CHAPTER

5

Improving the Academic Performance of College Students with Brief Attributional Interventions

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Two first-year college students, Sam and Sarah, receive Ds on their first calculus test. Sam is very upset and anxious about his performance and finds it difficult to concentrate. Sarah shrugs off her poor performance, buckles down, and studies harder for the next test. Why does one student respond to the poor grade with anxiety and helplessness, whereas the other redoubles her efforts? A key factor is how they explain their poor performance on the first test, namely, their attributions.

Attribution theory originated in the late 1950s and early 1960s with theorists such as Heider (1958), Schachter and Singer (1962), Jones and Davis (1965), Kelley (1967), and Bem (1972). These theorists advocated a phenomenological approach to the study of human behavior. To understand what people will do, they argued, we have to see the world through their eyes, specifically, how people explain the reasons for their own and others' behavior. In the case of

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the two college students, their reactions to getting a "D" are determined by their attributions about the causes of the poor grade. Note that there is little concern with the *actual* causes of the students' poor performance, such as how intelligent they are or how well prepared they were for the test. Consistent with a phenomenological approach, the focus is on how the students perceive the causes of their poor performance, because these attributions are believed to have important consequences that are independent of the actual causes.

The actual causes of behavior, of course, are not irrelevant. If Sam got a D because he was woefully unprepared for a college calculus class or untalented at math, then how he explains his poor performance will not matter very much. He is unlikely to do very well on the next test. In everyday life, however, people are often in situations in which they have the potential to succeed. Most people taking college courses have the ability to do well; if they did not, they would not have been admitted to college or advanced so far in their academic careers. Attribution theory assumes that within this range of abilities, the explanation people make for their performance is crucial.

As noted by Valins and Nisbett (1972) and Storms and McCaul (1976), many problems become worse the more people worry about them. Further, the degree to which people worry about a problem depends on how they explain its causes. Storms and McCaul (1976) refer to this as an exacerbation cycle, which operates like this: People behave dysfunctionally, such as doing poorly on a test, and make a pejorative attribution about the cause of the behavior, namely, an attribution that implies that they were to blame and that the problem is unlikely to get better. This pejorative attribution causes physiological arousal and anxiety. The arousal and anxiety, in turn, make it more difficult to perform the desired behavior, leading to even more pejorative attributions, further anxiety, and so on, round and round in a viscious cycle.

Sam, for example, might explain his D as due to the fact that he was an admission error who is clearly not intelligent enough to do well in college. The anxiety produced by this self-blame makes it difficult for him to study for the next test. He does poorly again, which serves to increase his self-blame and anxiety, which makes it even more difficult to study, and so on. Sarah, in contrast, explains her D as due to the fact that she did not study hard enough and that the professor purposefully gives a tough first test. She is not very anxious when she thinks about the next test and is able to study hard for it.

How might we help students who make pejorative attributions for their performance? One possibility would be to target the behavior that is causing their problems, namely, their poor academic performance. Perhaps some math tutoring is in order or a program to improve study skills. Another possibility is to target directly the anxiety that is contributing to the academic difficulties. Perhaps we could teach them relaxation strategies or prescribe drugs to alleviate the anxiety.

Although either of these approaches might work, research on attribution theory suggests a third approach. Rather than targeting people's behavior or

anxiety, perhaps we could try to change their attributions from pejorative to nonpejorative ones. Doing so might succeed in breaking the exacerbation cycle: People avoid the self-blame that follows from a pejorative attribution, thereby avoiding further increases in anxiety and poor performance (and subsequent self-blame). This is the premise of "attribution therapy" (Ross, Rodin, & Zimbardo, 1969). In this chapter we review attempts to use attribution therapy to help college students improve their academic performance, beginning with a brief review of the history of attribution therapy.

MISATTRIBUTION RESEARCH

Initial attempts at attribution therapy focused on people's explanations for their physiological arousal. These interventions were based on Schachter and Singer's (1962) two-factor theory of emotion, which argues that emotional experience is a joint function of arousal and an attribution about the cause of the arousal. The same physiological arousal can be attributed to a variety of sources, leading to quite different emotions. Schachter and Singer (1962), for example, demonstrated that people could be led to make quite different attributions about the cause of their arousal, which was actually due to an injection of epinephrine. Some participants attributed the arousal to the fact that they were angry at the experimenters (because another participant acted in an angry manner), whereas others attributed it to the fact that they were quite happy (because another participant acted in a happy-go-lucky manner). This study, and many others like it, demonstrated that the way in which people explain the causes of their internal arousal is influenced by their social environment (e.g., how other people are responding), which can have profound effects on their emotions and behavior.

These studies led to the insight that people experiencing arousal-based problems could be helped by changing their attributions about the cause of the arousal. Storms and Nisbett (1970), for example, reasoned that insomniacs have difficulty sleeping because they are physiologically aroused at bedtime. If people attribute this arousal to pejorative causes, they are caught in the exacerbation cycle described earlier. The dysfunctional behavior—the arousal and sleeplessness people experience when they are trying to sleep—is attributed to pejorative causes (e.g., "I'm a hopeless neurotic"), which produces additional anxiety and further sleep problems, leading to even more pejorative attributions, and so on.

In an attempt to break this cycle of self-blame, the researchers gave insomniacs a placebo to take at bedtime and manipulated the supposed side effects of the pill. Some participants were told that the pill would have arousing side effects such as an increased heart rate. Ironically, these participants reported getting to sleep more quickly than people who were told that the pill had no side effects. Storms and Nisbett (1970) argued that telling people that the pill

had arousing effects provided the insomniacs with a nonpejorative explanation for the arousal they typically experienced at bedtime, reducing their self-blame and subsequent anxiety. The exacerbation cycle was broken, allowing participants to get to sleep more quickly.

Although promising, there are some problems with applying misattribution techniques to achievement contexts. First, although the original findings have been replicated by some (e.g., Storms, Denney, McCaul, & Lowery, 1979), other researchers have failed to replicate them (e.g., Kellogg & Baron, 1975; for a review, see Ross & Olson, 1981). Second, this type of intervention is not easy to administer on a large scale. To help college students who are experiencing academic difficulties, for example, it would not be feasible to hand out placebos and tell people that they would have arousing side effects. Finally, misattribution manipulations are limited to dysfunctional behaviors that are accompanied by physiological arousal, such as insomnia. Although students who are getting low grades probably become aroused at times, such as when taking a test, it might be more feasible to target their attributions about their poor academic performance.

REATTRIBUTION INTERVENTIONS

Reattribution is a technique that attempts to change people's explanations about the dysfunctional behavior itself, regardless of whether that behavior is accompanied by physiological arousal. For example, to help students who get poor grades in their first year of college, we would attempt to change their attributions for their poor academic performance from pejorative (e.g., low intelligence) to nonpejorative (e.g., the difficulty of the transition from high school to college) causes.

Interestingly, the reattribution approach arose from a confluence of different research traditions. As already mentioned, one tradition was research on attribution theory (e.g., Kelley, 1967), which led to early attempts to change people's attributions from pejorative to nonpejorative causes, with mixed success (e.g., Nisbett, Borgida, Crandall, & Reed, 1976). Reattribution interventions can be traced to four other theoretical roots.

Weiner's Attribution Theory

Bernard Weiner (1986; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1972) was among the first to extend attribution theory to the domain of academic achievement. Whereas early attribution theories had focused on the internal–external dimension of causality (whether people attribute an event to themselves or to something external to themselves), Weiner stressed the importance of additional, independent dimensions, notably stability (whether people see the causes as stable and unchangeable or unstable and change-

able). Weiner argued that the stability dimension is most related to expectations about future performance and thus is a promising target of interventions. He hypothesized that changing people's attributions for poor performance to an unstable cause, such as low effort (internal, unstable) or bad luck (external, unstable), would raise their expectations about their future performance. Weiner's work spawned attribution retraining studies that focused on the stability dimension, usually with the attempt to convince people that their poor performance was due to low effort. Many of these studies have been successful, by showing that getting people to attribute failures to low effort led to increased effort and improved performance in the future (e.g., Anderson, 1983; Andrews & Debus, 1978).

Learned Helplessness Theory

Concurrent with initial research on attribution theory, Martin Seligman and his colleagues were developing their theory of learned helplessness in animals (Overmeier & Seligman, 1967; Seligman & Maier, 1967). The emphasis of the theory was on the debilitating effects of a lack of control over negative outcomes. For example, dogs who experienced uncontrollable negative events (e.g., electric shocks) showed more deficits in learning than dogs who received the same shocks but could control their termination. In 1978, Abramson, Seligman, and Teasdale reformulated learned helplessness theory in terms of attributional principles, arguing that the key to understanding humans' reactions to negative events is the way they explain the causes of these events. Reformulated helplessness theory focused on three independent dimensions of causality: internality (whether people see the causes as internal or external to themselves); stability (whether people see the causes as stable and unchangeable or unstable and changeable); and globality (whether people see the causes as applying to one specific situation or as applying to many situations). People who attribute negative events to internal, stable, global causes will experience learned helplessness, which is characterized by depression, lower effort, and difficulty in learning.

Learned helplessness theory has focused mostly on individual differences in patterns of attributions and how these differences are correlated with problems such as depression and health. In a further revision of the theory, for example, Abramson, Metalsky, and Alloy (1989) argued that people who attribute negative life events to stable, global causes are particularly likely to experience a type of depression termed hopelessness. Perhaps due to its emphasis on individual differences in personality, the learned helplessness approach has not generated many interventions that attempt to change people's attributions. The predictions of the theory, however, are quite compatible with the other approaches reviewed here: People experiencing academic difficulties are better off attributing them to external, unstable, specific causes than internal, stable, global ones.

Dweck's Model of Self-Theories

Drawing on the work of Weiner and learned helplessness theorists, Carol Dweck (1975) was one of the first to show that encouraging people to attribute poor performance to unstable causes (e.g., low effort) improves subsequent effort and performance. She subsequently developed a model that emphasizes people's theories about their own intelligence. People who view their intelligence as a fixed, unchangeable trait (an entity theory) are hypothesized to react to failure very differently than people who view their intelligence as a malleable, changeable skill (an incremental theory). Of most relevance here is how people with these different theories react to failure on a task. Those with an entity theory, Dweck reasoned, are more likely to give up, assuming that they must not have the ability required for the task. Those with an incremental theory are more likely to try harder in the future, assuming they need only increase their efforts to acquire the skills necessary to do well. In a series of fascinating experiments, Dweck and her colleagues have shown that children with incremental theories choose more challenging tasks to perform, persist more in the face of failure, and perform better academically (for a review see Dweck, 1999, and Chapter 3 in this volume).

Dweck's work is firmly rooted in attribution theory. People with an entity theory of intelligence are likely to attribute academic failure to an internal, stable cause (low intelligence that will not change), whereas people with an incremental theory are likely to attribute academic failure to an external, unstable cause (the fact that they have not yet acquired the necessary skills, but can with increased effort). Because these patterns of attribution are rooted in people's self-theories about intelligence, Dweck (1999) argues that the best way to change attributions is to target these theories, rather than specific attributions.

Self-Efficacy Theory

In contrast, Albert Bandura's (1997) self-efficacy theory points to the importance of people's beliefs about the likelihood that they can perform desired behaviors. The greater people's sense of self-efficacy in a given domain, the more effort they will exert and the more successful they are likely to be. Self-efficacy beliefs are related to attributions, because people who attribute successes to internal, stable factors (e.g., ability) will experience greater self-efficacy than people who attribute their successes to external, unstable factors (e.g., luck). Bandura argues that self-efficacy is a broader, more important concept than attributions, and that in fact the effects of attributional interventions are mediated by changes in self-efficacy. We will return to the issue of what mediates the effects of attributional interventions; for now, we point out that self-efficacy theory, like the other approaches we have reviewed, argues that changing people's attributions for the causes of their behavior can have beneficial effects on future performance.

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To summarize, a number of theoretical approaches converge on the same intervention strategy: To help people behaving dysfunctionally, it is helpful to try to change their attributions from pejorative to nonpejorative explanations of their behavior. Although a number of attributional dimensions have been targeted, such as internality, the one that has been addressed the most is the stability dimension, whereby people are encouraged to reattribute their poor performance from stable to unstable causes. By the early 1980s a number of successful interventions had been performed, notably Dweck's work with academic performance in children.

These studies inspired Wilson and Linville (1982, 1985) to try an attributional intervention with college students. They reasoned that students in the first year of college might be especially susceptible to the exacerbation cycle discussed earlier. Academic setbacks are common in the first year of college, as they are in any transition from one level of schooling to the next. Students must deal with more challenging courses, a new social environment, and (for many) life away from home for the first time. The way in which students explain these setbacks is crucial, Wilson and Linville reasoned. Those who make pejorative attributions, blaming their academic difficulties on internal, stable factors, are likely to experience anxiety, lowered effort, and difficulty in learning new material, just as the theories we have reviewed would predict. They might well become caught in a spiral of increasing self-blame, anxiety, and poor performance.

If so, first-year college students might be helped by an intervention that encouraged them to attribute any academic problems they were having to temporary factors. One of way of accomplishing this, Wilson and Linville reasoned, would be to convey the simple message that many beginning college students experience academic difficulties, but that these difficulties tend to improve after the first year. The knowledge that their initial academic problems are not unusual, and are likely to improve over time, might be enough to change people's attributions from pejorative to nonpejorative causes, thereby alleviating anxiety and improving performance.

To find out, Wilson and Linville (1982) targeted first year college students who were especially likely to be caught in the exacerbation cycle. Specifically, they selected students who were worried about their academic performance, felt that they had not done as well as they could have in their first semester courses (and, in fact, did not have extremely high GPAs), and felt that they were intellectually inferior to their classmates. Ostensibly as part of a survey about the college experience, the participants were randomly assigned to a treatment or control condition. In the treatment condition, the students read actual statistics documenting that many students improve their grades after their first year of college. To make this information more concrete, the students also

watched videotaped interviews of four upperclass students discussing their college experiences and personal backgrounds. The interviewees reported their grade point average for their first semester of college, second semester of college, and the semester they had just completed. In all four cases, it was clear that the students' grades improved over time. These interviews were intended to convey the following message: "The academic problems you are experiencing are not your fault; they are caused by temporary roadblocks and you will do better in the future." Participants in the control condition did not receive the statistics or view the videotapes.

The effects of this simple intervention were dramatic. Compared with the control condition, students in the treatment condition improved their grades in the following year and were more likely to remain in college. Wilson and Linville (1982) concluded that it may be possible to interrupt the exacerbation cycle, with considerable benefit, with a simple, one-time intervention. These dramatic, counterintuitive results cried out for a replication. Wilson and Linville thus conducted two more studies, with some minor procedural changes (see Wilson & Linville, 1985). When the results of the three experiments were combined, the effects of the attributional manipulation on grade improvement remained significant, though the effects were larger for males than females. The difference in grade improvement for males in the treatment versus control conditions was 0.41 GPA point (on a 4-point scale in which 4 = A, 3 = B, etc.). The difference in grade improvement for females in the treatment versus control conditions was a more modest 0.13 GPA point.

Since the publication of Wilson and Linville's studies a number of other investigators have used similar attributional interventions with college students. Table 1 summarizes the results of all known experimental studies that used attributional interventions to try to improve the academic performance of college students and randomly assigned participants to an intervention or control condition. As can be seen in this table, there have been many successful replications of Wilson and Linville's results. Each of the studies found that a one-time attributional manipulation improved academic performance relative to a randomly assigned control group. Sometimes the dependent measure was a single, multiple-choice test administered in a laboratory setting (e.g., Perry & Penner, 1990); sometimes it was an exam in an actual course (e.g., Noel, Forsyth, & Kelley, 1987; Van Overwalle & De Metsenaere, 1990). Often it was people's overall grade point average in the semester after the intervention (e.g., Aronson, Fried, & Good, in press; Jesse & Gregory, 1986/1987; Nelum-Hart, Schooler, Wilson, & Meyers, 1999; Van Overwalle, Segebarth, & Goldchstein, 1989; Wilson & Linville, 1985).

The consistency of the results summarized in Table 1 is striking. On a variety of dependent measures, one-time attributional interventions have been quite successful in improving college students' academic performance. Table 1 also illustrates, however, that a number of questions remain unanswered.

TABLE I
Summary of Attributional Retraining Studies Targeting Academic Performance in College Students

Study	Participants[a]	Manipulation	Results[b]	Moderators
Wilson and Linville (1982, 1985)[c]	Introductory psychology students with below-average grades and high worry about academic performance	Videotaped interview of upperclass students reporting that their grades increased after the first year, statistics indicating that grades increase after the first year	Improved grades the semester after the study; improved test performance (sample GRE[d] items); trend toward increased likelihood of staying in college	Results stronger for males than females
Jesse and Gregory (1986/1987)	Introductory psychology students	(a) GPA information: Same as video and statistics of Wilson and Linville (1982), crossed with (b) case histories of two students illustrating benefits of attributing bad performance to unstable, controllable factors	Replicated Wilson and Linville (1982); participants in GPA information condition improved grades next semester more than controls	People who received both the GPA information and the case histories did not improve their grades; people who received only the GPA information did
Noel et al. (1987)	Introductory psychology students who had received grade of D or F on first two tests	Videotaped interview of upperclass students reporting that their grades improved; internal, controllable causes of poor performance stressed (e.g., effort)	Better performance on next two tests and final exam	None
Van Overwalle et al. (1989)	First-year college students failing an economics course	Videotaped interview of students reporting causes of their poor performance in first year; unstable, controllable causes stressed	Better performance on next exam and higher grade point average at end of year	None

continues

continued

Study	Participants[a]	Manipulation	Results[b]	Moderators
Van Overwalle and De Metsenaere (1990, Study 1)	First-year college students in an economics course	Videotaped interview of students reporting causes of their poor performance in first year; unstable, controllable causes stressed	Better performance on final exam	None
Van Overwalle and De Metsenaere (1990, Study 2)	First-year law students	Videotaped interview of students reporting causes of their poor performance in first year; unstable, controllable causes of poor performance stressed	Better performance on final exam	Results stronger for students who had moderate grades on midterm (as opposed to low or high grades)
Perry and Penner (1990)	Introductory psychology students with a GPA above 2.10	Videotaped interview of professor describing his first year in college; unstable causes of poor performance and stable, internal causes of good performance stressed	Better performance on multiple-choice tests	Manipulation worked only with students who initially attributed failures to low ability
Menec, Perry, Struthers, Schonwetter, Hechter, and Eicholz (1994, Study 1)	Introductory psychology students	Videotaped interview of graduate student emphasizing unstable, internal causes of poor performance (low effort, ineffective strategies)	Better performance on multiple-choice tests	Manipulation worked only with students who had (a) performed poorly on an initial test and (b) received an effective lecture on the test material

Menec et al. (1994, Study 2)	Introductory psychology students who performed poorly on an initial test	Videotaped interview of upperclass students emphasizing unstable, internal causes of poor performance (low effort, ineffective strategies)	Better performance on multiple-choice tests	Manipulation *decreased* performance for students who received an ineffective lecture; manipulation *increased* performance for students who (a) received an effective lecture and (b) had an external locus of control
Nelum-Hart et al. (1999)	African-American and white introductory psychology and summer orientation students	Videotaped interviews of African-American and white upperclass students who had improved their GPA; unstable causes of poor performance stressed	Improvement in grades in the following semester	Significant interaction between attributional retraining, race, and level of dispositional worry; the manipulation worked the best for high-worrying African-Americans; there was a nonsignificant tendency for low-worrying African-Americans to do worse in the attributional retraining condition
Aronson, Fried and Good (in press)	African-American and white undergraduates	Students wrote letters to middle school students emphasizing the malleability of intelligence (emphasis on internal, unstable causes of poor performance)	Improvement in grades in the following quarter	Effects of treatment slightly larger for African-Americans, but not significantly so

[a]Unless otherwise noted, no selection criteria were used to select participants.
[b]Unless otherwise noted, all results reported below were significant at $p < 0.05$, when the attributional retraining group was compared with a control condition.
[c]Results are averaged over three studies.
[d]GPA, grade point average; GRE, Graduate Record Exam.

Who Benefits the Most from Attributional Interventions?

In one sense, the studies summarized in Table 1 illustrate that the effects are quite general. Wilson and Linville's (1985) finding that males benefitted more than females appears to have been spurious, as no other study has reported a similar gender difference. Further, there has been some diversity in the samples used, including students of different races, from different countries, in different kinds of courses, and no systematic differences between these groups has been found.

The last column of Table 1, however, highlights some unanswered questions about the type of person who is likely to benefit the most from the attributional intervention. Several studies found that the intervention worked better under some conditions or for certain types of people. For example, one study worked only with participants who initially attributed their poor performance to low ability (Perry & Penner, 1990), whereas another found that initial attributions to low ability did not moderate the results (Van Overwalle et al., 1989). One study found that the intervention worked best with students who had low grades (Menec et al., 1994, Study 1), whereas another found that it worked best with students who had moderate grades (as opposed to low or high) (Van Overwalle & De Metsenaere, 1990, Study 2).

There are two results that are particularly notable, because each suggested that the attributional manipulation *decreased* academic performance in a particular condition or in a particular type of person. After administering an attributional intervention, Menec et al. (1994) showed students a videotaped lecture on a topic relevant to their psychology course. They manipulated the effectiveness of the professor who gave the lecture; in one condition he was highly engaging and expressive, whereas in the other he was inexpressive and humorless. The main dependent measure was people's performance on a multiple-choice test, administered 1 week later, that was based on material in the videotaped lecture. In two studies, the attributional intervention improved test performance only among students who saw the effective lecture. This supported the researchers' hypothesis that the attributional intervention would cause people to try harder to learn the material, but that this would pay off only when they had received effective instruction. In one study, however, the attributional intervention led to a significant *decrease* in test performance among people who saw the ineffective lecture.

Our best guess is that this result was spurious, because in Menec and colleagues' (1994) other study, the attributional manipulation had no significant effect on people who saw the ineffective lecture. Nonetheless, the interaction between attributional interventions and the quality of instruction students receive is worthy of further attention.

Nelum-Hart et al. (1999) examined the extent to which attributional manipulations of the type used by Wilson and Linville (1982) generalized to African

American students. (There were a few African American students in earlier studies, but not enough to examine race differences reliably.) All students saw videotaped interviews of four, upperclass students who reported that their grades had improved since their first year of college and gave specific, unstable reasons for their initial poor performance. Two of the students in the videos were African-American and two were white. Overall, the intervention led to an improvement in GPA in both African-American and white students.

A closer look at the data, however, reveals some interesting differences. Nelum-Hart et al. (1999) included a measure of dispositional worry, in which people rated how much various statements described them, such as "I am a worrier, I worry about everything and anything" and "I wish I didn't worry so much about everything." The sample was divided into four groups: high-worrying African Americans, low-worrying African-Americans, high-worrying whites, and low-worrying whites. As it happened, the attributional manipulation led to improved grades in three of these four groups, all but the low-worrying African-Americans. Unexpectedly, in this latter group, the attributional manipulation led to somewhat lower performance. That is, low-worrying African-Americans who received the attributional manipulation actually had a somewhat lower GPA than low-worrying African-Americans in the control condition.

We should note that the sample sizes were quite low when broken down by the worry variable; for example, there were only six African-Americans in each of the four conditions of the study. Further, the drop in grades among low-worrying African-Americans, when considered by itself, was not statistically reliable. Thus, we cannot say for certain whether the attributional manipulation leads to a reliable drop in performance in this group or simply has no effect. The difference between this group and the other three was striking, however, and further studies should explore why the attributional manipulation did not help low-worrying African-Americans as much as the others.

A hint comes from the fact that the low-worrying African-Americans in the control condition got better grades than other participants in the control condition. The other three control groups—high-worrying African-Americans, low-worrying whites, and high-worrying whites—all showed a drop in grade point average the semester after the study was conducted. In contrast, low-worrying African-Americans' performance in the control condition did not change. Perhaps low-worrying African-Americans had some protective mechanism that allowed them to avoid the exacerbation cycle. Whatever this mechanism was, the attributional retraining manipulation may have short-circuited it, as evidenced by the lower performance of low-worrying African-Americans in the treatment condition.

To summarize, there is a remarkable consistency of results across the studies summarized in Table 1; college students of various backgrounds, selected using different criteria, have benefitted from attributional retraining interventions. Nonetheless, we should not overlook the hint of negative effects

in two of the studies. Although the extent to which these negative effects are real or spurious is unclear, they are worthy of further attention.

Evidence for Mediators of Attributional Retraining Effects

Although the various theoretical approaches reviewed earlier all argue that attributional interventions can benefit college students, they disagree on exactly what mediates the effects. Weiner (1986) has argued that the key is to get people to attribute past failures to unstable causes, so that they expect to do better in the future. Dweck (1999) suggests that the key is to change people's self-theories about intelligence, whereas Bandura (1997) argues that the key is to change people's self-efficacy. The exacerbation cycle we have described suggests that a reduction in anxiety produced by pejorative attributions is crucial. These distinctions are important, because with a clearer picture of exactly what mediates the effects of attributional interventions (e.g., changes in attributions of stability or changes in theories of intelligence), these interventions can be further refined and improved.

Few studies include more than one or two measures of the potential mediators of the effects, making it difficult to assess exactly what is responsible for the improvements in academic performance that have been observed. Further, whereas some studies find the predicted changes in these mediators, others have not. Aronson, Fried, and Good (in press), for example, found that their intervention increased the extent to which students believed intelligence was malleable, supporting Dweck's (1999) theory that changes in these self-theories lead to improvement in performance. Evidence for another possible mediator, that attributional interventions would increase people's expectations that their performance would improve, which would lead to increased effort and actual improvements, has been inconsistent (Wilson & Linville, 1985, found no such evidence for the mediation of expectations, whereas Menec et al., 1994, did.) Further, direct measures of the attributions that the interventions are designed to change have yielded inconsistent results (Perry, Hechter, Menec, & Weinberg, 1993). One complicating factor is that it is not clear that people have access to or can easily report the attributions that mediate their behavior (Nisbett & Wilson, 1977). Thus, our enthusiasm over the success of attributional retraining manipulations should be tempered by the lack of evidence to date about precisely what mediates the effect.

RECOMMENDATIONS FOR EDUCATORS

As illustrated by our discussion of mediators and potential negative effects, academic psychologists are fond of equivocation. We like to focus on the "ifs, ands, and buts," because exploring the nuances and subtleties of the findings

often reveals quite a bit about the conceptual underpinnings of the findings. We recognize, however, that such equivocation can be frustrating for practitioners who need to know what to do now, not in 10 years after some of the theoretical issues have been resolved. The stakes are high, as there are many students at risk of being caught in the exacerbation cycle. In this section we make some specific recommendations for how attributional retraining techniques might be used to help students adjust to college and perform up to their capabilities.

The good news is that a relatively simple, inexpensive, easy-to-implement intervention has been shown to work. Most programs that have been designed to help college students improve their academic performance are expensive, time-consuming, and labor-intensive, such as study skills courses that involve multiple sessions. Whereas such programs might be quite helpful, the research reviewed here suggests that a one-time intervention can have nontrivial effects on students' academic performance, such as the improvement in grade point average of 0.30 to 0.40 points observed by Wilson and Linville (1982) and Nelum-Hart et al. (1999).

The attributional retraining interventions used in these studies could be easily adopted as part of orientation programs for incoming college students or, for that matter, any student experiencing a transition from one level of education to another. Most of the interventions have this in common: students watch videotaped interviews of upperclass students who mention that whereas their grades were low their first year, they improved thereafter. In many of the studies, the students offer specific reasons for their improved performance, emphasizing unstable, controllable reasons for their initial difficulties, such as adjustment to a new environment and learning how to select college courses. It would be relatively easy to make such a videotape (tailoring it to the specific setting, using actual students) and show it at orientation sessions. College advisers, counselors, and professors could convey the same message, or even be supplied with copies of the retraining video to show individual students. In their day-to-day communications with students, teachers could also convey the idea that many students have struggles that can be overcome with perseverance. This would be similar to Lepper and Woolverton's (see Chapter 8 in this volume) approach to expert tutoring; they have found that stressing the difficulty of the material has protective and motivating effects on students. There is good reason to believe that inexpensive, simple approaches such as these will be beneficial.

Interventions and Experiments

As we write these words, however, the academic researcher part of us is like a little voice in the back of our minds. "What if the hints of negative effects of this intervention are real," this voice says, "such that the videotapes have harmful effects on some subgroups, such as low-worrying African Americans?" And,

"All of the studies have been conducted with students who have begun college and have probably already experienced some academic setbacks. Would the intervention work at an orientation with students who are about to begin college with high hopes and have not yet experienced any setbacks? Maybe the message that the first year will be difficult is too discouraging at that point and is best delivered midway through the first year of college." For example, Jesse and Gregory (1986/1987) intervened in the second week of students' first semester of college. Contrary to Wilson and Linville's (1985) studies, the intervention had negative short-term effects; people who got the intervention did significantly worse on sample items from the Graduate Record Exam. However, these students improved their grades more in the long run than did people in the control condition. Finally, would the intervention work with younger students, such as those beginning middle school or high school? Clearly, we need to know more about such issues as the optimal timing of the intervention.

Though some educators and administrators may want to wait until these questions are answered before implementing the attributional retraining intervention, we have a different suggestion: Be a science-practitioner. Rather than simply making the training video and showing it at a first-year orientation, turn the intervention into an experiment in which some people see the video and a randomly assigned control group does not. Track the performance of both groups to see whether the intervention was successful and whether it was more successful for some types of students than others.

We can think of at least two objections to this suggestion. First, is it ethical to "withhold" the intervention from a control group when there is such good evidence that the intervention is beneficial? We believe it is, given the uncertainty over how the intervention works and which types of students will benefit from it the most. An analogy to drug testing in medical research is apt. Suppose that a new drug was found to alleviate migraine headaches, and yet there was uncertainty about whether it helped all subgroups of people (e.g., males versus females, young versus old). The only way to tell is to continue to test the drug experimentally, in which some people are randomly assigned to get the drug and others are randomly assigned to get a placebo. Once it is clear that the drug is beneficial with few side effects, for most people, the trials are ended and the drug is distributed widely.

We believe that the current status of attributional retraining interventions with college students is analogous to a drug that is in the early stages of testing. The initial results look quite promising, but there are many unanswered questions. Before we can recommend widespread prescriptions, further experimental trials are needed. Rather than waiting for research psychologists to perform these trials, we suggest that college administrators and educators conduct the experiments themselves.

The second objection is whether college administrators and educators have the skills necessary to conduct experimental investigations of attribu-

tional retraining interventions. Conducting well-designed, tightly controlled experiments in field settings is not a trivial undertaking; nor would it be easy for nonprofessionals to analyze the results statistically (see Aronson, Wilson, & Brewer, 1998, for an in-depth discussion of methodological issues in experimentation). As experiments go, however, the type we are proposing is not very complicated, essentially involving random assignment to two groups: one that gets the intervention and one that does not. In other words, the intervention would be the same as what would be done otherwise, except for the inclusion of a control group. Further, an advantage of being at a college or university is the proximity of people who are well-versed in methodology and statistics. A professor or graduate student in psychology or education might be interested in helping administrators design and analyze such an experiment.

The payoff of this approach could be quite large. The number of experiments of the type described in Table 1 would quickly multiply, providing answers to the thorny questions of who is most helped by attributional retraining interventions, the optimal timing of the intervention, and so on. The intervention could be fine-tuned to work best in specific locales with specific populations. It might well be, for example, that the intervention best suited for older students at a community college is different from the one best suited for younger students at a large state university or students in high school. The only way to answer these questions is to find out which types of interventions are most effective, and the only way to find that out is to conduct experiments in which the intervention group is compared with a control group.

Science can be an agonizingly slow process, as evidenced by the fact that there have been about 10 experiments on attributional retraining with college students published in the years since Wilson and Linville's (1982) study appeared in the literature. Although our suggestion for educators and administrators to conduct experiments might seem naive or unrealistic, we believe that such a joining of forces would lead to considerable practical and conceptual advances. What is now a simple, promising technique to help college students experiencing academic difficulties might well evolve into a set of seasoned, well-tested interventions tailored for specific populations.

Teachers' Questions and Answers

Q: What do you suppose happens when a student has an inappropriate or unrealistic view of his or her efficacy? For example, the student who believes she or he can conquer a reading assignment, but actually does not have the skills for that reading level?

A: Good question. As we say in the chapter, convincing a person who does not have the ability to perform a task that his or her difficulties are caused by external, unstable factors is unlikely to help. In fact, we may be doing such people a disservice, by causing them to persist longer at a task they are bound to fail. The assumption many researchers make is that at the college level

virtually all the students have the ability to do the work; thus there are unlikely to be many people who truly do not have academic ability and will be harmed by an attributional intervention. This is borne out by the fact that on average, attributional interventions have proved to be beneficial. It would be desirable, of course, to identify in advance those students who are likely to respond well to the interventions and those who will not. Several efforts have been made in this direction, as noted in the chapter, but clearly this is an area in which much more work is needed.

Q: From a practical perspective, is there anything to be gained by refreshing the intervention, with either more of the same or perhaps by related teacher prompts that serve as reminders? Do we have any indication of how long these effects last?

A: This is another open question. We do know that one-shot interventions can have remarkably long-lasting effects, as in the original Wilson and Linville (1982) study, in which students in the treatment condition achieved better grades and were less likely to drop out of college in the following year. One-time interventions might be enough to break the exacerbation cycle, in which people's worries about themselves and their performance make it difficult to study, leading to more worry, more academic setbacks, and so on. Once this cycle is broken people can in a sense "refresh" the intervention themselves, by reminding themselves that any academic problems might be caused by non-pejorative factors, thereby reducing their anxiety and making it easier to study. Surely, however, some people require a larger "dose" of the intervention than others and are likely to respond to repeated reminders. The danger is that if teachers are constantly reminding students of all the reasons why they could be doing better, the students might feel labeled as underachievers. It would be best to reinforce the intervention at the group level, reminding all students that people often blame themselves inappropriately for academic setbacks.

Q: Is part of the power of the intervention the fact that the student sees "people like me" (same general age, at the same university, etc.) or might it be even more powerful to have a high status person, like a professor, talk about her or his obstacles and struggles as a youth and how she or she eventually overcame them?

A: In our research, we have assumed that people are most likely to personalize the information if they see people similar to themselves making nonpejorative attributions for academic setbacks. That is why in the Nelum-Hart et al. (1999) study, for example, we had white and African-American students watch videotaped interviews with white and African-American people taking about their academic problems and why they occurred. But we are unaware of any study that has looked at this systematically. It might be that attributional information delivered by a high-status person is as effective or more so.

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