

Dropouts from Community Colleges:
Path Analysis of a National Sample

by

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(ABSTRACT)

The purpose of this study was to determine the extent to which Tinto's model of the dropout process applied to a national sample of community college students. Strict definitions of persistence were used in applying a Tinto-based model to both 2- and 4-year student samples from the High School and Beyond (HSB) data set. The primary focus of the study was to determine the relative effects of social and academic integration, in relation to student background characteristics, on two measures of persistence: persistence in the institution, and persistence in higher education.

The data were analyzed using path analyses procedures. Results only partially supported Tinto's theory. Major findings revealed that: 1) background variables directly affected persistence, no matter how defined, 2) the ability of Tinto's model to explain persistence may be highly dependent on the criteria used in defining persistence, 3) the model may better explain institutional persistence than

persistence in the system of higher education, 4) student background characteristics may be more influential than institutional characteristics in explaining the long term persistence behavior of students, 5) results indicated that the Tinto model's ability to explain persistence was dependent upon the criteria used for defining persistence/dropout.

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CHAPTER 1

INTRODUCTION

Student attrition is of great concern among college administrators. Numerous studies focusing on college dropouts have been published in the educational literature over the years, with several major works devoted to the topic (Astin, 1975; Cope & Hannah, 1975; Lenning, Beal & Sauer, 1980; Ewell, 1984; Pantages & Creedon, 1978; Ramist, 1981; Spady, 1970; Summerskill, 1962; Tinto, 1975). Although college officials have always been concerned with the problem of dropouts, this concern has grown stronger in recent years due to a shrinking pool of traditional college-age (18-24 year-old) persons in our society. The reason for such concern is perhaps rooted in the fact that "Virtually all institutions of higher education, public and private, are dependent on some form of enrollment-driven funding..." (NIE, 1984, p. 12).

Although the studies on college dropouts have been numerous, most studies have lacked a conceptual schema with which to view the dropout process (Tinto, 1975). Previous studies of college dropouts have been criticized for numerous methodological shortcomings (Bean, 1980; Tinto, 1975). Some of the criticisms are unavoidable due to the

expost-facto nature of the problem. However, too many studies have used cross-sectional research designs, rather than longitudinal approaches, and there have been inconsistencies in the definition of attrition and dropout (Pantages & Creedon, 1978). Many of the earlier studies have been primarily descriptive, and have had limited, if any, theoretical frameworks to help guide paths of inquiry.

One of the most promising theoretical models of the dropout process to surface in recent years is one set forth by Tinto (1975). Tinto has provided a theoretical framework for understanding the dropout process by focusing upon the interface between the student and the institution. Tinto's theory is grounded in Durkheim's (1961) theory of suicide, which was first applied to college dropouts by Spady (1970). The Tinto model postulates that student background characteristics at time of college entry, such as educational aspirations, socioeconomic status, high school grades, ability, sex and race, have effects on initial commitments to the goal of graduation and to the institution. This combination of commitments and background characteristics work together to influence the student's academic and social integration into the institution, which in turn, affect subsequent commitments to the goal of graduation and institutional commitment. These commitments to the goal of graduation and to the institution, along with academic and social integration, are seen as positively

influencing persistence. The main premise of Tinto's argument is that the decision to drop out occurs when students are not adequately integrated into the social and academic environment of the college, and that student background characteristics influence the decision to drop out only indirectly through their effects on social and academic integration.

A recent study by Munro (1981) used data from the National Longitudinal Study (NLS) of the High School Class of 1972, applying a Tinto-based model of the dropout process to students enrolled in four-year colleges. Results were generally consistent and supportive of the Tinto model. One possible weakness in Munro's study, though, is that she used only two survey items from the NLS to measure academic integration and one item to measure social integration. One could argue that the use of so few items to measure the constructs of academic and social integration was insufficient. However, other researchers, conducting studies using much more sophisticated methods for measuring the same constructs, raised their own questions regarding the adequacy of the measures they used (Pascarella & Chapman, 1983; Pascarella & Terenzini, 1983; Terenzini & Pascarella, 1980).

A major strength of the Munro study is that it lends itself to easy replication, using the same path model and variable specification, due to the availability of an extant

data base. Another strength of Munro's study is that she used a national sample of students, so that results from her study have greater generalizability than results from studies using more restricted samples.

Statement of the Problem

Even though the Tinto model has demonstrated its value in understanding the dropout problem in much of higher education, its value in commuter, two-year colleges is less well established. The problem identified for the present study was to determine whether the relationships among specified constructs in Tinto's model remained the same when the model was applied to students at community colleges. Of particular interest was whether the background characteristics yielded only indirect effects through their effects on social and academic integration when the model was applied to community college students, or whether a direct effect was observed for the background characteristics. Two studies (Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983), when applying the Tinto model to students at commuter colleges, found that background characteristics had direct effects on persistence. In fact, in one of the studies, background characteristics explained more variance than was explained by social and academic integration.

Purpose

The purpose of the study was to determine the extent to which the Tinto model was applicable to a national sample of community college students and to explore modifications of the model that could help improve the prediction of dropouts among community college students. This was done by applying the model used by Munro (1981) to students enrolled in four-year colleges and two-year community colleges from the High School and Beyond (HSB) National Longitudinal Study of the High School Class of 1980. Another purpose of the study was to introduce the variable "work status" in the model to assess its ability to explain additional variance in persistence, and to determine whether there was a difference in the effect of this variable between the two-year and four-year samples.

The data for the study came from High School and Beyond (HSB), a national longitudinal study which began in 1980 (Peng, 1983). The High School and Beyond data set contains information about people who were sophomores and seniors in high school in 1980. Since 1980, when the base year data was obtained, follow-up studies have been conducted every two years on the original sample. The present study was concerned only with those students who were seniors in high school in 1980, and who entered academic programs in community colleges and four-year colleges upon graduating from high school.

Research Questions

The following questions were addressed by this study:

- 1) Does the Munro model yield similar path coefficients when applied to the four-year HSB sample as was obtained by Munro with the NLS sample when the model is defined with identical variable specifications.
- 2) Does the Munro model yield results for the community college HSB sample that are similar to: (a) the four-year HSB sample, (b) the four-year NLS sample, and (c) the commuter sample results obtained by Pascarella and Chapman (1983) and Pascarella, Duby, and Iverson (1983)?
- 3) What effects do student background characteristics have on persistence for the community college HSB sample?
- 4) What effects do academic and social integration have on persistence for the community college HSB sample?
- 5) Does the work status variable increase the explained variance in persistence for the community college HSB sample?

Research Hypotheses

The hypotheses for the study were:

- 1) It was hypothesized that, when applied to the four-year HSB sample, the Munro model results would be similar to those Munro obtained on the NLS sample.
- 2) It was hypothesized that Munro's resulting path model for the NLS sample would be dissimilar to the path model obtained on the community college HSB sample in as much as the background variables were expected to have a direct effect on persistence.
- 3) It was hypothesized that work status would significantly increase the explained variance in persistence for the community college HSB sample but not for the four-year HSB sample.
- 4) It was hypothesized that work status would have a direct effect on persistence.

Need for the Study

The following conclusions can be made regarding studies that have applied Tinto's model of the dropout process: (a) results have generally been supportive of Tinto's model when studying residential college students, (b) most studies have been conducted on individual campuses, and (c) recent

studies on commuter students have raised questions regarding the applicability of Tinto's model to commuter students. In fact, the results of two recent studies conducted on students at commuter institutions have challenged not only the order of relationships among the constructs in the original Tinto model (Pascarella & Chapman, 1983; Pascarella, Duby & Iverson, 1983), but the relative importance of individual student background characteristics as opposed to institutional experiences on student persistence decisions (Pascarella, Duby & Iverson, 1983).

There is a need to know more about the dropout process as it relates to community college students. Tinto's model may indeed be applicable to traditional, residential institutions, but since as many as forty percent of all high school seniors who enter postsecondary education institutions attend community colleges (NCES, 1984), it is necessary to determine which model is most applicable to them.

Most studies of college attrition have been conducted only at individual colleges and universities. These studies are important, but the results of such studies are usually applicable only at the institutional level, and are generally of little use outside of the particular institutions where they were conducted, (Lenning, Beal & Sauer, 1980). The present study improved generalizability by using data from a national sample to compare college

dropout among students at both four-year colleges and two-year community colleges. In so doing, the results yielded important data concerning the dropout phenomenon among both community college and four-year college students. Although the information may not be applicable to any particular community college, it should contribute to a general understanding of the attrition phenomenon among community college students as a whole.

Understanding more about the relative effects of background and institutional characteristics on dropout decisions among commuter institution students seems to have particular relevance in the 1980s, when administrators are searching for alternative methods to improve retention. This study was particularly concerned with whether background characteristics directly affected and/or had stronger effects on persistence decisions than institutional experiences, because such a finding would have practical implications for the types of strategies institutions typically use in dealing with retention problems. In particular, it would suggest that initiatives typically employed by colleges to increase retention may not have as much impact as previously anticipated and that resources might better be spent elsewhere.

Limitations

Since this study was a replication of Munro's study, the same questionnaire items were used to measure the path model variables. As mentioned earlier, Munro used only two items to measure academic integration and only one item to measure social integration. In addition, only two items were used to measure institutional commitment. It is possible that the items used for measuring certain constructs were inadequate, and the problem continues as a point of concern among other researchers (Pascarella & Terenzinni, 1983; Pascarella & Chapman, 1983; Terenzinni & Pascarella, 1980; Pascarella, Smart & Ethington, 1985).

Another limitation of the study was imposed by the coding of certain variables in the HSB data base, which required modifications in the strategies used for defining certain variables. Because of this coding problem, some variables could not be analyzed in the manner initially intended.

CHAPTER 2

REVIEW OF LITERATURE

Prior to the development of theoretical models of the college dropout process, the literature on college dropout was characterized primarily by correlational and descriptive studies that investigated the effects of certain variables on persistence, including demographic, social, motivational, psychological, and institutional factors. In fact, Tinto's theory considers the effects of such variables as they interact to affect persistence/dropout decisions. This chapter contains a review of the results of studies that investigated relationships between selected variables and dropout decisions, followed by an explanation of Tinto's model and two recent studies on commuter students by Pascarella and Chapman (1983) and Pascarella, Duby and Iverson (1983).

Gender

Some studies have found that women and men differed in their reasons for dropping out and the circumstances leading to dropout behavior. For example, women were more likely to leave for nonscholastic reasons, whereas men were more likely to leave for academic reasons (Pantages & Creedon, 1978; Tinto, 1975; Spady, 1970). Likewise, women were more

likely to drop out when the ratio of men to women was high (Astin, 1977; Cope & Hannah, 1975; Astin, 1964) and men were more prone to dropping out of large, nonselective institutions (Astin, 1975). Still, the general conclusion that there are no gender differences in dropout behavior is reached by most researchers (Ramist, 1981).

Socioeconomic Status

With regard to the effects of socioeconomic status on college dropout decisions, students from lower socioeconomic backgrounds generally are believed to be more likely to leave college than those from higher socioeconomic backgrounds (Astin, 1964; Eckland, 1964; Panos & Astin, 1968; Peng & Feters, 1978). But not all studies have found socioeconomic status to affect persistence (Kohen, Nestel, & Karmas, 1978). And, although Pantages and Creedon (1978) concluded that parental education was not a major factor affecting persistence, most evidence has indicated that parental education did have an effect on persistence (Feters, 1977; Astin, 1975). Some studies also found that father's occupation was related to differences in dropout rates (Trent & Medsker, 1968), while other studies found no such relationship (Rossman & Kirk, 1970; Summerskill, 1962).

Race

Differences in college dropout rates also have been observed among students from various ethnic groups (Kester, 1971). In a study of the high school class of 1972, Peng and Fetters (1978) found that the dropout rate for whites was higher than it was for blacks, although another study found no such differences when controlling for socioeconomic status and gender (Peng, Ashburn, & Dunteman, 1977). Most investigators concluded that dropout rates between blacks and whites were essentially the same (Kohen, Nestel, & Karmas, 1978; Fetters, 1977; Astin, 1975).

Aptitude

Numerous studies have shown that dropouts and persisters differ with regard to aptitude (Astin, 1972; Sewell & Shah, 1967; Wegner & Sewell, 1970). However, one study found no differences between persisters and voluntary dropouts, but did find differences between voluntary and nonvoluntary dropouts (Johansson & Rossmann, 1973).

High School Grades

High school grades have been associated with college persistence. A number of studies found high school grade-point average and high school rank to be the best predictors of persistence (Pantages & Creedon, 1978; Fetters, 1977; Astin, 1975; Summerskill, 1962). In fact, Astin concluded that high school grade-point average was, "the most potent

predictor of college persistence" (1977, p. 108). Other studies have not found significant differences between the high school grades of dropouts and persisters (Rossman & Kirk, 1970).

Parent Aspirations

College persisters have been found to have parents who express great expectations for their academic achievement (Hackman & Dysinger, 1970). Parental expectations often have been found to be strong determinants of student goals and persistence (Tinto, 1975; Sexton, 1965), though the finding is not universal (Rossman & Kirk, 1970). Pantages and Creedon (1978) noted that an important mediating factor influencing the effect of parental aspirations on students was the relationship between the parent and student.

Self-Concept/Locus of Control

Timmons (1978) reported that both male and female dropouts had poorer self-concepts and were more dissatisfied with their lives at college entrance than were persisters. Although not directly influencing persistence, some studies have found positive associations between self-concept and academic achievement (Lavin, 1965) and locus of control (Spann, 1977).

Educational Aspirations

Educational aspirations have been found to have strong influences on persistence (Astin, 1964; 1975; Hackman & Dysinger, 1970; Sewell & Shah, 1967; Spady, 1970). Peng, Ashburn and Dunteman (1977) found that for both two and four-year students, educational aspirations had significant effects on persistence. In one study, students who did not expect to obtain a four-year degree were much more likely to drop out during their freshman year (Fetters, 1977).

Employment

Research has shown that both part-time employment (Kohen, Nestel, & Karmas, 1978) and full-time employment had a negative effect on freshman persistence (Kohen et al., 1978; Astin, 1975; Iffert, 1958). Bucks County (1973) and Martin (1975) reported that employment was a major reason for withdrawing in community colleges. Astin (1975) reported that part-time employment correlated positively with persistence, especially when job was for less than 25 hours, and if the job was on campus.

Goal and Institutional Commitment

Pantages and Creedon (1978) concluded that researchers had failed to establish relationships among levels of motivation, commitment to the college, strength and content of educational goals, and attrition. Goals and aspirations were often powerfully related to the decision to leave.

Also, the extent to which the student saw the attainment of a degree as intrinsic goal to be pursued was an important predictor of program completion (Walleri, 1981). Commitment to college (Hackman & Dysinger, 1970), clear-cut goals (Angers, 1961), with respect to college career, and certainty of goals (Abel, 1966; Demitroff, 1974) were all important factors related to persistence.

Academic and Social Integration

Tinto (1982) stated that withdrawal appeared to arise from incomplete personal integration into the intellectual and social environment of the college. Pascarella and Terenzinni (1977) noted that voluntary withdrawal was marked by the holding of values incongruent with those that characterized the social and academic climate, by low levels of personal interaction with faculty and other students, and that interaction with faculty was often the single most important factor involved in retention.

Interaction between faculty and students has been found to be one of the strongest determinants of persistence (Cope, 1978; Pascarella & Terenzini, 1979b; Pantages & Creedon, 1978; Terenzini, 1978). Such interactions lead to greater academic and social integration in the college (Tinto, 1975), higher grades and greater self-perceived intellectual growth (Pascarella & Terenzini, 1978), and higher self-esteem (Astin, 1977). Pascarella and Terenzini (1979b) found that the faculty contact effect on persistence

operates primarily to compensate for low levels of parent education, commitment to the goal of college graduation, satisfaction with the quality and impact of peer relationships, and ability. Cope (1978) noted that research findings suggested that the most successful retention programs are those that integrate the individual with the academic and social milieu of the college.

Peng, Ashburn and Dunteman (1977) found that social integration was significantly related to dropout behavior among four-year college students but was not related to dropout behavior among two-year college students. College dropouts have been found to perceive themselves as having less social interaction than college persisters, and that it is perceptions of social integration that are most directly associated with persistence (Rootman, 1972; Spady, 1970).

Numerous studies have shown that grade performance in college is the single most important variable in predicting persistence (Astin, 1972; Kamens, 1971). Intellectual development has also been found related to persistence (Bayer, 1968; Trent & Medsker, 1968; Spady, 1970). Peng, Dunteman and Ashburn (1977) found that among both two- and four-year college students, a greater proportion of academic withdrawals than nonacademic withdrawals were dissatisfied with their intellectual development.

Tinto's Model

Tinto's (1975) theory of the dropout process may be one of the most valuable recent contributions to the study of student attrition. The literature on college dropouts is voluminous, but it is Tinto's model of the dropout process, extending Spady's (1970) work, that has been the premier model guiding a vast amount of research during the past ten years. Questions concerning elements of Tinto's model have helped shape the present inquiry. Tinto's model is shown in Figure 1.

Tinto's model postulates that entering student background characteristics (e.g. educational aspirations, socioeconomic status, high school grades, ability, gender, and race) have effects on initial commitments to the goal of graduation and to the institution. These commitments and background characteristics interact to influence the student's academic and social integration into the institution. Consequently, both academic and social integration affect subsequent commitments to the goal of graduation and institutional commitment. Thus, commitments to the goal of graduation and to the institution, along with academic and social integration, are seen as positively influencing persistence. The main thrust of Tinto's theory

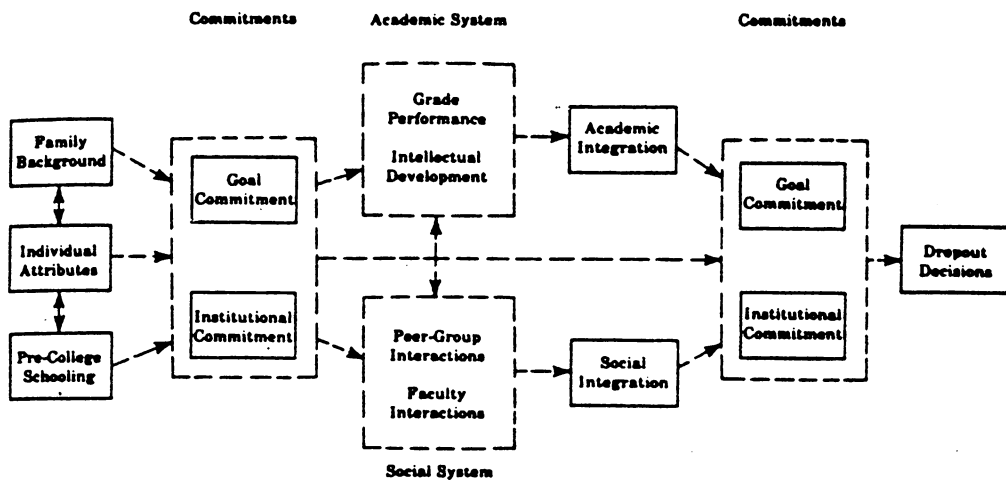


Figure 1. Tinto's Model

Note. From "Dropout from higher education: A theoretical synthesis of recent research" by V. Tinto, 1975, Review of Educational Research, 45(1), p. 95.

of the dropout process is that the decision to drop out occurs when students are not adequately integrated into the social and academic environment of the college.

Recent Studies on Commuter Students

Numerous studies have been conducted on samples from four-year residential institutions using either the complete Tinto model or major constructs from his model. The results of most of these studies have supported Tinto's model by reinforcing his contention that the effects of student background characteristics on persistence/dropout decisions are mediated by social and academic integration (Bean, 1980; Munro, 1981; Pascarella & Terenzini, 1983; 1979a; 1979b; Terenzini & Pascarella, 1980; 1978; 1977). But results from recent studies conducted with students at commuter institutions (Pascarella & Chapman, 1983; Pascarella, Duby & Iverson, 1983) indicated that background characteristics of entering students had direct effects on persistence, and that they were not simply mediated by student on-campus experiences. These findings represent a departure from the relationships postulated by the Tinto model. Results of these two commuter studies guided the present study because the results indicated that Tinto's model may not "fit" as well for students attending commuter colleges as it does for students attending residential colleges.

Pascarella and Chapman (1983) conducted a multiinstitutional, path analytic validation of Tinto's model across eleven institutions at three different types of colleges: four-year residential, four-year commuter, and two-year commuter. Results indicated that for the four-year residential colleges, institutional commitment had a stronger influence on persistence than goal commitment, social integration had stronger direct and indirect effects than academic integration, and the influence of background traits was mediated through college experience variables. However, the reduced path model obtained for four-year and two-year commuter colleges differed substantially from the model obtained for four-year residential colleges. Figure 2 is used to show the reduced path model obtained for two-year commuter institutions.

In both two- and four-year commuter institutions, academic integration had stronger direct effects on persistence than social integration. Student background traits in both commuter institutions also had direct effects on persistence. High school achievement had a direct effect on persistence for four-year commuter students, and affiliation needs had a direct effect on persistence for two-year college students. Even goal commitment, which had the largest direct effect on persistence for the two-year sample, was most strongly influenced by background traits, i.e., achievement needs, and was not influenced by either

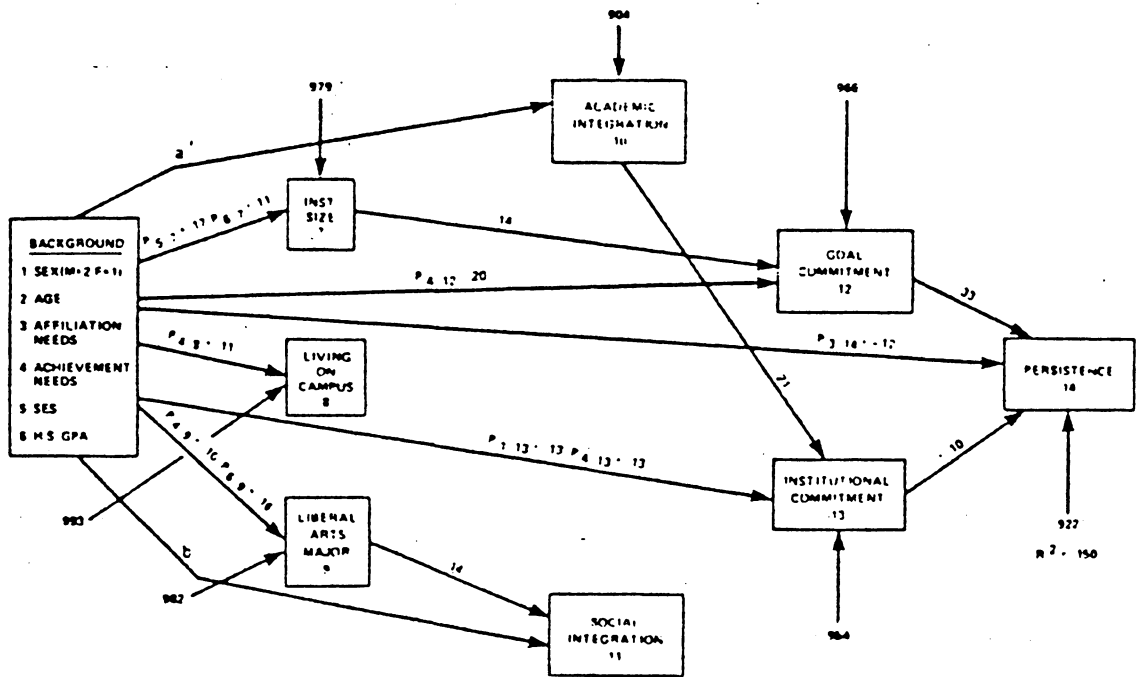


Figure 2. Pascarella and Chapman's Model

Note. From "A multiinstitutional, path analytic validation of Tinto's model of college withdrawal" by E. Pascarella and D. Chapman, 1983, American Educational Research Journal, 20(1), p. 97.

integration measure. Pascarella and Chapman (1983) concluded that "...we might expect that persistence in commuter institutions will be more likely to be directly influenced by background traits, while the influence of such student traits in residential institutions is more likely to be mediated by the actual experience of the college" (p. 99).

Pascarella, Duby & Iverson (1983) tested Tinto's model in another study involving an urban commuter institution. Results from their study indicated that background characteristics had direct effects on persistence and that they also explained more of the variance in persistence than academic and social integration. The reduced path model obtained is shown in Figure 3.

Several background characteristics had significant direct effects: (a) gender, wherein women were more likely to persist than males, (b) academic aptitude, which had a positive direct effect on persistence, (c) secondary school achievement, which, surprisingly, had a significant negative direct effect on persistence, (d) academic and social integration had relatively strong direct effects on persistence (academic integration had a positive effect, social integration had a negative effect), (e) entering commitment to the institution had a direct influence on academic integration rather than on social integration, and (f) academic integration, rather than social integration, had a direct effect on subsequent institutional commitment.

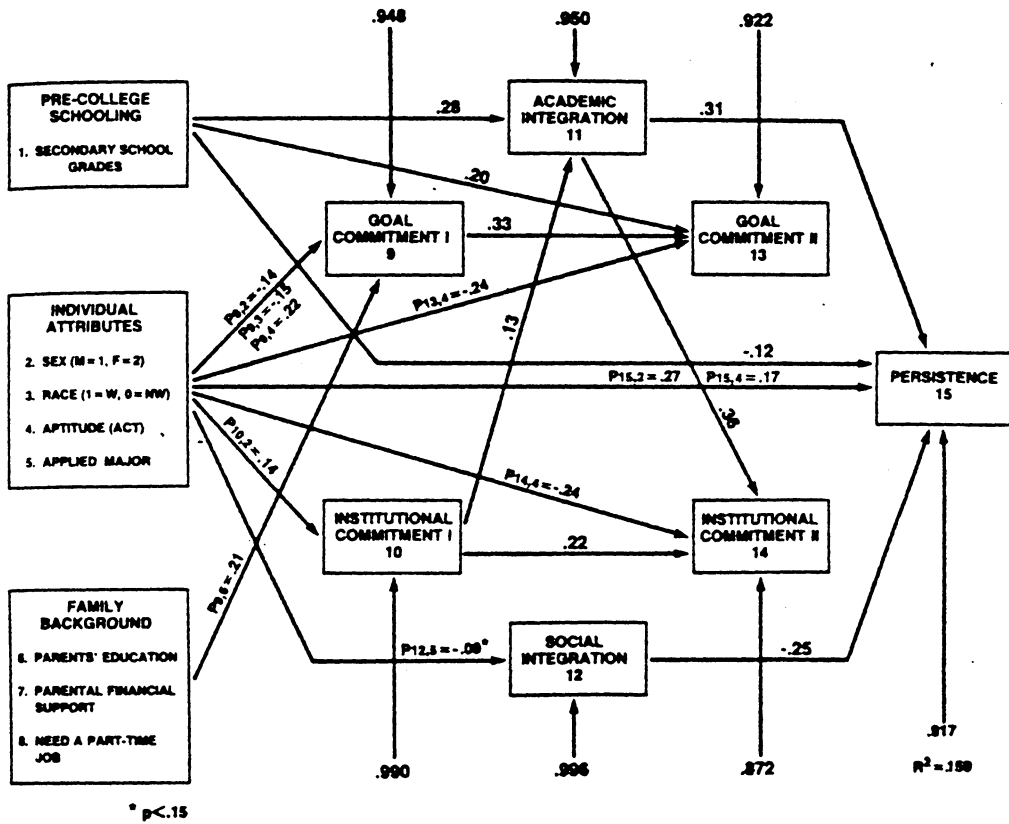


Figure 3. Pascarella, Duby and Iverson's Model

Note. From "A test and reconceptualization of a theoretical model of college withdrawal in a commuter institution setting" by E. Pascarella, P. Duby and B. Iverson, 1983, *Sociology of Education*, 56, p. 95.

Therefore, commitment to the institution was defined by personally satisfying interactions with academic rather than social systems of college (p. 95). Not only did background characteristics have a direct influence on persistence, but they accounted for more variance in attrition than did academic and social integration. Pascarella, Duby and Iverson (1983), reported that "...results suggest that the cluster of characteristics which commuter students bring to the college are factors of equal if not greater importance in their subsequent persistence/dropout decisions than their actual experiences of college once enrolled " (p. 93).

The findings of the Pascarella and Chapman (1983) and Pascarella, Duby, and Iverson (1983) studies were the major springboards for the current study. Although both of these studies were well constructed, they both had low student response rates. Another rather serious problem with the studies (also noted by the researchers) was that they were unable to differentiate true dropouts from stopouts, because both studies defined dropout as any student who failed to return the fall term following the freshman year. Therefore, the results of these studies must be interpreted with a degree of caution, given the frequency of stop-in/stop-out behavior of many commuter college students.

This study used a data base which had a high student response rate. The study also had greater potential for distinguishing dropouts from stopouts, because of the

longitudinal nature of the data. The study used data which was obtained by surveying the same group on three occasions: 1980, 1982, and 1984. Thus there was a four year history of the respondents. Four years may not be long enough though, to determine whether one is a true dropout, as suggested by some researchers (Pantages & Creedon, 1978). However, access to four years of longitudinal data on respondents allowed the current study to follow students for two successive fall terms after they dropped out, to determine whether they returned to college. This length of follow-up time provided for greater certainty in classifying students as dropouts, as opposed to the Pascarella and Chapman (1983) and Pascarella, Duby, and Iverson (1983) studies, which only followed students until the subsequent fall term following the freshman year.

Results of the Pascarella and Chapman (1983), and Pascarella, Duby, and Iverson (1983) studies led the present writer to investigate the influential paths and the relative effects of background characteristics to institutional experiences (academic and social integration) on student persistence in community colleges.

CHAPTER 3

METHOD

This study investigated the applicability of the Tinto model of the dropout process among community college students. Data collected from the High School and Beyond (HSB) study were used for the analyses. The HSB study is a longitudinal survey of a nationally representative sample of persons who were high school sophomores and seniors in 1980 conducted by the National Center for Educational Statistics (NCES). The HSB base year study began in the spring of 1980, and included a stratified national probability sample of over 1100 public and private high schools with approximately 30,000 sophomores and 28,000 seniors. The first follow-up survey was conducted two years later in the spring of 1982. To reduce the size of the sample, 11,995 of the original 28,000 seniors were surveyed. Of those 11,995 persons, 11,227 (93.6%) completed the first follow-up questionnaire. A second follow-up survey was conducted in the spring of 1984. And, of those same 11,995 persons, ninety-one percent (10,925) completed the second follow-up questionnaire.

Sample

The sample for the study contained all HSB 1980 seniors who enrolled in an academic track in public two-year community, technical, and junior colleges college) and four-year colleges in the fall 1980 term. Of all the seniors fitting this description who completed the first and second follow-up questionnaires, there were 974 community college students and 2969 four-year college students.

Method

Path analysis was used with these data to determine whether Tinto's model of the dropout process was as applicable to community college students as it had been for four-year college students. Path analysis is a technique which uses a series of multiple regression analyses to predict changes in a dependent variable by assessing the direct and indirect effects of exogenous and endogenous variables on the dependent variable. Independent variables are ordered within the model according to whether they have a direct influence upon the dependent variable, an indirect influence upon the dependent variable, or both. Any variable in the model that is presumed to be influenced by other variables in the model is referred to as endogenous, in contrast to exogenous variables, which have sources of variation that are presumed to lie outside the model. Thus, no attempt is made to explain sources of variance in

exogenous variables, whereas sources of variance in endogenous variables are explained by the exogenous and endogenous variables in the model (Pedazur, 1982). Path analysis results in estimates of the magnitude of both direct and indirect effects of the independent (endogenous and exogenous) variables upon the dependent (endogenous) variable.

Procedure

Two path models were used to answer the research questions specified in chapter one. The first path model tested in this study was the one obtained by Munro (1981) when she applied a path model of attrition to a national sample of four-year college students from the National Longitudinal Study (NLS) of the High School Class of 1972. Munro used questionnaire items from the NLS survey to tap several of Tinto's major constructs. The Munro study was ideal for comparison because the availability of the HSB data set afforded an opportunity to replicate her study using the same model with the same variables, but at different points in time. This allowed direct comparisons to be made, not only between students from different types of colleges, but between students at the same types of colleges at different points in time. The Munro model was applied to both two- and four-year students in the HSB data set. That model is shown in Figure 4.

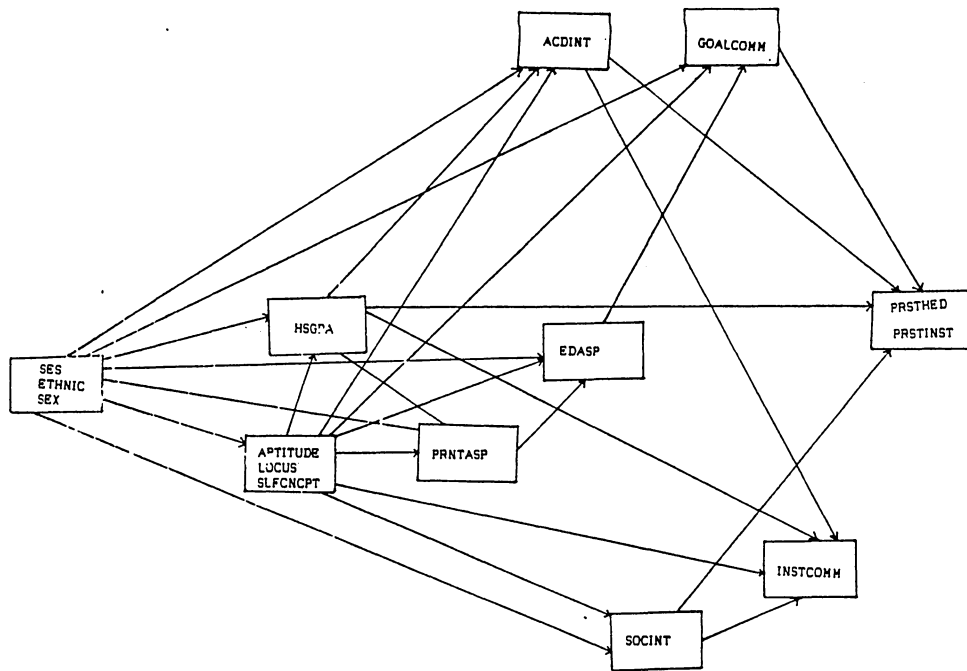


Figure 4. Munro's Model

Note. From "Dropouts from higher education: Path analysis of a national sample" by B. Munro, 1981, American Educational Research Journal, 18(2), p. 138.

Munro's model contains the family background variables of socioeconomic status, ethnicity, and gender as exogenous variables in the model. The endogenous variables are self-esteem, locus of control, aptitude, perceived parental aspirations, educational aspirations, social and academic integration, institutional commitment, goal commitment, high school grades, persistence in institution, and persistence in higher education. The model posits that the dependent variables, persistence in institution and persistence in higher education, are functions of the exogenous and endogenous variables mentioned above. The variables are ordered according to their hypothesized relationships to each other.

The following questions were answered in the first set of analyses. Does the Munro model yield similar results when applied to the four-year HSB sample as was obtained by Munro with the NLS sample when the model is defined with identical variable specifications? Does the Munro model yield results for the community college HSB sample that are similar to (a) the four-year HSB sample, (b) the four-year NLS sample, and (c) the commuter sample results of Pascarella and Chapman (1983) and Pascarella, Duby, and Iverson (1983)? These questions were answered by applying the Munro model to community college and four-year college students from the HSB data set, using path analysis. Resulting path models were compared by contrasting

differences in the direction and magnitude of the direct and indirect effects of the exogenous and endogenous variables on the dependent variables.

The first step was to apply the Munro model to community college students from the HSB data set. Results of this analysis were then compared to Munro's results for four-year students from the National Longitudinal Study (NLS) data set. The Munro model was then applied to four-year college students from the HSB data set. The path model obtained for the four-year students from the HSB data set was then compared to the path model obtained for the HSB two-year HSB sample. This step in the analysis indicated whether there were differences in the attrition phenomenon between students at the two institutional types. The model obtained for the four-year HSB sample was also compared to the model Munro obtained for four-year students from the NLS data set. Comparing Munro's NLS path model to that of the four-year HSB path model was necessary for ascertaining the robustness of Munro's model. This step in the analysis was needed for subsequent comparisons to determine if differences between the two-year HSB and four-year NLS samples were due to differences between the attrition phenomenon between students at the two institutional types, or simply because the two cohorts of students grew up during different points in time. The focal point in the analyses was in assessing the effects of student background

characteristics on persistence, especially in relation to the effects of social and academic integration on persistence.

The second phase of the study was exploratory in nature. As such, some variables from the Munro model were removed and/or shifted in their structural relationships. Also, an additional endogenous variable, work status, was entered into the model to determine its effects on decisions to remain in or dropout of college. An earlier study by Peng and Feters (1978) used the 1972 NLS data and included work status as an endogenous variable in a path model of college withdrawal. However, the measure of work used by Peng and Feters indicated only whether the student was working in October, 1972. The HSB data set allowed the present study to trace the work status of students while they were enrolled in college, so that a determination could be made of the working status of the student while enrolled in college. Work status seemed an important variable to include in a causal model of attrition, because work status had been shown to be highly correlated with dropping out of college (Astin, 1985). The exploratory model is shown in Figure 5.

The exogenous variables in the exploratory model are socioeconomic status, ethnicity, gender, self-esteem, aptitude, and high school grades. The endogenous variables are work status, educational aspirations, social and

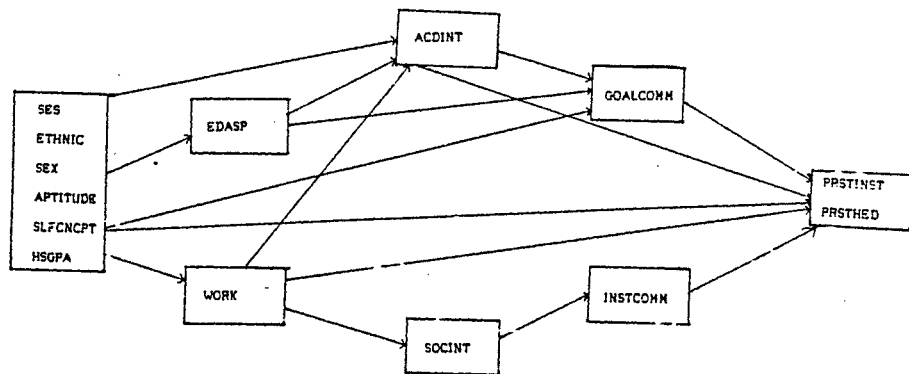


Figure 5. Exploratory Model

academic integration, institutional commitment, goal commitment, persistence in the institution, and persistence in higher education. The model posits that the dependent variables, persistence in the institution and persistence in higher education, are functions of the exogenous and endogenous variables mentioned above. The variables are ordered according to their hypothesized relationships to each other.

The question to be answered in the second phase of the study was "Does the "work status" variable increase explanation of the variance of persistence?" In the exploratory model, work status was hypothesized to be a function of background characteristics. It was hypothesized that work status would have direct effects on the student's decision to persist. Work status was also hypothesized to have indirect effects on persistence through its effects on academic integration. This question was answered using path analysis procedures by applying the exploratory model to both the two-year and four-year college HSB samples. Results for both analyses were then compared to determine what effect work status had on increasing the explained variance in the dependent variable, and to see what differences existed between the models obtained for both groups of students.

Dropout/Persister Specification

The intention was to define a persister as anyone who persisted beyond the first year of college. However, preliminary analyses revealed that fewer than 20 percent of the students dropped out and stayed out of college after the first year. A split as large as this (20/80) on any dichotomous variable will limit the magnitude of the correlation that can be obtained with any other variables. To avoid this attenuation effect, persistence had to be redefined so as to yield more nearly equal proportions of persisters and non-persisters, while simultaneously remaining true to one of the primary focal points of the study: to distinguish dropouts from stopouts through the identification of students who appeared to have terminated their postsecondary education. The strategy for choosing a definition of persistence was dependent upon two considerations: identifying enough dropouts for inclusion in the multiple regression procedures, while having reasonable confidence that those identified were indeed dropouts, and not stopouts. Different definitions of persistence were considered until an acceptable one was adopted which satisfied the two considerations mentioned above.

For this study, a persister was defined as anyone who persisted beyond June 1982 or who received a degree or certificate prior to or after June 1982. In addition to the above definition, persistence was further delimited to two

specific definitions in applying the path models to the samples of college students: persistence in higher education, and persistence in the institution. A student was considered a persister in higher education if he or she received a degree or certificate from a postsecondary educational institution, or persisted in a postsecondary educational institution beyond June 1982, regardless of the number of institutions attended or length of attendance at any one institution. A student was considered an institutional persister if he or she had either received a degree or certificate from, or persisted beyond June 1982 in the first postsecondary educational institution attended.

Variable Specification

The variables used in the study and their operational definitions were as follows:

Gender (GNDR)- this variable was coded as male (1) and female (0).

Race (RACE)- this variable was coded as white (1) and nonwhite (2).

Socioeconomic status (SES)- was based on a composite score involving father's education, mother's education, parental income, father's occupation, and a household items index. Scores ranged from -3.07 to 2.18. (Note:

The documentation available to the researcher did not clearly explain the computation of this composite variable. However, an examination of the questionnaire items revealed that low scoring was associated with low socioeconomic status. The appendices to this document contains the questionnaire items used for the variables used in the analyses of the path models.)

Aptitude (APT)- this variable was the sum of the scores from the three HSB base-year test scores: vocabulary, reading, and mathematics. Scores ranged from 28.77 to 72.81.

Locus of control (LOCUS)- four items used to measure this construct were included in the base-year questionnaire. Scores ranged from -3.38 to 1.25. (Note: The documentation available to the researcher did not clearly explain the computation of this composite variable. However, based on the coding scheme used in the questionnaires, it appeared that internality was associated with high scores.)

Self-concept (SLF)- four items used to measure this construct were included in the base-year questionnaire. Scores ranged from -1.05 to 5.80. 1.25. (Note: The documentation available to the researcher did not clearly explain the computation of this composite variable. However, based on the coding scheme used in the

questionnaires, it appeared that higher self-concepts were associated with lower scores.)

High school grades (HSGPA)- these measures were self-reported on the base year survey. There were 7 categories ranging from 1 to 7. Mostly A's=7, about half A's and half B's=6, mostly B's=5, etc.

Perceived parental aspirations (PRNTASP)- the level of education that the student believed his/her mother wants attained. There were nine levels ranging from: less than high school graduation (1) to the attainment of a PhD or other advanced degree (9). This measure came from the base year survey data.

Educational aspirations (EDASP)- the lowest level of education that the student would be satisfied with was the measure of educational aspirations. There were nine levels ranging from: less than high school graduation (1) to the attainment of a PhD or other advanced degree (9). This measure came from the base year survey data.

Academic integration (ACDINT)- the sum of the responses to two items on the first follow-up survey, one which asked the overall grade point average of the student and one which asked how satisfied the student was with his/her intellectual development, was the individual's score and ranged from 2-12.

Social integration (SOCINT)- an item on the first follow-up survey that asked how well satisfied the student was with the social life on campus was the measure of social integration. Scores ranged from 1-5.

Goal commitment (GOAL)- this item was measured by asking what was the lowest level of education that the student would be satisfied with. There were nine levels ranging from: less than high school graduation (1) to the attainment of a PhD or other advanced degree (9). This measure came from the first follow-up survey data.

Institutional commitment (INST)- institutional commitment was a commitment to the institution in which the student originally began study and was measured by two items (how satisfied the student was with the ability, knowledge, and personal qualities of most teachers and with the development of work skills). Scores ranged from 2-10. This measure came from the first follow-up survey data.

Work status (WORK)-an item that asked which months the student was employed was the item used to create the work status variable. This measure came from the first follow-up survey data.

Prior to the analysis of the data, the intent had been to define work as a continuous variable with rankings from 0 (did not work) to 5 (worked over 40 hours per week). However, due to the coding of data, it was

not possible to construct the work status in the manner intended. Therefore, another strategy was used which computed a ratio of the total number of months worked to the total number of months enrolled in college. Thus, work status was represented by a decimal number with a range of 0 to 1, indicating the percentage of time the student worked while in college. Initial analysis revealed that there was minimal correlation between work status and persistence, none of which were greater than .045. Had a stronger relationship been found, attempts would have been made to find a means to analyze the work variable as originally planned.

Data Analysis

The first step, preliminary to the analyses, was to develop an SPSSX (Statistical Package for the Social Sciences) program containing the proper coding and identification of variables to be used in the analyses. Since the HSB data set contained more than 30,000 cases, each containing over 2,000 variables, the SPSSX program was used to create two subsets of the larger HSB data set, each composed of students from each college type. Each of the subsets were then saved as main frame system files for performing all subsequent statistical analyses. Creating the two data sets helped to save in analysis time and computer time. Initial analyses of the data

sets, primarily through frequency distributions and the listing of variable values, were conducted so as to visually inspect, and thus verify that the data were accurate and that no out of range values for any of the variables were present. Individual cases that had out of range, missing, inconsistent, erroneous or missing values in essential variables were deleted from analyses when appropriate.

After the preliminary analyses were completed, the dependent variable for each model was regressed on the independent variables in the path models. An SPSSX program was used to conduct these analyses, using the multiple regression procedure with the option, pairwise deletion of missing data. The output of each multiple regression analysis provided a correlation matrix among the variables, as well as means, standard deviations and the number of observations for each variable in the analysis. The outputs of the multiple regression analyses provided initial profiles of student characteristics from the two student samples, as well as the intercorrelations needed for subsequent path analyses procedures.

The final step in the data analyses sequence was the path analyses procedures. These analyses were performed using GEMINI (Wolfle & Ethington, 1984), a Fortran computer program that analyzes recursive structural

equation models and provides standard errors of the direct and indirect effects of the variables in the model. The correlation matrix produced by the multiple regression analysis was entered into the GEMINI program, along with the variable means, standard deviations and instructions which defined the structural makeup of the path model. The output of the GEMINI program provided the information used to analyze the direct and indirect effects of the variables in the path models, including the path coefficients among the variables. Path coefficients significant at $<.05$ were retained and are indicated on the models produced in Chapter 4.

CHAPTER 4

FINDINGS

In order to construct the two definitions of persistence used in the various analyses, different variables had to be manipulated in the data sets. Because of this procedural necessity, some cases in both the two-year and four-year samples had to be eliminated, due to missing or conflicting data contained within certain variables in the data. Thus, four separate samples were used for the analyses, two samples of students from each college type.

The total two-year sample contained 974 students and was used to analyze the path model having persistence in higher education as the dependent variable. A subset of this sample containing 918 students was used to analyze the path model with persistence in the institution as the dependent variable. Likewise, the total four-year sample contained 2929 students and was used to analyze the path model having persistence in higher education as the dependent variable. And a subset of this sample containing 2786 students was used to analyze the model with persistence in the institution as the dependent variable.

Sample Characteristics

A breakdown of the sample characteristics for students from the two college types is shown in Table 1. The correlations among the variables for the four samples of students are shown in Tables 2 through 5. The samples differed demographically, with the four-year sample composed primarily of whites (54-55%) and the two-year sample composed primarily of nonwhites (54%). The ratio of females to males was nearly the same among both samples, with females outnumbering males in both the four-year (56%) and two-year (53%) college samples.

Inspection of the means in Table 1 revealed other differences between the two types of students. For example, the four-year students worked slightly more than a third of the time while enrolled in college, whereas the two-year students worked more than half of the time they were enrolled in college. The four-year sample scored almost one standard deviation higher than the two-year sample on their high school grades, with the four-year sample reporting their high school grades as primarily As, with some Bs. The two-year students reported that their high school grades were mostly Bs, with some As. With regard to perceived parental aspirations, the four-year students scored about a half standard deviation higher than the two-year students, believing that their mothers expected them to continue beyond the attainment of a four-year degree, but for less

than a masters degree. The two-year students thought their mothers expected them to persist only to the attainment of four-year degree. Regarding educational aspirations, the four-year sample scored about one standard deviation higher than the two-year sample. The scores obtained indicated that the lowest level of education the average four-year student would be satisfied with was about midway between a two-year degree and a four-year degree. The lowest level of education the average two-year student would be satisfied with was between less than two years of college and the attainment of a two-year degree.

For the aptitude measure, the four-year sample scored about one half of a standard deviation higher than the two-year students. The two samples tended to score alike on the measures of locus of control, self-concept, social integration, academic integration and institutional commitment. However, the four-year sample scored about a half standard deviation higher on the measure of goal commitment. Differences in persistence rates between the two groups of students were also apparent, with four-year students more likely to persist in higher education (86%) than the two-year students (77%). Four-year students were also more likely to persist in the institution first attended (57%) than were the two-year students (51%).

Table 1

Means, Standard Deviations and Number of Observations for Variables in Two- and Four-Year HSB Samples

HSB SAMPLE CHARACTERISTICS, PERSISTENCE IN HIGHER EDUCATION (PRSTHED)															
	<u>SES</u>	<u>RACE</u>	<u>GNDR</u>	<u>APT</u>	<u>LOCUS</u>	<u>SLF</u>	<u>HSGPA</u>	<u>WORK</u>	<u>PRNTASP</u>	<u>EDASP</u>	<u>SOCINT</u>	<u>ACDINT</u>	<u>INST</u>	<u>GOAL</u>	<u>PRSTHED</u>
<u>TWO-YEAR</u>															
MEAN	-.076	1.539	.471	50.351	.059	-.072	5.760	.541	6.943	5.360	3.715	8.673	7.965	6.077	.767
ST DEV	.741	.499	.499	7.690	.623	.726	1.296	.416	1.623	1.950	1.009	1.701	1.453	1.522	.423
N	959	974	974	973	958	958	971	952	823	950	917	895	916	930	974
<u>FOUR-YEAR</u>															
MEAN	.078	1.459	.439	54.379	.205	-.160	6.494	.375	7.518	6.392	3.859	8.708	7.966	6.731	.862
ST DEV	.796	.498	.496	8.052	.603	.708	1.227	.384	1.288	1.658	1.088	1.722	1.514	1.304	.345
N	2929	2969	2969	2967	2942	2944	2963	2929	2571	2920	2881	2813	2864	2862	2969
HSB SAMPLE CHARACTERISTICS, PERSISTENCE IN INSTITUTION (PRSTINST)															
	<u>SES</u>	<u>RACE</u>	<u>GNDR</u>	<u>APT</u>	<u>LOCUS</u>	<u>SLF</u>	<u>HSGPA</u>	<u>WORK</u>	<u>PRNTASP</u>	<u>EDASP</u>	<u>SOCINT</u>	<u>ACDINT</u>	<u>INST</u>	<u>GOAL</u>	<u>PRSTINST</u>
<u>TWO-YEAR</u>															
MEAN	-.078	1.541	.472	50.337	.066	-.076	5.672	.542	6.934	5.381	3.720	8.678	7.970	6.087	.510
ST DEV	.741	.499	.499	7.685	.625	.716	1.299	.416	1.642	1.958	1.003	1.699	1.453	1.512	.500
N	904	918	918	917	904	904	916	899	783	897	868	848	867	877	918
<u>FOUR-YEAR</u>															
MEAN	.086	1.452	.438	54.514	.209	-.157	6.508	.374	7.513	6.399	3.865	8.711	7.970	6.747	.574
ST DEV	.795	.498	.496	7.993	.600	.712	1.222	.383	1.292	1.658	1.087	1.717	1.508	1.289	.495
N	2751	2786	2786	2784	2763	2765	2780	2754	2421	2743	2707	2648	2692	2687	2786

LEGEND:

- | | | | |
|-------|------------------------|----------|-----------------------------------|
| SES | = SOCIOECONOMIC STATUS | PRNTASP | = PERCEIVED PARENTAL ASPIRATIONS |
| RACE | = RACE | EDASP | = EDUCATIONAL ASPIRATIONS |
| GNDR | = GNDR | SOCINT | = SOCIAL INTEGRATION |
| APT | = APTITUDE | ACDINT | = ACADEMIC INTEGRATION |
| LOCUS | = LOCUS OF CONTROL | INST | = INSTITUTIONAL COMMITMENT |
| SLF | = SELF-CONCEPT | GOAL | = GOAL COMMITMENT |
| HSGPA | = HIGH SCHOOL GRADES | PRSTHED | = PERSISTENCE IN HIGHER EDUCATION |
| WORK | = WORK STATUS | PRSTINST | = PERSISTENCE IN INSTITUTION |

TABLE 2

Correlation Matrix for Two-Year HSB Sample (PRSTHED)

	SES	RACE	GNDR	APT	LOCUS	SLF	HSGPA	WORK	PRNT	EDASP	SOCINT	ACDINT	INST	GOAL	PRSTHED
SES	1.000	-.292	.105	.206	.131	-.108	.012	.080	.135	.134	-.066	.038	-.016	.084	.099
RACE	-.292	1.000	-.031	-.400	-.131	-.030	-.195	-.120	.110	.106	.114	-.066	.001	.048	.007
GNDR	.105	-.031	1.000	.147	-.053	-.076	-.131	-.044	.035	.001	.006	-.031	-.015	.064	.073
APT	.206	-.400	.147	1.000	.344	-.052	.388	.163	.096	.103	-.117	.284	.071	.169	.147
LOCUS	.131	-.131	-.053	.344	1.000	-.138	.174	.075	.125	.173	.001	.157	.093	.106	.010
SLF	-.108	-.030	-.076	-.052	-.138	1.000	-.173	-.037	-.057	-.110	-.089	-.191	-.145	-.128	-.127
HSGPA	.012	-.195	-.131	.388	.174	-.173	1.000	.086	.038	.178	-.017	.388	.112	.169	.141
WORK	.080	-.120	-.044	.163	.075	-.037	.086	1.000	-.020	-.021	-.052	.090	.026	.027	.010
PRNT	.135	.110	.035	.096	.125	-.057	.038	-.020	1.000	.360	-.012	.069	-.020	.191	.123
EDASP	.134	.106	.001	.103	.173	-.110	.178	-.021	.360	1.000	.026	.167	.074	.351	.167
SOCINT	-.066	.114	.006	-.117	.001	-.089	-.017	-.052	-.012	.026	1.000	.105	.304	.005	-.034
ACDINT	.038	-.066	-.031	.284	.157	-.191	.388	.090	.069	.147	.105	1.000	.471	.221	.224
INST	-.016	.001	-.015	.071	.093	-.145	.112	.026	-.020	.074	.304	.471	1.000	.098	.116
GOAL	.084	.048	.064	.169	.106	-.128	.169	.027	.191	.351	.005	.221	.098	1.000	.384
PRSTHED	.099	.007	.073	.147	.010	-.127	.141	.010	.123	.167	-.034	.224	.116	.384	1.000

TABLE 3

Correlation Matrix for Four-Year HSB Sample (PRSTHED)

	SES	RACE	GNDR	APT	LOCUS	SLF	HSGPA	WORK	PRNT	EDASP	SOCINT	ACDINT	INST	GOAL	PRSTHED
SES	1.000	-.316	.054	.328	.171	-.049	.082	-.058	.106	.173	.081	.142	.052	.148	.180
RACE	-.316	1.000	-.010	-.457	-.193	-.071	-.232	-.056	.142	.000	-.068	-.180	-.038	.021	-.073
GNDR	.054	-.010	1.000	.128	-.075	-.059	-.105	-.037	.014	.031	-.016	-.054	-.058	.053	.058
APT	.328	-.457	.128	1.000	.364	-.047	.471	.097	.090	.216	-.003	.291	.036	.177	.212
LOCUS	.171	-.193	-.075	.364	1.000	-.210	.231	.041	.059	.157	.031	.174	.086	.105	.110
SLF	-.049	-.071	-.059	-.047	-.210	1.000	-.131	-.004	-.116	-.130	-.069	-.106	-.122	-.103	-.035
HSGPA	.082	-.232	-.105	.471	.231	-.131	1.000	.072	.089	.186	.022	.377	.108	.167	.181
WORK	-.058	-.056	-.037	.097	.041	-.004	.072	1.000	.022	-.049	-.082	.049	-.006	-.063	-.045
PRNT	.106	.142	.014	.090	.059	-.116	.089	.022	1.000	.340	-.006	.034	-.026	.198	.052
EDASP	.173	.000	.031	.216	.157	-.130	.186	-.049	.340	1.000	-.003	.093	.015	.344	.172
SOCINT	.081	-.068	-.016	-.003	.031	-.069	.022	-.082	-.006	-.003	1.000	.112	.276	.049	.013
ACDINT	.142	-.180	-.054	.291	.174	-.106	.377	.049	.034	.093	.112	1.000	.533	.173	.143
INST	.052	-.038	-.058	.036	.086	-.122	.108	-.006	-.026	.015	.276	.533	1.000	.114	.082
GOAL	.148	.021	.053	.177	.105	-.103	.167	-.063	.198	.344	.049	.173	.114	1.000	.359
PRSTHED	.180	-.073	.058	.212	.110	-.035	.181	-.045	.052	.172	.013	.143	.082	.359	1.000

TABLE 4

Correlation Matrix for Two-Year HSB Sample (PRSTINST)

	SES	RACE	GNDR	APT	LOCUS	SLF	HSGPA	WORK	PRNT	EDASP	SOCINT	ACDINT	GOAL	INST	PRSTINST
SES	1.000	-.280	.097	.188	.123	-.107	-.005	.074	.137	.129	-.074	.025	.071	-.017	.006
RACE	-.280	1.000	-.033	-.396	-.123	-.023	-.189	-.128	.122	.121	.108	-.063	.066	.009	.073
GNDR	.097	-.033	1.000	.152	-.053	-.077	-.134	-.041	.045	.009	-.003	-.022	.061	-.011	-.008
APT	.188	-.396	.152	1.000	.338	-.056	.380	.153	.088	.106	-.117	.272	.163	.062	.021
LOCUS	.123	-.123	-.053	.338	1.000	-.138	.177	.065	.125	.186	-.004	.152	.106	.087	-.002
SLF	-.107	-.023	-.077	-.056	-.138	1.000	-.186	-.042	-.049	-.116	-.072	-.183	-.139	-.140	-.022
HSGPA	-.005	-.189	-.134	.380	.177	-.186	1.000	.091	.038	.183	-.017	.391	.178	.102	.075
WORK	.074	-.128	-.041	.153	.065	-.042	.091	1.000	-.019	-.022	-.046	.069	.013	.032	.002
PRNT	.137	.122	.045	.088	.125	-.049	.038	-.019	1.000	.366	-.015	.064	.202	-.019	.073
EDASP	.129	.121	.009	.106	.186	-.116	.183	-.022	.366	1.000	.030	.161	.351	.077	.103
SOCINT	-.074	.108	-.003	-.117	-.004	-.072	-.017	-.046	-.015	.030	1.000	.103	.005	.304	-.083
ACDINT	.025	-.063	-.022	.272	.152	-.183	.391	.069	.064	.161	.103	1.000	.220	.473	.136
GOAL	.071	.066	.061	.163	.106	-.139	.178	.013	.202	.351	.005	.220	1.000	.099	.193
INST	-.017	.009	-.011	.062	.087	-.140	.102	.032	-.019	.077	.304	.473	.099	1.000	.073
PRSTINST	.006	.073	-.008	.021	-.002	-.022	.075	.002	.073	.103	-.083	.136	.193	.073	1.000

TABLE 5

Correlation Matrix for Four-Year HSB Sample (PRSTINST)

	SES	RACE	GNDR	APT	LOCUS	SLF	HSGPA	WORK	PRNT	EDASP	SOCINT	ACDINT	GOAL	INST	PRSTINST
SES	1.000	-.310	.046	.322	.170	-.053	.083	-.065	.106	.174	.077	.138	.138	.042	.102
RACE	-.310	1.000	-.003	-.448	-.186	-.067	-.223	-.060	.145	.008	-.060	-.181	.036	-.042	-.054
GNDR	.046	-.003	1.000	.126	-.083	-.061	-.107	-.045	.012	.032	-.017	-.049	.044	-.056	.002
APT	.322	-.448	.126	1.000	.361	-.052	.468	.098	.085	.217	-.009	.297	.168	.031	.147
LOCUS	.170	-.186	-.083	.361	1.000	-.221	.225	.043	.062	.151	.027	.173	.102	.077	.084
SLF	-.053	-.067	-.061	-.052	-.221	1.000	-.131	-.002	-.119	-.137	-.066	-.108	-.100	-.119	-.031
HSGPA	.083	-.223	-.107	.468	.225	-.131	1.000	.076	.088	.183	.025	.382	.159	.104	.194
WORK	-.065	-.060	-.045	.098	.043	-.002	.076	1.000	.018	-.054	-.084	.045	-.076	-.016	-.031
PRNT	.106	.145	.012	.085	.062	-.119	.088	.018	1.000	.351	-.001	.033	.203	-.032	.021
EDASP	.174	.008	.032	.217	.151	-.137	.183	-.054	.351	1.000	.000	.095	.356	.013	.090
SOCINT	.077	-.060	-.017	-.009	.027	-.066	.025	-.084	-.001	.000	1.000	.113	.054	.280	.103
ACDINT	.138	-.181	-.049	.297	.173	-.108	.382	.045	.033	.095	.113	1.000	.173	.534	.180
GOAL	.138	.036	.044	.168	.102	-.100	.159	-.076	.203	.356	.054	.173	1.000	.104	.266
INST	.042	-.042	-.056	.031	.077	-.119	.104	-.016	-.032	.013	.280	.534	.104	1.000	.103
PRSTINST	.102	-.054	.002	.147	.084	-.031	.194	-.031	.021	.090	.103	.180	.266	.103	1.000

Munro Path Model Results

Four-Year HSB Sample. The path model obtained for the four-year HSB sample with persistence in higher education as the dependent variable is shown in Figure 6. Results indicated that six variables -- goal commitment, high school grades, perceived parental aspirations, aptitude, sex, and socioeconomic status -- had direct effects on persistence in higher education. Of the six variables, goal commitment was the best predictor variable. In fact, goal commitment had three times the predictive power of the next best predictor variable, socioeconomic status. In order of the magnitude of their direct effects, goal commitment was followed by socioeconomic status, high school grades, aptitude, perceived parental aspirations (negative effect) and then sex. Five of the six variables which directly affected persistence in higher education were background variables, an unexpected finding. Of all variables in the model, academic integration, social integration, and locus of control had the least predictive ability. Educational aspirations, academic integration, social integration, self-concept, institutional commitment, high school grades, perceived parental aspirations, locus of control, race, aptitude, and socioeconomic status had significant indirect effects on persistence in higher education. Of these, aptitude and educational aspirations had the strongest indirect effects on persistence in higher education. The

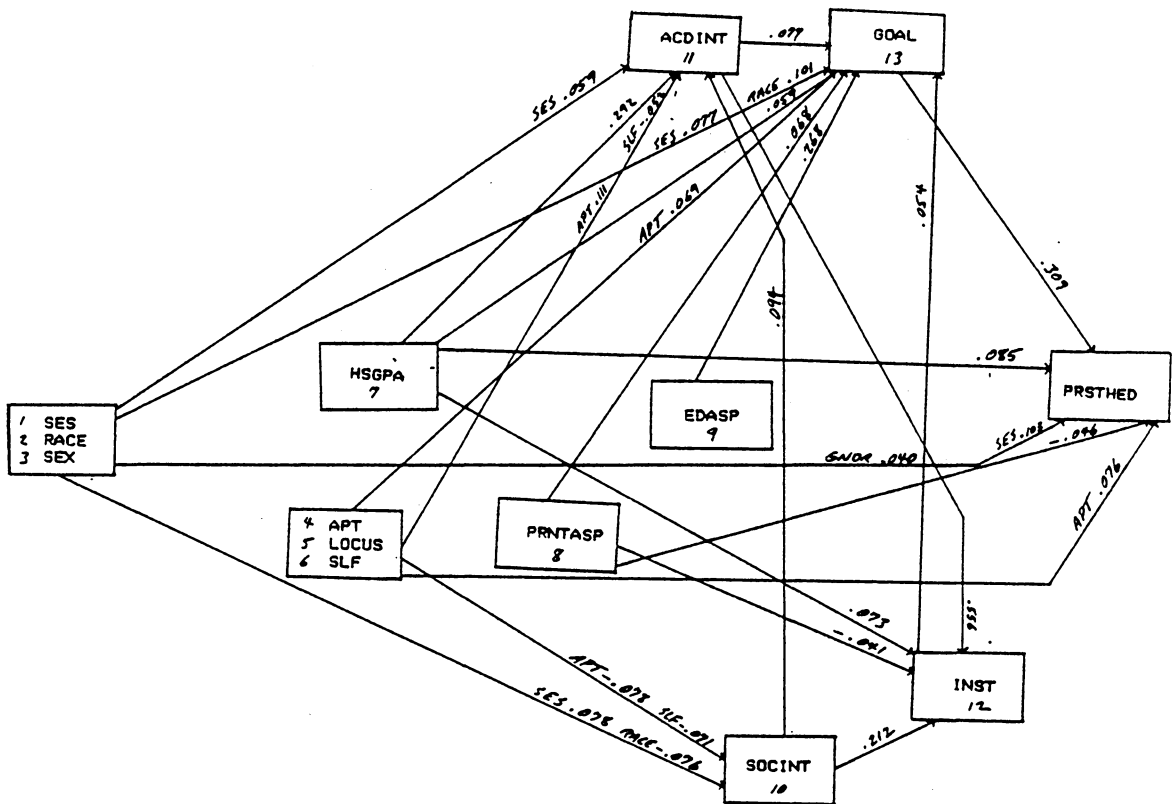


Figure 6. Munro Model Results - Four-Year HSB Sample (PRSTHED)

(Note: All path model figures are shown with the path coefficients of interest. For those readers wishing additional information, Appendices A and B contain complete matrices of the direct effects of the variables in the models, as well as the indirect effects of the variables on the persistence measures.)

path model was able to explain 16.9 percent of the variance in persistence in higher education.

The path model obtained for the four-year HSB sample with persistence in the institution as the dependent variable is shown in Figure 7. Results indicated that goal commitment, high school grades, socioeconomic status, academic integration, and social integration had direct effects on persistence in the institution. Of the five variables having direct effects on persistence in the institution, goal commitment was the best predictor variable, having the strongest effect, followed by high school grades, social integration, academic integration, and socioeconomic status. In the model obtained, two of the five variables directly affecting persistence in the institution were background variables. Of all the variables in the model, sex, locus of control, and race had the least predictive ability. Educational aspirations, social integration, self-concept, high school grades, perceived parental aspirations, aptitude, race, and socioeconomic status had significant indirect effects on persistence in the institution. Of these, aptitude and educational aspirations had the strongest indirect effects on persistence in the institution. The path model obtained was able to explain 11.3 percent of the variance in persistence in the institution.

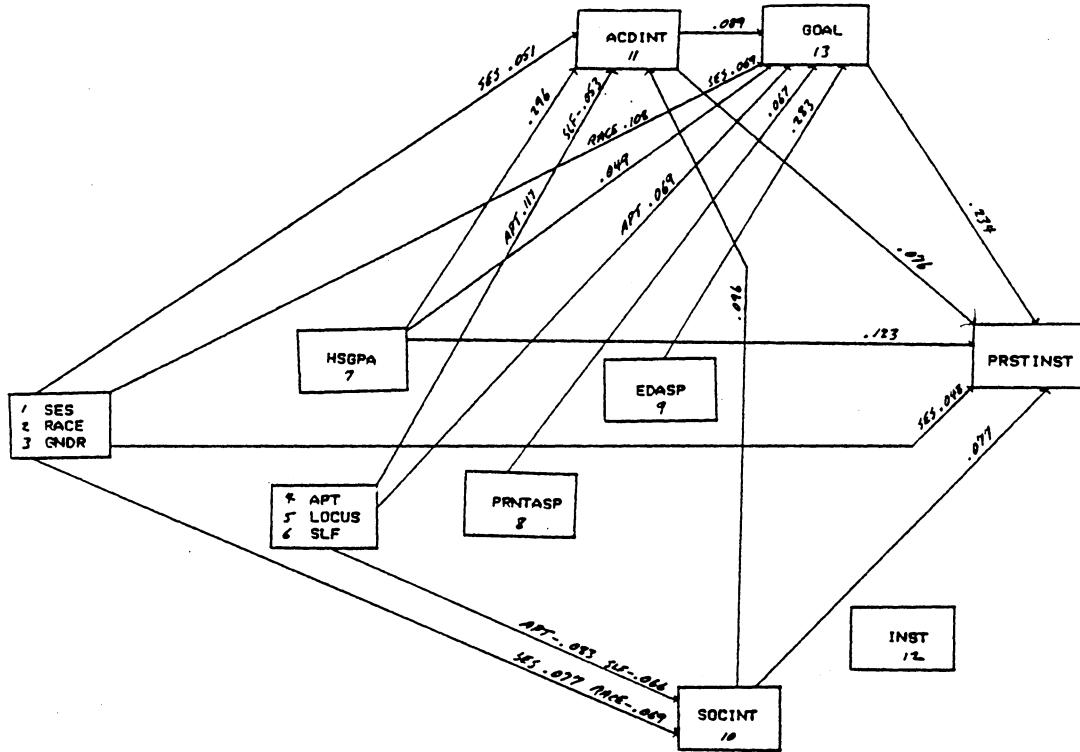


Figure 7. Munro Model Results - Four-Year HSE Sample (PRSTINST)

Two-Year HSB Sample. Path model results for the two-year sample with persistence in higher education as the dependent variable is shown in Figure 8. Results indicated that goal commitment, academic integration, and locus of control had direct effects on persistence in higher education. As with the four-year sample, goal commitment had much stronger direct effects than the effects of any of the other variables directly affecting persistence in higher education. In fact, goal commitment had about three times the predictive power of academic integration, the next strongest predictor variable. Locus of control was the only background variable which had a direct effect on persistence in higher education, and it had a negative effect, which meant that those more external were more likely to persist. Educational aspirations, high school grades, and race had the least predictive ability. Socioeconomic status, high school grades, aptitude, self-concept, perceived parental aspirations, educational aspirations, and academic integration had significant indirect effects on persistence in higher education. Of these, aptitude, educational aspirations, and high school grades had the strongest indirect effects on persistence in higher education. The path model explained 19.0 percent of the variance in persistence in higher education.

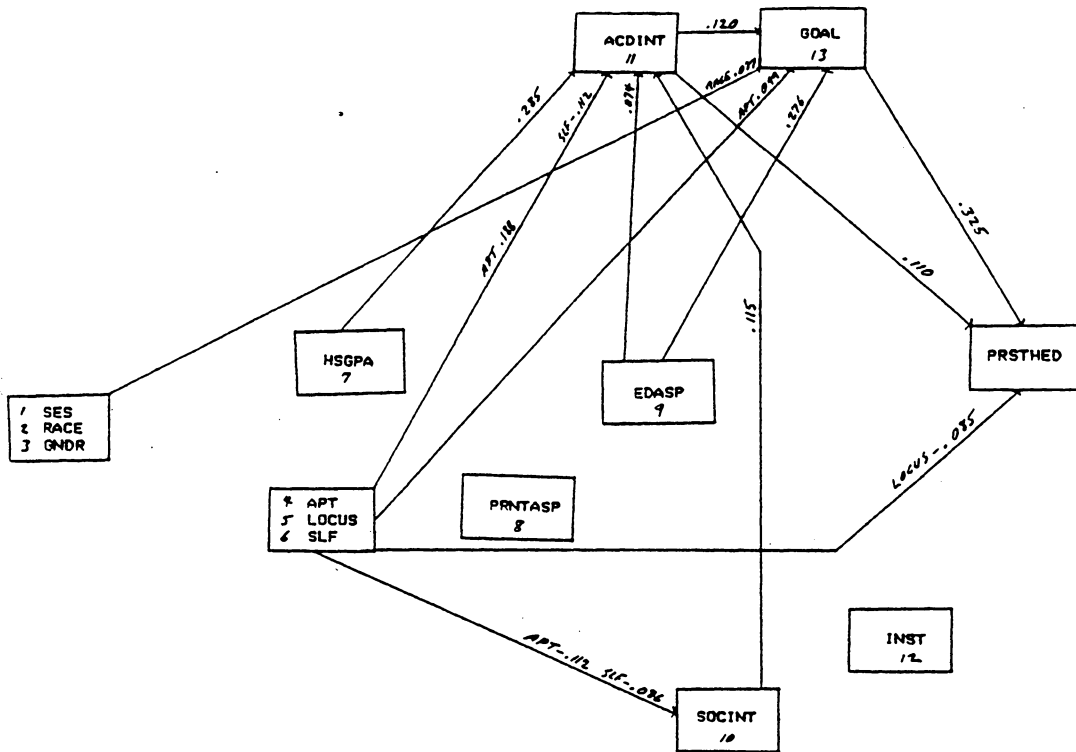


Figure 8. Munro Model Results - Two-Year HSB Sample (PRSTHED)

For the two-year sample with the dependent variable, persistence in the institution, the path model results are shown in Figure 9. Results indicated that social integration, academic integration, and goal commitment had direct effects on persistence in the institution. Of these, goal commitment had the strongest effect on persistence in the institution, followed by social integration and academic integration. Sex, socioeconomic status, and educational aspirations were the worst predictors of persistence in the institution. High school grades, aptitude, self-concept, perceived parental aspirations, educational aspirations, and academic integration had significant indirect effects on persistence in the institution. Of these, aptitude, high school grades and educational aspirations had the strongest indirect effects on persistence in the institution. For the two-year sample, the path model explained 6.7 percent of the variance in persistence in the institution.

Exploratory Path Model Results

Four-Year HSB Sample. The path model obtained for the four-year sample with persistence in higher education as the dependent variable is displayed in Figure 10. Contrary to the proposed hypothesis, work had no significant direct or indirect effect on persistence in higher education. The results indicated that goal commitment, high school grades, aptitude, sex, and socioeconomic status had direct effects

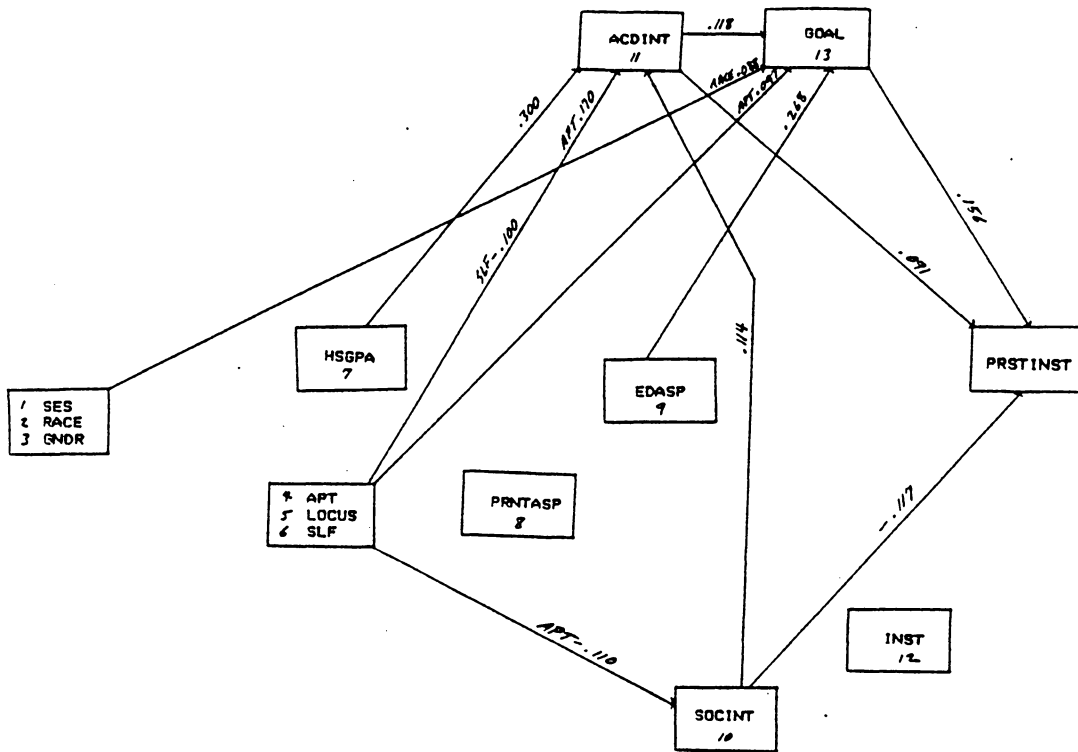


Figure 9. Munro Model Results - Two-Year HSB Sample (PRSTINST)

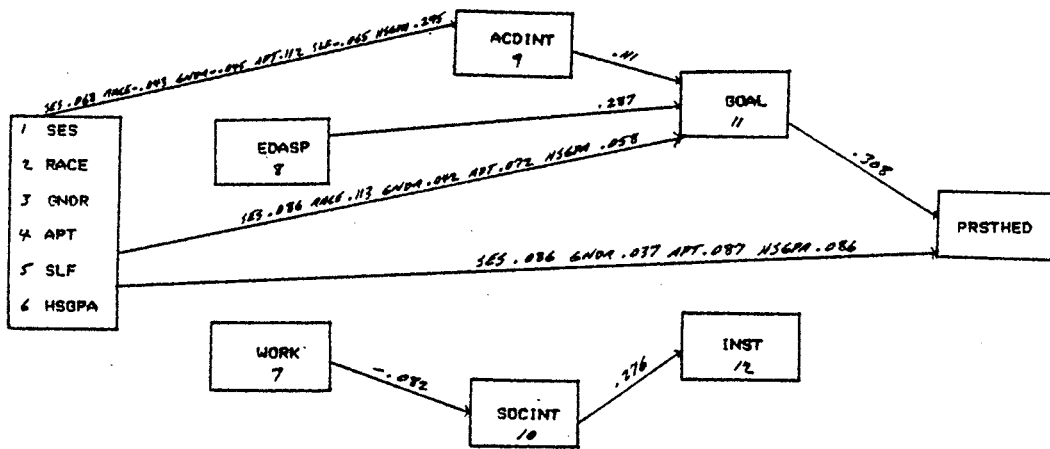


Figure 10. Exploratory Model Results - Four-Year HSB Sample (PRSTHED)

on persistence in higher education for the four-year sample. Of all the variables, goal commitment had the strongest effect. In fact, the direct effects of goal commitment on persistence in higher education were over three times stronger than the effects of the next best predictor variable. In the order of strongest to weakest effects, goal commitment was first, followed by socioeconomic status, aptitude, high school grades and sex. Four of the five variables having direct effects on persistence in higher education were background variables. Of all the variables in the model, academic integration, race, and institutional commitment were the worst predictors of persistence in higher education. Academic integration, educational aspirations, high school grades, self-concept, aptitude, race, sex, and socioeconomic status had significant indirect effects on persistence in higher education. Of these variables, educational aspirations had the strongest indirect effect on persistence in higher education. The exploratory model explained 16.8 percent of the variance in persistence in the four-year sample.

The path model obtained for the four-year sample with persistence in the institution as the dependent variable is in Figure 11. Again, work had no significant direct or indirect effects on persistence in the institution. Results of the exploratory model indicated that goal commitment, academic integration, high school grades, and socioeconomic

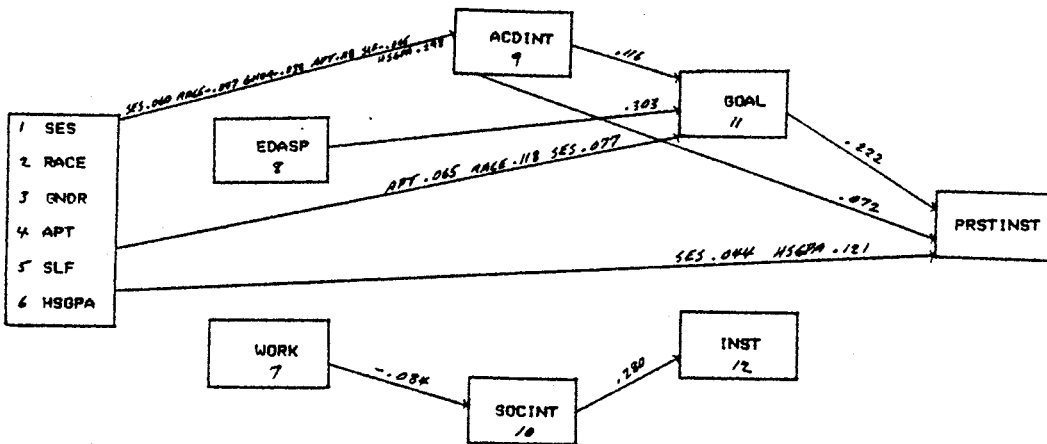


Figure 11. Exploratory Model Results - Four-Year HSB Sample (PRSTINST)

status had direct effects on persistence in the institution for the four-year sample. Of these variables, goal commitment had the strongest effect, followed by high school grades, academic integration, and socioeconomic status. Institutional commitment, sex, and race had the least predictive ability. Academic integration, educational aspirations, high school grades, self-concept, aptitude, race, and socioeconomic status had significant indirect effects on persistence in the institution. Of these, educational aspirations had the strongest indirect effect on persistence in the institution. The exploratory model explained 10.6 percent of the variance in persistence in the four-year sample.

Two-Year HSB Sample. The exploratory model for the two-year sample with persistence in higher education as the dependent variable is shown in Figure 12. As with the four-year sample, work had no significant direct or indirect effect on persistence in higher education. Results of the exploratory model indicated that goal commitment and academic integration directly affected persistence in higher education for the two-year sample, with goal commitment having the stronger effect. In fact, the effect of goal commitment was about three times the effect of academic integration. The variables in the model having the least predictive power were institutional commitment, work and

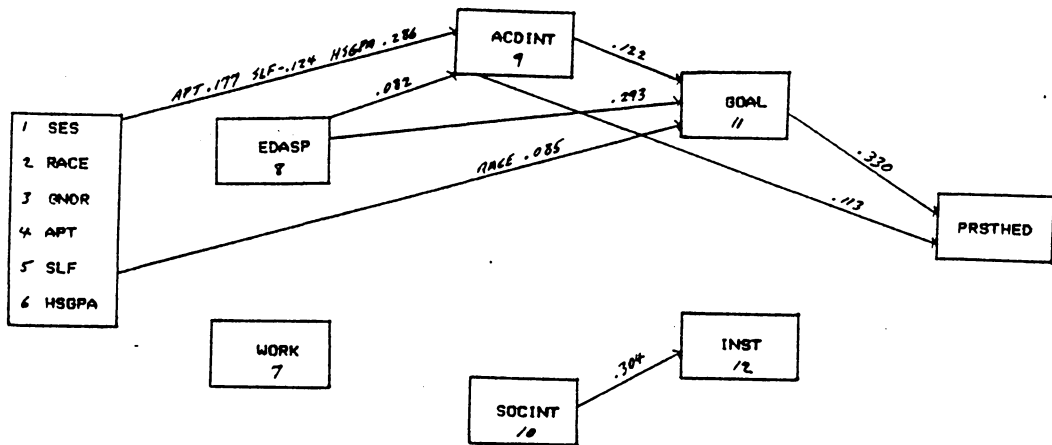


Figure 12. Exploratory Model Results - Two-Year HSB Sample (PRSTHED)

high school grades. Academic integration, educational aspirations, high school grades, self-concept, aptitude, race, and socioeconomic status had significant indirect effects on persistence in higher education. Of these variables, educational aspirations, high school grades, aptitude, and race had the strongest indirect effects on persistence in higher education. The exploratory path model explained 18.0 percent of the variance in persistence.

The path model obtained for the two-year sample with persistence in the institution as the dependent variable is contained in Figure 13. Again, work had no significant direct or indirect effect on persistence in the institution. In addition, goal commitment and academic integration had direct effects on persistence in the institution for the two-year sample, with goal commitment having the strongest effect. The variables having the least predictive power were work, sex, and socioeconomic status. Academic integration, educational aspirations, high school grades, self-concept, aptitude, and race had significant indirect effects on persistence in the institution. Of these variables, educational aspirations and high school grades had the strongest indirect effects on persistence in the institution. The exploratory model explained 5.3 percent of the variance in persistence.

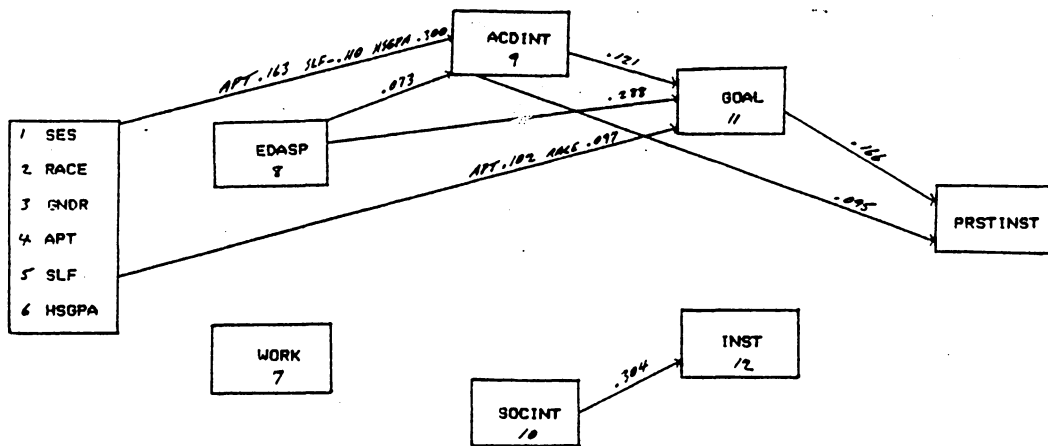


Figure 13. Exploratory Model Results - Two-Year HSB Sample (PRSTINST)

Summary of Findings

It was hypothesized that the path model obtained on the four-year HSB sample would be similar to the models Munro (1981) obtained with the four-year NLS sample. Unexpectedly, for the four-year HSB sample, five of the six variables directly affecting persistence in higher education were background variables, and neither academic nor social integration had direct effects on persistence in higher education. Munro found that academic integration, goal commitment, and high school grades directly affected persistence in higher education. The models obtained for the two samples were similar only in that goal commitment and high school grades directly affected persistence in higher education, with goal commitment having the stronger effect. Otherwise, the models reflect more differences than similarities.

With persistence in the institution as the dependent variable, the path model obtained on the four-year HSB sample indicated that two of the five variables directly affecting persistence in the institution were background variables, whereas Munro's model for the four-year NLS sample indicated that no background variables had direct effects. The models were similar only in that both social and academic integration had direct effects on persistence in the institution for both samples of students. However, for Munro's results with the NLS sample, academic

integration had a negative effect, which meant that those less academically integrated into the institution were more likely to persist. Academic integration had a positive direct effect on persistence in the institution for the four-year HSB sample. The models were also dissimilar in that high school grades, socioeconomic status, and goal commitment had direct effects on persistence in the institution for the HSB sample. Academic and social integration were the only variables that directly affected persistence in the institution for the NLS sample. Thus, the hypothesis stating that the four-year HSB and four-year NLS models would be similar, was not supported under either measure of persistence.

It was expected that the path models obtained on the two-year HSB samples would be dissimilar to the ones Munro obtained. Unexpectedly, the path model results for the two-year HSB sample were more similar to Munro's results with the NLS sample than were the results on the four-year HSB sample. Models for both the two-year HSB sample and the NLS sample indicated that goal commitment and academic integration had direct positive effects on persistence in higher education, with goal commitment having the stronger effect. For each model, one background variable had a direct effect on persistence in higher education. High school grades directly affected persistence in higher education for the NLS sample, whereas locus of control had a

direct effect (negative) for the two-year HSB sample.

For persistence in the institution, however, the models obtained were quite different, even though both models indicated that social and academic integration had direct effects on persistence. For example, Munro's model on the NLS sample indicated that academic integration had a negative effect and that social integration had a positive effect, whereas the path model for the two-year sample indicated that academic integration had a positive effect, while social integration had a negative effect on institutional persistence. Contrary to expectations, no background characteristics had direct effects on persistence in the institution for the two-year HSB sample. It was hypothesized that the path results for the two-year sample would differ from the NLS results, primarily in that the two-year sample was expected to show background variables having direct effects on persistence. Although the two-year HSB results differed from the NLS results, the differences were not in the hypothesized direction. Therefore, the proposed hypothesis was not supported by the findings.

The path models for the two-year and four-year HSB samples also were expected to be dissimilar, primarily in that background variables were expected to have direct effects on persistence in higher education for the two-year sample, but not for the four-year sample. It has already been noted that for one of the models obtained on the four-

year sample, five of the six variables directly affecting persistence in higher education were background variables and that two of the five variables directly affecting persistence in the institution were background variables. In contrast, only one background variable had direct effects on persistence in higher education and no background variables had direct effects on persistence in the institution for the two-year HSB sample. For persistence in higher education, the two-year and four-year HSB samples were alike only in that goal commitment had direct effects on persistence. However, with persistence in the institution as the dependent variable, goal commitment, academic integration, and social integration had direct effects on persistence for both samples of students, though social integration was negatively related to persistence in the institution for the two-year sample. And for both samples, goal commitment had the strongest direct effect. Surprisingly, and contrary to the hypothesized relationships, the four-year samples, under both measures of persistence, had more background variables directly affecting persistence than the two-year samples. The four-year HSB results were expected to more closely approximate Munro's results on the NLS sample, when in fact the two-year results were more similar to Munro's findings. In comparing the two-year and four-year HSB sample results, the hypothesis was not supported because, although the path

model results differed, the differences were not in the hypothesized direction.

One purpose of this study was to determine the extent to which results on the two-year HSB sample were similar to the results obtained by Pascarella and Chapman (1983), and Pascarella, Duby, and Iverson (1983). Pascarella and Chapman found that, for two-year commuter institutions, affiliation needs, goal commitment, and institutional commitment directly affected persistence in the institution, and that academic and social integration had no direct effects. Although academic integration did have an indirect effect on persistence, through its effects on institutional commitment, social integration had neither an indirect nor direct effect on persistence. Goal commitment, which had the strongest effect, was influenced by background variables, but not by either integration measure. The two-year HSB sample results were similar to Pascarella and Chapman's results in that goal commitment had the strongest direct effects on persistence. However, the two models were dissimilar in that academic and social integration had direct effects on persistence for the two-year HSB sample.

Pascarella, Duby, and Iverson found that sex, aptitude, high school grades, academic integration and social integration directly affected persistence. The two-year HSB sample results were similar to Pascarella, Duby, and Iverson's results in that academic and social integration

had direct effects on persistence, and that social integration had a negative effect on persistence. Unlike Pascarella, Duby, and Iverson though, goal commitment had significant direct effects on persistence. However, the models were similar in that social integration had no effect on institutional commitment and that institutional commitment had no direct or indirect effects on persistence.

Overall, it can be concluded that, although the two-year HSB results had some findings in common with the Pascarella and Chapman, and Pascarella, Duby, and Iverson studies, differences were also noted, primarily in that the two-year HSB path model had no background variables directly influencing persistence, the major focal point of comparison. Therefore, the findings for the two-year HSB sample failed to support earlier findings by Pascarella and Chapman, and Pascarella, Duby, and Iverson, that initiated interest in the present study. An interesting finding, though, was that social integration had a negative effect on persistence, just as it did in the Pascarella, Duby, and Iverson study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine the extent to which Tinto's model of the dropout process applied to a national sample of community college students. The study used strict definitions of persistence/dropout in testing Tinto's model. Two different measures of persistence were used in the study: persistence in higher education, and persistence in the institution. A persister in higher education had to have either received a degree/certificate or persisted in some form of higher education beyond June, 1982. An institutional persister had to meet the same requirements specified above and, in addition, either have received a degree/certificate from the institution first attended or persisted in that institution beyond June, 1982.

Path analysis was used to test a theoretical model on two-year and four-year student samples from the HSB data set. The path model tested was a Tinto-based model Munro (1981) had applied to a four-year sample of students from the NLS data set. The resulting path models from the two-year and four-year HSB samples each were compared to Munro's results on the NLS sample, then the two- and four-year HSB sample results were compared. Finally, the path model obtained on the two-year HSB sample was compared to the path

models obtained in two earlier studies (Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983) that applied Tinto-based models to commuter students. The purpose of the various comparisons was threefold: to assess the robustness of Munro's model, to assess the similarities and differences between two-year and four-year students regarding the effects of specified variables on persistence, and to determine if the findings of recent studies on commuter samples (Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983), that found background variables directly affecting persistence, could be duplicated.

The second phase of the study involved another set of path analyses applied to the two-year and four-year HSB student samples, but with a modified path model. The path model used in the second phase contained most of the variables used in the first phase of the study, but with the addition of a new variable, work status, to determine if the working status of students helped explain variance in persistence.

In comparing the different models, results indicated that there were substantial differences between the path models obtained for the four-year NLS students (Munro, 1981) and the four-year HSB students. Also, quite surprisingly, results for the two-year HSB sample were more similar to Munro's findings with the NLS sample than were the results

for the four-year HSB sample, though there were notable differences in the path models obtained.

The path models for the two-year HSB samples were expected to show background variables directly affecting persistence, when in fact, only one background variable, locus of control, directly affected persistence, defined as persistence in higher education. Conversely, the models generated on the four-year HSB samples revealed that, for one of the models, five of the six variables directly affecting persistence were background variables, and for the other model, two of the five variables directly affecting persistence were background variables. These findings were in direct contrast to expectations based on results of previous studies that generally supported Tinto's model (Pascarella & Terenzinni, 1983; Pascarella & Chapman, 1983; Terenzinni & Pascarella, 1978; 1980; 1983), where the effects of background variables were minimal, or mediated by academic and social integration.

Comparison of the two-year HSB results to those of Pascarella and Chapman (1983) and Pascarella, Duby, and Iverson (1983), supported the lack of influence or negative influence of social integration on persistence in the institution, but did not support findings from those studies which showed background variables directly influencing persistence.

Findings of the exploratory phase indicated that the working status of students had no direct nor indirect effects for either the two-year or four-year HSB samples, regardless of the way persistence was defined.

Even though many of the findings were unexpected, not all outcomes of the study contrasted with expectations. For example, one of the most salient findings of the study was that, for all path models applied to the two-year and four-year HSB samples, goal commitment consistently had the strongest direct effects on persistence of all variables in the models. This finding supported Tinto's assertion that "...it is his [the student's] commitment to the goal of college completion that is most influential in determining college persistence" (Tinto, 1975, p. 102). Given the nature of the goal commitment variable, in that goal commitment was measured by response to the question, "What is the lowest level of education you would be satisfied with?", it seems logical that there would be a strong relationship between persistence and those students who aspired to higher levels of education. The goal commitment variable appears similar to another variable, intention to persist, that was included in a Tinto-based model in a study by Bean (1980). The intention to persist variable was measured by asking students if they intended to return to college the fall semester following their freshman year in college. Not surprisingly, the variable had a strong

positive direct effect on predicting persistence and was able to add considerably to the explained variance in persistence. Goal commitment appears to share a similar ability in predicting persistence as the intention to persist variable. It seems sensible, from a practical standpoint, to expect that those with higher educational aspirations and those who intend to return to college would be the students most likely to persist.

Another consistent finding throughout all models tested, though conflicting with Tinto's theory and other research findings (Bean, 1980, 1985; Pascarella & Terenzini, 1983), was that institutional commitment failed to have direct effects on persistence for any of the models tested, and it only indirectly influenced persistence in one of the models. No explanation for this finding is readily apparent, although Munro (1981) also found that institutional commitment had no direct nor indirect effects on persistence in either of the models she tested. It may be that the measures used to assess institutional commitment were inadequate for capturing the essence of the construct, which would explain why neither this study nor Munro's found institutional commitment to have any noteworthy effects.

Discussion

Overall, the results of this study were disappointing in that none of the hypotheses set forth were supported by the findings. There are several possible explanations for the results. One explanation suggests that the Munro model is not robust, meaning that, although results on the NLS sample tended to support Tinto's theory, the Munro model is unable to duplicate those results when applied to a different sample from a similar, if not the same population. Thus, the model is stable only under certain unknown conditions.

Another explanation of the outcomes of this investigation may be that the students in the current study represent an entirely different student cohort, differing from those in Munro's study. The 1980 HSB students grew up in a different era, and may differ substantially from the 1972 NLS sample of high school graduates. For example, the NLS students grew up during such significant social events as the civil rights movement, the women's movement, the Vietnam war, and student protests characteristic of the times. The HSB cohort, on the other hand, may not have been influenced by the above-mentioned events, but were influenced by events of their own formative years, such as economic uncertainty and conservative postures or philosophies. The students of the 1980 cohort also have been characterized as more vocationally-oriented than

earlier cohorts (Levine, 1980). The effects of such cohort differences are unknown, particularly on college persistence, but differences may be great enough to significantly affect Munro's path model results. It may be that the careerism so characteristic of students today is only a partial reflection of attitudes and values that have far-reaching implications in other areas of life, including patterns of college persistence. But such differences may only explain why results varied so much from Munro's findings, and do little to explain why the results of this study differ so markedly from results of other studies that used recent high school graduates.

Perhaps the model variables used in Munro's original study were defined in a somewhat different manner than they were in the current study, which produced different outcomes in the path models. For example, Munro's criteria to measure persistence differed from the criteria used in this study. Even if the criteria had been the same, Munro did not indicate the criteria she used for her two measures of persistence. Obviously, any variation in measures for the dependent variables could have significant effects on outcomes of the analyses. The outcomes of the various analyses performed were so different from expectations based on previous studies (Pascarella & Terenzinni, 1978; 1983) of four-year students, it seems likely one or more of the above explanations may be true.

However, the most probable reason for the obtained differences between this study and Munro's, and this study and other studies, is related to the manner in which persistence was conceptually and operationally defined. In the current study, great care was taken to ascertain that those identified as dropouts were indeed dropouts, and not stopouts. Thus, to be considered a dropout, one had to have been out of college for at least twenty months.

Conversely, most studies that have applied Tinto's model have classified students as dropouts if they did not return to college the fall semester following the freshman year in college, or if they were not engaged in postsecondary education at the time of the last follow-up. In such studies, students were classified as persisters or dropouts based upon their behavior at a particular point in time. It may be inappropriate then, to compare the outcomes of this study to outcomes of similar studies because the dependent variables may represent markedly different phenomena.

Conclusion

This study differed from other college attrition studies that used Tinto's model primarily in the way the dependent variables were defined. The definition of dropout was highly specific, with regard to the length of time the student had to have been a college dropout, and there were

two different classifications of dropouts. Perhaps when such a strict definitions of dropout are used with the Tinto model, the integration variables (social and academic integration) that would usually have more influence in persistence/dropout decisions, lose some of their influence to student background characteristics. This indicates that the ability of Tinto's model to explain persistence is sensitive to changes in the definition of persistence. This may mean that, as the definition of college dropout changes from one who simply fails to re-enroll for a particular semester, to one who fails to re-enroll for a specified length of time, the ability of academic and social integration to explain persistence diminishes, and student background characteristics take on more importance in persistence decisions, in relation to academic and social integration.

And, even though the Tinto model may be sensitive to definitions of persistence, there is evidence that the model was useful for explaining persistence at the institutional level, because social and academic integration had more influence on decisions pertaining to institutional persistence than they did on decisions pertaining to persistence in higher education. Thus, it may be said that the findings of this study support Tinto's assertion that academic and social integration play an important role in

directly influencing persistence decisions, at least at the institutional level.

However, for the other persistence measure, persistence in higher education, neither social nor academic integration had direct effects on persistence for four-year students, and only academic integration directly affected persistence for two-year students. This finding indicates that the background characteristics of students may be more influential than individual institutional characteristics in explaining the long term persistence behavior of students in the system of higher education. The path models obtained indicated this to be true for four-year students, though it was not clearly the case for two-year students. Perhaps then, in viewing persistence as a long-term behavior pattern, maybe institutionally-based factors play a less important role than background characteristics in the ultimate decisions to continue or terminate involvement in postsecondary education. Hence, this finding challenges the utility of Tinto's model, especially regarding the concepts of academic and social integration, in explaining the long-term persistence patterns of students.

Results of this study indicated that the Tinto model's ability to explain persistence was dependent upon the criteria used for defining persistence/dropout. Perhaps then, in furthering efforts to better understand the persistence/dropout phenomenon, it would be helpful in

future studies to strive toward consistency or standardization in defining persistence/dropout so that results can be more comparable from one study to another.

Persistence was defined as it was in this study because of the nature of attendance patterns common to community college students, and because of the curiosity of the researcher. If persistence had been defined as in past studies, results may have more closely approximated results from previous studies, though this is unknown.

For many practitioners, persistence will be studied only as it pertains to the institution of their association. And obviously, such a focus has much practical importance. For others who are interested in furthering knowledge pertaining to the dropout phenomenon, the more general focus of inquiry should perhaps be in discovering factors which affect the long-term persistence/dropout patterns of students, whether they are enrolled in a specific type of institution, or in the system of higher education in general. Thus, understanding the phenomenon of college dropout, both at the institutional level and at the system level, has practical and theoretical importance.

The results of this study have raised a question pertaining to the care with which researchers specify the phenomenon under study. And, in the case of persistence, it seems likely that the criteria used to define persistence is crucial to future investigations. Researchers need to be

aware of this distinction as they venture further to investigate the phenomenon.

More studies should be conducted and some consensus should be reached in establishing a common definition for persistence, so that results from different studies that use Tinto's model can be more generalizable. In particular, long-term dropout, as distinguished from short-term dropout, needs to be investigated, focusing on the phenomenon at both institutional and system levels. Future studies should also be conducted to assess differences between two- and four-year college students with regard to Tinto's model, taking into account how definitions of persistence/dropout may affect the outcomes.

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APPENDIX A

Matrices of the direct effects of
the variables in the models tested.

TABLE A

MATRIX OF DIRECT EFFECTS FOR MUNRO MODEL - FOUR-YEAR HSB SAMPLE (PRSTHED)

	PRSTHED	GOAL	INST	ACDINT	SOCINT	EDASP	PRNTASP	HSGPA	SLF	LOCUS	APT
GOAL	.309										
INST	.033	.054									
ACDINT	.010	.077	.556								
SOCINT	-.019	.025	.212	.094							
EDASP	.029	.268	-.001	-.003	-.014						
PRNTASP	-.046	.069	-.041	-.010	-.003	.289					
HSGPA	.086	.060	-.073	.293	.024	.094	.066				
SLF	.027	-.018	-.062	-.052	-.071	-.054	-.076	-.121			
LOCUS	.020	.006	.023	.034	.012	.061	.008	.022			
APT	.076	.073	-.082	.111	-.078	.119	.124	.489			
GNDR	.040	.045	-.023	-.040	-.011	.018	-.004	-.169	-.056	-.083	.113
RACE	.022	.101	.027	-.033	-.076	.077	.253	-.044	-.096	-.154	-.393
SES	.103	.077	-.004	.059	.078	.106	.135	-.093	-.076	.127	.198

TABLE B

MATRIX OF DIRECT EFFECTS FOR MUNRO MODEL - FOUR-YEAR HSB SAMPLE (PRSTINST)

	PRSTINST	GOAL	INST	ACDINT	SOCINT	EDASP	PRNTASP	HSGPA	SLF	LOCUS	APT
GOAL	.234										
INST	.003	.040									
ACDINT	.076	.089	.562								
SOCINT	.077	.033	.215	.096							
EDASP	-.022	.283	.001	-.001	-.011						
PRNTASP	-.040	.067	-.045	-.011	-.001	.299					
HSGPA	.123	.049	-.081	.296	.032	.088	.065				
SLF	.023	-.012	-.062	-.053	-.067	-.060	-.078	-.120			
LOCUS	.016	.009	.016	.032	.010	.052	.012	.016			
APT	.025	.069	-.087	.117	-.083	.128	.115	.489			
GNDR	.009	.035	-.024	-.033	-.010	.018	-.005	-.171	-.058	-.089	.116
RACE	.020	.108	.017	-.037	-.069	.080	.250	-.036	-.092	-.146	-.387
SES	.048	.069	-.012	.051	.077	.106	.135	-.087	-.079	.129	.197

TABLE C

MATRIX OF DIRECT EFFECTS FOR MUNRO MODEL - TWO-YEAR HSB SAMPLE (PRSTHED)

	PRSTHED	GOAL	INST	ACDINT	SOCINT	EDASP	PRNTASP	HSGPA	SLF	LOCUS	APT
GOAL	.325										
INST	.044	.010									
ACDINT	.111	.120	.465								
SOCINT	-.058	-.017	.247	.115							
EDASP	.005	.276	.018	.074	.026						
PRNTASP	.040	.056	-.053	.004	-.023	.305					
HSGPA	.029	.046	-.079	.285	.018	.170	.021				
SLF	-.054	-.051	-.048	-.112	-.086	-.031	-.010	-.179			
LOCUS	-.085	-.008	.035	.019	.038	.104	.091	.006			
APT	.058	.099	-.014	.188	-.112	.008	.107	.394			
GNDR	.037	.053	-.008	-.028	.028	.007	.016	-.195	-.065	-.067	.127
RACE	.035	.077	-.017	.040	.064	.156	.216	-.074	-.067	-.101	-.372
SES	.058	.026	-.023	-.007	-.042	.117	.161	-.091	-.121	.109	.084

TABLE D

MATRIX OF DIRECT EFFECTS FOR MUNRO MODEL - TWO-YEAR HSB SAMPLE (PRSTINST)

	PRSTINST	GOAL	INST	ACDINT	SOCINT	EDASP	PRNTASP	HSGPA	SLF	LOCUS	APT
GOAL	.156										
INST	.052	.010									
ACDINT	.091	.118	.473								
SOCINT	-.117	-.017	.247	.114							
EDASP	.020	.268	.022	.064	.035						
PRNTASP	.024	.069	-.052	.006	-.026	.305					
HSGPA	.030	.056	-.094	.300	.013	.173	.032				
SLF	.021	-.061	-.052	-.100	-.072	-.035	.001	-.190			
LOCUS	-.032	-.012	.033	.021	.032	.115	.096	.013			
APT	-.022	.097	-.013	.170	-.110	.016	.097	.385			
GNDR	-.008	.047	-.010	-.013	.019	.014	.031	-.199	-.068	-.066	.132
RACE	.071	.088	-.009	.038	.054	.168	.226	-.074	-.058	-.097	-.372
SES	.010	.020	-.016	-.007	-.052	.113	.168	-.101	-.117	.102	.071

TABLE E

MATRIX OF DIRECT EFFECTS FOR EXPLORATORY MODEL - FOUR-YEAR HSB SAMPLE (PRSTHED)

	PRSTHED	INST	GOAL	SOCINT	ACDINT	EDASP	WORK
INST	.029						
GOAL	.308	----					
SOCINT	----	.276	----				
ACDINT	.012	----	.111	----			
EDASP	----	----	.288	----	----		
WORK	-.033	----	-.082	.016	----	----	
HSGPA	.086	----	.058	----	.295	.115	.013
SLF	.025	----	-.028	----	-.065	-.089	-.007
APT	.087	----	.072	----	.112	.176	.115
GNDR	.037	----	.042	----	-.045	.009	-.046
RACE	-.015	----	-.113	----	.043	-.147	.035
SES	.098	----	.086	----	.068	.148	-.106

TABLE F

MATRIX OF DIRECT EFFECTS FOR EXPLORATORY MODEL - FOUR-YEAR HSB SAMPLE (PRSTINST)

	PRSTINST	INST	GOAL	SOCINT	ACDINT	EDASP	WORK
INST	.029						
GOAL	.222	----					
SOCINT	----	.280	----				
ACDINT	.072	----	.116	----			
EDASP	----	----	.303	----	-.003	----	
WORK	-.025	----	----	-.084	.010	----	
HSGPA	.121	----	.048	----	.298	.109	.016
SLF	.022	----	-.022	----	-.065	-.095	-.006
APT	.021	----	.069	----	.118	.181	.115
GNDR	.006	----	.032	----	-.038	.009	-.053
RACE	.002	----	.119	----	-.047	.153	-.041
SES	.043	----	.077	----	.060	.149	-.114

TABLE 6

MATRIX OF DIRECT EFFECTS FOR EXPLORATORY MODEL - TWO-YEAR HSB SAMPLE (PRSTHED)

	PRSTHED	INST	GOAL	SOCINT	ACDINT	EDASP	WORK
INST	.020						
GOAL	.330	----					
SOCINT	----	.304	----				
ACDINT	.113	----	----	----			
EDASP	----	----	.293	----	.082		
WORK	-.019	----	----	-.052	.039	----	
HSGPA	.029	----	.044	----	.286	.177	.006
SLF	-.043	----	-.049	----	-.124	-.050	-.032
APT	.043	----	.104	----	.177	.086	.140
GNDR	.044	----	.054	----	-.025	-.004	-.072
RACE	.037	----	.085	----	.049	.224	-.055
SES	.061	----	.032	----	-.013	.175	.039

TABLE H

MATRIX OF DIRECT EFFECTS FOR EXPLORATORY MODEL - TWO-YEAR HSB SAMPLE (PRSTINST)

	PRSTINST	INST	GOAL	SOCINT	ACDINT	EDASP	WORK
INST	.013						
GOAL	.166	----					
SOCINT	----	.304	----				
ACDINT	.095	----	.121	----			
EDASP	----	----	.288	----	.073		
WORK	.002	----	----	-.046	.020	----	
HSGPA	.032	----	.054	----	.300	.185	.017
SLF	.029	----	-.059	----	-.110	-.052	-.035
APT	-.017	----	.102	----	.163	.095	.120
GNDR	-.006	----	.049	----	-.012	.007	-.065
RACE	.073	----	.097	----	.046	.241	-.071
SES	.020	----	.028	----	-.013	.173	.034

APPENDIX B

Matrix of the indirect effects of
the variables on the persistence measures.

TABLE A

MATRIX OF TWO-TAILED PROBABILITIES OF T-VALUES FOR INDIRECT EFFECTS

	MUNRO PATH MODEL				EXPLORATORY PATH MODEL			
	TWO-YEAR SAMPLES		FOUR-YEAR SAMPLES		TWO-YEAR SAMPLES		FOUR-YEAR SAMPLES	
	PRSTHED	PRSTINST	PRSTHED	PRSTINST	PRSTHED	PRSTINST	PRSTHED	PRSTINST
GOAL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
INST	.810	.810	.019	.094	1.000	1.000	1.000	1.000
ACDINT	.007	.046	.000	.060	.001	.006	.000	.000
SOCINT	.112	.059	.002	.007	.575	.736	.175	.198
EDASP	.000	.001	.000	.000	.000	.000	.000	.000
PRNT	.005	.041	.000	.002	----	----	----	----
HSGPA	.000	.002	.000	.000	.000	.001	.000	.000
SLF	.000	.005	.000	.000	.003	.005	.002	.001
LOCUS	.183	.223	.048	.106	----	----	----	----
APT	.000	.000	.000	.000	.000	.001	.000	.000
SEX	.156	.980	.372	.208	.254	.366	.032	.291
RACE	.842	.659	.002	.001	.000	.001	.000	.000
SES	.015	.186	.000	.000	.036	.091	.000	.000
WORK	----	----	----	----	.266	.588	.928	.885

APPENDIX C

Questions from the Base-Year, First- and Second Follow-up
Surveys of High School and Beyond: A National Longitudinal
Study of 1980 High School Seniors

Note: The two letters preceding each question number
identify which survey contained the question.

BB (Base-Year)
FE (First Follow-up)
SE (Second Follow-up)

BB007 (High School Grades)

Estimate how well you have done in all of your course work or programs during high school. (MARK ONE)

Mostly A (a numerical average of 90-100)	1
About half A and Half B (85-90)	2
Mostly B (80-84)	3
About half B and half C (75-79)	4
Mostly C (70-74)	5
About half C and half D (65-69)	6
Mostly D (60-64)	7
Mostly below D (below 60)	8

BB058 (Items measuring self-concept)

- (A) I take a positive attitude toward myself.
- (C) I feel I am a person of worth, on an equal plane with others.
- (D) I am able to do things as well as most other people.
- (H) On the whole, I am satisfied with myself.

Strongly agree	1
Agree	2
Disagree	3
Disagree strongly	4

BB058 (Items measuring locus of control)

- (B) Good luck is more important than hard work for success.
- (E) Every time I try to get ahead, something or somebody stops me.
- (F) Planning only makes a person unhappy, since plans hardly ever work out anyway.
- (G) People who accept their condition in life are happier than those who try to change things.

Strongly agree	1
Agree	2
Disagree	3
Disagree strongly	4

BB066 (Perceived parental aspirations)

How far in school do you think your mother wants you to go? (MARK ONE)

- Less than high school graduation 1
- High school graduation only 2
- Vocational, trade, or business(Less than two years 3
school after high school (Two years or more 4
- College program(Less than two years of college 5
(Two or more years of college
(including two-year degree) 6
(Finish college (four or five year
degree) 7
(Master's degree or equivalent 8
(Ph.D., M.D., or other advanced
professional degree 9

BB067 (Educational aspirations)

FE13 (Goal commitment)

What is the lowest level of education you would be satisfied with? (MARK ONE)

- Less than high school graduation 1
- High school graduation only 2
- Vocational, trade, or business(Less than two years 3
school after high school (Two years or more 4
- College program(Less than two years of college 5
(Two or more years of college
(including two-year degree) 6
(Finish college (four or five year
degree) 7
(Master's degree or equivalent 8
(Ph.D., M.D., or other advanced
professional degree 9

BB083 (Sex)

(MARK ONE)

- Male 1
- Female 0

BB089 (Race)

What is your race? (MARK ONE)

- White 1
- Other 2

FE23 (Work Status)

Which months did you work (full- or part-time) or serve in the military since you left high school? (MARK ALL THAT APPLY)

1980	1981	1982	
June.....[]	January.....[]	July.....[]	January.....[]
July.....[]	February....[]	August.....[]	February....[]
August.....[]	March.....[]	September..[]	
September....[]	April.....[]	October....[]	
October.....[]	May.....[]	November...[]	
November.....[]	June.....[]	December...[]	
December.....[]			

FE32

Which months were you enrolled in or taking classes in any school between the time you left high school and the end of February 1982? (MARK ALL THAT APPLY)

1980	1981	1982	
June.....[]	January.....[]	July.....[]	January.....[]
July.....[]	February....[]	August.....[]	February....[]
August.....[]	March.....[]	September..[]	
September....[]	April.....[]	October....[]	
October.....[]	May.....[]	November...[]	
November.....[]	June.....[]	December...[]	
December.....[]			

FE33B

What kind of school is this? (MARK ONE)

- Vocational, trade, business, or other career training school 1
- Junior or community college (2-year) 2
- College or university (4 years or more) 3
- Other (DESCRIBE) 4

FE33C

When did you START attending this school? (MARK OVALS FOR MONTH AND YEAR)

MONTH		YEAR
January.....[]	July.....[]	1980
February....[]	August.....[]	1981
March.....[]	September..[]	1982
April.....[]	October....[]	
May.....[]	November...[]	
June.....[]	December...[]	

FE33C

When did you LEAVE this school? (MARK OVALS FOR MONTH AND YEAR)

MONTH		YEAR
January.....[]	July.....[]	1980
February....[]	August.....[]	1981
March.....[]	September..[]	1982
April.....[]	October....[]	
May.....[]	November...[]	
June.....[]	December...[]	

FE33J

Is this field of study in a vocational or academic program? (MARK ONE)

- A vocational program
(does not lead to a bachelor's degree) 1
- An academic program
(typically leads to a 4- or 5-year bachelor's degree) 2

FE41 (Academic Integration)

Estimate how well you have done in all of your course work or programs during the period since you left high school. (MARK ONE)

- Mostly A (3.75-4.00 average) 1
- About half A and Half B (3.25-3.74 grade point average) 2
- Mostly B (2.75-3.24 grade point average) 3
- About half B and half C (2.25-2.74 grade point average) 4
- Mostly C (1.75-2.24 grade point average) 5
- About half C and half D (1.25-1.74 grade point average) 6
- Mostly D or below (less than 1.25) 7

FE40D (Academic Integration)

With regard to your education and training during the last year you were in school, how satisfied as a whole were you with each of the following:

(D) My intellectual growth

- Very satisfied 1
- Somewhat satisfied 2
- Neutral or no opinion 3
- Somewhat dissatisfied 4
- Very dissatisfied 5

FE40A (Institutional commitment)

FE40C (Institutional commitment)

With regard to your education and training during the last year you were in school, how satisfied as a whole were you with each of the following:

- (A) The ability, knowledge, and personal qualities of most teachers
- (C) Development of my work skills

- Very satisfied 1
- Somewhat satisfied 2
- Neutral or no opinion 3
- Somewhat dissatisfied 4
- Very dissatisfied 5

FE40B (Social Integration)

With regard to your education and training during the last year you were in school, how satisfied as a whole were you with each of the following:

(B) The social life

- Very satisfied 1
- Somewhat satisfied 2
- Neutral or no opinion 3
- Somewhat dissatisfied 4
- Very dissatisfied 5

FE52

Since high school, had you earned any certificate, license, diploma or degree of any kind up to the end of February 1982? (MARK ONE)

Yes....[]

No.....[]

SE18J

Did you complete requirements for that certificate, degree or diploma from this school? (MARK ONE)

Yes....[]

No.....[]

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the scanned document**