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ABSTRACT

Indicators of persistence of nontraditional students at a large commuter state university were studied, and the literature on persistence was reviewed. The literature review covered student variables affecting retention rates, ethnic status and retention, institutional variables affecting persistence, and theoretical models that explain persistence. Full- and part-time students at the commuter university were tracked from fall 1982 through the beginning of the fall 1986 term. Information was gathered on fall 1982 grade point average (GPA) and cumulative GPA in 1986. For students who entered as freshmen, high school GPA and Scholastic Aptitude Test scores were obtained. Transfer GPA and credit hours were obtained for transfer students. Persistence was defined as either obtaining a degree or being registered for the fall 1986 term. The analysis was done by class level, including remedial, freshman, sophomore, junior, and senior levels. Multiple discriminant analysis included the variables of gender and minority status. It was found that academic integration as measured by GPA was by far the best indicator of persistence. This finding was consistent with previous research on nontraditional students. However, retention patterns were somewhat affected by gender and minority status. Five data tables and a two-page list of references conclude the document. (SW)

RETENTION OF NON-TRADITIONAL STUDENTS

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The decline in the number of traditional college students has resulted in an increased interest in the areas of attrition and retention. A large body of published literature on the causes of attrition is in existence. These studies present both empirical analyses as well as theoretical models of factors related to retention. While the majority of these studies have focused on traditional residential campuses, several important models have emerged in the literature which seek to provide a comprehensive explanation for retention of non-traditional students.

The purposes of this paper are to present a review of the retention literature with emphasis on non-traditional students, and to review the findings of a series of retention studies at a commuter state university. This paper is based on student persistence over a four year period with a population of over 20,000 non-traditional students. Gender and minority status groupings were utilized to determine if different retention patterns existed.

Review of Literature on Retention

Student Variables Affecting Retention Rates

Several variables have been found to be related consistently to retention. These are high school and first year college grades, academic rating of the high school attended, and the student's academic aptitude and study skills and habits. Sex and age were not found to be directly related to the retention rate (Lenning, Sauer & Beal, 1980b).

Ramist (1981) found the following student characteristics to be among those related to persistence: parental education, marital status, hometown location, high school record, Scholastic Aptitude Test scores, College

Board Achievement Tests, high school program, high school academic rating, years of study in certain subjects, college performance, areas of study, degree level goals, parental financial aid, spouse financial support, and part-time on-campus employment.

Personal factors such as aspirations, motivations, and commitment to goals can affect persistence (Bean, 1980; Lenning, Sauer, & Beal, 1980a). Socioeconomic level was found to relate to retention indirectly through its effects on personality and the home environment which in turn have an effect on self-confidence, self-concept, motivation and aspiration.

Astin (1975a) found the financial situation of the student to be related to retention. Scholarships, grants, and part-time work (particularly on-campus) were found to be related to persistence, while loans and full-time work were associated with dropping out. It was noted that the student's perception of his financial situation may be more important than his actual ability to pay.

Ethnic Status and Retention

Ethnic status has been found to relate to persistence, but blacks generally persist less than whites only when there are not controls for other factors such as aptitude, socioeconomic level and motivation. In a longitudinal study by Astin (1972, 1975b), it was found that the retention rate for minority students was lower than that of nonminority students. However, when the effects of academic aptitude were controlled, the retention rate for blacks was at least as high as for whites. Bean and Metzner (1985) also found that blacks and whites tended to have the same rates of attrition after controlling for academic ability and socioeconomic status.

In a longitudinal comparison of minority and nonminority dropout rates, Rugg (1982) found that differences between the two groups were small

and not statistically significant. Proportionately fewer minority than nonminority students were classified as dropouts. This study emphasized the importance of distinguishing between dismissal dropouts and voluntary dropouts. The proportion of students dropping out after being dismissed was higher for minority students, but when the effects of aptitude were partially controlled, differences between minority and other students were found only for students with low aptitude test scores. In terms of voluntary dropouts, one in ten minority students dropped out, while three in ten nonminorities dropped out. A recent longitudinal study by staff members of the U.S. Census Bureau found similar patterns for Hispanic students (Maw, Salganik, & Samuelson, 1986).

Institutional Variables Affecting Persistence

Several types of institutions have higher graduation rates than others. Institutions which are private, more costly, have religious affiliations, or have a clearly defined mission and role tend to have lower attrition rates (Beal & Noel, 1980). Smart (1985) reported that predominantly commuter colleges (both two-year and four-year), in general, have the highest dropout rate. This is attributed to the inherent difficulties of providing services and programs that contribute to the social integration of largely part-time and commuting students.

Astin (1975b) found involvement in academic and social activities to be related to persistence. Also of importance were close academic and personal associations with faculty, staff and peers. Terenzini and Pascarella (1980) stressed the importance of the frequency and especially the quality of interactions between faculty and students outside of the classroom. Lenning, Sauer, and Beal (1980a) emphasized the importance of student-institution fit. The moral and social integration of the student in the

institution, as well as the student's perception of the institution's responsiveness to his needs, were thought to be important factors influencing a student's decision to drop out or persist. Pascarella, Terenzini, and Wolfle (1986) studied the influence of a freshman orientation program on persistence. The influence of orientation was indirect through its effects on social integration and commitment.

Persistence to graduate education has been examined by Ethington and Smart (1986). Background variables were found to affect indirectly decisions to attend graduate school through intervening variables. Academic and social integration were significant for both men and women, with academic integration being much more important than social integration for men, and social integration being slightly more important than academic integration for women.

Theoretical Models Which Explain Persistence

Several important models have emerged in the literature which seek to provide a comprehensive explanation for attrition/retention. Tinto's (1975) research sought to identify the salient variables which impact dropout decisions; his model shows the interaction of these variables. In short, the model indicates that individual background variables have an impact on goal and institutional commitments, which then influence the academic and social systems. Both academic and social integration influence dropout decisions in traditional institutions.

Fox (1986) reported a study of the retention of economically and academically disadvantaged students at an urban, non-residential university. The major constructs of Tinto's (1975) model were tested. Academic integration was found to be the most important factor, with social integration having little effect. For underprepared students, the development of

academic skills and behaviors was seen as critical in terms of their retention.

Pascarella, Duby, and Iverson (1983) tested Tinto's model for commuter institutions and refined the model as a result of differences in commuter students which their data suggested. Two key differences emerged. Students at commuter institutions did not require the same degree of social integration as their residential counterparts. Those students on commuter campuses who had high needs for social integration tended to transfer to schools which provided it. Commuter students who persisted did, however, have high needs for academic integration. The authors concluded that "in nonresidential institutions commitment to the institution...is defined largely by successful and personally satisfying interactions with the academic rather than the social systems of the institution" (p. 92). The second key difference which Pascarella, et al, noted is the introduction of a new, important variable for explaining persistence: intention. This new variable had the strongest direct effect on persistence/ withdrawal. Because students attend commuter schools for varying reasons, their intent to persist was found to be a good predictive indicator of persistence. Students who are transitory residents of an area, or who are interested in a few courses only, are common to commuter schools: these students have no intent to persist to a degree and appear in retention studies as attrition statistics. Walleri and Japely (1986) also emphasized the importance of student intent.

A conceptual model of non-traditional undergraduate student attrition was developed by Bean and Metzner (1985). The chief difference between the attrition process of traditional and non-traditional students was that non-traditional students were more affected by the external environment and academic integration rather than by social integration. Pascarella and

Chapman (1983) substantiated these differences in multi-institutional studies between residential and commuter institutions. When academic and environmental factors were good, a student was likely to persist. When the academic factors were good, but the environmental factors were not, then the student was more likely to drop out. Thus, for the non-traditional student, the external environment or support system had a greater bearing on persistence than did even academic integration.

Broughton (1986) tested the explanatory power of the Bean and Metzner (1985) model at an urban, commuter university. The relation between enrollment intentions and background, academic, psychological, and environmental factors was examined. Academic outcome had the only direct effect on intent, with other sets of variables having indirect effects mediated by academic outcome.

Summary of Retention Findings at One Urban University

This is a commuter university with a large number of transfer and non-traditional students. Research has found academic integration and external environmental factors to be the key to retention at this university. Such variables as grade point average, credit hours carried, and cumulative hours carried and earned were important indicators of academic integration. Important external environmental factors included commuting distance, employment, personal and medical problems, and finances. Transfer students and students with more years between high school and college also were less likely to be retained.

Black males and black females tend to attend a shorter length of time than their non-black counterparts, with almost half of the black males not attending after their first year. Academic progress, the most measurable factor affecting persistence, appears to affect black students particularly.

METHODS

Data

The data for this paper included those students at a large commuter state university who were registered for the fall term 1982. Full-time as well as part-time students were tracked through the beginning of the fall term 1986. Additional information gathered included fall term 1982 grade point average (GPA) and cumulative GPA as of fall 1986. For students who entered as freshmen, high school GPA and Scholastic Aptitude Test (SAT) verbal and math scores were obtained. Transfer GPA and credit hours were obtained for transfer students. Persistence was operationally defined as either obtaining a degree or being registered for the fall term 1986, and students were categorized into persisters and non-persisters.

Because of the importance of measuring the persistence of black students relative to other students within these two groups, students were further classified as black female (BF), black male (BM), white female (WF), and white male (WM).

Multiple Discriminant Analysis

The method used to determine the variables indicative of persistence is multiple discriminant analysis. This multivariate technique allows an assessment of how well a given set of variables predict group membership. An important aspect of this analysis is the determination of the degree to which these variables are indicative of differing patterns of persistence for gender and minority status.

FINDINGS

The analysis was done by class level (remedial, freshman, sophomore, junior, and senior).

Remedial Students

The discriminant analysis for remedial students may be found in Table 1. For these students the best predictors of persistence were SAT scores and current GPA. It is interesting to note that high school GPA is negatively associated with persistence. It was found that 33% of these students were correctly grouped by the procedure. The group with the least accurate prediction was WF non-persisters. The group with the highest level of accurate prediction was BF persisters. The BM persisters also tend to be predicted to be in the WM persisters group.

Freshmen

The analysis for freshmen may be found in Table 2. The best indicator of persistence were current GPA, SAT scores, and full or part-time status. These variables correctly classified 32% of the freshman students. The WM persisters were the group with the highest percent correctly classified (45%), followed by BF persisters (40%). Here again, BM persisters tended to be similar to WM persisters.

Sophomores

The analysis of the persistence of sophomores is given in Table 3. The discriminant analysis results showed that current GPA was by far the best predictor. The percentage correctly predicted was 32%. The group with the highest level of prediction was WF persisters (51%). The lowest level of correct prediction was for WM non-persisters who tended to be predicted as BM or WF non-persisters. Interestingly, black male persisters tended to have similar academic backgrounds to those of WF non-persisters.

Juniors

Table 4 presents the discriminant analysis and findings for junior

level students. For these students the analysis clearly shows that current GPA and full-time status are strongly predictive of persistence, especially for white females. The procedure correctly classified 32% of the students. WF persisters were correctly classified 49% of the time, followed by BF persisters (31%). As with sopomores, WM non-persisters tended to be similar to BM or WF non-persistors. WM persistors tended to be similar to WF persisters.

Seniors

The analysis for seniors is presented in Table 5. Thirty-six percent of these students were correctly predicted. The best indicators of persistors were found to be both current GPA and 1982 GPA. Again, WF persistors had the highest level of correct prediction (55%). The BF non-persisters had the next highest level at 45%. Also the WM non-persistors had the lowest level of prediction, and were often predicted to be in the BF or WF non-persister groups.

SUMMARY AND CONCLUSIONS

This paper has attempted to determine indicators of persistence of non-traditional students at a large commuter institution. The analysis was done by class level including remedial, freshman, sophomore, junior, and senior level students. To aid in the determination as to whether there are different patterns of retention by gender and minority status, the multiple discriminant analysis focused on these groupings. It was found that academic integration as measured by GPA was by far the best indicator of persistence. This finding is consistent with previous research on non-traditional students as reported by Fox (1986), Pascarella, Duby, & Iverson (1983), Bean and Metzner (1985), and Pascarella and Chapman (1983).

However, patterns of retention were found to vary to a degree by gender and minority status.

Table 1

Multiple Discriminant Analysis of Persistence
of Remedial Students 1982-1986

Variables	Total Structure Coefficients Functions						
Recent GPA	.54	.78	-.06	-.14	-.08	.01	.24
1982 GPA	.06	-.02	-.04	.11	-.07	.20	.94
1982 Hours	.15	.14	-.29	-.05	.60	.68	-.10
HSA	-.35	.58	.36	-.11	.51	-.05	.10
SAT-V	.49	-.11	.69	.12	.13	.09	.04
SAT-M	.64	-.14	.11	-.01	.32	-.06	.05
Transfer GPA	-.01	.12	.24	.42	-.50	.61	-.13
Hours	.02	.20	.02	.88	-.23	.31	-.05
Missing Data HSA	.10	.02	-.02	.49	.03	.12	.23
SAT-V	.10	.07	-.07	.58	.02	.13	.22
SAT-M	.10	.07	-.07	.58	.02	.13	.22

Groups	Groups Centroids						
Persistence							
BF	-.89	.01	.03	-.02	.10	-.02	-.00
BM	-.36	-.56	-.39	.10	-.09	.03	.03
Other Females	-.14	-.03	.27	-.02	-.13	.01	.02
Other Males	.66	-.61	.03	.03	.03	.02	-.02
Non Persistence							
BF	-.28	1.26	-.18	-.22	-.07	.14	-.04
BM	.32	.44	-.29	-.20	-.23	-.25	-.05
Other Females	.53	1.26	.01	.40	.02	-.02	-.00
Other Males	1.13	.39	-.07	-.20	.10	-.02	.04

Actual Group	Classification Results								
	Persistence				Non-Persistence				
	BF	BM	Other F	Other M	BF	BM	Other F	Other M	N
	%	%	%	%	%	%	%	%	
Persistence									
BF	40	21	6	4	17	6	3	2	203
BM	25	39	6	13	8	3	2	5	88
Other Females	19	18	14	13	7	9	6	14	151
Other Males	9	16	9	34	5	7	2	20	187
Non Persistence									
BF	9	7	0	2	55	7	14	7	44
BM	0	4	13	9	22	26	0	26	23
Other Females	4	6	4	2	29	13	22	22	55
Other Males	1	1	1	17	16	15	7	42	76

Percent of grouped cases correctly classified: 33%

Table 2

Multiple Discriminant Analysis of Persistence
of Freshman Students 1982-1986

Variables	Total Structure Coefficients Functions						
Recent GPA	.70	.58	.04	-.03	-.18	-.28	.11
1982 GPA	- .03	.09	.05	.14	-.42	-.04	.44
1982 Hours	.38	-.02	-.53	.38	.48	.34	-.08
HSA	.07	.58	.20	.01	-.18	.49	-.31
SAT-V	.47	-.12	.78	.10	.25	.25	-.07
SAT-M	.58	-.40	.24	-.05	-.17	.21	-.13
Transfer GPA	- .02	.14	.20	.29	-.01	-.32	.43
Hours	.38	-.02	-.53	.38	.48	.34	-.08
Missing Data HSA	- .13	.15	.25	.31	.31	-.51	.31
SAT-V	- .11	.12	.24	.44	.24	-.38	.38
SAT-M	- .11	.12	.24	.44	.24	-.38	.38

Groups	Groups Centroids						
Persistence							
BF	-1.26	.18	-.21	-.21	.08	-.01	.00
BM	- .87	-.49	-.14	.29	.08	-.03	-.07
Other Females	- .22	.16	.30	.01	-.05	-.02	.00
Other Males	.05	-.63	.03	-.01	.00	.04	.01
Non Persistence							
BF	- .52	.87	-.53	.11	-.22	.07	-.00
BM	- .43	-.09	-.51	.44	.16	-.09	.16
Other Females	.56	.60	.05	.02	.10	.03	-.01
Other Males	.74	-.16	-.24	-.06	-.04	-.05	-.01

Actual Group	Classification Results								
	Persistence				Non-Persistence				
	BF %	BM %	Other F %	Other M %	BF %	BM %	Other F %	Other M %	N
Persistence									
BF	40	15	9	3	15	12	6	2	177
BM	16	29	9	12	9	20	2	3	90
Other Females	11	13	20	10	13	10	18	8	558
Other Males	7	14	6	29	7	10	12	15	491
Non Persistence									
BF	13	6	8	1	40	17	12	3	90
BM	4	14	7	11	18	18	11	18	28
Other Females	2	2	12	5	12	7	45	15	357
Other Males	1	1	8	13	8	11	21	36	353

Percent of grouped cases correctly classified: 32%

Table 3

Multiple Discriminant Analysis of Persistence
of Sophomore Students 1982-1986

Variables	Total Structure Coefficients Functions						
Recent GPA	.89	-.24	.23	-.24	-.16	.03	-.04
1982 GPA	.28	.04	.19	.06	-.39	.16	.62
1982 Hours	.39	.22	-.63	.47	.20	.31	-.01
HSA	.17	-.53	.05	.32	.35	-.22	-.05
SAT-V	.29	.24	.47	.52	.34	-.35	.25
SAT-M	.30	.54	.39	.17	.16	-.30	-.16
Transfer GPA	- .01	-.23	.38	-.03	.16	.48	-.11
Hours	- .10	-.11	.31	-.04	.43	.55	-.53
Missing Data· HSA	- .12	-.23	.43	.22	-.11	.47	-.47
SAT-V	- .12	-.20	.41	.19	-.07	.47	-.49
SAT-M	- .12	-.20	.41	.19	-.07	.47	-.49

Groups	Groups Centroids						
Persistence							
BF	-1.17	-.32	-.28	-.06	.10	-.06	.00
BM	-1.18	.15	-.12	.25	.01	.08	-.05
Other Females	- .23	-.28	.36	-.06	-.02	.01	-.01
Other Males	- .49	.46	.09	.03	-.02	-.01	.03
Non Persistence							
BF	- .22	-.47	-.52	.01	-.16	-.04	-.00
BM	- .17	-.21	-.52	-.23	.01	.21	.04
Other Females	.78	-.25	-.01	.08	.02	.00	.01
Other Males	.54	.39	-.11	-.07	.01	-.01	-.02

Actual Group	Classification Results								
	Persistence				Non-Persistence				
	BF %	BM %	Other F %	Other M %	BF %	BM %	Other F %	Other M %	N
Persistence									
BF	22	38	15	4	8	8	4	1	198
BM	13	44	16	7	9	4	3	4	113
Other Females	4	18	35	4	6	5	24	3	541
Other Males	4	29	19	14	5	6	9	14	453
Non Persistence									
BF	7	10	18	3	28	13	12	9	135
BM	7	10	22	5	17	19	14	7	59
Other Females	1	2	17	2	9	6	51	12	591
Other Males	1	4	16	7	9	6	29	28	532

Percent of grouped cases correctly classified: 32%

Table 4

Multiple Discriminant Analysis of Persistence of Junior Students 1982-1986

Variables	Total Structure Coefficients Functions						
Recent GPA	.92	.29	.22	-.11	.02	-.07	-.10
1982 GPA	.40	.20	.07	.16	.04	.57	.02
1982 Hours	.40	-.62	-.42	.29	-.06	-.12	.27
HSA	.09	-.12	.42	-.20	.54	.29	.40
SAT-V	.11	.43	-.13	.41	-.17	.28	.26
SAT-M	.10	.44	-.53	-.29	.21	.32	.27
Transfer GPA	- .04	.25	.29	.08	.36	-.09	.14
Hours	- .19	.36	.18	.19	.01	-.61	.15
Missing Data HSA	- .11	.28	.19	.37	.06	-.11	-.20
SAT-V	- .13	.26	.20	.28	-.01	-.15	-.31
SAT-M	- .13	.26	.20	.27	-.01	-.15	-.31

Groups	Groups Centroids						
Persistence							
BF	-1.35	-.38	.10	-.03	.12	-.11	.03
BM	-1.59	-.20	-.10	.11	-.24	.06	.09
Other Females	- .31	.47	.33	-.07	-.03	-.01	.00
Other Males	- .85	.15	-.19	.08	.07	.04	-.03
Non Persistence							
BF	- .18	-.59	.22	-.16	-.02	.08	-.03
BM	- .16	-.26	.12	.17	-.23	-.12	-.11
Other Females	.72	-.07	.13	.07	.02	.01	.01
Other Males	.39	.05	-.31	-.07	-.02	-.02	.00

Actual Group	Classification Results								
	Persistence				Non-Persistence				
	BF %	BM %	Other F %	Other M %	BF %	BM %	Other F %	Other M %	N
Persistence									
BF	14	38	10	13	14	6	2	4	176
BM	18	53	7	7	9	4	0	3	101
Other Females	6	14	37	8	6	7	18	5	422
Other Males	7	27	20	18	7	6	9	6	426
Non Persistence									
BF	4	5	17	11	31	16	11	5	204
BM	2	6	22	9	23	16	16	6	82
Other Females	0	2	18	2	13	7	49	9	895
Other Males	1	2	19	7	9	11	30	21	755

Percent of grouped cases correctly classified: 32%

Table 5

Multiple Discriminant Analysis of Persistence
of Senior Students 1982-1986

Variables	Total Structure Coefficients Functions						
Recent GPA	.74	.52	-.13	-.13	-.29	.12	.06
1982 GPA	.72	.29	-.01	-.18	.34	-.34	.06
1982 Hours	.38	-.51	.08	.47	-.24	-.15	.16
HSA	.10	.12	-.45	.57	.27	.40	.33
SAT-V	.12	.34	.27	.38	.14	.24	-.54
SAT-M	.09	.31	.69	.48	-.01	.21	.17
Transfer GPA	.02	.34	-.20	.43	-.16	-.37	-.38
Hours	- .30	.64	-.17	.28	-.21	-.29	.06
Missing Data HSA	- .11	.40	-.03	.27	.27	-.05	-.22
SAT-V	- .13	.39	-.03	.21	.14	.05	-.22
SAT-M	- .13	.39	-.03	.21	.14	.05	-.22

Groups	Groups Centroids						
Persistence							
BF	-1.56	-.20	-.07	.15	.21	-.21	.04
BM	-1.85	-.35	-.10	.44	-.32	.05	-.01
Other Females	- .64	.52	-.12	-.13	-.08	-.02	.05
Other Males	- .90	.31	.07	.00	.08	.08	-.06
Non Persistence							
BF	- .21	-.44	-.44	-.08	.05	.11	.03
BM	- .43	-.49	-.12	-.28	-.11	-.14	-.09
Other Females	.58	.08	-.11	.05	.00	-.02	-.01
Other Males	.08	-.12	.28	-.02	-.00	.01	.01

Actual Group	Classification Results								
	Persistence				Non-Persistence				
	BF %	BM %	Other F %	Other M %	BF %	BM %	Other F %	Other M %	N
Persistence									
BF	31	25	15	7	6	10	2	5	126
BM	27	45	9	1	5	8	3	3	78
Other Females	11	14	32	9	2	4	20	8	330
Other Males	20	15	24	15	1	5	9	12	334
Non Persistence									
BF	8	6	14	12	19	10	16	16	293
BM	15	4	11	11	10	22	14	14	138
Other Females	3	3	14	3	6	4	55	13	1506
Other Males	5	3	14	10	6	7	30	25	1232

Percent of grouped cases correctly classified: 36%

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