

EXPLANATORY STYLE

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Explanatory Style and Achievement in School and Work

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Research since 1980 has supported the theory that explanatory style predicts achievement in various domains, such as in school, work, sports, and politics. In this chapter, I first discuss the attributional reformulation of the learned helplessness theory and how it relates to achievement. Second, I review related theories of achievement. Third, I review four studies relating explanatory style to school achievement and four studies relating explanatory style to work achievement. Finally, I discuss the implications of this research for school intervention programs and corporate selection, placement, and training programs. Later chapters in this section discuss the role of explanatory style in sports and politics, and cross-cultural differences in explanatory style.

THE ATTRIBUTIONAL REFORMULATION OF LEARNED HELPLESSNESS THEORY

The original learned helplessness theory stated that experience with uncontrollable events can lead to the expectation that desired outcomes are independent of one's actions (Maier & Seligman, 1976; Seligman, 1975). This expectation of helplessness leads to three types of deficits that closely resemble human depression: motivational (lowered response initiation and persistence), cognitive (inability to perceive contingencies between actions and outcomes), and emotional (sadness

Everyone experiences uncontrollable aversive events, yet not everyone develops the expectation of helplessness and these helplessness deficits. The attributional reformulation addresses this issue of individual differences and predicts who is more vulnerable or resistant to learned helplessness (Abramson, Seligman, & Teasdale, 1978; Seligman, Abramson, Semmel, & von Baeyer, 1979). According to the reformulation, individuals who habitually attribute negative events to internal, stable, and global causes and positive events to external, unstable, and specific causes (the pessimistic style) are at greater risk for helplessness deficits than those with the opposite, optimistic style.

The process by which explanatory style impacts on achievement in this diathesis-stress model is as follows. The explanations individuals habitually make for their successes and failures lead to expectations that affect their reactions to future successes and failures. These expectations create self-fulfilling prophecies that either enhance or undermine performance. Expectations can affect performance through a variety of behaviors. Individuals with an optimistic explanatory style may be more likely, for example, to take initiative, persist under adversity, take risks, be decisive, engage in quality problem-solving strategies, and be more assertive than individuals with a pessimistic style.

Any complete theory of achievement must discuss the issues of intelligence, motivation and task demands, as well as expectations. It is not just the ability to succeed and the desire to succeed that are critical to performance, but also the belief that one will succeed. All three factors interact to determine performance. This chapter focuses on how an individual's explanations and expectations impinge on achievement.

RELATED THEORIES OF ACHIEVEMENT

There are several theories of achievement that overlap with the attributional reformulation of the learned helplessness theory and they should be noted. These theories discuss the relevance of the perception of control, expectation of control, or explanations of negative events to achievement.

In the field of social learning, Rotter's locus of control theory states that the extent to which an individual has a generalized expectancy that rewards are contingent on behavior will be a determining factor in performance, skill acquisition, and achievement motivation. Numerous studies demonstrate the validity of this construct. See Rotter (1966); Lefcourt (1976); and Phares (1976) for a review of this literature. The research of McClelland, Atkinson, Clark, and Lowell (1953); Atkinson (1958); and Crandall (1963) indicates that individuals who are high on the need for achievement also tend to believe that outcomes are related to their efforts.

Bandura's (1982) theory of self-efficacy also relates to performance and achievement motivation. Bandura defines self-efficacy as the assessment of

whether one possesses the necessary abilities to achieve a desired outcome. Judgments of self-efficacy, he stated, "determine how much effort people will expend and how long they will persist in the face of obstacles or aversive experiences" (p. 123).

Vroom (1964) introduced expectancy theory into industrial-organizational psychology. Vroom asserted that performance is a multiplicative function of valence (the perceived value of an outcome), instrumentality (the belief that there exists a given performance that will achieve a desired outcome), and expectancy (the belief that one's efforts will lead to the necessary ———). Vroom predicts that when valence and instrumentality are held constant, expectancy be positively correlated with performance. There is some evidence to support this prediction (Garland, 1984; Locke, Motowldlo, & Bobko, 1986).

Dweck and her associates conducted some pioneering research showing a link between children's explanations for failure and subsequent performance. In a series of studies, they found that children who attributed their academic failure to stable and global factors, such as lack of ability or stupidity, were more likely to give up following failure than children who attribute failure to unstable and specific factors, such as luck or a lack of effort. Stable and global explanations for failure correlated with lower initiative, persistence, quality of problem-solving strategies, and lower expectations for future success (Diener & Dweck, 1978, 1980; Dweck, 1975; Dweck & Goetz, 1978; Dweck & Licht, 1980; Dweck & Reppucci, 1973; Dweck & Wortman 1982). Dweck's research differs from explanatory style research in that the subjects offered verbal explanations of failure (that were analyzed by the researchers) as opposed to performing an analysis of each of the attributional dimensions (internality, stability, and globality). Research by Eccles (1983) and Weiner (1974, 1978, 1979, 1985a) also showed that particular explanations for academic success and failure correlate with subsequent motivation and performance.

The previously mentioned research supports the notion that perceptions, expectations, and explanations of negative events all bear a relationship to achievement. The following explanatory style research substantially adds to this evidence.

EXPLANATORY STYLE RESEARCH

Following is a review of four studies on the relationship between explanatory style and school achievement and four studies on explanatory style and work achievement.

Explanatory style in these studies was measured by the Attributional Style Questionnaire (ASQ), the primary instrument for measuring explanatory style (Seligman et al., 1979; Peterson et al., 1982). On this questionnaire, subjects generate a cause for six hypothetical positive events and six negative events and then rate the cause on a 1-to-7 scale for three causal dimensions: internal versus external causes, stable and global versus specific causes,

The ASQ yields scores for three main measures: the composite positive explanatory style (CP), the composite negative explanatory style (CN), and the combination of these two scores (CPCN). Higher scores are more optimistic scores for CPCN and CP and lower scores are more optimistic scores for CN. Past research indicates that CPCN and CN are the most valid empirical predictors of helplessness deficits (Peterson & Seligman, 1984a; see chapter 2, this volume, for details).

EVIDENCE: EXPLANATORY STYLE AS A PREDICTOR OF SCHOOL ACHIEVEMENT

Study 1: First-Year Grades of College Freshmen (Peterson & Barrett, 1987)

This study addressed whether the ASQ could predict first-year college grade point averages (GPA) controlling for SAT scores and a measure of depression, the Beck Depression Inventory (BDI; Beck, 1967). In short, explanatory style correlated significantly with first-year GPA and significantly predicted first-year GPA when SAT scores and depression were partialled out.

In the beginning of their freshman year, 87 students from the Virginia Polytechnic Institute and State University took the BDI and the academic version of the ASQ. This modified ASQ was patterned exactly after the original ASQ except that it presented subjects with 12 hypothetical negative academic events. The original ASQ is different in that there are 6 positive events and 6 negative events, 6 achievement-oriented and 6 affiliation-oriented events. As discussed earlier, explanations for negative events are often better predictors of various outcomes than explanations for positive events, but it is not clear whether there are advantages in making the content of the event relevant to the sample being tested.

Also measured were several factors that may intervene between explanatory style and academic performance. Subjects took questionnaires measuring specificity of academic goals (Locke, Shaw, Saari, & Latham, 1981), their self-efficacy with respect to achieving these goals (Bandura, 1986), and information was obtained on the number of visits made to academic advising.

The explanatory style for these 12 negative events correlated significantly with cumulative first-year GPA in the expected direction ($r = -.36$, $p < .001$). When SAT score and BDI were partialled out, the CN partial correlation with first-year GPA was $-.28$ ($p < .01$).

After partialling out SAT and BDI, CN correlated $-.30$ ($p < .005$) with goal specificity, $-.29$ ($p < .002$, $n = 65$) with number of advising visits, and $-.16$ (ns) with self-efficacy. Goal specificity ($r = .25$, $p < .02$) and advising visits ($r = .25$,

These results support the reformulated learned helplessness theory. Students with an optimistic explanatory style for negative events received better grades in their first year of college than those with a pessimistic style, even when measures of ability and depression were controlled for. Further, those with an optimistic style had more specific goals and actively sought out more academic advising. Goal specificity and number of advising visits in turn predicted GPA.

Study 2: First Semester Grades of College Freshmen (Schulman et al., 1990)

This study asked two questions: (a) Does explanatory style predict first semester college GPA above and beyond traditional measures of ability, such as SAT scores, achievement test scores, and high school rank? (At the University of Pennsylvania, a weighted average of these three measures form the predictive index [PI], a measure the Admissions Committee uses to predict college GPA.); and (b) do those who exceed their predicted grades have a better explanatory style than those who do not?

The interaction of CP and PI significantly predicted GPA, but ASQ scores alone did not correlate with GPA. Further, those who had better grades than the PI prediction were significantly more optimistic than those who had worse grades than the PI prediction.

At the beginning of their first fall semester, 289 freshmen at the University of Pennsylvania completed the ASQ. The PI correlated .54 ($p < .0001$) with first semester GPA, but the ASQ did not correlate significantly with GPA. The ASQ correlated inversely and significantly with the PI (CPCN: $r = -.20$, $p < .002$; CN: $r = .11$, $p < .05$; CP: $r = -.18$, $p < .002$).

In a regression analysis, there was a significant interaction effect for CP \times PI ($F = 5.4$, $p < .02$) and a marginal interaction effect for CPCN \times PI ($F = 3.2$, $p < .07$) in the prediction of GPA when PI and the respective ASQ measure was partialled out. The CN \times PI interaction was not significant. None of the ASQ measures alone predicted GPA when PI was partialled out.

In a t -test analysis, those who exceeded the PI prediction of their grades had a significantly better CPCN ($t = 2.3$, $p < .02$) and CP ($t = 2.8$, $p < .006$) than those who did worse than the PI prediction. There was no difference in CN scores.

These results lend mixed support to the reformulated learned helplessness theory. The CP score and PI combined predicted first semester GPA better than either measure alone. Also, CPCN and CP discriminated those who exceeded their predicted grades from those who underachieved.

It is not clear, however, why the ASQ did not correlate with GPA and why CN did not predict GPA above and beyond the PI. The authors assert that not enough time may have elapsed for these college freshmen to accumulate the bad

next study examines the influence of explanatory style on the academic performance of students with more college experience.

Study 3: Grades of College Upperclassmen (Schulman et al., 1990)

The ASQ was completed by 175 University of Pennsylvania upperclassmen in an abnormal psychology course at the beginning of the semester. The ASQ and PI were used to predict GPA in that semester. Unlike the freshmen in Study 2, the subjects in this study were a mix of sophomores, juniors, and seniors, and therefore were more likely to have experience with negative academic events.

The prediction was that those with a pessimistic explanatory style are at greater risk for helplessness deficits and reduced performance following negative events than those with an optimistic explanatory style. Both the ASQ and PI correlated significantly with GPA and the ASQ significantly predicted GPA when PI was partialled out.

The PI correlated .29 ($p < .0001$) with GPA for that semester. The ASQ also correlated significantly with GPA in the expected direction (CPCN: $r = .23$, $p < .01$; CN: $r = -.19$, $p < .01$; CP: $r = .15$, $p < .05$). CP correlated positively with the PI ($r = .22$, $p < .01$) and CPCN and CN did not correlate with the PI.

In a regression analysis, there was a significant interaction effect for CP \times PI ($F = 4.4$, $p < .04$) in the prediction of GPA when PI and CP were partialled out, but not for CN \times PI or for CPCN \times PI. CN ($F = 8.1$, $p < .005$) and CPCN ($F = 8.3$, $p < .005$), however, significantly predicted GPA when PI was partialled out, but CP did not.

In a t -test analysis, students in the best quartile of GPA had a significantly better CN ($t = 2.1$, $p < .04$) and CPCN ($t = 2.5$, $p < .02$) than those in the worst quartile of GPA. There was no significant difference in CP scores.

Compared to the results of the freshman sample in Study 2, explanatory style was a stronger predictor of GPA for upperclassman while the PI became a weaker predictor of GPA. Unlike Study 2, CN was a significant predictor of GPA in Study 3. One possible explanation for this is that as negative events accumulate, one's explanatory style for negative events and expectations of future academic performance have a growing impact on academic achievement, whereas ability has a declining impact. Once again, however, it is not clear why some ASQ measures were significant predictors in some analyses, whereas other ASQ measures were not.

There are two factors that may have handicapped the effects of explanatory style on GPA in Studies 2 and 3. First, one of the purposes of these studies was to measure the effect of explanatory style above and beyond ability. The PI, however, is not a pure measure of ability because one of its components, high school rank, derives from a performance that may in part reflect the effects of

Second, the University of Pennsylvania is a highly selective institution with a restricted range of academic talent. It is therefore plausible that explanatory style would bear a stronger relationship with GPA in a population with a broader distribution of talent.

Study 1 possibly overcomes these two handicaps somewhat. Study 1 only used SAT scores as a measure of ability and, because the students came from a less selective state school, there may have been a less restricted range of talent. Furthermore, grades were measured over the first year rather than just the first semester, which may have allowed for more negative events to accumulate. This may explain the stronger relationship between explanatory style and GPA in Study 1 than in Study 2. It is also important to note that Study 1 used a modified, academic negative events-only version of the ASQ that may have better tapped students' interpretations of academic performance.

Study 4: First-Year Grades and Dropping Out from West Point (Schulman et al., 1990)

This study investigated whether the ASQ could predict first-year academic grades and drop-outs at the United States Military Academy at West Point, New York.

The ASQ was completed by 1,184 individuals at this officer training school in the beginning of the summer, before the first year of classes. ASQ and SAT scores were used to predict two outcomes: cumulative first-year grades and dropping out (dropping out of a highly stressful boot-camp-type introduction to military life in the summer before classes or dropping out during the first year of classes).

CPCN and CN significantly predicted first year GPA when SAT scores were partialled out (CPCN: $F = 3.7, p < .03$; CN: $F = 5.3, p < .01$). The ASQ, however, did not correlate with first-year GPA but SAT scores correlated .58 with GPA ($p < .0001$). CPCN correlated inversely with SAT ($r = -.09, p < .002$), but CP and CN did not correlate significantly with SAT.

In a t -test analysis, those who dropped out of boot camp or the first year of classes had a significantly more pessimistic CPCN score than those who did not drop out ($t = 2.1, p < .02$). CP and CN did not significantly predict dropping out.

This study adds mixed support to the reformulated learned helplessness theory. CPCN predicted first year GPA when SAT scores were partialled out but did not correlate with GPA. It is important to note that this is a highly selective academy, with average SAT scores for this sample at about 1,200. So, as in Studies 2 and 3, restriction of range may diminish explanatory style effects. This study does make an important contribution to the helplessness literature: CPCN predicted quitting, a central helplessness deficit.

Predicting dropping out at West Point has theoretical and practical importance.

diathesis-stress model. Practically, identifying individuals at risk for dropping out has implications for selection, placement, and training. By the end of the first year, about 20% of the subjects in this sample dropped out. This represents wasted time, money, and needless human distress. Helplessness prone individuals may best be steered away from the rigors of this kind of program or go through special training to fortify them against such challenges. It may also be useful to place individuals who are particularly helplessness resistant in the high pressure positions.

These first four studies suggest that explanatory style is related to school performance and quitting. Following is a review of four studies on the relationship between explanatory style and work achievement.

EVIDENCE: EXPLANATORY STYLE AS A PREDICTOR OF WORK ACHIEVEMENT

Study 5: A Cross-Sectional Study of Sales Productivity (Seligman & Schulman, 1986)

This study investigated the relationship between explanatory style and the productivity of 94 life insurance salespeople who had experience ranging from several months to several decades. Productivity was defined as commissions earned on the sale of life insurance policies in their first or second year of experience. Agents with less than 1 or 2 years of data were excluded from the analysis.

Like the West Point study (Study 4), this is a good test of the diathesis-stress model. Sales agents repeatedly encounter rejection and indifference from prospective clients. It is inevitable that agents will fail to sell insurance more often than they succeed. Consequently, the turnover rate among life insurance agents is very high, as are the training costs. About 78% of the life insurance agents hired in the United States quit within 3 years (Life Insurance Marketing Research Association [LIMRA], 1983). Do agents with an optimistic explanatory style perform better than those with a pessimistic style? (Because this is a cross-sectional study, all subjects were by definition employed when the data was collected, so there is no measure of dropping out in this study.)

The explanatory style for negative events significantly correlated with sales productivity. Optimists sold significantly more insurance than the pessimists did. CN correlated $-.19$ ($p < .07$) with first-year sales and $-.39$ ($p < .01$) with second-year sales. Sales agents who scored above the CN median (optimists) sold 29% more insurance in their first year than agents who scored below the CN median ($t = 1.4$, $p < .01$). Differences were more pronounced in the second year. Agents who scored above the CN median sold 130% more insurance in their first year than agents who scored below the CN median ($t = 2.0$, $p < .03$). Sample sizes in the second year are only about half as large, however, because

significant at the median division but were significant at the quartile and decile splits. CP was not significant.

Sales agents with an optimistic explanatory style sold more insurance than those with a pessimistic explanatory style. Further, explanatory style better discriminated between the high and low producers in the second year than in the first year. This speaks to the theory discussed in Studies 2 and 3, that explanatory style becomes a better predictor of performance as time goes on and negative events accumulate.

Because explanatory style was measured after production was collected, the question of causal direction is unanswered. There are several possibilities. Explanatory style could precede and predict productivity, productivity could affect explanatory style, there could be a bidirectional influence, or there may be an underlying third variable. Study 6 is a longitudinal study that better addresses the issue of causality.

Study 6: A Longitudinal Study of Sales Productivity and Turnover (Seligman & Schulman, 1986)

This study asked whether explanatory style could predict sales productivity and turnover. After being hired, but before training and any sales experience, 103 life insurance sales agents took the ASQ. Productivity and turnover data was collected for 1 year. (I use the term *survivor* to refer to those who had not quit at the end of 1 year.) Results are presented only for the CPCN measure. CP and CN were marginally significant predictors but better predictors when combined to form CPCN.

Explanatory style significantly predicted sales productivity in the agents' second 6 months of sales experience but not in the first 6 months. Further, explanatory style significantly predicted whether or not the agent would survive the first year. CPCN correlated .27 ($p < .03$) with the second 6 months of sales but did not correlate significantly with the first 6 months of sales. Agents who scored above the CPCN median sold 9% more insurance in their first 6 months ($t = .7$, ns) and 25% more insurance in their second 6 months ($t = 1.6$, $p < .06$) than those who scored below the CPCN median. Agents who scored in the top quartile of CPCN sold 40% more insurance in their first year ($t = 1.9$, $p < .03$) than those in the bottom quartile.

Agents who scored above the CPCN median survived at twice the rate of agents who scored below the CPCN median (above median survivors = 67%, below median survivors = 33%; $X^2 = 6.6$, $p < .005$). (59 of the 101 agents for whom there was survival information dropped out by the end of the first year.) Agents who scored in the top quartile of CPCN survived at almost three times the rate of agents who scored in the bottom quartile of CPCN (top quartile survivors = 74%, bottom quartile survivors = 26%; $X^2 = 8.4$, $p < .002$).

In summary, agents with an optimistic explanatory style were more likely to

style. The authors present several possible reasons why explanatory style did not predict productivity in the first 6 months. In the first few months agents are still in training, learning the necessary skills and product knowledge and work closely with their manager in making sales. As time goes on and they begin to work more independently and experience more negative events, explanatory style may play a larger role in sales success.

The findings of Studies 5 and 6 indicate that explanatory style predicts sales performance, but this does not rule out the possibility that there may be a bidirectional influence between explanatory style and performance. Like the West Point Study (Study 4), these findings have practical implications. Identifying individuals at risk for dropping out and poor performance has implications for selection, placement, and training, especially given the very high turnover rates and training costs. Training costs are estimated conservatively at \$30,000 per life insurance agent. These implications are discussed in more detail later in the chapter.

Study 7: A Second Longitudinal Study of Sales Productivity and Turnover (Seligman & Schulman, 1986)

Based on the results in Studies 5 and 6, Metropolitan Life decided to administer the ASQ to about 15,000 sales applicants to replicate these studies, track their productivity and survival for 2 years, and also use the ASQ to hire a small group of agents.

Because applicants are motivated to score well on the ASQ in order to be hired, this raises the question of whether validity will hold up under such conditions. In a study on the transparency of the ASQ, Schulman, Seligman, and Amsterdam (1987) found that college students given a monetary incentive to score well scored no differently from those not given a monetary incentive (see chapter 2).

One of Metropolitan Life's goals was to increase their sales manpower without a loss in productivity per agent or survival rates. To do this, they used the ASQ to hire a small number of agents who scored just slightly below their currently used selection test but scored well on the ASQ. Their currently used selection test is the Career Profile (CP: LIMRA, 1984), a widely used personality profile that yields a score by matching the profile of the applicant to the profiles of past successful insurance agents. Scores range from 1 to 19 and managers were allowed to hire those who scored 12 or more.

Of the 14,000 applicants who completed the ASQ, 543 were hired on the basis of scoring 12 or more on the Career Profile and doing well in interviews. I call them the *regular agents*. In addition, 138 agents who failed the Career Profile in the 9 to 11 range but scored above the CPCN median were hired. I call them the *special agents*. Also, there were 85 agents who failed the Career Profile and scored below the CPCN median who were hired. I call them the

It is important to note that none of these groups were randomly selected. As long as applicants passed the selection criteria, managers had wide latitude in hiring decisions. This introduced a serious selection bias, especially among the special agent control group, that failed both tests and were not technically allowed to be hired. Those who were hired in spite of this probably had qualities compelling enough for the manager to hire them in violation of company policy. This selection bias eliminates the possibility of a random control group and should handicap ASQ effects.

There were four major findings from this study. First, special agents sold more insurance and survived at a higher rate than the special agent controls. Special agents sold 44% more in the first year ($t = 2.5, p < .01$) and 70% more in the second year ($t = 2.6, p < .01$) than the special agent controls. Second-year sample sizes are smaller due to dropping out. The special agents' survival rate was marginally better than the special agent controls' survival rate at the end of 2 years (36% vs. 26%; $X^2 = 2.6, p < .07$).

Second, special agents produced and survived as well as the regular agents. There were no significant differences between the special and the regular agents. The most important implication of these first two findings is that the ASQ could be successfully used to identify applicants who failed the Career Profile and normally would not be hired but, if they had an optimistic explanatory style, would produce and survive as well as agents who passed the Career Profile.

Third, regular agents with an optimistic explanatory style sold more insurance in their second year than regular agents with a pessimistic explanatory style. (There was no production difference using the median CPCN split. The following production statistics are based on the top three quartiles CPCN versus the bottom quartile CPCN.) There was no difference in survival rates. Regular agents with an optimistic style sold 8% more in their first year ($t = .6, ns$) and 31% more in their second year ($t = 1.8, p < .04$).

Fourth, combining all three groups for a survival analysis, the ASQ significantly predicted survival among the low producers, but not the high producers. As reported previously, the ASQ marginally predicted survival among agents who scored 9 to 11 on the Career Profile and did not predict survival among regular agents. Because high producers may quit for different reasons than low producers, such as better job opportunities, analyses were done separately on these two groups. Among the low producers, those with an optimistic explanatory style had a higher survival rate ($X^2 = 3.4, p < .05$) than those with a pessimistic explanatory style.

Study 8: Using the ASQ for Sales Selection (Seligman & Schulman, 1986)

Based on the results in Study 7, Metropolitan Life decided to use the ASQ to hire agents who scored just below the currently used selection test cutoff (9–11 on the Career Profile) but scored well on the ASQ (above the CPCN median).

Because they instituted this hiring policy, about 875 of these special agents have been hired. These special agents have produced and survived as well as the regularly hired agents in their first year and a half. This replicates some of the findings of Study 7. (There are no true control groups for purposes of comparison, because the ASQ was used in the selection process and those who failed the ASQ were not hired.) This has helped Metropolitan Life achieve its goal of increasing sales manpower and revenue without a decline in productivity per agent or survival rates.

DISCUSSION AND IMPLICATIONS

These eight field studies support the notion that the attributional reformulation of the learned helplessness theory is related to achievement at school and at work. Individuals who habitually explain their successes and failures with optimistic explanations are more likely to be high achievers and not quit than those who make pessimistic explanations.

Further, these findings suggest that explanatory style precedes, predicts, and is one of the causes of achievement, although these field studies are not fine-grained enough to illuminate the precise mechanism. Explanatory style (especially for negative events) seems to predict performance above and beyond ability and has greater predictive power over time as adverse experiences accumulate.

Questions, however, still remain. Why are different ASQ measures predictive in different studies? How does each attributional dimension relate to the various outcomes? In Studies 2 and 4, why is it that explanatory style predicts grades above and beyond ability but does not correlate with grades? In Study 7, why does explanatory style predict quitting among low producers but not among high producers? What is the mechanism by which explanatory style influences performance? These are important questions to consider, yet the weight of the evidence converges in favor of the model.

The results of these studies have important implications for individuals in academic and work settings. Intervention with students at risk for poor grades and dropping out could help bring performance closer to potential and reduce drop out rates. Intervention could take place through academic advising or existing university counseling services.

Prevention programs, however, may be especially effective among children, to immunize them against the inevitable setbacks and effect change before cognitive styles become entrenched. A children's depression prevention program is currently being developed and piloted by Seligman, Hollon, Freeman, and their associates. This program adapts cognitive therapy methods for elementary school children and includes such techniques as identifying automatic negative thoughts, reality testing the accuracy of these thoughts, and searching for alternative

In the workplace, these findings have implications for selection, placement, and training, especially for positions fraught with adversity. In insurance sales, for example, the high turnover rates (78% within 3 years) indicate that an agent who can bounce back from the frequent rejection and failure is the exception rather than the rule. Such high rates of quitting represent not only large financial costs in training and management, but needless suffering as well.

Identifying individuals who are particularly helplessness resistant or prone may be advantageous to both the individual and the organization. Hiring those who have a more optimistic explanatory style for the most challenging and stressful positions may improve the person–environment fit and have financial benefits. Preventive or remedial explanatory style training for all, or for selected high-risk individuals, could help immunize them against the difficulties inherent in that position. Such a training program has also been developed by Seligman and his associates.