

# THE EFFECTS OF PERCEIVED ATTRIBUTIONS, ACTION CONTROL, AND CREATIVITY ON COLLEGE STUDENTS' MOTIVATION AND PERFORMANCE: A FIELD STUDY

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**ABSTRACT:** College students periodically experience varying degrees of academic failure in pursuit of their educational goals. Such experiences can have deleterious effects on subsequent motivation and achievement. Recent research, however, indicates that some students are buffered against negative academic outcomes because they possess certain cognitive orientations or individual differences. Extending this research, the present study examined the buffering effects of

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students' perceived attributions for failure (unstable, stable), action control orientations (state, action), and creativity (low, high) on motivation and achievement. College students were grouped into unstable/stable attributions, state/action orientations, and low/high creativity according to their scores on Russell's (1982) causal dimension scale, Kuhl's (1985) action control scale, and two creativity items, respectively. Subsequently, three motivation variables were examined, along with their actual course grade in introductory psychology. Analysis of variance results indicated that unstable attributions produced greater motivation in students than did stable attributions. Moreover, stability attributions interacted with creativity and action control orientation on students' performance.

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## A FIELD STUDY

Achievement is a fundamental aspect of everyday life, affecting people's work, interpersonal relationships, sense of being, and leisure. Perhaps the quintessential achievement-oriented domain, however, is that of education, particularly for college students whose goals include high performance on tests, passing courses, and completing degrees. In attempting to achieve their goals, students will experience an array of performance outcomes. Particularly, failure experiences have been shown to have detrimental effects on subsequent attributions, motivation, and achievement (Aspinwall & Taylor 1992; Perry 1991; Schonwetter, Perry, & Struthers 1994; Taylor 1991; Weiner 1986). Fortunately, there are a number of factors that appear to buffer students and help circumvent these effects (Perry, Menec, & Struthers 1996). The purpose of this study was to examine whether some of these factors can enhance or attenuate student motivation and achievement in a field setting.

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## STUDENT MOTIVATION

From a motivational perspective, students have been traditionally viewed as passive recipients, mechanistically responding to the classroom environment and instructor (Weiner 1990). More recently however, research indicates that college students are more active participants possessing characteristics that engage their thoughts and enable them to sustain or enhance their motivation and achievement following academic failure (Ames 1992; Aspinwall & Taylor 1992; Perry & Dickens 1984; Perry, Schonwetter, Magnusson & Struthers 1994).

Findings from these investigations indicate that some college students can perform well in spite of negative academic outcomes. By possessing certain characteristics, students' appear to shield or buffer themselves from the motivationally threatening effects of academic failure. For example, following negative

scholastic outcomes such as test failure, some college students have a greater capacity to self-regulate than do others. These students are influenced by their thoughts including attributions and individual differences. In turn, such characteristics are believed to insulate students from the adverse effects of negative academic outcomes. Moreover, these traits motivate them to compensate for negative academic events by causing them to enhance their attention and effort, or to apply different learning strategies (Corno 1993; Perry et al. 1996; Pintrich 1989).

In contrast, other students who are unable to manage negative academic experiences place themselves at risk of experiencing learned helplessness, academic withdrawal or possibly depression (Perry, et al. 1994). For instance, research shows that undergraduate students who make stable attributions following failure are less motivated than are those who make unstable attributions (Troper & Weiner 1993; Weiner, Nierenberg, & Goldstein 1976). Moreover, other research demonstrates that students who have a low sense of control or invoke dysfunctional explanatory schemas are less likely to perform well following failure than are students who have a high sense of control or invoke functional explanatory schemas (Perry & Dickens 1984; Perry & Magnusson 1989; Schonwetter, Perry, & Struthers 1994). There remain however, a number of other factors that potentially contribute to student motivation and achievement in higher education. The purpose of this study was to extend previous research on college students' achievement striving by examining, in a field setting rather than a laboratory setting, the relationship among students' perceived causal attributions (Weiner 1986), action control orientations (Kuhl 1985), and creativity and their subsequent motivation and performance.

## CAUSAL ATTRIBUTIONS

Causal attributions or the explanations that individuals use to understand their environment are important contributors to their motivation and performance. Several models describe the consequences of these causal attributions, including learned helplessness theory (Abramson, Garber, & Seligman 1988) self-efficacy theory (Bandura 1982; Schunk 1985), self-worth theory (Covington 1993), and attribution theory (Weiner 1986). Weiner's (1986) attribution theory is particularly suited to studying student motivation and achievement because it identifies key cognitive, affective, and behavioral variables for achievement-oriented situations and their sequential association.

According to the theory, students who are confronted with failure on tests and exams search for the cause of the event (Weiner 1979). Knowing the cause of an outcome allows students to understand and regulate their behavior and to become motivated to achieve specific goals (i.e., success). The reasons for outcomes can be assessed along 3 dimensions: locus (internal-external), stability (stable-unstable), and controllability (controllable-uncontrollable). Depending on the reason that is used to explain the outcome (e.g., ability, effort) and its dimensional properties (e.g., locus, stability), expectations, emotions, motivation, and subsequent behaviors are differentially affected.

The present study focused on perceived stability given that it is directly linked to one of the motivational components—expectancy (Weiner 1986; Weiner, Nierenberg, & Goldstein 1976). For example, a student who makes a stable attribution, such as lack of ability for an exam failure, should feel less motivated and more helpless possibly leading to withdrawal from class or even the course (Abramson et al. 1980). Accordingly, we consider such cognitions as *barriers* to motivation and successful performances because they inhibit adaptive motivational styles and behavior. In contrast, unstable attributions, such as lack of effort should produce high expectations of future success, feelings of hope, motivation, and persistence. In this case, we refer to such cognitions as *buffers* because they lessen the motivational deficit that routinely follows negative achievement outcomes.

## ACTION CONTROL

Weiner's (1986) attribution theory posits that achievement motivation results from expectations and emotions which are determined by students' attributions about the cause of their past successes and failures. However, motivation is but one of several important factors that will affect students' achievement striving. A student may make an unstable (lack of effort) attribution for his or her past test performance, be motivated to do well in a course, and have the ability to perform at a high level, for example, but fail to invest the necessary effort into studying. Consequently, such a student could perform poorly on subsequent achievement tasks. In his theory of action control, Kuhl (1985) proposes that individuals first set and then commit to goals in a predecisional phase (motivation) followed by a postdecisional regulation and action phase (volition). The primary role of the motivational phase is to determine goals and to become motivated to achieve them, whereas the pivotal role of volition is in the management and execution of goals (Corno 1993). Thus, students' capacity to manage and execute their goal appears to depend not only on their goal being set, but also on their motivation or the factors that influence their motivation such as unstable attributions.

While in the action phase, internal and external forces can act on a person's intentions, these forces create competing action alternatives (e.g., going to a movie vs. studying) that can interfere with the enactment of intentions. Thus, for an intended act to be executed, it must be protected from interferences (i.e., phone calls from friends). The extent to which a person is able to enact intentions is thought to depend on two states: action-orientation and state-orientation. Action-orientation is characterized by four cognitive elements: (1) cognitions about the present state; (2) cognitions about the future state; (3) cognitions about the discrepancy between the present and future states; and (4) action alternatives that will eliminate the discrepancy (Kuhl 1985).

Thus, action orientation may be defined by cognitions focusing on plans and action that serve to overcome a discrepancy between the present state and an intended future state. If one of the four elements is missing, a person is said to be state-oriented. Such an individual may ruminate excessively about the past, but fail to focus on an action plan. After failing a test, for instance, a student may

spend sleepless nights thinking about the exam, without considering what actions might produce success on the next test.

Implied in the above statement is the notion that all state oriented activity is maladaptive and all action oriented behavior is adaptive. According to Kuhl (in press), however, the deactivation of planned action (i.e., state orientation) can be adaptive and the enactment of planned action (i.e., action orientation) can be maladaptive. For instance, students who exhibit an action oriented profile may routinely adopt the same strategies and actions in pursuit of their goals, thereby bypassing the attribution process and directly engaging in action oriented behavior. Failure to engage in causal search could lead to ineffective self-regulation and lowered achievement, especially if an ineffective, routine action plan is adopted in situations that require a novel solution. In other words, although action-oriented individuals may focus on, develop, and execute an action plan, which has merit, they may not possess the ingenuity or inventiveness to think of effective strategies for attaining a desired goal, especially when the new action plan required is more challenging. In this case, neither unstable attributions nor action-orientation may be sufficient to enhance performance on subsequent tasks, suggesting that an additional factor may influence students' success in the future, namely creativity.

## CREATIVITY

Creativity is the ability to innovate and to change the environment, and is regarded as a major factor in achievement and motivation (Amabile 1983; Snow 1991). Two typical definitions are adopted by researchers to describe creativity. The first concerns the processes involved in creating, such as creative thought and ideas, and the other emphasizes a special kind of output such as a painting or developing a research design. This study focuses on the former abstract definition, specifically, students' own perceptions about their imagination and creativity relative to other students.

Following the previous example of student failure, unstable attributions suggest that the cause can be altered. According to Weiner's (1985, 1986) theory, such attributions should enhance expectations for future success and, consequently, achievement motivation and performance. Moreover, some students may be action-oriented and focus on an action plan to succeed on the next test. Nevertheless, if they lack the creativity to envision an appropriate strategy to attain that goal, such as using a more effective study strategy, subsequent performance may not improve. For instance, following a failure on an exam, a student may attribute this outcome to his/her lack of study effort. However, if he/she is action oriented; that is, can think of an action plan and execute it, such as studying harder, then his/her subsequent performance should improve. However, if he/she lacks the creativity to envision an effective action plan then behavior to improve performance is unlikely and an ineffective action alternative may dominate. Thus, students who attribute their poor performance to unstable factors, who are creative, and who attend to an achievement plan may be buffered against

motivational and volitional deficits following academic failure by focusing on and executing another action alternative.

In sum, a number of key issues emerge from the literature. First, students are achievement-oriented and commonly face a number of negative experiences on exams and assignments while attending college (Perry 1991). Second, students actively seek information about their negative experience so that they can understand them, set new goals, and regulate their behavior (Schunk 1989; Weiner 1979, 1986). Third, there are a number of student factors (e.g., attributions, individual differences) that appear to buffer students from the ominous effects of academic failure and compensate for such effects. In contrast, some factors may act as inhibitors on other students' motivation, volition, and performance. The purpose of this research was to provide further understanding of these cognitions and individual differences.

Several hypotheses were proposed. First, a main effect for attribution was anticipated. That is, college students who make unstable attributions for failure should be more motivated than students who make stable attributions. Moreover, an interaction effect between attributions and creativity was expected for students' motivation dependent variables. Specifically, it was hypothesized that, compared to the other conditions, students who made unstable attributions would experience the greatest motivation if they were also highly creative. For students' grades, a specific comparison was planned between state- and action-oriented students who made unstable attributions and perceived themselves as high in creativity. According to action control theory, the primary role of volition is in the management and implementation of goals. In other words, volition operates after students set goals and become motivated. Consequently, volition is more likely to play a role in students who make unstable attributions and who perceive themselves to be highly creative.

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## METHOD

### SUBJECTS

The participants were 313 male and female introductory psychology students at the University of Manitoba. Students volunteered and received course credit in exchange for their participation. Given that the focus of the study was on poor academic performance, only those students who had perceived their previous academic performance on a test or assignment as unsatisfactory were selected. Previous researchers (e.g., Perry & Magnusson 1989) have shown that some students distort failure feedback as success. Similarly, the sample in this study had 29% who perceived relatively high performances between 71 and 100% as unsatisfactory. Hence, to limit the inclusion of possible "distorters," only students' who had perceived their performance of less than 71% on a previous exam or assign-

ment to be unsatisfactory were analyzed. Using this cut-off, our original sample ( $N=313$ ) was reduced by 29% to 221 (females=131, males=75, missing values=15) students which enabled acceptable cell sizes to conduct the analyses.<sup>1</sup>

## INDEPENDENT VARIABLES

**Attributions For Poor Performance.** Students were asked to "remember the last time within the last year that you had not done as well as you wanted to do on an important exam or assignment." Because this information was obtained within the second week of fall classes for an introductory level course, this would be high school for most students. Following this question, the students filled out Russell's (1982) Causal Dimension Scale (CDS). This scale has acceptable psychometric properties and consists of nine 9-point likert scales designed to measure the locus ( $\alpha = .87$ ), stability ( $\alpha = .84$ ), and controllability ( $\alpha = .73$ ) dimensions of Weiner's (1986) theory (Russell 1982). Each of the three dimensions is assessed with 3 questions. Given that this study focused on the motivational variables of expectancy, importance (value) and hope, and that Weiner suggests that these variables are directly related to the stability dimension, we only examined the stability items of the CDS ( $\alpha = .67$ ). Students who scored at or below the median (med. = 8) were classified as the unstable attribution group; all those above the median were classified into a stable attribution group.

**State/Action Orientation.** To assess students' state/action-orientation, seven items from Kuhl's (1985) action-control scale were utilized. His scale assesses a broad range of domains including: sports, leisure, health, dating, work, and education. This scale is a 60 item instrument that consists of three subscales of 20 items each: Performance related ( $\alpha = .74$ ), Failure related ( $\alpha = .79$ ), and Decision related ( $\alpha = .79$ ). Given that we were primarily interested in failure orientations in an academic situation, only items from the failure related subscale were used. From the scale, items were chosen that specifically dealt with academic situations such as assignments and grades ( $\alpha = .50$ ).<sup>2</sup> For each item, students were to choose between two alternatives, one representing an action approach to the situation and the other representing a state approach. For example,

When I've made several futile attempts to start an assignment,

- (0) I start something else relatively soon (action-oriented), or
- (1) I don't feel like doing anything at all (state-oriented).<sup>3</sup>

Scores were added and divided at the median (med. = 4) to determine each student's orientation. Students who scored at or lower than the median were classified as state-oriented, whereas those scoring above the median were considered action-oriented.

**Student Creativity.** To assess perceived creativity, a procedure similar to Kumar, Holman, and Rudegeair (1991) was adopted. Students were asked to compare

themselves to other University of Manitoba students of the same sex and age on the following personality characteristics: imagination and creativity. Responses were measured using a 9-point likert scale ranging from -4 (very much below average) to +4 (very much above average). These items were then recoded from 1 (-4) to 9 (+4) consistent with the positive direction of the other items ( $\alpha = .89$ ). Because these items correlated highly ( $r = .74$ ), they were summed and divided at the median response (med. = 12). Students who fell at or below the median were categorized into the low creativity condition, those above the median were categorized into the high creativity condition.

### DEPENDENT MEASURES

Four dependent variables were assessed, three motivational variables and one achievement variable: (1) how well the students *expected* to do this year at university ( $M = 7.11$ ,  $SD = 1.41$ ), (2) how *important* (valuable) was it for the students to do well this year at university ( $M = 8.41$ ,  $SD = 1.21$ ), (3) how *hopeful* the students were about doing well this year at university ( $M = 7.80$ ,  $SD = 1.76$ ), and (4) final grade in introductory psychology ( $M = 202.21$ , 67%,  $SD = 25.36$ ). The first 3 motivational variables were measured using a 10-point likert scale ranging from (0) not well at all (not at all important, not at all hopeful) to (9) very well (very important, very hopeful).

### PROCEDURES

Groups of students were tested in a lecture theatre. Each student received a questionnaire booklet with the items described above. Students were instructed to think of the last time, within a year, that they had not done as well as they wanted to do on an important exam or assignment. Then the students completed the CDS followed by the action control scale and the creativity items. Next, the students responded to the dependent variables, and finally, the grades were obtained from the course instructor at the end of the academic year.

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## RESULTS

### RATIONALE FOR ANALYSIS

It was predicted that students' motivation would be differentially affected by each level of stability attributions (unstable-stable). Our hypothesis concerning the main effect for stability attributions was tested using the stability main effect from the Perceived Attribution by Perceived Action Control by Perceived Creativity<sup>4</sup> ( $2 \times 2 \times 2$ ) ANOVA and is reported in the next section labelled motivation. This approach was adopted because it allowed for the examination of main



effects as well as other higher order interactions. Our second hypothesis concerned a more specific mean comparison for the Action Control groups for the unstable attribution and high creativity condition on the achievement variable. Accordingly, paired comparisons were examined using a Bonferroni approach which controls the familywise error rate (Maxwell & Delaney 1990; Pillemer 1991). These results are reported under the academic achievement heading.

## MOTIVATION

Perceived Attribution by Perceived Action Control by Perceived Creativity ( $2 \times 2 \times 2$ ) ANOVAs were computed for the expectancy, importance, and hope dependent variables.<sup>5</sup> Table 1 summarizes the ANOVA results and Table 2 contains the descriptive statistics. Main effects for attributions emerged for: expectancy for doing well this year at university,  $F(1, 212) = 4.70, p < .05$ , and importance for doing well this year at university,  $F(1, 213) = 5.58, p < .01$ . Hope for doing well this year at university was nonsignificant,  $F(1, 213) = 0.15, p > .05$ . The direction of all means for each significant dependent variable supported our hypothesis. Thus, students who made unstable attributions expected to do better this year at university ( $M = 7.20$ ) and assigned greater importance to doing well this year at university ( $M = 8.52$ ) than did students who made stable attributions ( $M_s = 6.74, 8.39$ , respectively).

Creativity had a similar significant effect on all motivation dependent variables: expectancy,  $F(1, 212) = 19.65, p < .01$ ; importance,  $F(1, 213) = 13.05, p < .01$ ; and hope,  $F(1, 213) = 9.05, p < .05$  (See Table 1). Students who were more creative were more expectant ( $M = 7.45$ ), held doing well this year at university as more important ( $M = 8.64$ ), and were more hopeful ( $M = 8.00$ ) than were students who were less creative ( $M_s = 6.49, 7.96, 7.14$ ). No significant action control main effects emerged on any of the motivation dependent variables: expectancy,  $F(1, 212) = 0.76, p > .05$ ; importance,  $F(1, 213) = 1.85, p > .05$ ; and hope,  $F(1, 213) = 0.33, p > .05$ .

Two significant stability attribution by creativity effects were found, one for expectations for doing well this year at university,  $F(1, 212) = 11.36, p < .01$  and one for importance for doing well this year at university,  $F(1, 213) = 10.96, p < .01$ . These effects were probed further using a Bonferroni approach ( $t$  critical = 2.60,  $\alpha = .05$ , 6 comparisons, 214 df). Students who made stable attributions and were low in creativity were less expectant of future success at university ( $M = 5.89$ ) compared to students who made unstable attributions and were low in creativity ( $t = 5.45, M = 7.09$ ), students who made unstable attributions and were high in creativity ( $t = 7.15, M = 7.32$ ), and students who made stable attributions and were high in creativity ( $t = 6.50, M = 7.58$ , see Figure 1). The same effects emerged for how important it was for students to do well at university (see Figure 2). In other words, students who made stable attributions and were low in creativity reported that doing well at university was less important ( $M = 7.42$ ) than did students who made unstable attributions and were low in creativity ( $t = 5.63, M = 8.49$ ), students who made unstable attributions and were high in creativity ( $t = 6.28, M = 8.55$ ), and students who made stable attributions and were high in creativity ( $t = 5.95, M = 8.73$ ).

TABLE 1  
Stability Attributions by Action Control by Creativity ANOVA Summary for the Motivation Dependent Variables

Effects	Expectations			Importance			Hope			Grade		
	F	$\omega^2$		F	$\omega^2$		F	$\omega^2$		F	$\omega^2$	
Stability(S)	4.70*	.03		5.58*	.04		0.15	—		0.00	—	
Creativity(C)	19.65***	.15		13.05***	.10		9.05*	.07		1.48	—	
Action Control(AC)	0.76	—		1.8	—		0.3	—		1.14	—	
S	11.36***	.16		10.96**	.15		1.79	—		0.80	—	
S*AC	4.27*	.05		1.74	—		0.5	—		0.4	—	
AC	1.07	—		2.75	—		1.38	—		2.72	—	
S*AC*C	4.39*	.10		3.18	—		0.77	—		1.06	—	
MSe	1.64			1.24			2.87			647.93		

Note:  $\omega^2$  = omega squared is a measure of degree of association

$p < .05 = *$ ,  $p < .01 = **$ ,  $p < .001 = ***$

TABLE 2  
Means and Standard Deviations for Attributions, Action Control, and Creativity  
on Expectancy, Importance, Hope, and Achievement Dependent Variables.

Dependent Variables	Unstable Attributions				Stable Attributions			
	State		Action		State		Action	
	LC	HC	LC	HC	LC	HC	LC	HC
Expectancy	6.84	7.30	7.33	7.33	6.55	7.56	5.23	7.60
SD	1.44	1.15	1.23	1.11	1.44	1.02	2.28	1.51
Importance	8.48	8.57	8.50	8.53	8.00	8.66	6.85	8.80
SD	0.87	0.79	0.67	1.13	1.23	1.06	2.38	0.42
Hope	7.55	7.43	7.00	8.07	7.23	8.39	6.77	8.10
SD	1.50	2.45	2.63	0.88	1.45	1.55	1.96	1.37
n	33	23	12	15	22	93	13	10
Grade	200.55	197.90	196.18	218.43	203.06	201.68	202.00	206.38
SD	20.54	19.64	25.02	27.00	25.10	32.73	28.27	28.92
%	66.9	66.0	65.4	72.8	67.7	67.2	67.3	69.0
n	33	21	11	14	22	22	13	8

**Note:** LC = Low Creativity; HC = High Creativity; Expectancy = Expectancy for doing well this year at university; Hope = Hope for doing well this year at university; Importance = Importance for doing well this year at University; State = state-orientation; Action = action orientation

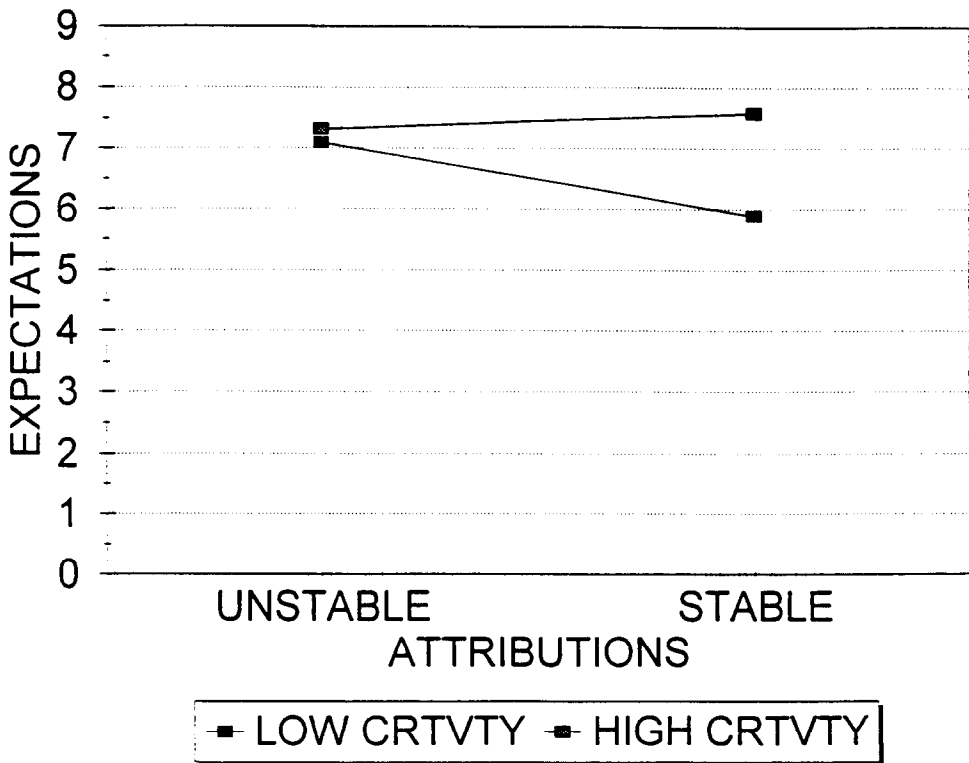


FIGURE 1

Mean expectations for success as a function of stability attributions and creativity

A stability attribution by action control two way interaction was also found for expectations for future university success (see Figure 3). Students who made stable attributions and were action oriented were significantly less expectant of future success at university ( $M = 6.41$ ) than were students who made unstable attributions and were state oriented ( $t = 3.00$ ,  $M = 7.07$ ), students who made unstable attributions and were action oriented ( $t = 3.54$ ,  $M = 7.33$ ), and students who made stable attributions and were state oriented ( $t = 3.20$ ,  $M = 7.05$ ). No significant Action Control by Creativity interactions were found for any of the motivation dependent variables.

A three way Attribution by Action Control by Creativity interaction emerged on students' expectations for their university success. The action control by creativity effects were examined separately for each level of stability attributions. Our rationale to examine the two individual differences for each level of stability was based on Weiner's (1986) attribution theory in which the stability dimension (i.e., unstable attributions) is directly linked to expectancy change. No significant differences emerged among the state/action-orientation by low/high-creativity groups in the unstable condition. For the stable attribution group, however, students who were action oriented and low in creativity were significantly less expectant of success at university ( $M = 5.23$ ) compared to students who were

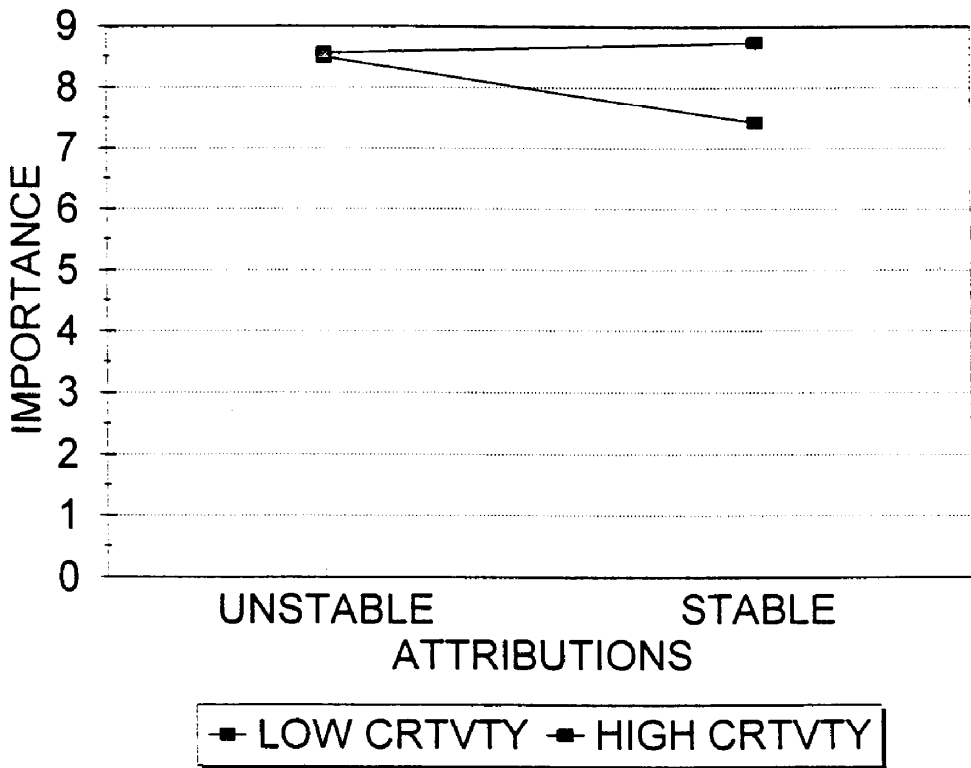


FIGURE 2  
Mean importance for doing well this year at university

state-oriented and low in creativity ( $t = 4.00$ ,  $M = 6.55$ ), students who were state-oriented and high in creativity ( $t = 8.63$ ,  $M = 7.56$ ), and students who were action oriented and high in creativity ( $t = 6.08$ ,  $M = 7.60$ ). Students who were state-oriented and low in creativity ( $M = 6.55$ ) were also less expectant of university success than were students who were state-oriented and high in creativity ( $t = 4.59$ ,  $M = 7.56$ ), and students who were action-oriented and high in creativity ( $t = 3.00$ ,  $M = 7.60$ ).

Thus, stability attributions and creativity influenced two of the three motivation dependent variables, both separately and together. Students appeared to be buffered from low motivation if they made unstable attributions, were high in creativity, or both, compared to students who made unstable attributions and were low in creativity. In addition, stability attributions also interacted with action control and, action control and creativity on one motivation variable, namely expectation for university success.

### ACADEMIC ACHIEVEMENT

Action-oriented students who made unstable attributions about their poor performance and who perceived themselves to be highly creative had a signifi-

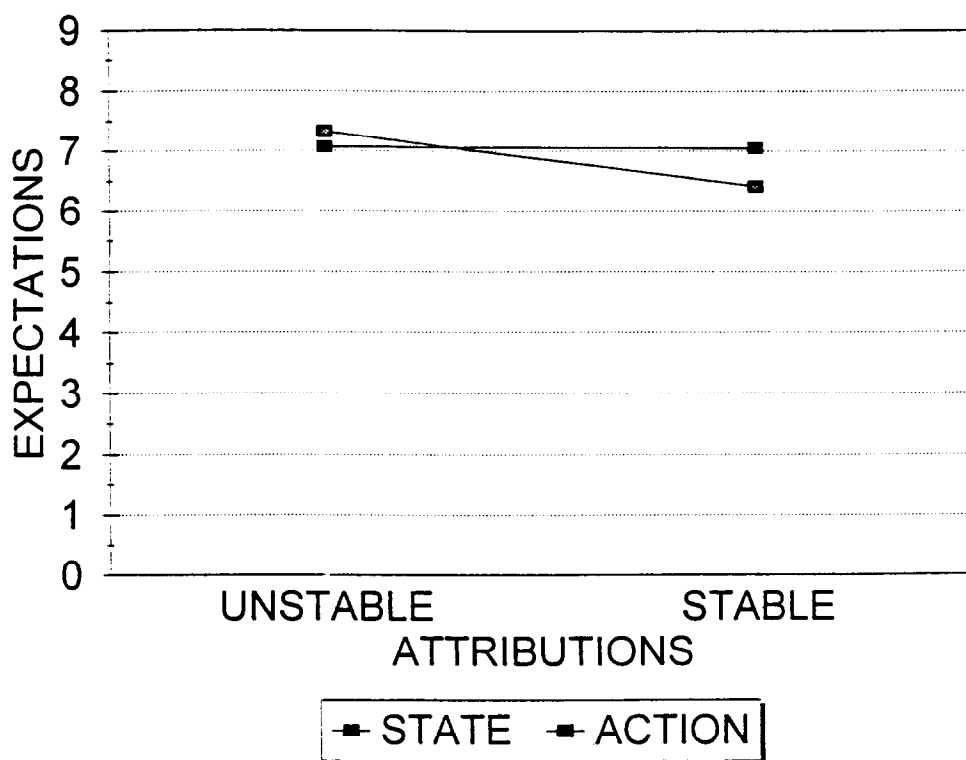


FIGURE 3

Mean expectations for success as a function of stability attributions and action control orientation

cantly higher grade than did state-oriented students who made unstable attributions and who were high in creativity,  $M_s = 218.43, 72.8\%$  vs.  $197.90, 66\%$ ,  $t = 3.77, p < .01$ . One additional difference was found. Students who made unstable attributions and were action-oriented had lower grades if they were low in creativity ( $M = 196.18, 65.4\%$ ,  $t = 3.54, p < .01$  compared to high creativity students ( $M = 197.90, 66\%$ , see Figure 4).

## DISCUSSION

This study examined the relationship between students' attributions, action control, and creativity and their subsequent motivation and achievement. Findings indicate that cognitions and individual differences can buffer some students from motivation threatening effects and subsequent failure associated with negative outcomes. In contrast, cognitive and individual difference variables can predispose other students to lower motivation and lower achievement. This study adds to the literature in a number of ways. First, it extends previous research by exam-

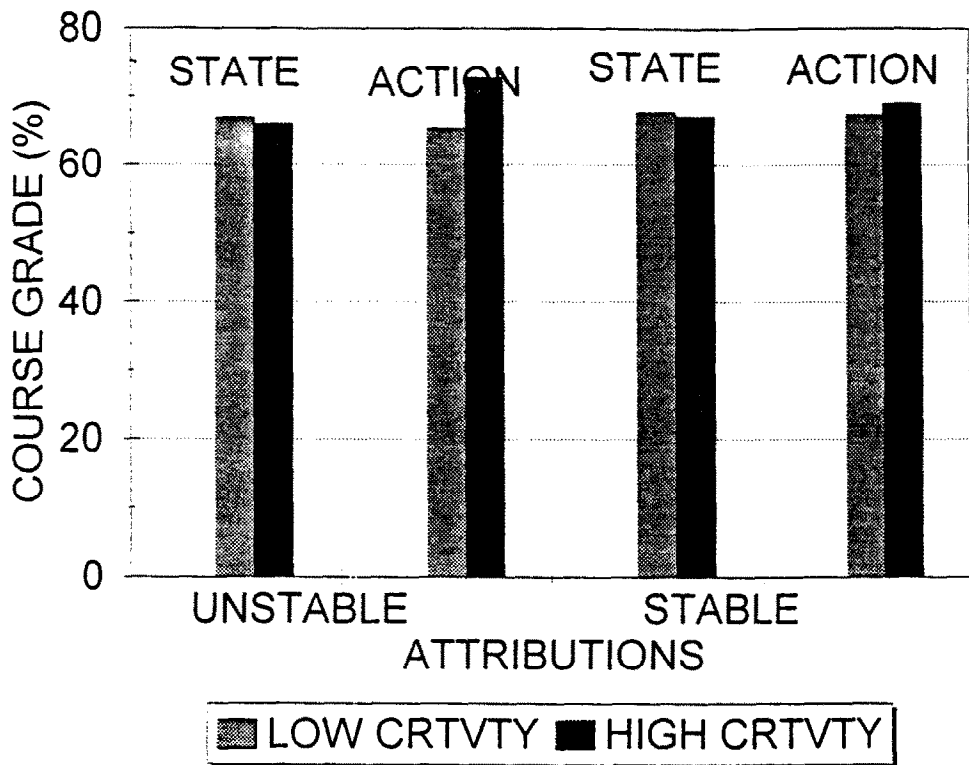


FIGURE 4  
Mean percentage course grade as a function of stability attributions, creativity, and action control orientation

ining a different combination of cognitive and individual difference variables. Second, this study adopts two complimentary motivational models of achievement, namely Weiner's (1986) attribution theory and Kuhl's (1985) theory of action control to explain students' motivation, volitional action, and subsequent achievement following negative outcomes.

Previous research has been beneficial because it enabled a fine-grained analysis of several student individual differences in conjunction with different qualities of instruction (Perry 1991). However, generally, this research has been conducted in a laboratory setting which often is artificial or low in ecological validity. Therefore, and consistent with others (e.g., Aspinwall & Taylor 1992; Covington 1993), we have lessened this concern by conducting this research in a field setting.

#### ATTRIBUTION AND INDIVIDUAL DIFFERENCE EFFECTS

Based on Weiner's (1986) attribution theory, it was predicted that unstable attributions following a negative academic outcome would enhance, whereas stable attributions would attenuate subsequent motivation. This hypothesis was supported in that students who made unstable attributions had greater expectations for doing well and assigned greater importance to doing well compared to stu-

dents who made stable attributions. The same pattern of results was found for creativity but not for action control.

Further analyses, however, indicated that student motivation is also dependent on the interaction of cognitions and individual differences. Specifically, students who made stable attributions and were low in creativity were less motivated than were the students in the other attribution by creativity conditions. Surprisingly, action control interacted with stability attributions and with stability attributions and creativity on expectations for success at university. These findings are discussed in greater detail below. One of the most interesting results, however, emerged when action control was examined for students in the unstable attribution-high creativity group on students' introductory psychology grade.

As expected, the levels of action control and creativity in the unstable attribution condition translated into significantly different grades in students' introductory psychology course. Despite initially being relatively high in motivation (unstable attributions), students who were either state-oriented and low in creativity, or state-oriented and high in creativity, produced lower course grades compared to action-oriented, highly creative students. This finding indicates a relationship between causal attributions, creativity, and action control orientations and students' performance. Specifically, this shows that students who made unstable attributions for poor academic performances and who were highly creative and action-oriented, were buffered from performance deficits. In contrast, students who made unstable attributions and who were high in creativity and state-oriented, were inhibited from performance increments.

Based on Weiner's attributions theory and Kuhl's theory of action control, we predicted that the achievement enhancing effect of action-orientation and creativity would be unlikely if students also made stable attributions (i.e., ability). In other words, because of the lack of motivation resulting from stable attributions, the effects of action orientation and creativity would be overridden. This was supported by nonsignificant comparisons on the achievement dependent variable. Thus, regardless of students' capacity to think of new strategies (creativity) and their ability to focus their attention on their goals (action-oriented), if motivation was low (stable attributions), then their performance was low.

It is interesting to note that one cell (stable-attributions, state-oriented, high-creative) showed a remarkable decrease in subjects from 93 to 22 over the course of the study. Several reasons could account for such attrition. First, not all students provided consent for their grades to be used and therefore they could not be included in the grade analysis. Second, some students dropped the course and thus were not awarded a grade for the course. Moreover, there are a number of reasons why students drop courses including financial, relationships, and a low midterm grade. Unfortunately, because certain procedures were adopted in order to maintain confidentiality, namely omitting students' names after their data was entered into the computer, these students are no longer traceable to obtain this information. Nevertheless, this issue appears to be important and worthy of future research.

Overall, the results of this study suggest that students who made unstable attributions seemed to be highly motivated. However, the results also indicate that



the relationship between stability attributions and motivation is mediated by two individual differences, namely creativity and action control. Of particular interest, are those students who experience the least motivation and achievement. This study indicates that action-oriented students who made unstable attributions, and who did not consider themselves as having the ingenuity to think of a solution had the lowest achievement. This finding suggests the importance of creativity since action-oriented students who made unstable attributions and who considered themselves as having the ingenuity to think of a solution had the highest achievement.

In summary, students' achievement and motivation, measured by their expectations, importance, and feelings of hopefulness, are positively related to unstable attributions about past failures and negatively related to stable attributions. However, students who possess certain individual differences can protect themselves from the adverse effects of test failure. Unfortunately, there are other students who possess different traits that appear to predispose them to subsequent motivational threats and failure. Future research should focus on identifying those students who are in greatest need of intervention and examining how different interventions affect their motivation and achievement. Furthermore, such interventions may be helpful in establishing stronger causal links between attributions, action control orientations, and creativity since they suggest that these variables can be manipulated.

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## NOTES

1. Gender was not included as a factor in the analyses reported in this article because of a lack of meaningful results and a low number of subjects in certain cells.

2. The alpha is lower than anticipated and likely stems from two sources: (1) The use of fewer items than were used in the original subscale and (2) multidimensionality. To determine whether multidimensionality was a factor, a factor analysis was conducted on the seven action control items. Three factors emerged with eigen values greater than 1: Factor 1 included two items. Thus, some support for multidimensionality was found. However, for two reasons we decided to retain our seven item configuration. First, dichotomous variables which are factor analyzed are dubious because they distort the factor analysis (Gorsuch 1983, p. 291). Second, only one factor was interpretable and produced consistent results with the original configuration.

3. The bracketed words did not appear in the questionnaire. They are presented in the text to inform the reader of which response corresponds to each orientation.

4. For the purpose of this article (perceived) attributions, (perceived) action control,

and (perceived) creativity are viewed as perceptions regardless of whether the word "perceived" precedes the variable name or not.

5. The motivation dependent variables significantly correlated with each other in a low positive direction: expectancy and importance,  $r = .495$ , expectancy and hope,  $r = .461$ , and value and hope,  $r = .420$ , suggesting some degree of overlap (approximately 17% of the variance among each pair) and their possible composition. However, for four reasons, we present our dependent variables as single item measures. First, many researchers are interested in the relationship among the individual differences and each dependent variable in our study. Second, Weiner's (1985) theory specifically describes the dependent variables used in this study and not some higher-order construct such as motivation. Third, Weiner (personal communication April, 1995) does not stipulate what mathematical operation should be performed on such dependent variables in his theory (i.e., addition, multiplication, etc.), thereby making any composite motivation dependent variable and its interpretation difficult. Fourth, we were specifically interested in how well students expected to do this year at university, how important it was for students to do well this year at university, and how hopeful they were about doing well this year at university, and therefore, we chose items with high face validity given that we are unaware of any specific formal measures of these variables.

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