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PERSISTENCE IN COMMUNITY COLLEGE ALLIED HEALTH PROGRAMS

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Abstract: The purpose of this study was to identify early indicators of persistence using **preenrollment** variables derived from the ASSET assessment developed by the American College Testing Program. The **sample** studied consisted of 187 community college allied health students enrolled in **one-** and two-year programs. The length of program persistence, in calendar days, was regressed on **preenrollment** ASSET variables and the first quarter grade point average. Separate prediction equations were developed for students enrolled in one-year and two-year programs respectively. The adjusted R square for the stepwise regression **applied** to one-year programs was .67 when first quarter grade point average (GPA) was included and .24 when GPA was deleted. For two-year

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programs, the adjusted R square was .44 when first quarter GPA was included and .25 when GPA was deleted. The noncognitive, self-reported information from the ASSET planning form, appeared to be more useful than the cognitive measures of academic ability when explaining variance in persistence. However, explained variance increased with knowledge of first quarter grade point average and there was a moderate relationship between cognitive measures and grade point average.

Student attrition is a widespread problem that has remained remarkably constant in pattern and percentage, for more than seventy years. **Summerskill** (1962), reporting on attrition studies from 1913 to 1962, found that only 40 percent of entering college freshmen graduate within a four-year period. A nationwide study (Iffert, 1957) found that 40 percent of an entering class never graduate. **Astin** (1972); **Bayer, Royer, and Webb** (1973); and **Cope, Pailthorp**; **Trapp, SkaLing, and Hewitt** (1971) put the national figures closer to 50 percent. A ten year follow-up study (**Eckland**, 1964) at the University of Illinois found that 69 percent graduate from some four year programs, though not necessarily from the program of initial enrollment.

Community colleges show similar patterns of attrition. Recent studies indicate that, while about 55 percent of students in public two-year institutions return for a second year, only 41 percent graduate after three years (**Beal** and **Noel**, 1979).

This research was guided by the definition of attrition that includes anyone leaving a college at which they were registered. The converse of

attrition is persistence which includes anyone remaining enrolled at a college at which they registered. Since this research is program specific, attrition will be defined as students leaving a program of study in which they were originally enrolled.

The task of reducing attrition in community colleges is formidable since it involves complex characteristics of both students and institutions. Indeed, some reports suggest that community colleges attract students with attributes associated with attrition (Astin, 1977; Pantages and Creedon, 1978). Open door admission policies provide little incentive to administer entrance and placement tests which would identify those needing remedial instruction prior to attempting college level work. While relatively low tuition provides access it may lead to less of a commitment to complete the entire college curriculum. The career education component may encourage students to leave as soon as they obtain a marketable skill, whether or not they have completed a degree or program. Even strong vocational goals, often found in community college students and usually associated with persistence, may not lead to persistence for all students. One study (Simpson, Baker and Mellinger, 1980) found that among students earning poor grades, those with higher vocational orientation had higher attrition rates than those with lower vocational orientation. Community colleges also have a larger number of academically disadvantaged students who are at increased risk of early attrition (Rounds, 1984). Whatever the reasons, student attrition is a significant problem at the community college level.

Methodology

The purpose of this study was to examine the possible relationships between student attributes, attitudes, and abilities, assessed by the ASSET Educational Planning Form (American College Testing Program, 1986), and the nature of student attrition/persistence (hereafter referred to as persistence) in Allied Health Programs at a selected community college. This research was an ex-post facto study, with data collected prior to enrollment and during matriculation within the 1985-86 academic year, with the exception of students in the **electroencephalographic** program where enrollment data were collected for one year, starting December 1984. **Preenrollment** characteristics identified on the ASSET Educational Planning Form, and college records of grade point average and enrollment data, were independent variables. The dependent variable in this research was persistence in calendar days in an allied health program. Each student was studied for enrollment status for a period of 'one year from the time of initial enrollment. The ASSET assessment was administered by the same person for **all** students in the sample. The purposes of the instrument were explained to participants and each question on the background plans and summary section was read to the participants. The skill assessment tests were administered after completion of the background plans and summary section. The sample used in this **study** was 187 students who enrolled in an allied health program. Table 1 identifies the programs represented, the number of students initially enrolled with each program, and the number of students who persisted for the year of the study.

The sample for this study was chosen for the following reasons. First, it allowed the utilization of an untapped data base related to student retention. Second, employment of one of the researchers at the college facilitated collection of crucial enrollment data.

Table 1

Sample Size and Persistence by Program

Program	Initial Sample Size	Persisted for the Year of Data Collection
Dental Assistant	46	24
Dental Laboratory Technologist	11	9
Electroencephalographic Technician	10	5
Medical Assistant	38	32
Medical Record Technologist	17	6
Orthopedic Physician Assistant	12	11
Occupational Therapy Assistant	31	23
Respiratory Therapist	22	15
TOTALS	187	125

Instrument

In 1982, The American College Testing Program (ACT) designed the ASSET' program as a planning and advising tool for students entering two-year institutions . The ASSET (Assessment of Skills for Successful Entry and Transfer) program combines measures of academic skills with educational planning information to help students identify their strengths and weaknesses and "enables counselors and advisors to provide new students with crucial early guidance in a variety of areas that can affect retention" (American College Testing Program, 1986, p. 1).

The ASSET basic skills battery was developed from existing instruments used in the ACT Career Planning Program. Validity and reliability of the ASSET battery have been tested and reported in the ASSET Technical Manual (ACT, 1986). Ability of the ASSET battery to predict academic performance in selected courses continues to be studied by the American College Testing Program and was reported by Nielsen (1986). Earlier researchers have not investigated predictive abilities of variables collected on the entire ASSET Educational Planning Form. Data, on educational backgrounds, plans, needs and abilities of students provided on the ASSET planning form, represent a consolidated data base for attrition research. Table 2 identifies data available from the ASSET Educational Planning Form.

Data Analysis: Multiple Regression Technique

A series of multiple regression equations were developed using the Statistical Package for the Social Sciences (SPSS-X). InitialIV, all

Table 2

Variables Used in the Study

Obtained From the ASSET Planning Form	Obtained From College Records
Age, Sex, Veteran Status	Elapsed time between ASSET test date and enrollment
Ethnic Background	
Type of High School Certificate	
Previous College Credit	Credit hours attempted
Highest Degree Earned	Credit hours earned
Last High School English Grade	
Last High School Mathematics Grade	First Quarter Grade Point Average
Last High School Science Grade	Cumulative Grade Point Average
Career Goal	
Enrolled in Program of First Choice	
Certainty of Career Goal	Type of Withdrawal
Certainty of Program Choice	
Planned Hours of Employment	Credit hours taken first quarter
Amount of Education Planned	
Plans to Transfer	
- Need Help With;	
Financing, Education, Finding Employment, Day Care, Physical Disability, Health Problems, Commuter Information, Choosing a Major/Career, Reading Skills, Study Skills, Writing Skills, Math Skills, Work Experience Credit, Other	Number of days enrolled in program
Plan to Earn Certificate	
Language Usage Score	
Reading Skills Score	
Numerical Skills Score	

independent variables were used to account for variance in persistence based on its continuous measure; i.e. , days enrolled in the program. After an assessment of initial equations, a second set of equations were developed eliminating variables measuring credit hours attempted, credit hours earned,

and cumulative **grade** point average. Although these measures showed high correlations with persistence, they were considered **covariates** of persistence and of little utility in an **early** prediction model.

A third set of equations were developed after partitioning the **sample** into students in one-year and two-year programs. Past research had suggested that differences may **exist** between various programs. Although the **sample** size was **not** sufficient for a breakdown by individual programs, it was adequate for partitioning by program length. The third set of equations are presented subsequently.

A stepwise multiple regression procedure was employed using an empirical method for selecting independent variables for entry into the equation. Probability for entry of a variable into the equation was set at a $p < .05$ significance level and tolerance was set at the $p < .001$ level. A stepwise method using these criteria, considers all variables for entry, but enters only those variables that make a significant contribution to prediction and do not demonstrate collinearity with other variables in the equation. A **listwise** method was employed for deletion of missing data. The listwise method deletes the entire case for consideration if any data are missing for that case. This ensures that every case contributes to every correlation in the correlation matrix on which the multiple regression procedures are based.

In the following discussion, a number of terms and symbols are used that merit explanation at this point. Multiple R, represented by the symbol R, is an expression of the multiple correlation of the combined independent variables with the criterion variable. R^2 , represented by the symbol R^2 , is

the square of the multiple R and is an expression of the fraction of the explained variance in the criterion measure. In order to maintain the readability of the prediction tables, multiple R was not included. It may be calculated by taking the square root of the R^2 value. Adjusted R^2 is the R^2 value adjusted for the sample size and number of variables in the equation, since small sample sizes tend to inflate R^2 . The ratio of explained variance to error variance is represented by the symbol F. The F ratio is compared to the F distribution when testing its level of significance .

SUMMARY OF FINDINGS

The findings are summarized in Tables 3 and 4. Table 3 identifies the relationship between persistence and both first quarter grade point average and **preenrollment** variables for one- and two-year programs. Table 4 identifies only the relationship between persistence and **preenrollment** variables when first quarter grade point averages have been removed from the regression equation. As with Table 3, separate regressions were developed for one - and two-year programs. Regression statistics not previously described but presented in the table include the unstandardized regression coefficient (B), the standard error (SE B), the standardized regression coefficient (Beta), the calculated t value (T), and level of significance (Sig T).

First Quarter Grade Point Average and Preenrollment Variables

Table 3 shows the regression equation for one- and two-year allied health programs regressing the dependent variable of persistence on first

Table 3

Regression Analysis of Persistence in Calendar Days on First Quarter GPA
and ASSET Variables for Students in One-Year and Two-Year Programs

Variable	B	SE B	Beta	T	Cumulative Sig	T	R ²
<u>Students in One-Year Programs (N=65)</u>							
First Qtr GPA	98.08	8.92	.8634	10.995	.0000		.5803
High School							
Science Grade	-46.10	12.58	-.3085	-3.663	.0005		.6218
High School							
Math Grade	26.82	11.29	.1841	2.376	.0207		.6496
Need Help With							
Work Experience Credit	34.39	12.96	.2001	2.655	.0102		.6751
Need Help With							
Financing Education	-23.19	11.16	-.1556	-2.077	.0421		.6973
(Constant)	122.69	46.67		2.629	.0109		
Final Adjusted R ²	.6717	SE 62.27					
Analysis of Variance F Ratio of 27.2 significant at .0000							
<u>Students in Two-Year Programs (N=76)</u>							
First QTR GPA	53.86	11.60	.4330	4.643	.0000		.3059
Need Help With							
Study Skills	-91.24	23.84	-.5075	-3.827	.0003		.3520
Choice of Program	-13.71	5.14	-.2315	-2.668	.0095		.3986
Need Help With							
Writing Skills	49.63	20.15	.3081	2.463	.0162		.4462
Need Help With							
Financing Education	23.87	11.00	.1932	2.169	.0335		.4811
(Constant)	242.64	65.26		3.781	.0004		
Final Adjusted R ²	.4440	SE 74.40					
Analysis of Variance F Ratio of 12.98 significant at .0000							

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Table 4

Regression Analysis of Persistence in Calendar Days on Asset Variables for
Students in One-Year and Two-Year Programs

Variable	B	SE B	Beta	T	Cumulative Sig T	R ²
<u>Students in One-Year Program (N=71)</u>						
Procrastination in Taking ASSET	0.54	0.15	.4909	3.659	.0005	.0885
Need Help With a Physical Disability	-115.12	36.18	-.3390	-3.182	.0022	.1624
High School Math Grade	43.03	17.74	.2573	-2.426	.0180	.2264
Type of High School Certificate	-12.83	5.72	-.3011	-2.243	.0282	.2812
(Constant)	251.83	59.44		4.236	.0001	
Final Adjusted R ²	.2377	SE 109.20				
Analysis of Variance F Ratio of 6.45 significant at < .0002						
<u>Students in Two-Year Programs (N=80)</u>						
Need Help With Study Skills	-133.95	28.48	-.6815	-4.919	.0000	.1010
Need Help With Writing Skills	69.82	25.15	.3947	2.776	.0069	.1724
Need Help With Financing Education	33.63	13.92	.2473	2.417	.0181	.2295
Choice of Program	-15.36	6.38	-.2353	-2.409	.0185	.2848
(Constant)	413.12	57.30		7.209	.0000	
Final Adjusted R ²	.2466	SE 97.40				
Analysis of Variance F Ratio of 7.46 significant at .0000						

quarter grade point average and preenrollment variables. For one-year programs, the following five variables met criteria for entry into the equation in the following order: (a) first quarter grade point average, (b) high school science grade, (c) high school mathematics grade, (d) need help with work experience credit, and (e) need help with financing education. The cumulative R^2 (fraction of explained variance) reached .6973 with a final adjusted R^2 of .6717. The negative beta assigned to high school science grades indicated that lower grades are associated with longer persistence.

For two-year programs the following five variables met criteria for entry into the equation in the following order: (a) first quarter grade point average, (b) need help with study skills, (c) choice of program, (d) need help with writing skills, and (e) need help with financing education. The cumulative R^2 reached .4811 with a final adjusted R^2 of .4440. Again, first quarter grade point average accounted for a majority of explained variance. . Negative signs associated with" the beta statistics for the two following variables indicated that students who did not need help with study skills tended to persist longer and that, while the relationship between persistence and program choice is not clear, students choosing certain programs had longer persistence than those choosing others. Wanting help with writing skills and financing of education were variables positively related to greater program persistence.

Preenrollment Variables Only

Table 4 lists regression equations which were developed for use of ASSET preenrollment variables only. For one-year programs, four variables met criteria for entry into the equation in the following order: (a) procrastination in taking ASSET, (b) need help with a physical disability, (c) high school mathematics grade, and (d) type of high school certificate. The cumulative R^2 reached only .2812 with an adjusted R^2 of .2377. Procrastination (elapsed time between ASSET completion and enrollment) yielded an R^2 change of .0885. The relationship between this variable and persistence may be expressed as the greater the time prior to enrollment that ASSET is completed, the greater the persistence. Similarly, not needing help with physical disability is related to greater persistence as are higher high school mathematics grades. The type of high school certificate provided a negative relationship. Essentially, those students who earned a traditional high school diploma persisted for a longer period of time.

Table 4 also identifies the multiple regression equation of ASSET variables to persistence for two-year programs. The following four variables met the criteria for entry into equation in the following order: (a) need help with **study** skills, (b) need help with writing skills, (c) need help with financing education, and (d) choice of program. The four variables produced a multiple R of .2848 with an adjusted R^2 of .2466. It should be noted that the same ASSET variables were also entered for two-year programs as shown in Table 3, but in different order.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions of the study are somewhat limited since the sample was comprised of only 187 subjects from one institution and since the dependent variable (persistence) was measured over only one year. Even with these limitations, the study suggests important conclusions related to persistence:

1. Academic performance, in terms of grade point average, is the best single predictor of persistence. Early indicators of academic performance may be just as useful as cumulative measures of grade point average, particularly since they can identify a need for early intervention.
2. Cognitive measures of basic skills, such as the ASSET Language Usage, Reading and Numerical skill scores were not as useful for predicting persistence as the self-reported measures obtained from the ASSET planning form. The cognitive measures did, however, correlate moderately with grade point average.
3. Students enrolled in one-year allied health programs differed from students in two-year programs in the factors that influenced program persistence, (e.g., the shorter the time commitment to an educational program, the more the perceived need for financial assistance negatively influenced persistence).
4. Although self-reported high school grades (Mathematics and Science) appear to be related to persistence, the direction of the relationship is not always clear, and may be a function of the

degree of fit between students and their vocational choices. At least in one case, doing well in high school science was related negatively to persistence for students enrolled in one-year programs. Faculty in one-year programs supported this conclusion. They have found that some of their better prepared students are more likely to leave the program.

5. A student's perceived need for assistance, in factors related to academic and social integration into the institution, appeared to be important in determining persistence/attrition. The relationship was not always clear. Students who requested help with study skills were more likely to withdraw from two-year allied health programs, while those requesting help with writing skills were more likely to persist.
6. The less time between a student's completion of the ASSET assessment and program enrollment, the more likely the student was to withdraw. This variable may be a measure of commitment to the institution and/or program. While a strength of ASSET is that it is easily and quickly administered, it may capture data about students who have not considered adequately their program choice.

RECOMMENDATIONS

Based on the findings and limitations of this research, the authors offer the following recommendations. The ASSET assessment performing form should be used in its entirety by counselors and student advisors. The basic

academic skills measures, alone, are not adequate for identifying students prone to program attrition. Information from the Educational Background and Plans Summary is an important component in diagnosing student needs.

Early intervention programs should be implemented for students applying to allied health programs. Interventions that may be helpful are encouraging early assessment of a student's academic strengths and weaknesses, physical and social concerns, and financial needs. Remedial support should be available prior to entry into a credit program and scheduled at times when students can use the services. Students that are identified as being more prone to withdrawal should receive extra attention from their instructors outside of class. Discussing their educational plans and goals in an informal context might be a useful way of providing the extra attention. Teachers should monitor early indicators of academic achievement, such as classroom test scores, mid-term grades, and first quarter grades. Poor academic achievement may be a symptom of a lack of direction and commitment to a course of study.

As with other initiating studies, there is a need for further research. The ASSET Planning Form allows for easy collection and access to preenrollment variables. It is part of a national service to community colleges currently containing approximately 140,000 individual records and increasing daily. The form identifies thirty-five variables and provides for locally identified items. Research and evaluation efforts may be locally directed and/or coordinated with services available from the American College Testing Program.

Given this relatively convenient and rich data base and the experience gained from the current research, the following suggestions for further research seem warranted.

There is a general need for replication with a larger sample containing more students, programs and institutions. With a larger sample, regression equations could be developed for the type of allied health program rather than limited to program length as in the current study. The ability to develop program equations may be particularly important in that there was some evidence in the current study to suggest that the type of program that a student enrolls in was related to persistence. The curricular content, in terms of its orientation to the vocation, may be important for future study. It is recommended that number of credit hours of transfer courses and courses taught outside the vocational area be included in future studies of attrition from vocational programs.

Longitudinal studies would allow researchers to determine if receipt of requested assistance (e.g., financial aid, study skills, etc.) was in fact efficacious in pro Longing program enrollments. The current study also suggests that future research on attrition should employ a continuous measure of persistence studied over a longer period of time.

The authors suggest that the persistence/attrition dilemma will become more important in the future. Institutional concerns to provide cost effective programs, concerns for individuals and their right to succeed, in addition to the necessity for meeting health manpower needs warrant continued

research in this area. The ASSET Educational Planning Form with its combination of cognitive and non-cognitive variables can be an important source of information.

References

- American College Testing program. (1986). ASSET technical manual, Iowa City, IA, Author.
- Astin, A. W. (1972). College dropouts: A national profile. ACE Research Report, No. 7, Washington, DC: American Council on Education.
- Astin, A. W. (1977). Four critical years. San Francisco: Jossey-Bass, Inc.
- Bayer, A. E., Royer, J. T., & Webb, R. M. (1973). Four years after college entry. Washington, DC: American Council on Education. (ERIC Document Reproduction Service No. ED 077 329).
- Beal, P. E., & Noel, L. (1979). What works in student retention. Iowa City, IA and Boulder, CO: American College Testing Program and The National Center for Higher Education Management Systems. (ERIC Document Reproduction Service No. ED 180 348).
- Cope, R. G., Pailthorp, K., Trapp, D., Skaling, M., & Hewitt, R. (1971). An investigation of entrance characteristics as related to types of college dropouts. (ERIC Document Reproduction Service No. ED 052 749).
- Eckland, B. K. (1964). College dropouts who come back. Harvard Educational Review, 34, 402-420.
- Iffert, R. E. (1957). Retention and withdrawal of college students. (U.S. Office of Educational Bulletin 1958, No. 1) Washington, DC: U.S. Government Printing Office.
- Nielsen, N. (1986). An investigation of the utility of ASSET as a predictor of academic success or failure of students in vocational-technical programs in a two-year community college. Unpublished doctoral dissertation, The University of Iowa.
- Pantages, T. J. & Creedon, C. F. (1978). Studies of college attrition: 1950-1975. Review of Educational Research, 48, 49-101.

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Allied Health Programs

Rounds, J. C. (1984). Attrition and retention of community college students: Problems and promising practices. (ERIC Document Reproduction Service No. ED 242 377).

Simpson, C., Baker, K., & Mellinger, G. (1980). Conventional failure and unconventional dropouts: Comparing different types of university withdrawals. Sociology of Education, 53, 203-214.

Summerskill, J. (1962). Dropouts from college. In N. Sanford (Ed.), The american college: A psychological social interpretation of the higher learning (pp. 627-657). New York: Wiley.

