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ABSTRACT

A survey of study behaviors was mailed to 300 adult students enrolled in two distance learning programs of The American College. The sample included three groups: high passers, low passers, and failers. The survey instrument was a 50-item rating scale measuring study practices in six areas: elaborative processing, information processing, attitude management, executive monitoring, effortfulness, and strategic test-taking. The overall return rate for the questionnaire was 66 percent. A discriminant analysis indicated that both high and low passing groups differed from the failing group on all six study dimensions, but that the executive monitoring and strategic test-taking scales were the strongest predictors of group membership. Specific study practices most frequently used by all three groups included using practice tests for review, intensive studying the night before the exam, underlining important material, and relating reading material to one's own experience. Fewer than 20 percent of each group reported using charts or outlines to summarize material, writing out a study schedule prior to beginning a course, and overlearning course material. Specific skills used by only the high-achieving group included skimming the text, reading all of the assigned study material, mental rehearsal, and overlearning. (23 references, 5 tables) (CML)

STUDY PRACTICES OF ADULT LEARNERS IN DISTANCE EDUCATION: FREQUENCY OF USE AND EFFECTIVENESS

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ABSTRACT

A survey of study behaviors was mailed to 300 adult students enrolled in CLU and ChFC (distance-learning) programs at The American College. The sample consisted of three groups: high passers (receiving scores of 90 or above on all exams taken); low passers (passing all exams taken, but by no more than 5 points each); and failers (failing four or more exams). The survey instrument was a 50-item rating scale measuring study practices in six areas: elaborative processing, information processing, attitude management, executive monitoring, effortfulness, and strategic test-taking.

A discriminant analysis was performed, employing the six scales as the predictor set. Results indicated that both high and low passing groups differed from the failing group on all six study dimensions, but that executive monitoring and strategic test-taking scales were the strongest predictors of group membership. In addition, low passers could be differentiated from the other two groups on a second discriminant function, suggesting that factors underlying academic achievement may not be unidimensional.

Individual questionnaire items were also analyzed to determine how frequently specific study behaviors were employed and to determine which ones were related to academic performance. Findings were discussed as they relate to the moderating influence of educational context on study strategy effectiveness and to implications for the use of study strategies research by distance learning institutions.

STUDY PRACTICES OF ADULT LEARNERS IN DISTANCE EDUCATION: FREQUENCY OF USE AND EFFECTIVENESS

Over the years, learning strategies research has uncovered a variety of dimensions which make a difference in academic performance. Findings have been translated into a variety of diagnostic inventories and training programs designed to assist students in "learning to learn" (Brown & Holtzman, 1967; Schmeck, Ribich, & Ramanlah, 1977; Weinstein & Underwood, 1985). While insights about effective learning continue to emerge, the breadth of their potential application is limited by a paucity of studies focusing on the relevance of such findings for specific educational contexts (Rothkopf, 1988). This is especially true in the case of adult learners in nontraditional educational settings. This study aims to determine current study practices used by adult students in a distance education program for insurance and financial planning and to identify which of these practices are associated with the level of one's academic performance.

Studies concerning how students learn and methods for improving how students learn have been conducted in colleges, high schools, and grade schools. A variety of study strategy dimensions which contribute to academic success have been proposed (Dansereau, 1986; Thomas & Rohwer, 1986; Wittrock, 1988). Most of these dimensions can be placed in two very general categories: (1) primary strategies, which are used to identify, understand, remember, and apply important subject matter; and (2) support strategies, which involve the formation and maintenance of attitudes related to learning and academic performance. The first category includes such issues as elaborative processing, selection of main ideas, frequency of self testing and review, and test taking. The second category includes issues related to academic self-concept, commitment or motivation to learn, time management, positive expectations for success, and anxiety reduction (Dansereau, 1985).

Laboratory and training studies have demonstrated the importance of these dimensions with varying levels of success (Dansereau, Collins, McDonald, Holley, Garland, Diekhoff, & Evans, 1979; Meichenbaum, 1972). It is not clear how generalizable such findings are, however, given the nature of outcome measures used and the intensity which training programs involve (Rothkopf, 1988; Weinstein & Underwood, 1985). In short, the question of how much discrepancy there is between the "best way of learning" and what students are actually willing to do has not been adequately addressed (Rothkopf, 1988).

A further question concerns whether the lessons learned from studies conducted in traditional educational settings apply to the problems which adult learners encounter in non-traditional educational settings. Palmer and Goetz (1988) argue that existing research indicates an overlap between findings for adult learners and their younger counterparts. This overlap seems to be far from complete, however, since there is strong evidence to suggest that adult learners are qualitatively different from their younger counterparts. Knowles (1978) suggests that older students prefer more self-directed modes of learning, possess lower expectations for academic success, and are more problem-oriented than curriculum-oriented in their academic interests. They are also more diverse than younger students in their academic and non-academic experiences (Neugarten, 1973).

These differences are further exaggerated when adult learners enroll in nontraditional educational programs. Such students are often less schooled (Schwittman, 1982) or have been out of school for some time (Feasley, 1983). They may need more pedagogical contact and more evaluative feedback, while they receive less. They are confronted with more reading material than students taking formal classes; as active adults, they have less time to study it (Howard, 1985; Schwittman, 1982). Faced with such stresses and given the internalized, independent character of distance study, it is not surprising that dropout rates for students in such programs approach 50% (Baath, 1982; Schwittman, 1982).

Certain dimensions of academic studying seem to be especially salient for such learners. Time management is one such dimension. Students generally spend less than the recommended amount of time for distance learning courses (Schwittman, 1982). There is a great deal of individual variation in time spent studying, with only half of all students completing self-assessment activities assigned in course material (Clyde, Crowder, Patching, & Stone, 1983). Metacognitive or executive strategies are also important. Distance learners often fail to monitor their progress and comprehension of course material, resulting in less-than-optimal use of limited time and effort(Clyde *et al.*, 1983; Howard, 1985). Finally, student motivation is a critical factor, inasmuch as adult learners are not required to engage in education in the same "default" fashion as younger students (Cropley & Kahl, 1983; Heinze, 1983). Koenig and McKeachie (1959) have suggested that while ability is a more critical factor in achievement among younger students, attitudinal, motivational, and personality factors may contribute more to differences in achievement among older students. For adult learners, educational achievement is very often tied to promotion and/or career survival (Heinze, 1983). In addition, the absence of a teacher to remove such emotional blockages may lead to exaggerated effects resulting from differences in attitudes and personality orientations (Clyde *et al.*, 1983).

Given these "learner and contextual variations" which characterize adult learning in a non-traditional educational setting, studies must explore and establish baselines which can be compared with those already established in more traditional academic settings. This study attempted the following: (1) to determine which general areas of study behavior discriminate among high, moderate, and low achievers; (2) to determine what specific strategies adult learners in a distance-learning program actually use; and (3) to identify specific study behaviors which clearly discriminate among the three achievement groups.

METHOD

Setting

The American College is a private, nonprofit, accredited degree-granting institution offering education in the financial services to nearly 25,000 students nationwide. Students enrolled in the Huebner School program must complete 10 courses covering a variety of topics related to insurance, investments, tax planning, etc. About 90% of students complete the program using independent study techniques. Knowledge of material for each course is assessed using a standardized, norm-referenced final exam consisting of 100 multiple choice items. Exams are administered through a nationwide network of written and computerized testing centers. Studies are self-paced; students can schedule examinations whenever they feel they are ready.

Sample

A group of students was identified for inclusion in the study based on the following criteria: (1) matriculated in one of the college's designation programs during or after 1985; (2) took an examination as part of course requirements within the past six months; and (3) had registered for at least four courses. From this pool, three subsamples of approximately 100 students each were drawn: (a) high passers, consisting of students who received scaled scores of 90 or above on all exams taken; (b) low passers, consisting of students who passed all of their exams with a scaled score between 70 and 75 (70=passing); and (c) failers, who have failed four or more exams taken at the college. Students' scores for three required courses were analyzed to assure that classifications accurately reflected general student performance.

The mean age for the sample was 38 (range 24-67 years). Each subsample was approximately 72% male. Approximately 45% of the sample had completed undergraduate studies at a traditional college; nearly 22% had obtained advance degrees. The three achievement groups were similar in all respects except for educational level; high achievers were more likely to have obtained an advanced degree, while low achievers were more likely to lack an undergraduate degree, χ^2 (4, N = 183) = 31.39, p < . 0001.

Instrument and Procedure

A pool of items was generated on the basis of an extensive review of existing study skills inventories and study skills manuals. Specific items were selected from the pool based upon their anticipated relevance for students at The American College. A final pool of 50 items included 30 related to specific study habits, 10 related to potential problems which students might encounter while studying, and 10 beliefs or attitudes which might affect student motivation. Items covered six general areas: elaborative processing (5 items); information processing (4 items); executive monitoring (13 items); attitude management (6 items); effortfulness (9 items); and strategic test-taking (7 items). Additional items did not fit into any of the general areas. While the internal consistency of each scale was analyzed, the exploratory character of the study made it appropriate to be concerned not only with broader dimensions of study behavior but also with specific study habits whose use might or might not be related to such areas. Respondents were instructed to indicate how frequently they used each strategy or habit using a 5-point scale (1=almost never true of me; 5=almost always true of me). Additional items instructed students to estimate the average time they spent preparing for exams and to identify the singlemost important factor in their academic efforts.

Questionnaires were mailed in early January 1989. Returns were monitored, and a follow up mailing was conducted in mid-February. By early March, an overall return rate of 66% was reached (80% for high passers; 72% for low passers; 48% for failers).

RESULTS

Scale Characteristics

Estimates for internal consistency (Cronbach's alpha) and correlations among scales are presented in Table 1. Low internal consistency estimates for Elaborative Processing, Information Processing, and Attitude scales may be viewed as a function of small item sets. In general, low correlations among scales suggest that most of the scales are measuring different constructs; the exception appears to be Executive Monitoring, which is moderately correlated with both Effortfulness and Test-Taking Strategies scales (some items appeared on two scales).

Table 1
Scale Intercorrelations[a]

		(1)	(2)	(3)	(4)	(5)	(6)
Elaborative Processing	(1)	(.53)[a]					
Information Processing	(2)	.25	(.60)				
Attitude Management	(3)	.55	.14	(.55)			
Executive Monitoring	(4)	.27	.17	.33	(.81)		
Effortfulness	(5)	.29	.22	.33	.62	(.72)	
Test-taking Strategies	(6)	.18	-.03	.32	.46	.15	(.72)

[a] internal consistency estimates for each scale are in parentheses

Group Differences - Scales

A discriminant analysis was conducted using the 6 scale scores as predictor variables and achievement level as the group variable. Results indicated that both possible discriminant functions were significant, χ^2 (6, N =181) = 148.14, p < .0001, and χ^2 (5, N =181) = 22.99, p < .0005, respectively. Corresponding canonical correlation values for the two functions were .71 (88% of common variance) and .35 (12% of common variance). Means and standard deviations for the three groups, as well as univariate F values and standardized discriminant function coefficients, are presented for each of the six scales in Table 2.

An analysis of group centroids revealed that the first discriminant function differentiated among the three groups along an achievement continuum, with failers scoring lowest and high passers scoring highest. Scales contributing most strongly to this differentiation were Strategic Test-taking, Effortfulness, and Information Processing. The second discriminant function differentiated the low passing group from the high passing and failing groups. The second discriminant function had higher loadings for Elaborative Processing, Information Processing, Executive Monitoring, and Effortfulness scales.

Table 2
Results of Discriminant Analysis for Three Achievement Groups

	Achievement Group			*F* (2, 178)	SDFC[a]	
	Failers (*n* = 46)	Low Passers (*n* = 78)	High Passers (*n* = 57)		I	II
Elaborative Processing	3.66[b] (.51)[c]	3.96 (.55)	3.73 (.60)	5.23**	-.08	.58
Information Processing	2.62 (.86)	2.66 (.93)	2.26 (.92)	3.80*	-.34	.46
Attitude Management	3.75 (.61)	4.11 (.56)	4.00 (.55)	6.05**	-.12	.14
Executive Monitoring	2.89 (.53)	3.60 (.66)	3.68 (.60)	25.93***	.19	.58
Effortfulness	2.81 (.63)	3.13 (.62)	3.42 (.73)	10.74***	.42	-.94
Strategic Test-taking	2.99 (.64)	3.98 (.55)	4.20 (.48)	67.91***	.89	-.02

* $p < .05$; ** $p < .01$; *** $p < .0001$

[a] SDFC - standardized discriminant function coefficient.

[b] All scales range from 1 to 5.

[c] Standard deviations are in parentheses.

Educational Level and Study Practices. An analysis of pre-existing differences among the three performance groups indicated that a disproportionate number of failers had not attained an undergraduate degree and that a disproportionate number of high passers had attained advanced degrees (master's degrees, law degrees, etc.). This finding was consistent with that of an earlier study at The American College (Bajtelsmit, 1986) and with similar research done in traditional settings (Palmer & Goetz, 1988). In order to investigate the possibility that educational experience might provide a rival explanation for differences in study practices, a second discriminant analysis was performed using the six study practice scales as predictors to determine which scales, if any, discriminated among three educational levels: (a) high school / some college; (b) undergraduate degree only; (c) advanced degree.

Results of the second discriminant analysis are presented in Table 3. A Wilks lambda of .82 was obtained for the first discriminant function, χ^2 (12, N =163) = 30.56, p < .005. Only the first of two possible discriminant functions was significant. A corresponding canonical correlation of .34 indicated that the six predictors accounted for approximately 10% of the variance among the three groups. Only Executive Monitoring and Strategic Test-taking scales were significant predictors of educational level. The advanced degree groups scored significantly higher than the other two groups on the Executive Monitoring scale (p < .01); while the high school / some college group scored significantly lower than the other two groups on the Strategic Test-taking scale (p < .01).

Table 3
Results of Discriminant Analysis for Three Educational Level Groups

Scale	Educational Level				
	HS / Some College (n = 37)	College Degree (n = 85)	Advanced Degree (n = 41)	F (2,161)	SDFC[a]
Elaborative Processing	3.81[b] (.53)[c]	3.87 (.60)	3.74 (.53)	< 1	-.24
Information Processing	2.79 (.88)	2.51 (.87)	2.61 (1.10)	1.26	-.10
Attitude Management	3.96 (.60)	4.03 (.56)	3.92 (.60)	< 1	-.52
Executive Monitoring	3.27 (.77)	3.31 (.73)	3.70 (.56)	5.63*	.51
Effortfulness	3.17 (.59)	3.07 (.72)	3.27 (.73)	1.19	.11
Strategic Test-taking	3.38 (.81)	3.79 (.73)	4.03 (.61)	9.09**	.70

* p < .01; ** p < .0001

[a] SDFC - standardized discriminant function coefficient.

[b] All scales range from 1 to 5.

[c] Standard deviations are in parentheses.

Differences among College Graduates. To test the hypothesis that differences in self reported study habits were related to academic performance more directly, a third discriminant analysis was conducted to determine whether the predictive behavior of the six scales would change if educational level was held constant. Because several near-empty cells precluded the possibility of considering educational level and performance level simultaneously (e.g., almost no students with advanced degrees were in the failing group), it was decided to include only students who had received an undergraduate, but not an advanced, degree. Results are presented in Table 4. Results were remarkably similar to those obtained when all subjects were included in the analysis: both discriminant functions were significant at the .01 level of significance, with canonical correlations of .70 and .43, respectively. Differentiation among groups along the two dimensions were the same; changes in loadings on each scale within each discriminant function were trivial.

Table 4
Discriminant Analysis for Three Achievement Groups - Students with Undergraduate Degree Only

	Achievement Group			*F* (2,83)	SDFC[a]	
	Failers (*n* = 21)	Low Passers (*n* = 37)	High Passers (*n* = 27)		I	II
Elaborative Processing	3.68[b] (.53)[c]	4.07 (.58)	3.87 (.60)	3.56*	-.07	.50
Information Processing	2.52 (.79)	2.68 (.87)	2.12 (.86)	3.40*	-.44	.47
Attitude Management	3.75 (.64)	4.15 (.53)	4.13 (.55)	3.89*	-.15	.11
Executive Monitoring	2.74 (.50)	3.53 (.64)	3.64 (.65)	14.97***	.28	.73
Effortfulness	2.69 (.66)	3.04 (.72)	3.46 (.61)	7.90**	.50	-.92
Strategic Test-taking	3.10 (.74)	3.92 (.57)	4.20 (.48)	22.02***	.83	.05

* $p < .05$; ** $p < .001$; *** $p < .0001$

[a] SDFC = Standardized Discriminant Function Coefficient.
[b] All scales range from 1 to 5.
[c] Standard deviations are in parentheses.

Study Practices: Frequency of Use

While the above analyses provide useful insights concerning general study areas which differentiate among students, we felt strongly that grouping specific study practices into such areas may not always be appropriate. First of all, there is no reason to suspect that a student adopting one specific strategy within a particular area is necessarily more likely to adopt another specific strategy within the same area just because both strategies are theoretically similar. Furthermore, if items concerning specific strategies are stated clearly enough, there is no reason to suspect that the item by itself is an unreliable indicator of the student's study practices; or if it is, there is no reason to hope that adding several paraphrased items tapping the same skill will resolve the problem. Finally, perhaps most importantly in the present study, focusing exclusively on general areas may mask specific strategies which are largely responsible for group differences. At a very practical level, we were interested in knowing *specifically* what successful students were doing that unsuccessful students were not. In addition, we were interested in knowing how often these specific strategies were employed.

The percentage of each of the three groups indicating that they employed a particular strategy or experienced a particular problem "very often" or "almost always" is presented on Table 4. Items are paraphrased from the original questionnaire for the sake of brevity; a complete copy of the questionnaire is available from either author upon request.

Elaborative Processing. An examination of practices related to this area reveals that roughly 50-75% of all groups reported using different methods of elaborative processing in their study. Differences among groups were not dramatic; both groups of passers used such strategies more frequently than failers, with low passers reporting more frequent use than high passers.

Information Processing/Reading Habits. While only four items were included in the scale described earlier, additional items which are theoretically related to information processing are included in Table 4 (after the four scale items). While a substantial number of respondents reported using strategies generally recommended in the study skills literature, these individual strategies did not generally discriminate among passers or failers, nor did they discriminate between high passers and low passers. Roughly 60-70% of each group reported using underlining to identify important material; 40-50% reported reading chapter overviews and objectives prior to reading text material. Infrequently used strategies included memorizing material, organizing and condensing notes, summarizing material with charts, diagrams, or outlines, and overlearning material. While high passers scored lower than the other two groups on this scale, this difference masks several differences which clearly distinguish high passers from the other groups: high passers were nearly three times more likely than either low passers or failers to skim or preview chapters before reading. In addition, high passers were twice as likely to overlearn material and half as likely to resort to memorization when material became difficult to understand.

Executive Monitoring Practices. Failers were more haphazard in their approach to study than passers and less likely to follow a routine or "plan of attack." In addition, over four times as many failers reported preferring formal classes to independent study, suggesting a need for externally imposed structure; over 3 times as many failers reported getting lost in the details of course material. Items related to time management were among the strongest discriminators between successful and unsuccessful students. While few students (less than

20%) in any group reported actually writing out a study schedule prior to beginning a course, both groups of passers were more likely than failers to monitor their progress and to stay on schedule. Failers were more likely than passers to report putting off study and feeling that other responsibilities caused them to neglect their studies. In addition, failers were less likely than passers to set aside specific periods of time for study and more likely to report feeling restless and distracted during study.

Attitude Management. Student attitudes regarding their studies at The American College were generally positive and did not discriminate dramatically among groups. Over 75% of all three groups felt that courses provided essential information and skills and that their educational and career goals were clear. About 50% reported believing that hard work is the secret to success. Small but significant group differences on this scale are probably accounted for by the somewhat higher level of resentment reported by the failing group and the lower percentage of high passers reporting being interested only in whether they pass or fail.

Effortfulness. All students are provided with a text to read and a study guide to follow. Less than a third of each group reported writing out the answers to self-test questions in the study guide; these questions involve writing definitions and short essays concerning concepts and principles discussed in the text. Similarly, only slightly over half of each group reported reading and completing the exercises in the study guide. What differentiated high passers from the other two groups appears to be the fact that high passers were nearly twice as likely to read nearly all of the required study materials; nearly all respondents in the high passing group reported doing so. In a similar manner, high passers were more likely to overlearn material and to use mental rehearsal techniques (as indicated above). Number of hours spent studying was not a significant discriminator among groups.

Strategic Test-taking. Not surprisingly, failers were more likely to report test anxiety problems than passers. This anxiety is reflected in failers' not knowing what to expect on exams, in their inability to stay relaxed and calm when taking tests, in their inability to pace themselves while taking tests, and in their feeling that they may have made careless mistakes on their examinations.

Over 80% of all three groups reported using practice tests as a means of review. The questionnaire item did not distinguish among different forms of practice tests; "frequent use" therefore might refer to a wide variety of practice tests as well as to a wide variety of motives for using practice tests. Over 80% of each group reported reviewing test material the night before or the day of the exam. This practice is contrary to common wisdom found in a large number of study skills manuals.

Table 5
Percentages of Students Reporting Use of Particular Strategies "Very Frequently" or "Almost Always"

	Fail	Low Pass	High Pass	
ELABORATIVE PROCESSING				
9. try to see how material applies to work situations	70	81	77	n.s.
16. relate new material to familiar ideas	56	61	70	n.s.
29. translate material into own words	40	60	51	n.s.
41. courses provide essential information and skills	77	79	86	n.s.
48. courses do not really apply to work	16	16	16	n.s.
INFORMATION PROCESSING				
(scale items)				
10. skim each chapter before reading it	35	29	89	***
18. read chapter overview and objectives	51	60	47	n.s.
19. organize and condense notes	21	21	16	n.s.
23. summarize with charts, diagrams, or outlines	19	18	21	n.s.
(non-scale items)				
1. underlining or highlighting	70	51	61	n.s.
6. memorize material which is not understood	19	24	11	*
12. mentally rehearse important ideas	37	53	67	n.s.
24. overlearn material	14	15	30	*
44. underline only key phrases and main ideas	68	65	62	n.s.
EXECUTIVE MONITORING				
(scale items)				
7. feel restless when sitting down to study	35	19	14	n.s.
8. other responsibilities cause neglect of studies	56	30	9	***
11. set aside a specific length of time to study	31	69	63	***
15. study long without making any real progress	7	6	0	n.s.
17. haphazard approach to reading and studying	21	3	2	***
27. put off studying	40	15	11	***
28. study in a "quiet place" without interruption	75	75	72	n.s.
33. write out a study schedule	14	22	19	n.s.
34. monitor progress to stay on schedule	21	54	63	***
38. fall "behind schedule"	47	27	18	*
39. get lost in details	21	7	0	***
40. do best studying a few days before exam	54	62	33	***
43. distracted from studies very easily	58	18	18	***

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 5 (cont'd)
Percentages of Students Reporting Use of Particular Strategies "Very Frequently" or "Almost Always"

	Fail	Low Pass	High Pass	
EXECUTIVE MONITORING (cont'd)				
(non-scale items)				
22. avoid studying when less alert	51	54	51	n.s.
37. frequent "study breaks" to avoid fatigue	23	55	48	*
42. prefer formal classes to independent study	52	13	9	***
ATTITUDE MANAGEMENT				
4. long range educational and career goals are clear	72	77	88	*
13. only interested in pass or fail	14	47	36	**
21. hard work is the secret to success	58	49	54	n.s.
35. resent pressure to pursue CLU/ChFC	11	1	2	***
50. can't wait to finish TAC studies	74	59	5?	*
EFFORTFULNESS				
5. read and complete the exercises in TAC Study Guide	54	56	60	n.s.
12. mentally rehearse important ideas	37	53	67	*
14. read nearly all of the required study materials	49	58	93	***
27. put off study until last minute	40	15	11	***
31. write out answers to the self-test questions	30	24	29	n.s.
24. overlearn material	14	15	30	n.s.
51. less than 60 hours spent on course	82	73	61	n.s.
STRATEGIC TEST-TAKING				
(scale items)				
20. test anxiety prevents optimal performance	30	14	4	*
25. follow a routine or "plan of attack"	35	78	67	***
26. TAC exams are excessively tricky	49	21	2	***
32. stay relaxed and calm when taking tests	33	60	83	***
45. pace self when taking tests	58	86	83	**
46. don't know what to expect on exams	44	14	5	***
49. have made careless mistakes on exam	24	7	2	***
(non-scale items)				
2. practice tests as means of review	81	88	86	n.s.
3. reviewing material night before/day of exam	76	82	84	n.s.
30. trouble identifying important material	49	18	2	***

* $p < .05$; ** $p < .01$; *** $p < .001$

DISCUSSION

The above results provide partial evidence to support the hypothesis that use of both primary and secondary strategies contribute to academic performance among adult learners. It is important to add that, while primary study strategies (information processing and elaborative processing) were significant discriminators among achievement groups, their contribution pales alongside that of secondary strategies (executive monitoring and effortfulness) and strategic test-taking. The tentative conclusion which follows is that differing concerns of adult learners create a learning context in which cognitive strategies are still significant, but less important than self-monitoring and motivational strategies.

One not-very-interesting but perhaps very significant implication which derives from this is that very basic study issues need to be addressed before more dramatic "high tech" solutions are called for: reading all the required study materials and following study guide instructions might be a good place to start. If two-thirds of all students are not bothering to follow the study guide being used, college faculty may want to consider the possibility that students perceive it as less than useful; accordingly, either the perception or the study guide itself is in need of change. Certainly, such modifications could learn much from cognitive research done in this area. In addition, unsuccessful students must be strongly encouraged to address the fact that "not getting around to study" is the first issue to consider, and that simply putting time in does not constitute successful learning.

Group Differences

The findings also suggest that it may be useful to distinguish among students not only in terms of academic achievement, but also in terms of academic goals. The six scales developed for this study discriminated not only passers from failers, but also low passers from the other two groups. The low passer group in the present study might be imagined to represent a "pass by the skin of one's teeth" category: having passed all of their courses by no more than five points (thereby falling easily within the lower one third of each testing group), they "just manage to get by," receiving below average scores. The picture that emerges (consistent with counseling experiences with low passers) is one of students who are anxious to complete the program and receive their certification as quickly and with as little effort as possible.

While this may sound a bit cynical, it is important to remember that adult learners usually lack the luxury of devoting all their time and attention to academic pursuits; accordingly, during the course of priority-setting, career and / or family interests take precedence. If, in addition to conflicting demands on time, pursuing certification is more a matter of employer pressure than of "honest curiosity," it is sensible to suppose that many learners would do the minimum amount necessary and set up a time line which would involve finishing studies as quickly as possible. It should be noted that students receive only pass-fail grades for American College courses; it figures, then, that high achievers are highly intrinsically motivated, since there is no recognition for "exceptionally good grades." One piece of evidence which supports the claim that low passers may be extrinsically motivated is their reported use of non-college study materials which stress learning the most in a minimum amount of time and stress passing the criterion test rather than learning the material.

Specific Study Strategies

Preliminary analyses indicated considerable variation in the frequency with which specific study practices were employed. Practices most frequently used by all three performance groups included using practice tests for review, intensive studying the night before the exam, underlining important material, and relating reading material to one's own experience. In contrast, fewer than 20% of each group reported using charts or outlines to summarize material, writing out a study schedule prior to beginning a course, and overlearning course material.

Specific skills which only the high-achieving group used included skimming the text, reading all of the assigned study material, mental rehearsal, and overlearning. Both high and low passers were likely to use self-monitoring strategies and test-taking strategies, though in several instances the high passers used such strategies more frequently. While practices unique to the high-achieving group are commendable, it may well be that focusing on skills and areas which discriminate passers from failers (i.e., executive monitoring and strategic test-taking) would be more readily accepted by students have trouble or wanting to improve their performance. In any case, it may be important to determine first (or to have the student determine) just how well the student wants to do. In short, the answer to the question "what do successful students in this program do?" is very straightforward; those who "get the A's" read all the material and take a systematic approach to time and environment management (importantly, they do not necessarily spend more time studying). If one defines success as "not getting an F," however, there appear to be shortcuts which can be taken; even those taking shortcuts are strategic in their planning and test-taking habits. Most clearly, those who stumble into and through the program--who need structure from outside-- have the most trouble passing.

Study Limitations

There are clearly limitations to the present approach. Most importantly, relying on a Likert scale format and upon self-report as a means of measuring study habits creates some social desirability problems. In the present case, it may be argued that the survey measures not so much what students do but what their theory is about what constitutes effective studying (Weinstein and Underwood, 1985). Two points need to be made to mitigate such a criticism. First of all, the questionnaires were mailed in the context of benefitting students having trouble in the program; accordingly, both passing groups were asked to participate in order to "share their study skills expertise" with failing students. Having been recognized as successful in advance of completing the questionnaire, it does not seem unreasonable to assume that most passing students would have reported what they themselves did to be successful; such an assumption seems at least as tenable as the assumption that respondents' answers were influenced by social desirability effects. The first assumption is further strengthened by the fact that low passers distinguished themselves from high passers in a number of areas, despite the fact that both groups received an essentially identical cover letter congratulating them on their successful performance and requesting their help on the part of less successful students.

As for the failers, their cover letters directly addressed their academic difficulties and offered diagnostic feedback to those who responded. Given that the primary motive for responding would be such feedback, once again there is little reason to suspect that respondents

would lie or exaggerate concerning their study habits. Of greater concern is the relatively smaller return rate by the failing group; what unique problems might be experienced by their non-responding counterparts remains open to question.

Several of the scales used had less-than-impressive consistency estimates, though they are comparable to those of scales using in previous studies. More importantly, scales did not include the same strategies as are used in other scales more appropriate to traditional learning contexts. Consequently, weak differences among groups on the Information Processing or Elaborative Processing scales do not mean that the effect would have been weak if subscales from the LASSI or ILP had been used. While comparability is questionable, it must be stressed that most scales geared toward traditional educational settings are simply not appropriate for non-traditional settings.

While wrestling with group differences on an item-by-item basis seems cumbersome and over-detailed, the reader will hopefully appreciate the additional insights which might be gained (in nontraditional as well as traditional learning contexts) by stepping beyond the "scale level" and exploring differences at the item level. While identifying general study dimensions is intuitively appealing for all of the standard psychometric reasons, there may be equally legitimate reasons for also considering particular study strategies.

Finally, the non-experimental and post hoc character of the above study requires careful replication using more experimental methodologies (Weinstein & Underwood, 1985). Accompanying such a weakness, however, are several strengths. Most importantly, its outcome measure (membership in one of three achievement groups) is more stable, more global, and more ecologically credible than many of those used in experimental studies; and it begins with spontaneously employed (rather than researcher-induced) study activities, in an effort to determine what three different types of students normally when confronted with the problem of studying. At least within the distance learning context, uncovering this information is a crucial prerequisite to exploring how one might improve the habits of students; for they differ dramatically from the undergraduate captives of educational psychology classes and psychology departments in general (Rothkopf, 1988).

Educational Implications

Any application of the above insights must take into account that most adult learners will probably not respond to offerings of "study skills workshops" (we wonder how frequently it occurs even in traditional undergraduate settings!). Intervention may need to turn in the direction of mentorship, reminders, simple study tip information sheets. Given the independent and "business executive" character of students at the American College, any intervention taken must be sensitive to student receptivity. Many prefer to "pick and choose" from a list of possible strategies; for others, laying out a particular approach seems to be helpful. Very notably, students who chronically fail examinations state that they prefer formal classes which provide a needed structure that few students in either of the passing groups feel a need for. This structure is more or less "built-in" in traditional college settings, by virtue of fixed semesters, regular class meetings, weekly assignments / quizzes, etc. While it is impractical to provide such courses on a national level within a distance learning context, some form of supportive strategy is clearly called for. The college currently is emphasizing small study group and mentor/sponsorship programs in an effort to provide some structure for such students.

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