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ABSTRACT

A study examined the possible relationships between student study behaviors and academic achievement and represented a continuation and extension of an earlier large-scale project undertaken at the Far West Laboratory. Subjects, 184 college students enrolled in an introductory psychology course, had their study skills, self-efficacy, academic aptitude, locus of control, and memory assessed. Results indicated that: (1) the self-efficacy instrument (Self-Concept of Academic Ability Test) is more accurately described as a measure of academic self-concept than as a measure of self-efficacy; (2) in certain academic contexts, the measure of academic self-concept is not as important a predictor of academic achievement as is locus of control; (3) the best predictor of course achievement was the subjects' self-assessment of their memory ability; and (4) four subscales of the study activities measure were significant predictors of course achievement. (Two tables of data are attached.) (RS)

Self-Efficacy, Locus of Control, Self-Assessment of Memory Ability, and Study Activities as Predictors of College Course Achievement

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Objectives and Perspectives

This research was designed to examine possible relationships between student study behaviors and academic achievement and represents a continuation and an extension of a large-scale project begun by John Thomas and his colleagues at the Far West Laboratory (e.g., Thomas, Iventosch, & Rohwer, 1987). In one study, Thomas et al. (1987) examined the relationship between study processes, self-efficacy, and academic achievement in specific courses, with self-efficacy defined as the extent to which students believe that they can control the outcomes of their attempts at learning. They found that the best single predictor of achievement in a course for junior high, senior high, and college students was a measure of self-efficacy, with a measure of academic aptitude and a very limited number of indices of study behavior accounting for much smaller but significant shares of the achievement variance. The present study sought to examine further the relationship between self-efficacy, study behavior, and academic course achievement by comparing self-efficacy and locus of control as predictors of achievement. To the extent that locus of control is a measure of the perceived relationship between one's actions and the outcomes in one's life, self-efficacy has been described by Thomas and his associates as combining the notion of locus of control with notions of perceived competence or self-worth. However, inspection of the Self Concept of Academic Ability Test (SCAAT) used by Thomas et al. as the measure of self-efficacy, suggested that it is very much more a measure of academic self-concept or self-worth than it is a measure of locus of control. Thus, it was of interest to determine whether a locus of control measure would function as a predictor of course achievement independent of the contributions of the SCAAT measure and indices of various study behaviors.

Also included in the present study was a self-assessment measure of memory. As Herrmann (1984) has noted, a large number of memory questionnaires have been developed in the past 25 years as a result of the increased interest in the ecological validity of memory research and suggestions that laboratory tests of memory may not be good predictors of memory functioning in real-world situations. However, it has become obvious that there are major problems with the validity of memory questionnaires. Self-reports of various memory abilities have not been found to correlate highly with measures of actual memory performance (Herrmann, 1984; Morris, 1984). However, it has been found that beliefs about memory ability do tend to correlate highly with how people process information in various memory tasks. For example, it has been found that people who report poor memory tend to use external aids such as notes and internal aids such as rehearsal more than people who report their memory to be good (Zelinski, Gilewski, & Thompson, 1980). Thus, a self-assessment measure of memory was included in the present study in order to examine further the validity of such memory measures as they relate to both study behavior and achievement in a college course.

Method

Subjects. A total of 184 college students enrolled in an introductory psychology course participated as part of a course requirement. The subjects were drawn from six different sections of the course, involving five different instructors.

Materials and Procedure. Subjects participated in the one-hour session in groups ranging in size from three to 35 during weeks 9-11 of a 13-week academic semester. First, subjects' study activities in their introductory psychology course were assessed using the Study Activity Survey (SAS), Form R, developed by the Autonomous Learning Project (e.g., Christopoulos, Rohwer, & Thomas, 1987). The 76 study activity items from the instrument have been classified into 15 scales, 12 of which concern cognitive activities and three of which concern self-management activites. These scales are listed in Table 1. An additional 15 items of the survey assessed students' allocation of study time on a routine basis. Self-efficacy was then assessed using the abbreviated form of the Self-Concept of Academic Ability Test (SCAAT) used by Thomas et al. (1987), with higher scores indicating a more negative self-concept. The Concept Mastery Test was then administered as a measure of academic aptitude, followed by the Adult Nowicki-Strickland Internal-External Control Scale, with higher scores indicating a more external locus of control. The final measure completed

by the subjects was the Everyday Memory Questionnaire (EMQ, Martin, 1983), a 37-item measure that asks respondents to rate on a 5-point scale their memory for information and events ranging from the "gist of what someone said" to "zip codes".

Results

Table 1 shows the correlations between the variables measured in the study. A stepwise multiple regression analysis was performed to predict course achievement, as reflected in students' final semester grades for the introductory psychology course. Entered into the analysis as possible predictor variables were the scores on the 15 activity subscales from the SAS listed in Table 1, and the scores on the SCAAT, the Concept Mastery Test, the locus of control measure, and the EMQ. One additional variable included in the analysis as a possible predictor was an estimate of Total Study Time. Subjects' responses to the two study time questions asking the number of times per week they studied outside of class for the course and how long a typical study session lasted were multiplied to obtain the total study time estimate.

The results from this regression analysis are shown in Table 2. Of the student characteristic variables, scores on the EMQ, the locus of control measure, and the SCAAT all accounted for significant shares of the achievement variance, with scores on the EMQT clearly the best single predictor of course achievement. The more positively the student assesed his/her own memory ability, the more external his/her locus of control, and the more positive his/her self-concept of academic ability, the better the student tended to do in the course.

Of the 15 study activity subscales, only the cognitive scale of Focus on Test Relevance and the two self-management scales of Assiduous Resource Management and Means of Resource Management, were significant predictors of course achievement. The Focus on Test Relevance scale has been described as measuring "self-initiated investigation, identification, and allocation of processing to information that is likely to be important for a test" (Thomas et al., 1987, p. 351). The Assiduous Resource Management scale has been described as measuring "voluntary, intense, or earnest prepararion for or application of one's energy to the task or activity at hand", and the Means of Resource Management scale is supposed to assess the degree to which a student uses "specific procedures for managing time and effort in contrast to worrying about managing them" (Thomas et al., 1987, p. 351). Thus, the cognitive activities of focusing on test relevance were positively associated with course grade, whereas the self-management activities encompassed by the Assiduous Resource Management and Means of Resource Management scales were negatively associated with course grade.

Implications and Conclusions

The results of the regression analysis, combined with the low and nonsignificant correlation between scores on the SCAAT and the locus of control measure, support the suggestion that the SCAAT is measuring characteristics of the individual that are independent of the person's locus of control. Thus, the SCAAT is probably more accurately described as a measure of academic self-concept than as a measure of self-efficacy. Furthermore, these results suggest that such a measure of academic self-concept may not be as important a predictor of academic achievement as is locus of control, at least in certain academic contexts. The finding in this study that externality rather than internality was significantly related to course achievement is unusual but not without precedent (e.g., Massari & Rosenblum, 1972). Lefcourt (1982) has noted that such findings point to the need for studies of how characteristics of the academic context may mediate the relationship between locus of control and achievement.

The finding that the best predictor of course achievement in this study was students' self-assessment of their memory ability supports the validity of the EMQ. Herrmann (1984, 1982) has noted that findings of only weak to moderate validity for memory questionnaires may be due more to inadequate self-knowledge than they are to poorly designed questionnaires. In support of this contention, he has cited evidence that correlations between questionnaire scores and scores on an actual test of memory increase substantially following experience with the criterion memory test. In the present study, students' semester-long experience with the memory demands of the psychology course may have sensitized them to the relative strengths and weaknesses of their memory abilities. Completing the SAS and related measures during their participation in this study may have heightened students' sensitivity to their own memory performance in the course and may have thus promoted a more accurate self-assessment of memory than has been found in some other studies.

The finding that the self-assessment of memory measure in this study was a better predictor of achievement than were measures of academic aptitude or specific study activities may reflect in part the

nature of the demands of the introductory psychology courses. That is, these courses may have placed considerable demands on memory processing and retrieval, thereby making achievement in the course importantly contingent upon effective memory performance. Interestingly, as Table 1 shows, scores on the EMQ were significantly correlated with scores on only two of the SAS subscales, Uniform Processing and Generation of Interpreted Information, and neither of these subscales emerged in the regression analysis as significant predictors of course achievement. The lack of other significant correlations suggests that students who perceived their memory ability to be weak did not attempt to compensate for this lack of ability by engaging in specific study activities that might be expected to improve memory performance. Thus, students who have little confidence in their memory performance may also tend to believe that there is little they can do to improve their memory performance.

The pattern of findings with regard to the SAS subscales differs from that reported by Thomas et al. (1987). Whereas Thomas and his colleagues found only the Duplicative Processing subscale to be a significant predictor of course achievement in their college sample, the present study found three other subscales to be significant predictors. This difference may be the result of the different types of courses studied. In the Thomas et al. study, the college sample was drawn from two history courses, whereas the sample in the present study was drawn from introductory psychology courses. Thus, the types of demands placed on the students and the most effective types of study behaviors may have differed considerably in the two studies. These findings highlight the importance of examining the relationship between course characteristics and specific study activities in predicting course achievement. For example, the finding in the present study that the cognitive subscale of Focus on Test Relevance was a significant predictor of achievement may have been a function of support features of the courses such as instructor-provided guides that promote successful identification of information likely to be important for a test. The finding of a negative predictive relationship between engagement in and attention to study management activities and course grade raises interesting questions of possible causation: does a preoccupation with managing study activities detract from actual effective processing of information and achievement in the course or does a perception that one is doing badly in a course promote a preoccupation with managing study activities? A longitudinal study which examines how students alter their study patterns in response to successes and failures during a semester course would appear to be in order.

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Table 1
Correlations between Variables

	UP	HP	FTR	SN	PRP	R.	DP	GI	GC	CM	SEC	AR	MR	SEM	CMT	SCAAT	EMQ	LC	TIME	GRADE
CMT	-.07	.04	.16*	-.13	-.06	.02	-.01	-.05	-.10	.07	.23**	-.01	-.05	0	-	-.38**	.28**	-.31**	-.12	-.05
SCAAT	-.11	-.18*	-.03	.20**	.11	-.07	.08	.06	.20**	.11	-.43**	-.01	.03	-.26**	-.38**	-	.03	.10	.06	-.[illegible]
EMQ	.23**	.05	-.11	.12	0	.06	.13	.20**	.09	-.03	-.02	.02	.14	.08	-.28**	.03	-	.19*	-.05	.47**
LC	0	-.12	-.10	.15*	-.12	-.02	.02	.04	.03	-.14	-24*	-.24*	.08	-.16*	-.32**	.10	.19*	-	.09	.38**
TIME	.16*	.28**	.31**	.27**	.28**	.01	.27**	.15*	.30**	.19*	.05	.24**	.28**	.19*	-.12	.06	-.05	.09	-	-.08
GRADE	.12	-.03	.07	.03	-.15*	.11	.02	.18*	.02	-.13	.03	-.18*	-.04	-.02	-.05	-.16*	.47**	.38**	-.08	-

*p < .05 **p < .01

Abbreviations:

Study Activity Survey Subscales:

UP - Uniform Processing
HP - Hyperprocessing
FTR - Focus on Test Relevance
SN - Selective Notetaking
PRP - Pre-Reading Preparation
RP - Receptive Processing
DP - Duplicative Processing
GI - Generation of Interpreted Information
GC - Generation of Constructed Information
CM - Cognitive Monitoring
SEC - Self-Evaluation of Cognitive Ability
AR - Assiduous Resource Management
MR - Means of Resource Management
SEM - Self-Evaluation of Management

CMT - Concept Mastery Test
SCAAT - Self-Concept of Academic Ability Test
EMQ - Everyday Memory Questionnaire
LC - Locus of Control Measure
TIME - Estimate of Study Time Per Week
GRADE - Psych. 105 Course Grade

Table 2
Stepwise Multiple Regression: Student Characteristics and SAS Subscales on Course Grade

Variable	R	B	Standard error of B	β	p
EMQ	.505	.127	.017	.461	<.0001
LC	.572	.311	.065	.301	<.0001
SCAAT	.602	-.328	.105	-.183	.0021
AR	.618	-.262	.107	-.161	.0157
FTR	.645	.425	.116	.235	.0003
MR	.658	-.185	.081	-.150	.0240