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Enhancing Academic Achievement in College Students Through Attributional Retraining and Instruction

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Attributional retraining is a therapeutic method for reinstating psychological control that may be useful for improving students' achievement in the college classroom. After attributional retraining or no training, internal- and external-locus students observed a videotaped lecture presented by either a low- or a high-expressive instructor in a simulated college classroom. One week later they wrote a test on the lecture and on a homework assignment. Attributional retraining improved external, but not internal, students' performance on both the lecture and homework tests. Expressive instruction also enhanced lecture- and homework-related achievement in external students but not in internal students. These results suggest that cognitive factors influencing students' perceived control (e.g., internal/external locus) must be taken into consideration when remedial interventions for academic achievement are developed. The results are interpreted within a social cognition framework.

Perceived control refers to a person's ability to predict and to influence the surrounding environment. Control theory (e.g., Carver & Scheier, 1982; Rothbaum, Weisz, & Snyder, 1982) suggests that perceived control is likely to play an instrumental role in college students' academic development and, ultimately, in their overall adjustment. Periodically, college students are threatened with loss of control through academic failure, personal trauma, and financial insecurity. These events can place some of them at risk, in part because loss of control impedes their capacity to benefit from effective instruction (Perry, 1985). The potential consequences range from boredom and apathy to absenteeism and dropping out. Improving the quality of instruction for these students will do little to promote better academic performance unless perceptions of uncontrollability can be modified. Attributional retraining is one therapeutic technique for reinstating psychological control that appears to have considerable potential.

Perceived Control and Quality of Instruction

Effective teaching has long been considered instrumental to students' learning and performance. As such, it potentially represents a viable remediation for poor academic achievement in college students. Recent research on college teaching in both laboratory and field settings has revealed a number of teaching behaviors that can have positive consequences for students' academic development (e.g., Abrami, Leventhal, & Perry, 1982; Marsh, 1984; Murray, 1983). Accordingly, a relatively simple solution would be to ensure that marginal, at-risk students are enrolled in programs having high-quality instruction. Unfortunately, the solution is not so simple because poor performance is frequently associated with low perceived control. As Perry and Dickens (1984) have shown, students lacking control over academic performance are incapable of benefiting from good instruction. Ironically, the students who are in most need of effective teaching are least likely to gain from it.

Subsequent research has provided further insight into this relation between perceived control and instruction. The research also offers useful guidance into the development of remedial interventions for improving achievement in college students. Perry and Dickens (1984) originally demonstrated the relation by presenting college students with either contingent or noncontingent feedback on a prelecture aptitude test that temporarily altered their perceptions of control in accordance with helplessness theory (Seligman, 1975). After the aptitude test, half of the students in each feedback condition viewed a 25-min videotaped lecture presented by a low-expressive instructor, and the other half saw the same lecture given by a high-expressive instructor. Students who received contingent feedback reported more control over their postlecture achievement test when taught by the high-expressive instructor than when taught by the low-expressive instructor. More important, they actually performed better with the expressive instructor. In contrast, students who received noncontingent feedback suffered temporary loss of control and did not perform well with the expressive instructor (see Figure 1, left panel). These results were replicated in three follow-up studies with similar experimental procedures (Perry & Magnusson, 1987; Perry, Magnusson, Parsonson, & Dickens,

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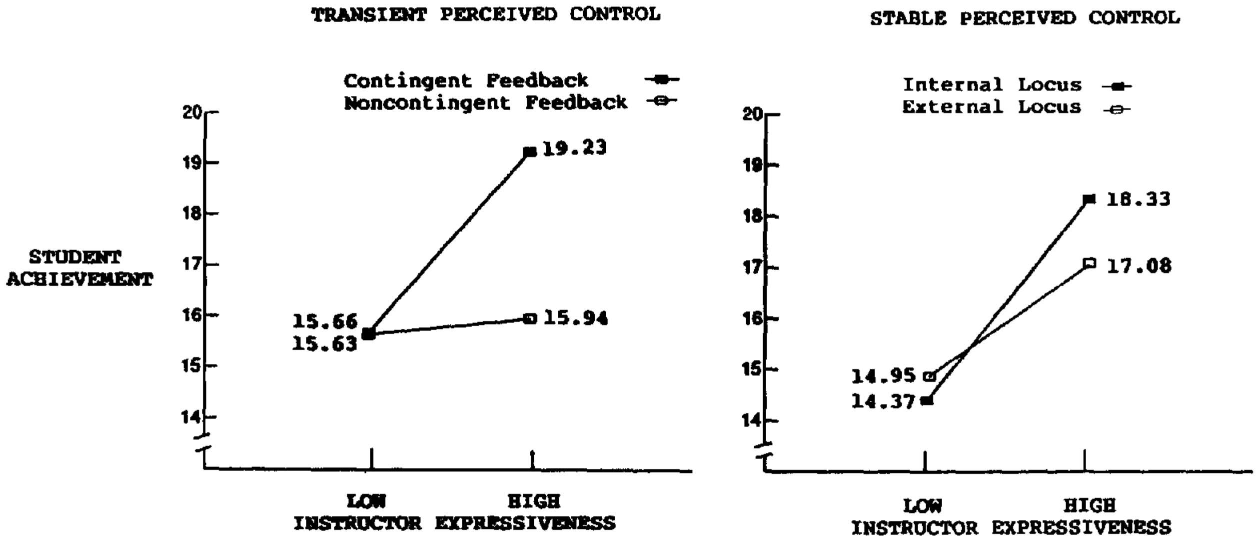

Figure 1. The relation between perceived control and instruction on student achievement when control is defined in terms of transient (Panel 1) and stable (Panel 2) factors. (The Panel 1 data are taken directly from Perry and Magnusson, 1987, and the Panel 2 data from a supplementary analysis of Magnusson and Perry, 1989.) Copyright 1987 by the American Psychological Association. Reprinted by permission.

1986; Perry & Tunna, 1988). Invariably, expressive instruction was an effective teaching behavior only when students perceived some control over their academic performance.[1]

Throughout these studies, loss of control was deemed to be the result of transient *situational* factors that periodically occur in college classrooms. Contingent and noncontingent feedback on an aptitude test was used to represent such environmental events. In addition to noncontingent feedback (e.g., Brophy, 1981), unannounced tests, excessive content, and poor organization are common classroom events that can lead to loss of control. The manipulation of feedback on aptitude tests provides a precise method for experimentally manipulating perceived control. Two additional experimental conditions were included in the core experimental design as levels of the contingency feedback variable: (a) no feedback, which requires students to respond to the aptitude test by using a standard IBM sheet (students are thus provided with no information about the accuracy of the answers) and (b) no training, which omits the aptitude test before the lecture.

But control theory specifies also that *stable* cognitive schemata, in addition to transient, environmental events, can determine students' perceptions of control. Internal locus of control (Rotter, 1966) and Type A personality (Glass, 1977), for example, are two constructs that describe people who have relatively enduring perceptions of control. Magnusson and Perry (1989), using a version of Rotter's (1966) scale modified for college classrooms (B. Weiner, personal communication, February 1981), examined how stable cognitive schemata might affect students' perceptions of control. If internals and externals differ in their stable perceptions of control (Lefcourt, 1980; Rothbaum et al., 1982), a pattern that is similar to that reported by Perry and Dickens (1984) for transient perceptions of control should emerge. As Figure 1 (right panel) indicates, internal-locus students in the study by Magnusson and Perry (1989) performed better for the expressive instructor than for the unexpressive instructor; however, external-locus students showed no comparable improvement in performance. Thus whether loss of control is considered in terms of temporary (state) or enduring (trait) qualities, it can consistently impede the benefits of effective instruction.

Of course, *both* stable cognitive schemata and transient environmental events *simultaneously* affect students' perceived control in actual college classrooms. For example, an internal-locus student may be periodically subjected to an environmental episode that normally causes loss of control, such as failure on a test or social rejection. Magnusson and Perry (1989) examined these combined determinants of per-

[1]The impairment of the achievement-enhancing capacity of effective instruction can be understood in terms of information-processing theory. According to Perry and Magnusson (1987), teaching behaviors are effective because they prime cognitive mechanisms involved in academic achievement. Expressiveness, for example, is effective because it activates selective attention. The basic dimensions that constitute expressiveness—namely, physical movement, voice inflection, eye contact, and humor (Perry, Abrami, & Leventhal, 1979)—have stimulus-cuing properties that serve to elicit selective attention. Other teaching behaviors, such as instructor organization, engage different components of the information processing system. Thus instructor organization is effective because conceptual structures inherent in organized lectures provide "chunking" strategies that can enhance long-term memory capacity. Cognitive, motivation, and emotional deficits associated with loss of control (Abramson, Garber, & Seligman, 1980) would interfere with mechanisms responsible for the storage and retrieval of achievement-related material. Under these conditions, effective teaching behaviors such as expressiveness would have greater difficulty activating information processing mechanisms.

ceived control in their other experimental conditions. Half of the internal-locus and external-locus students were presented with contingent feedback on the aptitude test, and the other half were presented with noncontingent feedback. In contrast to the results of the earlier studies, *noncontingent* feedback did not lower perceived control for internal-locus students. As a result, they continued to perform better with the expressive instructor than with the unexpressive instructor. Perry and Tunna (1988) reported similar results with Type A students. These students did better with the expressive instructor, even though before the lectures, they suffered loss of control as a result of receiving noncontingent feedback. On the other hand, *contingent* feedback presented before the lecture resulted in external-locus students' performing better with the expressive instructor than with the unexpressive instructor. Contingent feedback appears to serve a remedial function by increasing perceived control and thereby allowing the external-locus students to benefit from expressive instruction.

Together, these studies provide some guidance for developing remediation strategies to improve academic achievement. First, they show that loss of control, whether caused by transient environmental events or by preexisting cognitive schemata, impairs the achievement-enhancing capacity of effective instruction. Moreover, student achievement deteriorates in direct relation to the amount of uncontrollability induced before instruction (Perry & Dickens, 1988). Second, they indicate that some students are more resistant to loss of control because of cognitive schemata associated with internal locus of control and Type A personality. Despite the occurrence of events that normally lower perceived control, these students manage to retain or regain control so that they benefit from good instruction. Finally, contingent feedback appears to serve as a rudimentary intervention for one group of at-risk students (namely, those having an external locus) and to thereby enable effective instruction to increase achievement.

Attributional Retraining: Improving Academic Performance

If perceived control can be increased in at-risk students, then their achievement should improve as a result of both their own efforts and the quality of instruction. Attributional retraining is one remediation technique that appears to be gaining considerable prominence as a technique for restoring perceived control and self-efficacy (Försterling, 1985). Weiner (1974) and others (e.g., Abramson et al., 1980; Dweck, 1975) have argued that attributional retraining can be used to modify causal attributions, which in turn can lead to an increase in perceived control. Attribution theory has been used to design one-shot interventions in which ability and effort are linked to success and lack of effort to failure (Weiner, 1979). For example, Zoeller, Mahoney, and Weiner (1983) examined this technique with mentally retarded adults who observed a peer perform a psychomotor task on film. A commentator verbalized the desirable attribution following each success and failure. A second intervention procedure involved in vivo feedback given directly to subjects following each success and failure. Both interventions caused subjects' performance on a related task to improve more than the performance of an experimental group that received no intervention.

Attributional retraining has been used with different subjects in a variety of settings, but other than Wilson and Linville's (1982, 1985) research, few studies have focused on college students and academic achievement (Försterling, 1985). Wilson and Linville gave college students concerned about their academic performance a brief, one-shot attributional retraining session. The students saw videotaped interviews in which senior students described how their grade point averages (GPAs) improved substantially from their first to later academic years. The information was intended to change attributions for performance from stable to unstable causes and to show that although many students had problems initially, their performance improved dramatically in later years. Attributional retraining increased performance for men on a Graduate Record Examination- (GRE) type test immediately after the session and enhanced GPA for both men and women in the next academic term. These results underscore the potential utility of attributional retraining for improving academic achievement in college students, although further development and closer scrutiny are required (e.g., Block & Lanning, 1984).

Attributional retraining was used here to induce a mastery orientation in college students who had either an internal or external locus of control (Rotter, 1966). It was combined with selected instructional variables to determine whether it can assist potentially at-risk students who are unable to benefit from effective teaching. External locus of control identifies a specific group of students who may have perceptions of low control (e.g., Rothbaum et al., 1982). Their beliefs that factors outside themselves determine important outcomes could result in lower control and, in some cases, helplessness (e.g. Dweck, 1975; Lefcourt, 1980). Magnusson and Perry's (1989) study is relevant to this issue because they examined external-locus students in relation to three types of prelecture feedback: contingent, noncontingent, and no feedback. External students were unable to improve their performance with the expressive instructor in the no-feedback condition (Figure 1, right panel). Yet, when presented with contingent feedback, they did better with the expressive instructor than with the unexpressive instructor.

The attributional retraining procedure used in our study was a short viedotape intervention that was given before simulated classroom manipulations. Internal- and external-locus students received either attributional retraining or no training, after which they took an aptitude test that provided immediate contingent feedback. This phase was followed by a videotaped lecture that was presented by a low-expressive instructor to half of the retraining and no-training students and by a high-expressive instructor to the other half. Before departing, students received study material unrelated to the lecture and were told to return in 1 week to be tested on the lecture material and on the homework. These procedures depart from previous research by Perry and associates in that (a) an improved locus of control measure was used, (b) achievement was measured 1 week later rather than immediately after the lecture, and (c) a homework assignment provided a different type of achievement task.

Attributional retraining was expected to increase performance on both achievement measures 1 week following the lecture. If effective, it should have had immediate motivational consequences for students during the lecture, thereby improving their learning and ensuring better performance at a later date. It should also have motivated students to tackle the homework assignment in view of the impending test. A main effect would occur on the two achievement tests if both internal- and external-locus students benefited equally from the attributional retraining. If, however, either type of student benefited more than the other from the intervention, then a Locus of Control × Attributional Retraining interaction would occur. This is possible if differences in causal attributions and perceived control exist between internal- and external-locus students. For example, external-locus students could benefit from attributional retraining because it changes their causal attributions to a more internal locus. Internal-locus students may show little or no improvement if their attributions are congruent with the mastery orientation depicted in the attributional retraining.

Attributional retraining should also enable external-locus students to benefit from effective instruction. As demonstrated by Magnusson and Perry (1989), external-locus students performed better with an expressive instructor than with an unexpressive instructor when they received contingent feedback on a test before the lecture. In contrast, external-locus students who received no feedback before the lecture did not improve their performance with the expressive instructor. These results would be expected if contingent feedback led to an increase in perceived control in the external-locus students. The attributional retraining procedures employed in this study are more congruent with standard practices (e.g., Försterling, 1985) and therefore are likely to augment the effects of Magnusson and Perry's rudimentary contingent feedback manipulation.

Method

Subjects

Subjects were 198 male and female students enrolled in a multisection introductory psychology course of approximately 3,000 students at the University of Manitoba. Subjects volunteered for two sessions, and experimental conditions were assigned to sessions, as described in the *Procedure* section. Students received credit toward a course requirement for research participation.

Materials

Locus of control. The Multidimensional Multiattributional Causality Scale (MMCS) was used to assess internal-external locus of control (Lefcourt, Von Baeyer, Ware, & Cox, 1979). It is an attributional questionnaire for college students that focuses on two specific areas: academic achievement and affiliation. The psychometrics of the scale were described in detail by Lefcourt et al. Subjects responded to 48 Likert scale items that can be analyzed separately according to achievement versus affiliation, attributions for success/failure, and four kinds of attributions (ability, effort, context, and luck). Ability and effort attributions to failure were used to classify subjects into internal- and external-locus groups. The ratings for ability minus effort yield possible scores ranging from −15 to +15; higher scores indicate greater externality. This computational procedure separates students who attribute failure to lack of effort (internal locus of control) from those who attribute failure to lack of ability (external locus of control).

Our use of the terms *internal* and *external* depart from the original formulation as proposed by Rotter (1966). He would view an attribution of limited ability as an internal cause, although it implies an absence of self-contingency and a lack of control. A problem exists because this attribution does not conform with the general definition of internal locus, which suggests the presence of self-contingency and control. Because of this confusion, some researchers have deemed a limited ability attribution following failure as implying an external locus (e.g., Diener & Dweck, 1978; Lefcourt, 1976). An external locus is logically inferred because the person does not possess the resources (i.e., ability) necessary to produce success. This issue has been discussed at length elsewhere (e.g., Janoff-Bulman, 1979; Rothbaum et al., 1982). For our purposes, external locus was considered as involving an attribution to limited ability following failure. Without prejudging the resolution of this issue, our use of the term *external locus* implies differences in causal attributions and perceived control. Of course, an attribution to limited ability on the MMCS does not guarantee the absence of self-contingency because, owing to its construction, the scale does not assess other internal attributions that may be salient.

Only failure items were used to differentiate internal locus from external locus, on the basis of reviews of the learned helplessness literature that show that negative outcomes are the primary determinants of uncontrollability (e.g., Miller & Norman, 1979; Rothbaum et al., 1982). Perry and Dickens (1988) found similar patterns in their simulated college classroom, in which noncontingent failure caused loss of control but noncontingent success caused no comparable effect. A median-split procedure was used to classify students as internal (MMCS score ≤ -4) or external (MMCS score ≥ -3); scores ranged from −12 to +5 ($M = -4.22$). The mean ratings were −6.68 for internals and −0.67 for externals; higher ratings denoted greater externality.

Contingency task. An aptitude test that provided *contingent* feedback to all students was given before the videotaped lecture. It was a shortened version (30 items) of Perry and Dicken's (1984) contingency task, which has been shown to enable students to retain control over their academic performance (Perry & Dickens, 1984, 1988). The task consisted of verbal analogies and quantitative items similar to those found on the Miller's Analogies Test and on the GRE. Multiple-choice answer sheets provided immediate feedback to the subjects when a special pen was used to mark the chosen alternative. Irridescent properties of the ink interacted with the invisible type on the answer sheet so that the contingent feedback was immediately visible. The answer sheet had four alternatives for each question, and a *C* or an *X* indicated whether the choice was correct or incorrect. Subjects were given 20 min to complete the questions.

Attributional retraining. Attributional retraining involved an 8-min color videotape in which a male psychology professor described his freshman year at university. He recounted a critical incident in which, in the face of repeated failure, he persisted only at a friend's urging and went on later to succeed in university and graduate school. He encouraged students to attribute poor performance to lack of effort and good performance to ability and proper effort. He also explained that persistence is a major part of successful effort and that long-term effort enhances ability (ability is unstable and increasing). He emphasized that the amount of effort that a person expends is not a stable personality trait but is actually controllable.

The videotape intervention ensured better experimental control than did an in vivo technique, while maintaining comparable effectiveness (Schunk, Hanson, & Cox, 1986; Zoeller et al., 1983). The attributional retraining stressed that poor performance is often due to lack of effort and that greater effort and ability can enhance performance significantly. Both effort and ability were depicted as unstable factors to ensure common consensus in their interpretation and to increase the number of factors affecting subsequent performance. Weiner (1979, 1986) has repeatedly stated that attributions can have several interpretations, and so their placement may vary in his three-dimensional taxonomy. In contrast to the usual interpretation, effort may sometimes be considered as a stable trait, as in "a hard worker," and ability may be viewed as unstable, as in "a skill" that can be acquired. The procedure used here fosters a consistent interpretation by the students in which both are viewed as unstable.

Instructor expressiveness. Instructor expressiveness (low and high) was manipulated with two 25-min color videotapes. A male psychology professor, different from the one in the training tape, presented a lecture on the topic of repression that was based on actual lecture notes. His presentation varied in expressiveness, defined in terms of physical movements, eye contact, voice inflection, and humor. Decreased or increased frequencies of these behaviors represented the low- and high-expressiveness conditions as determined by Perry, Abrami, and Levanthal (1979). Lecture content was based on the number of teaching points covered in the presentation and was restricted to Perry, Abrami, Leventhal, and Check's (1979, Study 2) high-content tapes. An Advent 1000A Videobeam Color Projection Unit was used to project a life-size image on a 2.2-m diagonal screen.

Dependent measures. The dependent variables were administered as part of a questionnaire package 1 week after the videotaped lecture. Two achievement tests were used to assess students' academic performance: one related to the lecture and the other to the study materials. The lecture test contained 30 multiple-choice items, each with four response alternatives, designed to measure retention and understanding (Perry & Dickens, 1984). The homework test was similar and consisted of 10 multiple-choice items. The study materials were two pages of text summarizing a chapter entitled "The Nature of Anxiety-Based Problems" and written by the same professor who presented the videotaped lecture (Martin, 1983). Russell's (1982) Causal Dimension Scale (CDS) was used to assess students' causal perceptions of their performance on the two achievement tests. It consisted of nine Likert scales measuring the relative locus, stability, and controllability of a given cause. Each of these three attribution dimensions consisted of three Likert scales with a combined range of 1–27. Higher scores on these dimensions defined the cause as being more internal, stable, and controllable.

Procedure

The experimental procedures involved a two-stage sequence in which subjects volunteered to participate in a 2-hr session followed by a 1-hr session 1 week later. The first session involved the independent variable manipulations (attribution retraining and expressiveness); the second session was used to administer the achievement tests and the CDS. Before the first session began, the subjects were informed that the experiment concerned teaching processes and that they would first complete a questionnaire and an aptitude test and then view a videotaped lecture. They were also told that in the second session, they would take a test on the lecture and homework material and complete a questionnaire related to their performance. To prevent detailed discussions of the manipulations, the no-training conditions were run before the attribution retraining conditions. This reduced the possibility that the attribution retraining information would be disseminated to no-training condition subjects. Expressiveness conditions were randomly assigned to an equal number of morning and afternoon sessions. Lefcourt et al.'s (1979) MMCS was administered at the beginning of the first session.

In Session 1, subjects participated in groups of 15–25 in a simulated college classroom with rows of desks and blackboards and a video-projector unit. The subjects received the MMCS and then were given the aptitude test providing immediate contingent feedback. In the attributional retraining condition, the subjects were told that they would view a short videotaped interview on the student role in the learning process. The attributional retraining videotape was shown, followed by the aptitude test and then the lecture with the low- or high-expressive instructor. Subjects in the no-training conditions did not view the retraining videotape but simply proceeded to the aptitude test and to the lecture. After the lecture, subjects were told that they were to return to a specified room 1 week later to take a test and complete a questionnaire. They received the study materials before departing.

For Session 2, subjects returned to a different room than the one used for Session 1 and were introduced to a second experimenter. They participated in groups of 20–40 in which two Session 1 groups were tested on the same day when possible. Subjects wrote the lecture test and the homework test and then completed the CDS on the basis of their perceived performance on the two achievement tests. Debriefing involved a detailed explanation of the rationale for the experiment and the expected results.

Results

Preliminary Analyses

The experiment consisted of a lecture session that included the three independent variables and a testing session in which the dependent variables were administered 1 week later. A Locus of Control (internal and external) × Attributional Retraining (training and no-training) × Instructor Expressiveness (low and high) 2 × 2 × 2 factorial design was used to test student achievement and causal perceptions. The initial sample contained 267 subjects; however, 18 subjects were removed from the analyses because they failed to return for Session 2. A Locus × Retraining × Expressiveness chi-square analysis was computed for Session 2 attendance. An expressiveness main effect, $\chi^2(1, N = 249) = 4.40$, $p < .05$, (critical $\chi^2(1, N = 249) = 3.05$), revealed that attendance in Session 2 was higher with expressive instruction than with unexpressive instruction (96.6% vs. 90.4% of Session 1).

The complete Session 1/Session 2 sample was screened to remove subjects not suitable for the attributional retraining procedure developed for this study. Attributional retraining is intended to modify motivational deficits that cause students to perform below their capacity (e.g., Dweck, 1975; Wilson & Linville, 1982). The brief, one-shot videotape procedure used here would not be appropriate for students suffering extreme motivational deficits. Rather, they would require a lengthier, more personalized intervention than the short, group-administered videotape procedure. Consequently, students were not included if they were likely to be suffering extreme motivational deficits according to the following criteria: GPA < 2.10 (i.e., D average) and lecture achievement < 27% (i.e., 8/30). These criteria would also likely remove some students with marginal ability who would not be receptive to attributional retraining because it cannot correct intellectual deficits.[2] These criteria excluded approximately the same number of internal- and external-locus students (23 vs. 28) but excluded more students who had attributional retraining than those who had no training (34 vs. 17).

Lecture and Homework Achievement

Attributional retraining was predicted to improve learning during a lecture and to increase the use of study materials. It should be noted that the attributional training and no-training conditions both included contingent feedback on the aptitude test before the lecture. It was expected that external-locus students would benefit more from retraining than would internal-locus students because of external students' lower level of perceived control. Students' lecture and homework achievement was analyzed in separate Locus of Control × Attributional Retraining × Instructor Expressiveness 2 × 2 × 2 factorial analyses of variance (ANOVAS). See Table 1 for means and standard deviations.

Attributional retraining had a significant effect on lecture achievement, $F(1, 190) = 6.56$, $MS_e = 11.38$, $p < .01$, and on homework achievement, $F(1, 190) = 4.07$, $MS_e = 3.82$, $p < .05$. Students who received retraining performed better than those who received no training on the lecture test (Ms = 16.21 and 14.94) and on the homework test (Ms = 4.88 and 4.30). Attributional retraining also interacted with locus to affect lecture performance, $F(1, 190) = 3.03$, $p = .08$, and homework performance, $F(1, 190) = 9.48$, $p < .01$ (see Figure 2). Planned comparisons of the interactions indicated that attributional retraining improved achievement on the lecture test for external-locus students more than for their no-training counterparts, $t(190) = 2.74$, $p < .01$. For internal students, attributional retraining did not increase achievement more than did no training, $t(190) < 1$. Homework achievement revealed a similar pattern in which attributional retraining improved the performance of external-locus students, $t(190) = 3.24$, $p < .01$, but not of internal-locus students, $t(190) < 1$. Thus attributional retraining enabled external-locus students to perform better on both the lecture and homework tests, but it provided no comparable advantage for internal-locus students.

It was expected that the Locus of Control × Expressiveness relation reported by Magnusson and Perry (1989; see Figure 1, right panel) would change because attributional retraining elevated students' perceptions of control. Instructor expressiveness had a main effect on lecture performance, $F(1, 190) = 14.23$, $p < .001$, and interacted with locus on both performance measures. For lecture achievement, the Locus of Control × Expressiveness interaction, $F(1, 190) = 3.87$, $MS_e = 11.38$, $p < .05$, indicated that external-locus students achieved more with an expressive instructor than with an unexpressive instructor, $t(190) = 3.59$, $p < .01$. However, internal-locus students did not perform better with the expressive instructor, $t(190) = 1.44$, $p > .05$ (see Figure 3, left panel).

For homework achievement, a similar pattern emerged. The Locus × Expressiveness interaction, $F(1, 190) = 10.88$, $MS_e = 3.82$, $p < .01$, revealed that external-locus students performed better if they had had an expressive instructor than if they had had an unexpressive instructor, $t(190) = 2.31$, $p < .01$. Of interest is that the internal-locus students performed *worse* after having had the expressive instructor, $t(190) = 2.38$, $p < .01$ (see Figure 3, right panel).

Table 1
Means and Standard Deviations for the Postlecture Measures

	Attributional retraining				No training			
	Internal		External		Internal		External	
Measure	Low[a]	High[a]	Low	High	Low	High	Low	High
				Lecture achievement[b]				
M	15.36	15.97	15.33	18.17	14.67	15.84	13.19	16.05
SD	3.03	3.36	3.40	3.63	2.55	4.48	2.50	3.44
				Homework achievement[c]				
M	4.87	4.00	4.80	5.83	5.17	4.31	3.35	4.36
SD	1.86	1.62	2.18	2.18	2.08	2.15	1.65	2.06
n	31	30	15	18	24	32	26	22
				Causal Dimension Scale (CDS)				
Internality[d]								
M	17.94	18.17	16.53	16.24	14.92	14.41	15.34	16.55
SD	5.54	4.50	4.94	4.67	5.31	4.38	5.38	5.43
n	31	30	15	17	24	32	26	22
Control[e]								
M	20.35	18.63	18.87	16.56	19.44	15.44	18.80	17.25
SD	4.22	5.12	4.31	4.05	3.91	4.81	4.44	3.95
n	29	30	15	18	23	32	25	20
Stability[f]								
M	9.36	8.93	9.00	11.83	8.29	8.41	9.50	10.32
SD	4.88	4.75	4.99	4.59	4.26	4.54	3.54	5.46
n	31	30	15	18	24	32	26	22

[a] Refers to low- and high-expressive instructor. [b] Lecture achievement range is 0–30. [c] Homework achievement range is 0–10. [d] Internality dimension on the CDS: range = 1–27. [e] Control dimension on the CDS: range = 1–27. [f] Stability dimension on the CDS: range = 1–27.

Causal Perceptions of Performance

A Locus of Control × Attributional Retraining × Instructor Expressiveness 2 × 2 × 2 factorial ANOVA was computed for Russell's (1982) CDS. Students' causal perceptions of their performance were analyzed separately for each of the three dimensions (see Table 1 for means and standard deviations). Attributional retraining had a significant main effect on the locus of perceived causes, $F(1, 189) = 6.33$, $MS_e = 25.30$, $p < .01$, and it interacted with locus of control, $F(1, 189) = 4.22$, $p < .05$. Internal-locus students perceived the causes of

[2]Although it may seem improbable that students with marginal ability would be at university, recent changes in entrance requirements make this likelihood more feasible. In the last two decades, universities have moved to increase accessibility through various procedures, including lower entrance standards, open admissions for special students, and so forth. Some universities also have a mandate to serve the general public in the broadest capacity, necessitating less stringent admissions policies.

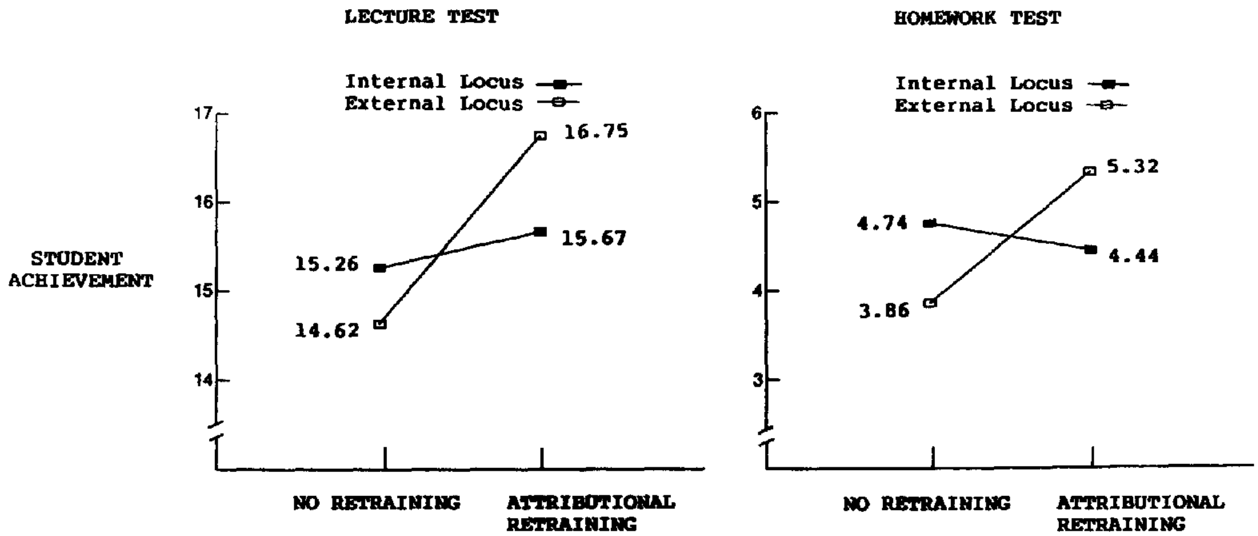

Figure 2. The attributional retraining and locus of control interaction for the lecture test (Panel 1) and the homework test (Panel 2). (Note that the ranges were 0–30 for the lecture test and 0–10 for the homework test.)

their performance as more internal after attributional retraining than after no training, t (116) = 3.64, $p < .01$, whereas external-locus students showed no similar increase in internality ($t < 1$). The attributional retraining main effect confirms predictions and is congruent with the achievement results. Although external-locus students did not increase their internality after attributional retraining, their mean ratings were within the range for internal-locus students. Thus their ratings were reasonably comparable but likely influenced by factors other than attributional retraining, such as the contingency feedback presented before the lecture.

Expressiveness influenced the controllability of causes, F (1, 184) = 13.13, MS_e = 19.67, $p < .01$; the unexpressive instructor produced higher ratings than did the expressive instructor (*M*s = 19.36 and 16.97). This pattern suggests a hedonic bias in which students are willing to give control for poor performance to the unexpressive instructor but are unwilling to attribute control for good performance to the expressive instructor. Locus affected students' perceived stability of causes, F (1, 190) = 4.35, MS_e = 21.42, $p < .05$; external-locus students viewed the causes as more stable than did internal-locus students (*M*s = 10.16 and 8.75).

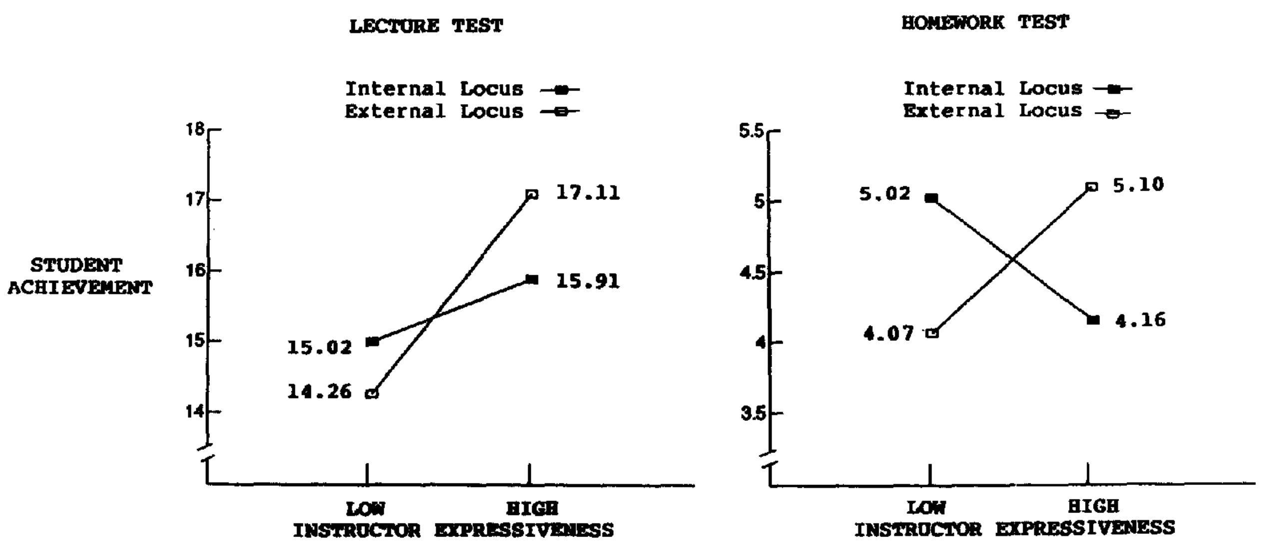

Figure 3. The relation between locus of control and instruction on student achievement when performance is based on a lecture test (Panel 1) and a homework test (Panel 2). (Note that the ranges were 0–30 for the lecture test and 0–10 for the homework test.)

Discussion

Attributional Retraining

Loss of control represents a serious threat to college students' academic development because it causes helplessness-related cognitive, motivational, and affective deficits. Attributional retraining can provide remedial assistance for these at-risk students by restoring perceived control. In our study, attributional retraining enabled external-locus students to learn more during a lecture and to make better use of study materials than they had before. Of significance is that it improved their performance on both lecture and homework material 1 week after the lecture and assignment were given. In contrast, attributional retraining offered no advantage to internal-locus students.

One explanation for this difference is that the retraining procedure introduced new causal attributions to external-locus students, whereas it simply reiterated existing options for internal-locus students. The potential for change, therefore, would be greater in external-locus students because they had a greater attributional deficit. An alternative explanation may lie in the students' capacity to incorporate the causal attributions presented in the retraining procedure. Not surprisingly, external-locus students would have more difficulty incorporating the ability and effort attributions into their achievement schemata than would internal-locus students, who would already have considerable familiarity with them. But of the two attributions, effort requires less cognitive restructuring than does ability, which could require major changes to one's self-concept, among other things. Consequently, effort would likely be the more salient explanation for performance in external-locus students and would be readily used. This would create optimal motivational conditions for subsequent achievement striving (Weiner, 1986) and more uniform performance across different achievement tasks.

Internal-locus students would not show similar performance gains because both effort and ability can be salient and each can have different consequences for motivation. An ability attribution could actually inhibit achievement striving if the student believes that his or her ability is sufficient to ensure success without trying hard. A perception that "I'm smart and don't need to work at this" would lower motivation and impair performance, especially on learning tasks requiring greater self-initiative. Learning during a lecture requires passive participation in which lack of motivation can be compensated for by extra effort from the instructor. But a homework assignment requires self-initiated activity, which is vulnerable to an ability attribution that lowers motivation in this way.

Thus attributional retraining appears to benefit external-locus students in disparate achievement tasks that require either cooperative or autonomous learning activities. The lecture format is a ubiquitous instructional method in college classrooms in which the teacher assumes a primary responsibility for the learning process. The student is expected to participate in a generally passive but cooperative role in activities ranging from information acquisition to teacher-initiated questioning. It is noteworthy that attributional retraining ensured the retention of information for at least 1 week after the presentation of the lecture material. Homework assignments, however, require considerable self-initiative by the student, who must take the major responsibility for mastering the task. Here again, attributional retraining facilitated performance 1 week after the assignment was given.

The retraining procedure used here would be suitable for remediation in large universities with its videotape format, short duration, and group-administration capabilities. It could be particularly useful as an instructional aid to reach those students who otherwise would not seek assistance from the instructor, their peers, or counseling services. For these students, loss of control exacerbates academic failure by preventing them from seeking help. The retraining procedure would, however, exclude students suffering extreme motivational or intellectual deficits. These students would be better served with a more individualized intensive intervention typically offered through student counseling or learning centers.

These results are important in view of Försterling's (1985) review of the attributional retraining literature, which identified only two studies in which academic achievement by college students was directly examined (Wilson & Linville, 1982, 1985). Our study incorporated several improvements to those studies. First, it included achievement measures that are based on two types of learning activities. The lecture test reflects learning that takes place in the confines of a classroom under the direction of an instructor. The homework test depicts self-initiated learning in which greater responsibility is placed on the student. Wilson and Linville used two measures, the Graduate Record Exam (GRE) and grade-point average (GPA), which are overdetermined and do not differentiate between dependent and autonomous learning activities. The achievement measures used here were derived from specific lecture content and study materials and are more representative of curriculum-related achievement tests than are the global GRE and GPA measures.

Second, this study combined locus of control with attributional retraining. Locus of control is a theoretically relevant student variable that has important consequences for academic achievement (e.g., Stipek & Weisz, 1981). External locus identifies one potentially at-risk group of college students who exhibit a stable attributional pattern sometimes associated with low perceived control. This relation has not been considered in college students previously, but it has been examined to some extent in elementary school students (e.g., Dweck, 1975). Finally, an instructional variable was included on the basis of the premise that teachers make an important contribution to students' academic development. Instructor expressiveness was identified as an important college teaching behavior from an extensive literature of field and laboratory studies. Its inclusion in the simulated college classroom provides a more systematic analysis of how instructional factors contribute to locus of control and attributional retraining.

Effective Instruction and Perceived Control

The Locus of Control × Instructor Expressiveness interaction replicates and extends Magnusson and Perry's (1989) study. They found that external-locus students performed better with an expressive instructor than with an unexpressive instructor if contingent feedback preceded the lecture. With similar procedures, our study revealed that a comparable pattern occurred 1 week after the lecture. These results are noteworthy because existing research has documented expressiveness effects on student achievement only immediately after a lecture. It is clear, however, that expressive instruction can increase both short-term recall *and* long-term retention of information at least for external-locus students. Of particular note is that expressiveness increased homework-related achievement, which required self-initiated learning activities rather than passive lecture participation. These results demonstrate that expressive instruction has a motivational influence extending beyond the immediate constraints of the classroom.

Expressive instruction was of little benefit, however, to internal-locus students. It did not improve performance on the lecture test and actually reduced achievement on the homework test. This pattern could occur if ability was the primary attribution used by internal-locus students to explain their performance as discussed in relation to the attributional retraining results. When presented with poor instruction, internal-locus students would strive harder to avoid failure and ensuing threats to their self-concept. When faced with good instruction, they would work less because of a lower probability of failure and a reduced threat to their self-concept. This rationale presumes that students are preoccupied with their level of ability and that they are motivated to protect it when threatened with failure (e.g., Perry & Magnusson, 1989; Rothbaum et al., 1982).

An attributional analysis may also account for the achievement results in the external-locus students. Perry and associates (Perry & Dickens, 1984; Perry & Magnusson, 1987; Perry et al., 1986) have noted that although expressive instruction did not increase achievement in students experiencing temporary loss of control, it did enhance their tendency to view internal attributions as responsible for their performance. This would serve to heighten the salience of both the ability and effort attributions. As described previously with attributional retraining, however, an effort attribution would be much easier for external-locus students to incorporate with other schemata than would an ability attribution.

These results augment previous research showing that for some students, expressive instruction (a) increases their achievement immediately after a lecture and their perceived success of and control over the performance, (b) instills greater confidence in their achievement, and (c) causes them to believe that they tried hard and to have more responsibility for their successes and failures. The results provide a more complete profile of instructor expressiveness as an effective teaching behavior in college classrooms. Expressive instruction enhances achievement in some students for as long as 1 week after the actual lecture is given and on tasks that require self-initiated learning outside the classroom. Thus expressive instruction is effective because of its cognitive and motivational impact on students. It appears to activate information-processing activities that ensure both immediate performance benefits and long-term retention of material. It also serves an important motivational function by initiating learning activities that are not directly related to the original teaching setting.

Finally, expressive instruction ensured better attendance at the second experimental session than did unexpressive instruction. These data raise some interesting implications for course enrollments and class attendance. They are consistent with evidence that instructor reputation is one of the most important factors influencing enrollment patterns in multisection undergraduate courses (Leventhal, Abrami, Perry, & Breen, 1975). If effective teaching is an integral part of a "good reputation," then expressiveness may be the element responsible for influencing enrollments. Thus expressiveness may serve to both increase enrollments and ensure class attendance. Of course, actual classrooms differ from our laboratory analogue in many ways, and further research is needed to examine these broader implications.

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