themselves* when they succeed or fail (Brown & Dutton, 1995; Brown & Marshall, 2001; Dutton & Brown, 1997). These emotions seem to come closest to what James (1890) had in mind when he opined that ''everything added to the self is a burden as well as a pride'' (p. 311).

2. *Happiness-Sadness*. A second scale consisted of five items used by Higgins and colleagues to measure general feelings of happiness and sadness (discouraged, happy, low, sad, and satisfied) (pretest α = .77; posttest α =.82) (Higgins, 1998, 1999; Higgins, Shah, & Friedman, 1997).

3. *Agitation-Relaxation*. Higgins and colleagues have also shown that positive and negative events trigger emotions involving activation versus quiescence (Higgins, 1988, 1999; Higgins et al., 1997). Six items were used to assess these reactions (agitated, calm, edgy, relaxed, tense, and uneasy) (pretest α = .83; posttest α =.81).

4. *Surprise*. Finally, we included three items to measure feelings of surprise (disappointed, relieved, surprised) (pretest α = $-$.26; posttest α =.16).[4]

After completing these items, the participants were informed that the experiment involved a problem-solving ability called integrative orientation. Integrative orientation was described as an intellectual ability used to find creative and unusual solutions to problems.

The experimental task was then introduced. This task was the Remote Associates Test (RAT; Mednick, 1962). With this task, participants are shown three words (e.g., car-swimming-cue) and asked to find a fourth word that relates to the other three (pool). Working interactively with the computer, participants completed three sample problems to ensure that they understood how the problems were solved. All participants received the same sample problems, which pretesting had shown to be of moderate difficulty.

They were then informed that the test was made up of 10 problems and that they would have 5 minutes to complete the test. After receiving this information, the participants indicated how many of the 10 problems they expected to solve. The experimental task was then administered. Using random assignment to

[3] We reversed the coding of the underlined items when calculating our scales.

[4] The internal consistency of this scale is extremely low. After presenting our main results, we discuss this issue in greater detail.

conditions, half the participants received a set of easy problems and half received a set of difficult problems. Difficulty level was determined on the basis of prior testing with an independent sample and on published norms (McFarlin & Blascovich, 1984).

When the allotted time for working on the test had expired, the computer paused for a moment and informed participants how many problems they had correctly solved. After receiving this information, participants evaluated their performance (1 = *very poor*, 9 = *very good*), and then indicated the extent to which they were experiencing each of the 18 emotions ''right now'' (1 = *not at all*, 5 = *very much*). When they had completed their ratings, the participants were debriefed, thanked, and excused.

Results and discussion

Preliminary analyses

Expectancies of success. After viewing the 3 sample problems, participants were asked to indicate how many of the 10 test problems they expected to solve. These expectancies ranged from 0–9, with a mean of 5.20 and a standard deviation of 1.77. There were no differences between experimental conditions ($F < 1$).

Task performance. Participants given the easy set of problems solved more problems ($M = 6.80$) than did those who received the difficult set of problems ($M = 2.74$), $F(1, 79) = 75.91$, $p < .001$. Those given easy problems also evaluated their performance more favourably ($M = 6.40$) than those given difficult problems ($M = 3.26$), $F(1, 79) = 76.16$, $p < .001$.

Emotional reactions to task performance. We submitted the four posttest emotion scales to a multivariate analysis of variance. The main effect of experimental condition was highly significant ($p < .001$), and follow-up analyses indicated that scores on all four scales were greater among those who received easy problems than among those who received difficult problems (see Table 2).

Expectancy and emotion

Having established that the experimental manipulations were powerful enough to affect participants' posttest emotional states, we now consider the extent to which these reactions were shaped by participants' expectancies of success. To address this issue, we first created a dummy variable to represent task difficulty (1 = *easy problems*, 2 = *difficult problems*). We then standardised this variable, task performance scores, and pretask expectancies, and used these variables, along with two cross-product terms (Task Difficulty × Expectancies and Task Performance × Expectancies) to predict participants' posttest emotional

TABLE 2
Study 1: Emotional reactions to performance outcomes

	Experimental condition		
Emotion scale	*Easy problems*	*Difficult problems*	$F(1, 79)$
Feelings of Self-Worth	4.04 (.57)	3.20 (.86)	27.92**
Happiness-Sadness	3.39 (.89)	2.48 (.83)	20.09**
Agitation-Relaxation	4.50 (.90)	3.67 (1.20)	12.41**
Surprise	3.15 (.66)	2.62 (.53)	14.09**

Note: Values in parentheses are standard deviations. ** $p < .01$.

reactions in a hierarchical regression analysis, with the main effect terms entered in Step 1 and the two-cross product terms entered in Step 2.

Table 3 presents the results. Two variables predicted *Feelings of Self-Worth*: Task Difficulty and Expectancies. The direction of the effect with expectancies is of particular interest, as the positive sign indicates that high expectancies predicted more positive emotional reactions to performance outcomes than did low expectancies. Thus, these results provide no evidence that low expectancies have positive emotional benefits.

Only the main effect of task difficulty predicted feelings of *Happiness-Sadness* and *Agitation-Relaxation*. The pattern was different when predicting to *Surprise*, however. Here, three terms were significant: Task difficulty, expectancies, and a Task Performance $\times$ Expectancies interaction. To better understand the nature of the interaction, we computed predicted values one standard deviation above and below the mean. Figure 1 shows the results. Among participants who performed poorly, surprise was greater when expectancies were high than when they were low. The reverse was true for those who performed well, although the effect was much less pronounced. In short, participants who expected to succeed were surprised when they failed. To the extent that feeling surprised is a negative emotion (but see Smith & Ellsworth, 1985), these results offer some support for the claim that low expectancies beget positive emotional consequences.[5]

[5] We noted earlier that the internal consistency of the *Surprise* scale was very low. A closer look at the three items revealed that the internal consistency would be increased by eliminating the term ''Disappointed'' from the scale (adjusted $\alpha = .48$). Accordingly, we conducted additional analyses using a scale comprised of only two items: Surprise and Relief. The results were virtually identical with those reported in Table 3 and the form of the interaction mirrored the one shown in Figure 1.

TABLE 3
Study 1: Hierarchical regression analyses

Concurrent analyses	β	ΔR^2	*Prospective analyses*	β	ΔR^2
Feelings of Self-Worth			*Feelings of Self-Worth*		
			Pretest:		
			Feelings of Self-Worth	.70***	.49***
Task Difficulty	−.53***		Task Difficulty	−.48***	
Performance	−.08		Performance	−.24*	
Expectancies	.20*	.30***	Expectancies	.09	.14***
Difficulty × Expectancies	−.07		Difficulty × Expectancies	−.14	
Performance × Expectancies	−.08	.00	Performance × Expectancies	−.10	.01
Happiness-Sadness			*Happiness-Sadness*		
			Pretest:		
			Happiness-Sadness	.56***	.32***
Task Difficulty	−.43***		Task Difficulty	−.36**	
Performance	.01		Performance	−.02	
Expectancies	.10		Expectancies	.05	.12**
Difficulty × Expectancies	−.17		Difficulty × Expectancies	−.09	
Performance × Expectancies	−.17	.02	Performance × Expectancies	−.06	.00
Agitation-Relaxation			*Agitation-Relaxation*		
			Pretest:		
			Agitation-Relaxation	.64***	.41***
Task Difficulty	−.28*		task Difficulty	−.23*	
Performance	.11		Performance	.05	
Expectancies	.10	.15**	Expectancies	.06	.08*
Difficulty × Expectancies	.01		Difficulty × Expectancies	.07	
Performance × Expectancies	−.02	.00	Performance × Expectancies	−.13	.03
Surprise			*Surprise*		
			Pretest:		
			Surprise	.43***	.18***
Task Difficulty	−.43**		Task Difficulty	−.38**	
Performance	−.12		Performance	−.15*	
Expectancies	.27**	.23**	Expectancies	.23*	.15**
Difficulty × Expectancies	−.01		Difficulty × Expectancies	−.05	
Performance × Expectancies	−.27*	.07*	Performance × Expectancies	−.24*	.04

*$p \leq .05$; **; $p \leq .01$; ***; $p < .001$.

Supplemental analyses

To this point, we have found only limited evidence that low expectancies of success are a benefit in achievement settings. Although participants who expected to fail were less surprised when they failed, they did not feel better about themselves, calmer, or less sad than did those whose expectancies were greater. If anything, just the opposite occurred: Those with high expectancies of success felt better about themselves following both success and failure.

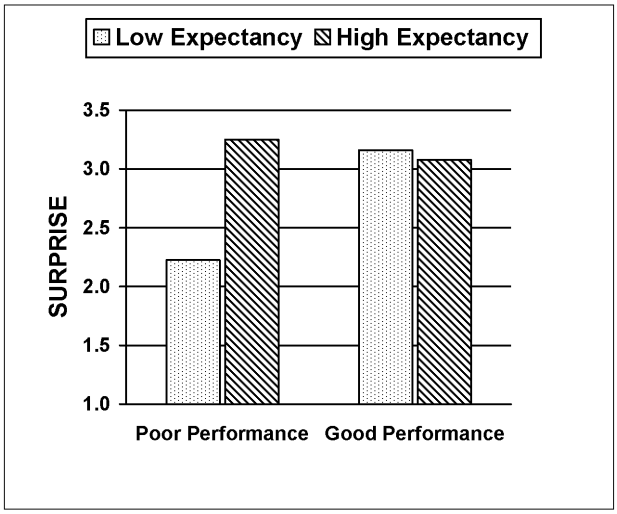

Figure 1. Study 1: Feelings of surprise as a function of expectancies and task performance (predicted values for one standard deviation above and below the mean).

Why might this be the case? One possibility is that expectancies are one aspect of a more general affective disposition. People who feel good also expect to succeed, and those who feel bad also expect to fail. Two predictions follow from this possibility: Expectancies (a) should be positively correlated with pretask emotions, and (b) should not predict emotional reactions to performance outcomes once pretask emotions have been statistically controlled.

We tested the first hypothesis by examining the correlation between pretask expectancies and pretask emotions. All of the values were positive, but the only significant correlation was between expectancies and *Feelings of Self-Worth* ($r = .22$, $p < .05$). The right-hand side of Table 2 shows the results pertinent to testing the second hypothesis. As can be seen, the results were virtually unchanged from the ones found before partialling out pretask emotions. Most importantly, expectancies continued to predict *Feelings of Self-Worth* and continued to interact with performance to predict *Surprise*.

Taken together, these findings show that expectancies are associated with general emotional tendencies, but this association alone does not fully explain why people with high expectancies feel better after performance outcomes. One more possibility merits attention. Being generally optimistic, people with high expectancies may view their performances more positively than those with low

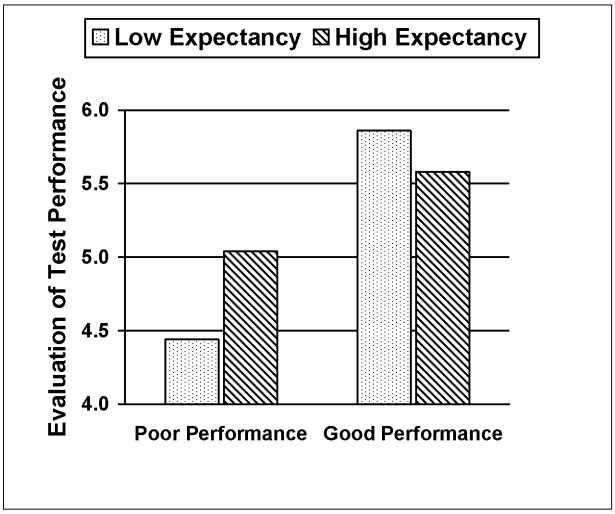

Figure 2. Study 1: Evaluation of task performance as a function of expectancies and task performance (predicted values for one standard deviation above and below the mean).

expectancies. Notice that this possibility runs counter to a more cognitively based, rational model. Logically, high expectancies should lead to more negative performance evaluations. When expectancies are high, a high score should be viewed as less of a success and a low score should be viewed as more of a failure.

To examine this issue, we used standardised scores for task difficulty, task performance and expectancies, along with the two relevant cross-product terms, to predict how favourably participants evaluated their performance. Two effects attained significance: A main effect of task difficulty ($\beta = -.85$, $p < .001$), and a Performance $\times$ Expectancy interaction ($\beta = -.18$, $p < .02$). Inspection of the interaction by graphing revealed an interesting pattern. Figure 2 shows that among those who performed poorly, those with high expectancies evaluated their poor performance *more favourably* than did those with low expectancies. An opposite, though somewhat weaker, pattern occurred among those who performed well at the task. These findings argue against the claim that low expectancies lead people to appraise a poor performance more favourably. In fact, just the opposite was true: Among those who performed poorly, those who expected to fail evaluated their performance more negatively than did those who expected to succeed.

Summary

The findings from Study 1 support several conclusions. First, we found evidence that expectancies interact with performance outcomes to predict feelings of surprise. The more unexpected the outcome, the more surprised one was. Inspection of the interaction by graphing showed that this was particularly true when the outcome was more negative than one expected. This suggests that, at least in this context, surprise was a negative emotion rather than a positive one. To the extent that this is so (but see Smith & Ellsworth, 1985), low expectancies appear to provide some emotional benefits.

The effect is not a general one, however. Participants with low expectancies of success did not feel happier, calmer, or better about themselves when they succeeded, or less sad, less tense, or less bad about themselves when they failed. In fact, compared to those with high expectancies of success, participants with low expectancies felt worse about themselves following a good performance and a bad performance.

We examined two reasons why this occurred. First, we considered whether expectancies were simply one aspect of emotional experience. Pretask emotions were positively correlated with expectancies, but the effect was significant with only *Feelings of Self-Worth*, and statistically controlling for these differences did not alter our main findings in any appreciable way. We then considered whether high expectancies are linked to a tendency to view one's performance in more favourable terms. Logically, people who fail should view their performance more negatively if they expected to succeed, but this was not the case. Instead, people with high expectancies viewed a poor performance more favourably than did those with low expectancies. This finding suggests that expectancies affect emotions through a more dynamic process. People who expect success are also inclined to see the world through ''rose-coloured spectacles''. Even when they fall short of their goals, they do not feel like they have failed. Consequently, they don't feel bad about themselves or sad.

STUDY 2

We conducted a second study to test a related hypothesis. Attribution theorists have shown that people's emotional reactions to performance outcomes depend not only on their level of accomplishment, but also on the attributions they make for their performance (Brown & Weiner, 1984; Weiner, 1985, 1986). For example, people who attribute success to high ability feel greater pride than do those who attribute success to good luck or help from others, and those who attribute failure to low ability feel greater shame and humiliation than do those who blame failure on bad luck or hindrance from others.

TABLE 4
Schematic representation of the hypothesised relation between expectancies, attributions, and emotional reactions to success and failure

Expectancy	*Outcome*		*Likely attribution*		*Likely emotional reaction*
High Expectancy	Success	→	Internal attribution	→	High pride
	Failure	→	External attribution	→	Low shame
Low Expectancy	Success	→	External attribution	→	Low pride
	Failure	→	Internal attribution	→	High shame

Attributions, in turn, are influenced by expectancies: Ability attributions are most apt to be made when outcomes match expectancies (Blaine & Crocker, 1993; Dutton & Brown, 1997; Miller & Ross, 1975). As a consequence, people with high expectancies tend to attribute success to high ability but deny responsibility for failure, whereas those with low expectancies are more inclined to attribute failure to low ability and deny responsibility for success. Table 4 outlines how the combination of these two effects could explain why people who hold high expectancies of success do not feel especially bad when they fail, and why people with low expectancies of success do not feel especially good when they succeed. High expectancies lead people to accept responsibility for success (thereby increasing positive emotion) but deny responsibility for failure (thereby dampening negative emotion). In contrast, low expectancies lead people to deny responsibility for success (thereby minimising positive emotion) but accept responsibility for failure (thereby maximising negative emotion).

These relations should only be evident for the class of emotions we have called *Feelings of Self-Worth*. Attributions predict how people feel about themselves when they succeed or fail, but they do not predict more general emotional reactions, such as happiness, surprise, or relaxation (Weiner, Russell, & Lerman, 1978, 1979). Accordingly, we examined only these emotions in Study 2 and predicted: (a) that expectancies of success would interact with performance outcomes to predict ability attributions; and (b) that ability attributions would interact with performance outcomes to predict *Feelings of Self-Worth*.

Method

Participants

A total of 65 University of Washington undergraduates participated in exchange for extra course credit.

Procedure and materials

The procedure and materials paralleled those used in Study 1, with three exceptions. First, we only measured emotions after the experimental task had been completed. Second, we only assessed the four emotions comprising the *Feelings of Self-Worth* scale. Third, instead of evaluating their performance after learning how many problems they had solved on the experimental task, participants answered two other questions: ''To what extent do you think your performance was due to your ability?'' and ''How accurately do you think this test measured your integrative orientation ability?'' Both questions were answered on 9-point scales (1 = *not at all*, 9 = *very much*), and we combined them to form an ''attributions to ability'' index ($\alpha = .86$).

Results and discussion

Preliminary analyses

Expectancies of success. Expectancies ranged from 0–10, with a mean of 5.88 and a standard deviation of 1.75. There were no differences between experimental conditions ($F < 1$).

Task performance. As expected, participants given the easy set of problems solved more problems ($M = 6.24$) than did those who received difficult problems ($M = 3.19$), $F(1, 63) = 56.54$, $p < .001$. Those given easy problems also were more inclined to attribute their performance to ability ($M = 5.12$) than were those given difficult problems ($M = 4.20$), $F(1, 63) = 4.36$, $p < .05$.

Emotional reactions to task performance. After reversing the scoring for the two negative emotions, we combined the four items into a single scale ($\alpha = .74$). As expected, *Feelings of Self-Worth* were greater for participants given easy problems ($M = 3.58$) than those given difficult problems ($M = 3.01$), $F(1, 63) = 11.06$, $p = .001$.

Expectancy and emotion

As in Study 1, we first computed a dummy variable corresponding to task difficulty (1 = *easy problems*, 2 = *difficult problems*). We then standardised this variable, along with task performance and pretask expectancies, and created two cross-product terms (Difficulty × Expectancies, and Performance ×

TABLE 5
Study 2: Hierarchical regression analyses

	β	ΔR^2
Feelings of Self-Worth		
Task Difficulty	.05	
Performance	.58***	
Expectancies	.24*	.34***
Difficulty × Expectancies	.06	
Performance × Expectancies	.12	.00
Ability Attributions		
Task Difficulty	.13	
Performance	.42**	
Expectancies	.00	.12*
Difficulty × Expectancies	.17	
Performance × Expectancies	.35*	.08
Feelings of Self-Worth		
Task Difficulty	−.02	
Performance	.53**	
Attributions	−.03	.28***
Difficulty × Attributions	−.02	
Performance × Attributions	.28**	.07*

*$p \leq .05$; **; $p \leq .01$; ***; $p < .001$.

Expectancies). We then used these scores to analyse participants' *Feelings of Self-Worth*. Table 5 shows that two variables achieved significance: A main effect of task performance and a main effect of expectancies. As in Study 1, the positive sign associated with the expectancies effect indicates that participants who held high expectancies of success felt better about themselves than did those who held low expectancies of success, and the lack of any interaction indicates that this was true across all levels of task performance. In short, regardless of whether they met, exceeded, or fell short of their goals, those who approached the task expecting to succeed felt better than those who approached the test with less optimism.

Expectancy and causal attributions

We conducted additional regression analyses on participants' causal attributions. Table 5 shows that these analyses revealed a main effect of task performance, and a Performance × Expectancy interaction. To better understand the nature of the interaction, we calculated predicted values one standard deviation above and below the mean on each of the two predictors. The data displayed in Figure 3 show two effects of interest. First, a main effect of outcome indicated that attributions to ability were more likely following a good

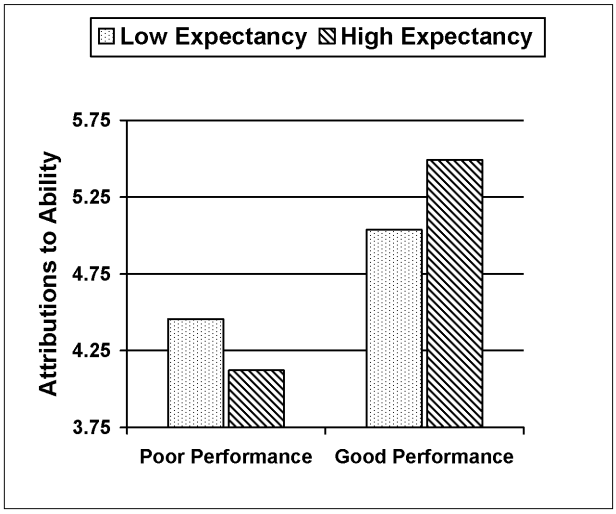

Figure 3. Study 2: Attributions to ability as a function of expectancies and task performance (predicted values for one standard deviation above and below the mean).

performance than following a bad performance. This is the familiar self-serving bias in causal attributions (Zuckerman, 1989). Second, and of greater importance to the present research, the significant interaction indicates that participants with low expectancies of success took more credit for a poor performance than did those with high expectancies of success, but the opposite was true following a good performance. These findings are consistent with the claim that people take greater responsibility for outcomes that match their expectations (Blaine & Crocker, 1993; Dutton & Brown, 1997; Miller & Ross, 1975).

Mediation

To this point we have seen that expectancies and emotion are positively correlated, and that expectancies interact with task performance to predict the attributions people make for good and poor outcomes. If attributions interact with task performance to affect emotion in the manner shown in Table 4, the latter effect could explain the former. To address this issue, we conducted another regression analysis, this time using (standardised) attributions, task difficulty, and task performance, along with two relevant cross-product terms (Difficulty × Attributions and Performance × Attributions), to analyse participants' *Feelings of Self-Worth*. Table 5 presents the findings. As can be seen, a main effect of task performance was qualified by a Performance × Attributions interaction. To better understand the nature of the interaction, we computed predicted values one standard deviation above and below the mean.

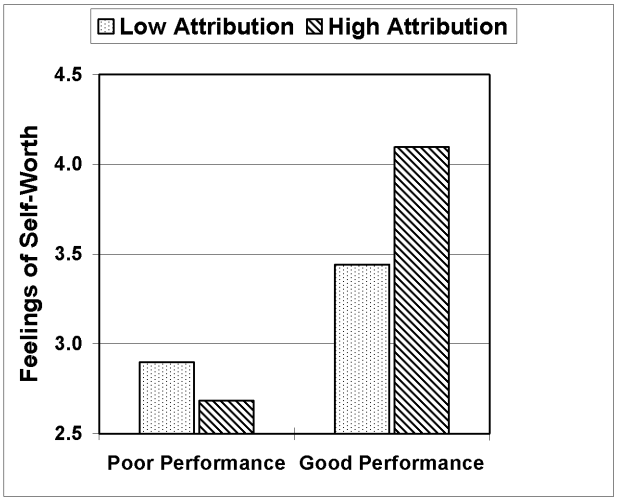

Figure 4. Study 2: Feelings of self-worth as a function of attributions to ability and task performance (predicted values for one standard deviation above and below the mean).

Figure 4 shows qualified support for our hypotheses. Although attributions had little effect among those who performed poorly, participants who attributed success to high ability felt better about themselves than did those who accepted less responsibility for success.

When considered along with our earlier findings, these results help us understand why high expectancies are positively (not negatively) correlated with emotional reactions to performance outcomes. Compared to those who hold low expectancies of success, those who are optimistic are more apt to attribute a good performance to high ability (so they feel prouder) and slightly less apt to attribute a bad performance to low ability (so they feel less ashamed).

GENERAL DISCUSSION

> Reactions to events depend not only on what the events are but on what they are not. . . . Expectancies provide the clearest example . . . Consider students' reactions to their exam scores. One important determinant of their reactions will be their expectancies. Students generally will be satisfied if their scores are close to or higher than the scores they expected but dissatisfied if the scores are significantly lower. (Miller, Turnbull, & McFarland, 1990, p. 305)

Expectancies are widely assumed to be negatively correlated with emotional reactions to achievement outcomes. From this perspective, low expectancies of success offer emotional benefits. They heighten the glow of success and dampen the pain of failure. In two investigations, we found very little evidence that this

occurs. Participants with low expectancies of success were less surprised when they failed, but they did not feel happier, calmer, or better about themselves when they succeeded, or less sad, less tense, or less bad about themselves when they failed. If anything, just the opposite was true: Even though they came closer to reaching their goals, participants with low expectancies of success actually felt worse about themselves than did those whose expectancies were higher.

Our data indicate that at least three factors underlie this effect. First, we found some evidence that expectancies are one aspect of emotional experience. People who expect to fail tend to feel bad in general, whereas those who expect to succeed generally feel good. Second, people with high expectancies of success tend to look on the bright side. Even though they may fall short of their goals, they view their performance more positively than do those who are more pessimistic from the start. Finally, the attributions people make for their performance outcomes play an additional role. People who expect to succeed take credit for success and deny responsibility for failure, while those who are less optimistic tend to do the opposite. Consequently, those who are optimistic do not feel bad about themselves when they fail, and those who are pessimistic don't feel good about themselves when they succeed.

Potential limitations

Before considering the implications of our findings, we wish to note some potential limitations. First, each of our studies was conducted in a laboratory setting with college students. Furthermore, participants were performing a novel task that measured a fictitious ability and their expectancies were apt to be held with only limited certainty. Whether our findings would occur in more naturalistic settings with other groups remains to be determined.

Second, we did not randomly assign participants to hold positive or negative expectancies. This limits our ability to draw causal conclusions. We have shown that people who naturally hold high expectancies of success do not feel worse when they fail than do those who naturally hold low expectancies of success, but we do not know whether this would also be true if people were randomly assigned to expect success or failure.

Finally, we examined only some of the many emotions people experience when they succeed or fail. Although these emotions covered a broad spectrum, including general feelings of happiness or sadness, feelings of pride and shame, agitation and contentment, and surprise and disappointment, other emotions, such as guilt, frustration, or embarrassment might show a different pattern. This remains a topic for further research. Future research should also examine emotions that unfold while performing the task (Griner & Smith, 2000). For example, the correspondence between expectancies and performance may influence such emotions as boredom and interest level.

Implications

These limitations notwithstanding, the present research has some interesting implications. Some of these implications are methodological. Psychological reactions to life experiences are often thought to be a function of the standards by which people gauge success and failure. Discrepancy models of this sort figure prominently in discussions of life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), self-esteem formation (Coopersmith, 1967), commitment to an interpersonal relationship (Thibaut & Kelley, 1959), and satisfaction with task performance (Locke & Latham, 1990). In all of these areas, people who match or exceed their goals are thought to react differently than those who fall short of their goals.

Most of these models have been tested by computing discrepancy scores. However, as noted in the introduction to this paper, discrepancy scores can cloud the very relations they attempt to illuminate. Future research could adopt the regression approach we used in this research in order to clarify the manner in which performances combine with standards to influence outcome variables of interest. In some cases, only the performance may matter; in other cases, the match may be important. Only by using both terms to predict the outcome variable can we know which occurs.

It is also important to specify which types of emotions are most apt to be affected. We found evidence that surprise-relevant emotions are influenced by the match between performances and expectancies, but none of the other emotions we examined showed this effect. This suggests that emotions relevant to surprise may be uniquely affected by expectancies. Unfortunately, any conclusions we draw here are tempered by the low internal consistency of the *Surprise* scale we used. The three items we used to measure *Surprise*—surprise, disappointment, and relief—did not form a coherent scale. In retrospect, perhaps there is no reason to have believed they would, as they tap quite different reactions to performance outcomes. To illustrate, suppose we expect to do poorly and fail. Here, we should not feel surprised, relieved, or terribly disappointed. Now suppose we expect to do poorly but succeed. Here we should be surprised and relieved, but still not disappointed. In the former case, disappointment covaries with the other two emotions, but in the latter case it does not. More generally, whereas some emotions may depend on the match between expectancies and performance, others may arise only when an unexpected *negative* outcome occurs.

No such ambiguity occurs when we examine the class of emotions we have called feelings of self-worth. These items had high internal consistency and showed a consistent pattern. We believe these findings are of particular importance, as they come closest to capturing what James had in mind when he argued that people can feel good about themselves simply by expecting to achieve less (James, 1890). Our findings provided no support for this

assumption. When expectancies predicted feelings of self-worth, the effect was a positive one, not a negative one. The higher one's expectancies, the better one felt about oneself regardless of one's performance.

Although personality processes appear to partially underlie this relation, we also found that two cognitively oriented processes—performance evaluations and causal attributions—play a role. These findings fit nicely with evidence that people's emotional reactions to performance outcomes depend on how they interpret their performance (Frijda, 1988; Roseman, 1984; Smith & Ellsworth, 1985; Smith & Lazarus, 1990; Weiner et al., 1978, 1979). Our findings go beyond previous research by showing that the role of construal is rather sophisticated and complicated. Previously, it was assumed that people who fall short of their goals will be more apt to view their performance negatively and, consequently, feel bad. Our results show that people are not this passive. Even though they have fallen short of their goals, people who hold high expectancies of success think they did reasonably well and deny that the performance was due to their ability. These, more secondary cognitive appraisals, insulate them from feeling bad.

Finally, our findings bear on Taylor and Brown's (1988, 1994) work on positive illusions and well-being. After surveying a great deal of literature, Taylor and Brown concluded that positive self-relevant beliefs (including expectancies) are generally beneficial. Other theorists have questioned whether this is always true, arguing that people who expect to succeed are destined to experience greater disappointment and shame when they fall short of their goals (e.g., Baumeister, 1989). Although we must be cautious given the correlational nature of our findings, it is noteworthy that we found little evidence that high expectancies have costs or that low expectancies are beneficial. When considered along with evidence that low expectancies lead to poor task performance (Marshall & Brown, 2004), ''making thy claim of wages a zero'' may be profitless advice.

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REFERENCES

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Baumeister, R. F. (1989). The optimal margin of illusion. *Journal of Social and Clinical Psychology*, *8*, 176–189.

Blaine, B., & Crocker, J. (1993). Self-esteem and self-serving biases in reactions to positive and negative events: An integrative review. In R. F. Baumeister (Ed.), *Self-esteem: The puzzle of low self-regard* (pp. 55–85). New York: Plenum.

Brown, J. D., & Dutton, K. A. (1995). The thrill of victory, the complexity of defeat: Self-esteem and people's emotional reactions to success and failure. *Journal of Personality and Social Psychology*, *68*, 712–722.

Brown, J. D., & Marshall, M. A. (2001). Self-esteem and emotion: Some thoughts about feelings. *Personality and Social Psychology Bulletin*, *27*, 575–584.

Brown, J. D., & Weiner, B. (1984). Affective consequences of ability versus effort attributions: Controversies, resolutions, and quandaries. *Journal of Educational Psychology*, *76*, 146–158.

Carver, C. S., Pozo, C., Harris, S. D., Noriega, V., Scheier, M. F., Robinson, D. S., Ketcham, A. S., Moffat, F. L., Jr., & Clark, K. C. (1993). How coping mediates the effects of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology*, *65*, 375–390.

Coopersmith, S. (1967). *The antecedents of self-esteem*. San Francisco: Freeman.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*, 1–74.

Dutton, K. A., & Brown, J. D. (1997). Global self-esteem and specific self-views as determinants of people's reactions to success and failure. *Journal of Personality and Social Psychology*, *73*, 139–148.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.

Frijda, N. H. (1988). The laws of emotion. *American Psychologist*, *43*, 349–358.

Griner, L. A., & Smith, C. A. (2000). Contributions of motivational orientation to appraisal and emotion. *Personality and Social Psychology Bulletin*, *26*, 727–740.

Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 30, pp. 1–46). New York: Academic Press.

Higgins, E. T. (1999). Promotion and prevention as a motivational duality: Implications for evaluative processes. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 503–525). New York: Guilford.

Higgins, E. T., Shah, J., & Friedman, R. (1997). Emotional responses to goal attainment: Strength of regulatory focus as a moderator. *Journal of Personality and Social Psychology*, *72*, 515–525.

James, W. (1890). *The principles of psychology* (Vol. 1). New York: Holt.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Marshall, M. A., & Brown, J. D. (2004). Expectations and realizations: The role of expectancies in achievement settings. *Motivation and Emotion*, *28*, 347–361.

McFarlin, D. B., & Blascovich, J. (1984). On the Remote Associates Test (RAT) as an alternative to illusory performance feedback: A methodological note. *Basic and Applied Social Psychology*, *5*, 223–229.

Mednick, S. A. (1962). The associative basis of the creative process. *Psychological Review*, *26*, 220–232.

Medvec, V. H., Madey, S. F., & Gilovich, T. (1995). When less is more: Counterfactual thinking and satisfaction among Olympic medalists. *Journal of Personality and Social Psychology*, *69*, 603–610.

Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, *82*, 213–235.

Miller, D. T., Turnbull, W., & McFarland, C. (1990). Counterfactual thinking and social perception: Thinking about what might have been. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 305–331). San Diego, CA: Academic Press

Roseman, I. J. (1984). Cognitive determinants of emotion: A structural theory. *Review of Personality and Social Psychology*, *5*, 11–36.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology*, *67*, 1063–1078.

Schul, Y. (1992). The effect of expectations on satisfaction when feedback about performance is not provided. *Social Cognition*, *10*, 165–188.

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, *48*, 813–838.

Smith, C. A., & Lazarus, R. S. (1990). Emotion and adaptation. In L. A. Pervin (Ed.), *Handbook of personality*: *Theory and research* (pp. 609–637). New York: Guilford Press.

Stouffer, S. A., Suchman, E. A., DeVinney, L. C., Starr, S. A., & Williams, R. M. (1949). *The American soldier: Adjustment during Army life* (Vol. 1). Princeton, NJ: Princeton University Press.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, *103*, 193–210.

Taylor, S. E., & Brown, J. D. (1994). Positive illusions and well-being revisited: Separating fact from fiction. *Psychological Bulletin*, *116*, 21–27.

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New York: Wiley.

Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *211*, 453–458.

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, *96*, 465–490.

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98*, 219–235.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*, 548–573.

Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer.

Weiner, B., Russell, D., & Lerman, D. (1978). Affective consequences of causal ascriptions. In J. H. Harvey, W. J. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol. 2, pp. 59–88). Mahwah, NJ: Erlbaum.

Weiner, B., Russell, D., & Lerman, D. (1979). The cognition-emotion process in achievement-related contexts. *Journal of Personality and Social Psychology*, *37*, 1211–1220.

Zuckerman, M. (1979). Attribution of success and failure revisited, or: The motivational bias is alive and well in attribution theory. *Journal of Personality*, *47*, 245–287.