

## Research Report

## EXPLANATORY STYLE AS A MECHANISM OF DISAPPOINTING ATHLETIC PERFORMANCE

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**Abstract**—Two university varsity swimming teams took the Attributional Style Questionnaire (ASQ) at the start of the season. Swimmers with a pessimistic explanatory style went on to show more unexpected poor performances during competition than optimistic swimmers. We then tested the purported mechanism of this effect by experimentally simulating defeat, giving each swimmer falsely negative times. Performance deteriorated for those swimmers with a pessimistic explanatory style for bad events on their next swim, whereas performance for those swimmers with an optimistic style did not.

Some people habitually explain bad events by causes that are stable in time, global in effect, and internal, but explain good events by causes that are unstable, specific, and external. The reformulation of the learned helplessness model of depression (Abramson, Seligman, & Teasdale, 1978) predicts that individuals who have this pessimistic style of explaining events should do worse than expected in achievement situations, whereas people with a more optimistic style should do better. A pessimistic explanatory style is claimed to lead to poor performance because it contributes to the expectation that bad events will recur in several domains. In turn, this expectation leads to lowered voluntary response initiation following failure (Seligman, 1975). The prediction that people with a pessimistic explanatory style will show poorer achievement than people with an optimistic style has been supported in field studies of academic performance (Dweck & Licht, 1980; Nolen-Hoeksema, Girgus, & Seligman, 1986; Peterson & Barrett, 1987) and the workplace (Seligman & Schulman, 1987). But no field

study to date has tested the mechanism by which pessimistic style impairs achievement.

We asked if pessimistic explanatory style predicts poorer than expected athletic performance and if it works by the mechanism of lowered response initiation specifically following defeat.

## STUDY 1

## Method

## Subjects

The subjects were members of the varsity men's and women's swim teams at the University of California at Berkeley in 1987–1988. Both of these teams are nationally ranked and several swimmers on the teams hold national or world records. Twenty-one men and twenty-six women participated in Study 1.

## Instruments

**Explanatory style.** To measure explanatory style, we administered the Attributional Style Questionnaire (ASQ; Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982; Seligman, Abramson, Semmel, & von Baeyer, 1979). This self-report instrument yields scores for explanatory style for bad and good events along three causal dimensions: stable versus unstable, global versus specific, internal versus external. A composite score for explanations of bad events (CN) is obtained by summing the subject's score on the three dimensions for the bad events. A composite score for good events (CP) is obtained by summing the subject's scores on the three dimensions for good events. A full scale score (CPCN) is obtained by subtracting the composite score for bad events from the composite score for good events. Cronbach's alphas (a measure of inter-item consistency) in this sample were .71, .76, and .79 for CPCN, CN, and CP, respectively. (For validity

reviews see Peterson & Seligman, 1984; Sweeney, Anderson, & Bailey, 1986.)

**Coaches' judgments.** The coaches rated each of their swimmers in the beginning of the season on a 1 to 7 scale, judging how the swimmers would perform after a defeat, where 1 was much worse than average and 7 was much better than average. There was one coach per swimmer: Nort Thornton for the men, and Karen Thornton for the women. Throughout the studies the coaches remained blind to explanatory style scores.

**Swim season ratings.** Following each competitive swim during the season, the coach rated each swimmer's performance on a 1 to 7 scale, where 1 is much worse than expected, 4 is as expected, and 7 is much better than expected. Every swim on which a swimmer received a rating of 1, 2, or 3 was counted as a poor swim. Each swimmer also rated his or her performance using the same scale. Since the correlation between coach and swimmer approached 1.00, we discontinued the swimmers' ratings after a few meets.

## Results

## ASQ Results

**Regression analyses (prediction of performance).** We performed a series of regression analyses to test our predictions about the main independent variables predicting the number of poor swims. In the main analysis CPCN, sex, and coaches' judgment were simultaneously regressed against percentage of poor swims. The squared multiple  $R$  was .53 and each of the predictor variables contributed significantly: CPCN ( $t = 2.62, p < .012$ ), sex ( $t = 2.51, p < .016$ ), and coaches' judgment ( $t = 3.28, p < .002$ ). Additional regression analyses using CN and CP showed that each con-

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tributed ( $t = 1.89, p < .066$ ;  $t = 2.51, p < .012$  respectively), but the strongest effect was with CPCN.

**Correlations of ASQ and coaches' judgments.** The coaches' judgments were not significantly correlated with any of the three ASQ composite scores. This suggests that the coaches' predictions of swimmers' performances are based on something other than an awareness of the swimmers' explanatory style ( $r[\text{CPCN}] = .14, r[\text{CN}] = -.22, r[\text{CP}] = .14$ ).

**Sex differences.** On the whole, the men had greater optimistic explanatory style than the women. The total scale score, CPCN, was significantly more optimistic for the men (men  $\bar{X} = 6.44, SD = 3.15$ ; women  $\bar{X} = 3.15, SD = 1.96$ ;  $t = 3.46, p < .001$ ). The men's composite score for negative events ( $\bar{X} = 11.60, SD = 3.12$ ) (CN) was marginally more optimistic than the women's ( $\bar{X} = 12.81, SD = 1.72$ ;  $t = 1.69, p < .097$ ) and their composite score for positive events (CP) was much more optimistic than the women's (men  $\bar{X} = 18.03, SD = 1.89$ ; women  $\bar{X} = 15.96, SD = 1.41$ ;  $t = 4.3, p < .0001$ ). These sex differences are notable. On average, the men's absolute scores are as optimistic as any group we have tested except for life insurance agents, whereas the women's scores look like typical college student female means. Remember that many of the women (as well as the men) are world-class athletes and campus heroines, however. This suggests that women tend to be more pessimistic than men even when they have high status and high achievement (Nolen-Hoeksema, 1987).

## STUDY 2

Study 1 showed that explanatory style and coaches' judgments of swimmers' resilience after defeat predicted how many unexpectedly poor swims the team members would go on to show over the season. Although these results are intriguing, because the study is naturalistic we could not directly test the mechanism by which explanatory style is alleged to affect performance: Persons with an optimistic explanatory style will recover

better following defeat than persons with a pessimistic explanatory style.

Thus we imposed defeat on all of the swimmers and tested their performance following this defeat. Specifically, each of the swimmers swam a time trial of his or her best event, and were given a falsely slow score. After a rest, the swimmers swam the event again.

## Method

## Subjects

The subjects were 33 swimmers from the original 46. These tended to be the best swimmers on the teams who had remained at school after the end of the season to prepare for the 1988 Olympic trials. Nineteen were women and 14 were men.

## Procedure

Each swimmer was asked by the coach to swim in his or her best event, and at the end of the swim was given a slower time. For 100-meter events, the time given to the swimmers was 1.5 seconds slower than they had actually swum, for 200 meter events it was 2 seconds slower, for 400 meter events it was 4 seconds slower, and for 500 meter events it was 5 seconds slower. These times were chosen to accomplish two goals: (a) to produce serious disappointment, and (b) be small enough to be undetectable. Both goals seem to have been accomplished, although no formal manipulation check was made. Swimmers looked disheartened and in some cases, dejected, after being given the slow times, and no swimmer voiced suspicion either during the study or during debriefing. After an average of 30 minutes of rest, chosen to ensure fresh performance with no fatigue, each swimmer swam the event again. The coaches rated each performance on the 1-7 scale from much worse than expected to much better than expected. We also computed the ratio of the swimmer's time on the second swim to his or her time of the first swim.

## Results

In Study 1, the most relevant explanatory style variable was CPCN, since swims over the whole season follow both

victories and defeats. The analyses for Study 2 focus on composite explanatory style scores for negative events (CN) only, because here we were trying to predict reactions to a defeat only.

In general, the swimmers with an optimistic explanatory style for negative events did at least as well after defeat as they did in their first swim, but the pessimists' performances deteriorated. We divided the swimmers into two groups based on a median split of CN scores. The mean ratio of the time after the false feedback to the actual first time was .995 for the swimmers with optimistic explanatory style scores, whereas the mean for the swimmers with pessimistic scores was 1.016 ( $t = 1.96, p < .059$ ). These are not trivial changes as swimming times go. The absolute improvement and deterioration in many of the cases would be the difference between winning and losing an event. On coaches' ratings of the quality of the second swim, the same difference held: Changes in the coaches' judgments of the quality of the swims from time 1 to time 2 showed a small deterioration ( $-.094$ ) among the swimmers with an optimistic explanatory style, but a more substantial deterioration of  $-.833$  among the pessimists ( $t = 2.07, p < .047$ ). It is also relevant that coaches' judgments of the first swim were not different for the optimists and pessimists, meaning that the optimists and the pessimists did as well as each other initially (means = 3.53 versus 3.50). The effect of explanatory style appeared only after defeat. The effect was specific to explanatory style for negative events; CP (and CPCN) did not show significant effects on time 2 performance relative to time 1.

Regression analyses, using CN scores, sex, and coaches' judgments of ability to rebound after defeat to predict second swim times confirmed the findings above. When we used the ratio of the times before and after feedback as the dependent variable, the model yielded a squared multiple correlation of .250; CN scores accounted for significant variance ( $t = 3.06, p < .005$ ), but neither sex nor coaches' judgments accounted for any significant portion of the variance. When we used the difference in coaches' judgments of the two times as the dependent variable, the model yielded a squared multiple  $r$  of .237; CN

scores accounted for variance approaching significance ( $t = 1.96, p < .06$ ), but neither sex nor coaches' judgments of ability to comeback accounted for significant variance.

## DISCUSSION

Three major findings emerged from these two studies: (1) Swimmers with a pessimistic explanatory style were more likely to go on to perform below expectations during the season than swimmers with an optimistic explanatory style. (2) After a simulated defeat, swimmers with a pessimistic explanatory style showed deteriorated performance, whereas swimmers with an optimistic style did not. (3) Explanatory style predicted performance by the swimmer even after coaches' judgments of ability to comeback were taken into account.

Is it possible that swimmers with an optimistic explanatory style are simply more talented swimmers than swimmers with a pessimistic style, and this is why they showed fewer poor swims in Study 1 and better comeback times in Study 2? There are four lines of evidence that suggest that explanatory style had predictive power over and above swimming ability. First, explanatory style did not correlate with the coaches' judgments of how well a swimmer would rebound from defeat—one measure of a swimmer's talent. Second, explanatory style did not correlate with the number of times the coach allowed the swimmer to compete during the season, a more objective index of how good the coach thought the swimmer was. Third, the main dependent variable in Study 1 was not absolute time, but doing better or worse than expected, a judgment which takes into account high expectations for highly talented swimmers. Finally, in Study 2 improvement or deterioration in time relative to a swimmer's prior time was the target; so swimming was judged relative to the swimmer's own time, not by an absolute standard of quality. Thus, explanatory style does not appear to be a mere reflection of athletic talent.

Nor is it a dimension that the coach already knows about and takes into account. Explanatory style did not correlate with the coaches' judgments. But it accounted for a significant amount of the

variance in poor swims over and above coaches' judgments in the regression analyses. This suggests that knowing swimmers' explanatory styles may be practically useful for coaches in making decisions about who should swim, particularly when the swimmers have suffered recent defeats or the event is very important. Those swimmers who have optimistic explanatory styles should on average do better under pressure than those with pessimistic styles.

In the theory of learned helplessness, the expectation of future failure works by undermining the incentive to try, thereby lowering the probability of voluntary response initiation (Seligman, 1975). The performance of swimmers after experimentally manipulated defeat in Study 2 suggests that lowered response initiation following defeat may be the mechanism by which pessimistic explanatory style hurts achievement in natural settings. There are other possibilities as well, however. Explanatory style may itself merely be a correlate of a more basic dimension. A number of cognitive styles such as optimism (Scheier & Carver, 1987), hardiness (Hull, Van Treuen, & Virnelli, 1987), self-handicapping (Rhodewalt, Saltzman, & Wittmer, 1984) and negative affectivity (Watson & Clark, 1984) have been related to achievement. Could explanatory style be subsumed under these more basic styles? Perhaps, but unlike these variables, explanatory style in reformulated helplessness theory specifies the mechanism by which achievement is impaired: lowered response initiation after defeat. Thus it provides a fairly precise and testable account of how a cognitive style impairs performance. Indeed Study 2 tested and confirmed the role of this purported mechanism. We suggest that even if explanatory style is correlated with these other styles, there is conceptual and empirical justification for focusing on explanatory style as a predictor of achievement.

In conclusion, we found that explanatory style predicted swimming performance. Optimists performed better than expected and pessimists worse than expected, particularly after defeat. Explanatory style predicted swimming performance beyond measures of talent, suggesting that actual performance is jointly determined by talent and habitual pat-

terns of subjective beliefs about the causes of events. What should one do with a very talented person who has pessimistic explanatory style? It may be important that cognitive therapy reliably and stably changes pessimism into optimism among depressed patients (Seligman, Castellon, Cacciola, Schulman, Luborsky, Ollove, & Downing, 1988; DeRubeis, Evans, Hollon, Garvey, Grove, & Tuason, 1988). It is plausible that similar techniques could be used with normal, pessimistic adults to help them perform at capacity.

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