ADMISSIONS COMMITTEE RATINGS AS PREDICTORS OF PERSISTENCE IN MASTER'S-LEVEL THEOLOGICAL EDUCATION

James H. Thames, B.A., Th.M.

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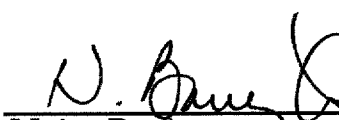

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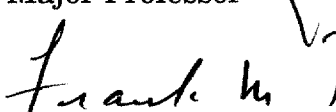

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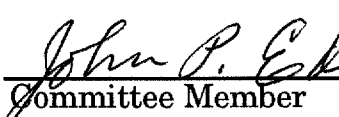

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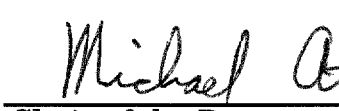
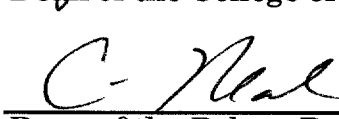
Program Coordinator of Higher Education



Chair of the Department of Counseling, Development, and Higher Education

Dean of the College of Education



Dean of the Robert B. Toulouse School of Graduate Studies

Thames, James H., Admissions Committee Ratings As Predictors of Persistence in Master's-Level Theological Education. Doctor of Philosophy (Higher Education), December 1997, 128 pp., 15 tables, 12 illustrations, references, 20 titles.

This research attempted to ascertain whether the ratings of applicants in the admissions-evaluation process of Dallas Theological Seminary (Admission Committee Rating, or ACR) were related to persistence in seminary study sufficiently to allow reasonable prediction of completion based on the strength of the ratings. Five ACRs were examined—the total ACR and its four components, strength of previous academics, personal references, potential and promise for ministry, and previous ministry experience. Other non-admissions factors were also examined to see what relationship they had to persistence. Those factors were year of matriculation, age at matriculation, gender, marital status, ethnicity, nationality, types of previous higher education, whether or not financial aid was received (if known), and the total amount of financial aid received (if known). Persistence in the study was defined as graduation from the seminary's major four-year master's degree program (Th.M.) within the time limits published for the degree.

The ACRs were collected for 788 Th.M. students, 572 of whom had graduated and 216 of whom had not. The ACRs were analyzed to see what relationship, if any, existed between the ratings and persistence. Means were tested for significance at the 0.05 level using *t*–tests for independent means, correlations computed were point biserial correlations, and the predictive

relationship of the ACR components was analyzed using discriminant analysis, a stepwise, multiple regression model.

Analysis results indicated that only two of the five ACRs were statistically significant, ministry potential and ministry experience, but the relationship with completion was weak. The conclusion reached was that the relationship between the strength of the admissions evaluation and persistence was practically insignificant and contributed little to the ability to predict completion on that basis alone.

The analysis of the non-admission factors indicated that only two of the factors had any practical relationship with completion, whether subjects received financial aid, and the amount of aid received.

The implications of the findings on admission and persistence are discussed, and several topics for further study are recommended.

ADMISSIONS COMMITTEE RATINGS AS PREDICTORS OF PERSISTENCE IN MASTER'S-LEVEL THEOLOGICAL EDUCATION

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

James H. Thames, B.A., Th.M.
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The greatest appreciation, however, goes to my wife and daughters—to the latter for sacrificing evenings, weekends, and vacations with their daddy as the project neared completion, and for understanding in ways beyond their years that Daddy's lap was only temporarily unavailable. And especially to my dear wife, Laurie, for her unwavering commitment to me and to seeing the project finished, and for her loving encouragement, support, and patience when at times it seemed the project would never be finished. Without her it would not have been.

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INTRODUCTION

Until the mid 1980s, theological graduate schools and seminaries, whose major mission was preparing men and women for full-time Christian ministry, operated differently from other state and private institutions of higher education, especially in the areas of recruitment and retention. The reason for this was the belief that an individual's conviction that he or she was called to and gifted for ministry was a strong factor in determining admissibility and eventual success in ministry preparation. For that reason perception of call and gift often superseded other factors when considering an individual's persistence in his or her studies. For many theological seminaries, evaluating a student's call and giftedness for ministry, subjective as that may have been, was and is an important part of the admission process and an important consideration in student retention.

The conviction still remains that students who have a strong aspiration for ministry are more likely to complete a program of study that they believe will prepare them for that particular ministry. In more recent years, however, an increase in the numbers of students who withdraw from theological seminaries before completing their studies has occurred in spite of their initial conviction that they were being led into full-time ministry. This has led some faculty and administrators in theological education to begin asking heretofore unasked questions—what makes students preparing for Christian ministry complete their program of study, and what connection, if

any, do the admissions-evaluation criteria play in predicting the persistence of students in theological higher education?

Educational research is replete with studies on student retention and predictors of success in education, largely, however, at the baccalaureate level and generally in terms of post-admission factors. And while many of the conclusions reached in those studies may be transferable to graduate education, and even to some extent graduate theological education, the transference in the case of the latter is more limited. Consequently, the questions of what makes students preparing for ministry persist to the completion of their studies and what role, if any, the admissions process plays in predicting persistence still remain.

These questions have surfaced at Dallas Theological Seminary, a conservative evangelical seminary founded in 1924. Dallas Seminary focuses on the preaching and teaching of the Bible as the foundation for significant and successful Christian ministry.[1] The school, a denominationally-independent seminary not affiliated with any university, currently ranks as one of the largest theological seminaries in North America. Its current enrollment in all master's and doctoral programs across all campuses is 1564 students.[2] Most of the seminary's rapid growth occurred in the 1970s and early 1980s and was due in large measure to the reputation the school enjoyed and the quality and notoriety of its faculty. During those years, the

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[1] From the history of Dallas Theological Seminary as published in various articles and documents and in the Seminary Catalog.

[2] Fall 1995 census enrollment headcount from official documents maintained in the Office of the Registrar at Dallas Theological Seminary.

seminary was in a position to be more selective in its admission procedures, accepting only those students who were determined to be the most likely to continue on into full-time ministry.

In the late 1980s, however, Dallas Seminary began experiencing a decline in enrollment, reflective of a decline in enrollments throughout higher education in general. With this decline, the seminary realized that a more proactive recruiting effort was necessary and thus established an office of recruitment to interface with the admissions department. Enrollments, however, continued to decline.

Additional steps were taken to encourage recruitment at Dallas Seminary during these years. The most notable were changes in the Th.M. curriculum and the development of additional degree programs.

Until the early 1970s, Dallas Seminary had only three degree programs: 1) its major four-year master of theology (Th.M.) program, which garnered the majority of the seminary's enrollment; 2) the one-year master of sacred theology (S.T.M.) program, equivalent to the Th.M. but built on a three-year master of divinity degree from another seminary; and 3) the doctor of theology (Th.D.) program.

Because of the continuing decline in enrollments in these programs and in response to the needs of an increasingly diverse student population and constituency, several two-year master's of arts programs were established in the late 1970s and early 1980s. A second, ministry-oriented doctoral program, the doctor of ministry (D.Min.) degree, was added as well. Each of these new programs was designed to meet the needs of students with more specialized interests in theological education.

In the 1980s the Seminary also branched out geographically and began establishing extension programs in other parts of the country where Dallas Seminary historically drew proportionally larger numbers of students. While the Seminary made many changes in procedures, curriculum, and delivery systems, the admissions process remained essentially the same.

Although enrollments have resurged at Dallas Seminary in the 1990s, arguably as a result of the changes cited above, retention of students began to decline. Currently approximately 75-80 percent of those students enrolling in the master of theology degree program finish that program, but in the late 1970s and early 1980s that number was closer to 90 percent.[3] This led to an increased focus on the retention of continuing students rather than just the recruitment of new students. One aspect of that focus resulted in discussions about the admission procedures employed by Dallas Theological Seminary and whether there was any connection between the admissions-evaluation process itself and the persistence of students in a seminary degree program. The desired goal was to determine if the admissions process itself might be used to assist the seminary in predicting who will or will not graduate. Retention efforts could then be focused accordingly. If the admissions process does not provide any significant correlation or predictability, then that process may need to be re-evaluated. This has become even more important to the seminary since its admissions-evaluation procedures have remained unchanged during the years when the seminary experienced a great many changes as noted above.

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[3] Retention statistics on record at Dallas Theological Seminary.

It was this concern for understanding the ability of the admissions process to predict the persistence of students in their programs of study in theological higher education that led to this research study.

Rationale

It seemed logical to assume that some association exists between admissions and retention. In other words, if the admissions process works effectively in identifying those who can benefit most from an institution's programs of study, and in identifying those who are most likely to be interested in those programs, one can expect a higher rate of retention and a higher completion rate. This assumption led to the study problem, namely to define what constitutes persistence in seminary studies, as well as to determine the factors that are indicators of persistence. Specifically, the candidate attempted to evaluate admission criteria to ascertain what correlation, if any, those criteria have with success rates in completing a seminary degree program and whether that correlation can be used in any way as a predictor of persistence.

Statement of the Problem

This study attempted to answer the specific research question: Can the Admissions Committee Rating (ACR) of Dallas Theological Seminary be used to predict persistence in the Master of Theology program at Dallas Seminary? Concurrently, can the component parts of the ACR predict persistence more effectively than the total ACR itself, and what association, if any, do extraneous demographic variables have with persistence?

Purpose of the Study

The purpose of this study was to examine whether predictors of persistence in graduate theological education, in particular at Dallas Theological Seminary, existed at the admissions level. In other words, were the criteria used in the admissions process in themselves able to predict completion? To accomplish this, the study focused on evaluating the Admissions Committee Rating (ACR) of the seminary and its component parts to determine if a statistically valid association exists between the magnitude of the ACR and its component parts and the completion of the Th.M. degree program. The study also included other demographic variables that retention research in general has indicated are associated with student persistence. These latter were included to help control for the main variable, student persistence, being studied.

Significance of the Study

Dallas Theological Seminary's ability to identify persisters in seminary education and, as a corollary, the ability to identify those who are at risk for dropping out of seminary, can be a powerful tool in developing programs that help in student retention, not only at Dallas Seminary, but at other seminaries and graduate schools of theology as well. Consequently, a research study able to determine if such predictors exist could be valuable to schools seeking to selectively manage enrollments.

Dallas Theological Seminary readily acknowledged that student retention and the factors that either predict it or improve it are complex. The seminary also recognized that it can learn a great deal from the wealth of

information that already exists in this field. What those studies have not provided, however, is any relevant information on whether the admissions criteria of a graduate school, particularly a theological seminary, provide any useful information associated with student persistence.

For the last ten years Dallas Seminary has attempted to develop and improve its retention focus. Development of student support services, increases in financial aid programs, development of a faculty advising program, and the addition to the curriculum of small focus-groups for Th.M. students have helped in retention. The seminary has also worked to develop programs and support for its women students and ethnic minorities to ensure that they have the same opportunities to succeed at the seminary as any other student.

In spite of these changes, and as mentioned previously, the seminary made no changes at all in the method it used to evaluate applicants for admission. Further, it had no indication whether its admissions process had any relevant bearing on the subsequent performance of its students.

The seminary recognized that this study might indicate that no changes in the admissions process are warranted, but there was an increasing awareness on the part of the administration that the admissions-evaluation process should itself be evaluated, even if no changes were indicated. The administration agreed that the study would help determine what role the current admissions process played in student retention if any. Using the results of the study, a determination could be made based on relevant data rather than on assumptions about whether the admissions process could or should be adapted to better serve as a predictor of

persistence in the seminary's master's level degree programs and whether changes to the admissions-evaluation process would be appropriate.

Beyond its significance to Dallas Theological Seminary, it was hoped that this study would also prove useful in evaluating admissions criteria used by other similar theological graduate schools. While it is true that the Dallas Seminary admissions process is unique, many of the factors considered in evaluating applicants at the seminary were also used by other conservative seminaries. In fact, undergraduate grade-point average and personal references are common criteria in admissions processes across graduate schools in general, so they were certainly not unique to Dallas Seminary.

What was unique, however, was the use of nonobjective criteria focusing specifically on an applicant's calling, gift, and promise for ministry, and on an applicant's experience in ministry. These criteria were unique to Dallas Seminary more in *how* they were evaluated than in *that* they were evaluated. Many conservative evangelical seminaries have considered similar criteria in evaluating applicants for admission.

It was hoped that this study would provide information other seminaries might use in evaluating their own admissions criteria, especially where those criteria might be similar to those of Dallas Theological Seminary. One could assume that similar schools would find similar benefits to the information that this study would hopefully provide.

Hypotheses

To carry out the purposes of this study, the following hypotheses were tested.

1. Graduates (persisters) of the Master of Theology (Th.M.) degree program at Dallas Theological Seminary will have higher, statistically-significant mean scores on the Admissions Committee Rating (ACR) and its component parts (previous academic performance [rated based on previous grade point average], references, potential and gift for ministry, and ministry experience), as measured by the standard admissions evaluation form of the seminary, than will nongraduates (nonpersisters).

2. There is a statistically-significant positive relationship between the ACR total rating and its component parts and the completion of the Th.M. degree at Dallas Seminary.

3. The combined relationship of ACR component ratings to persistence is greater than the separate relationship of each component to persistence.

Definition of Terms

The following terms were determined to have unique, subjective, or restricted meaning in the study and consequently were defined.

Admissions Committee Rating (ACR) is defined as that number calculated by adding together the scores of each of the four categories evaluated in the admissions process of Dallas Seminary by each of three admissions evaluators. A maximum score of five could be assigned to any one category with a resulting maximum score of 20 per evaluator and a maximum score of 60 for each applicant. The ACR is reported on the Admissions Committee Applicant Report[4] (ACAR).

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[4] See Appendix A for copies of the Admissions Committee Applicant Report form. The form has varied little since the early 1970s, which precedes the data available

A *graduate* or *persister* for the purposes of this study is defined as a student who completed the master of theology degree program, as evidenced by conferral of the degree, within the eight-year time limit allotted for the Th.M. program. *Nonpersisters* are those who withdrew before graduation, or those who exceeded the eight-year limit, whether or not they eventually graduated. The terms persister/nonpersister, graduate/nongraduate, and completion/noncompletion will be used interchangeably in this study to refer to the dependent variable.

The *cumulative grade point average (GPA),* one of the four components of the admissions evaluation, is derived by converting all grading systems to a 4.0 grading scale[5] before ranking them in the evaluation. All previous undergraduate or graduate work from institutions at which the applicant completed at least 12 credit hours are considered, not just the grade-point average from the institution which conferred the baccalaureate or graduate degree.

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for this study. The ACAR was converted to a computer format by the admissions office in 1990. At that time the form changed from the older version, on which the ratings of each of the admissions evaluators were recorded on the same form, to the current form, on which each admissions evaluator rates the applicant on a separate form with the results entered in the seminary's main computer.

This change in the way applicants are evaluated is discussed further in the Limitations section of this proposal.

[5] For this study and at DTS, a 4.0 grading scale is defined as follows at the bottom of the next page. All GPAs evaluated by the Admissions department are standardized according to this scale.

A/A+	=	4.0	C	=	2.0
A-	=	3.7	C-	=	1.7
B+	=	3.3	D+	=	1.3
B	=	3.0	D	=	1.0
B-	=	2.7	D-	=	0.7
C+	=	2.3	F	=	0.0

References in the study refer not only to the standard forms submitted by the referees on behalf of the applicant, but also to the letter from the applicant's home church. The letter might or might not contain information used by the Admissions Committee members in their evaluation of the applicant.

Gift and promise for ministry, the most subjective of all the independent variables in this study, is defined simply as the aptitude for and commitment to Christian service. It is within this variable that the applicant's *call to ministry,* or perception of God's leading or divine guidance, is considered. For purposes of the study, *call to ministry* is defined as that conviction on the part of the applicant that God has lead or is leading the applicant into a life-long, full-time vocation in Christian ministry. One might surmise that the strength of this conviction along with gift and promise would be a significant indicator of persistence in seminary studies.

Gift and promise for ministry can be compared to some extent to professional aim or vocational goal, which may be a factor in other professional school admissions practices. However this variable is defined, it is difficult to measure and quantify. It certainly is a qualitative variable. The ranking assigned to it is largely based on the experience of the evaluators, who are responsible for determining whether the applicant shows promise for ministry and whether the applicant appears to be called to ministry and appropriately gifted. The ranking assigned to this category is based on the admission evaluators' interaction with the entire admissions application and supporting materials.

Limitations

Many other variables exist (i.e., gender, ethnicity, nationality, age, finances, marital status, employment, advising, sense of community, etc.) which may be factors in predicting persistence in theological education. It was also recognized that for this study to be truly complete in providing information on predictors of persistence in theological education, many of those variables should be considered. At the same time, however, variables other than the ACR and its four components were not considered in the admission process at Dallas Seminary, so while they might have provided useful data from a retention perspective, they did so *after* the fact. In other words, they generally became factors in retention once the student had been admitted, but were not factors in the admission process itself. Yet because these types of variables impacted the dependent variables of the study (graduate vs. nongraduate), they were considered so that their impact on the correlation between ACR and persistence might be better confirmed.

Another limitation of the study was the instrument used to rate applicants in the admissions process. That instrument, the Admissions Committee Applicant Report (ACAR), has never been tested for reliability or validity. Consequently, it is difficult to know whether it actually measures what the seminary believes it measures. In spite of this, the form has been used consistently for many years, and because it has not changed appreciably, there is no reason to believe that the understanding individual evaluators have of the categories the instrument measures have changed significantly over time.

A potential inconsistency in how applicants were evaluated in the admission process also presented a limitation in the study. In establishing its admissions-evaluation process, the seminary recognized the need to control for the divergent opinions of evaluators by requiring a minimum of three evaluators for each application. This certainly helped to avoid isolated excesses in evaluating an applicant by any one evaluator. Over the years, however, at peak times of admission activity some applicants were only evaluated by two admissions committee members. In such cases, the scores given by the two evaluators were averaged to arrive at the third score, which was then used as a basis for arriving at the ACR used for admission consideration. In many cases the Director of Admissions, or one of the admissions staff counselors would use the average scores and adjust them based on their own evaluation of the applicant. There was no way of knowing when this occurred or how often it occurred in the evaluation of applicants over the years and hence the limitation. One would assume, though, that this inconsistency itself would be normalized over time.

Another related limitation of the study was a procedural one. On the completion of the application process, an ACAR form was attached to the application materials and routed to each of the admissions-application evaluators. Until 1992, one ACAR form was used that contained three columns, one for each evaluator. The form and application materials were routed to each of the evaluators in turn. This allowed the second and third evaluators of the application to see the ratings previously assigned. The danger with this procedure was that subsequent evaluations could be skewed by former evaluations, since the first ratings were readily available to subsequent evaluators and could influence their evaluations.

In 1992, the ACAR form was computerized and the admissions office began generating three ACAR forms for each applicant, one for each admissions evaluator. With this new procedure, the admissions office was able to encourage independent evaluations of the applicant by each of the evaluators. This was to be accomplished by having each evaluator return his or her ACAR form directly to the admissions office rather than routing it with the application materials to the next evaluator.

The result of this change was that each admissions evaluator no longer had access to the evaluations of any preceding evaluators. This resulted in more independent decisions on the part of each evaluator. After the application had been reviewed by all three evaluators, the admissions office entered the data in the computer system and generated the ACR. Unfortunately, the admissions office did not always require ACAR forms to be returned directly, or in some cases evaluators did not think to do so, but the result was that often the ACAR forms of the first two evaluators were routed with the application materials, thus negating any benefit of forcing independent evaluations.

One would assume that the ratings by each evaluator prior to 1992 would have been more closely grouped together than those after 1992 since each evaluator's ratings were recorded on the same form. However, this study did not attempt to determine what impact the different methods of evaluation might have had on ACR ratings of applicants. Especially in light of the fact that no consideration was given to that difference in either admitting or denying admission to an applicant. And also due to the fact that it was impossible to determine when post-1992 ACAR forms were either returned directly to the admissions office or routed with the application materials.

Limitations exist in this study also due to the fact that the data collected for evaluation were collected *ex post facto.* No controls could be established to make the data more consistent over time or across individual evaluators. Simply stated, neither the process nor the instrument controlled for differences among those who evaluated applications. One would certainly assume that each admissions-application evaluator would bring a unique perspective and preconceptions to the evaluation process. One could also assume that the ratings of individual evaluators would vary over time due to either experience in serving on the admissions committee and evaluating applications, or because of external factors influencing the admissions process. Because there was no way of determining if and when such variations occurred, it was not possible to control for them, even though they could potentially influence the outcome of the relationship between the ACR and program completion.

A final limitation was the fact that the data for the study came solely from Dallas Theological Seminary. While the research project itself was designed to assist the seminary in evaluating its own admissions processes, the researcher hoped that the results might have implications for graduate-level theological education as a whole. However, as mentioned previously in this section, the data obtained from the admissions-evaluation process of Dallas Seminary were unique in format, coming specifically from the ACAR form used uniquely by Dallas Seminary. The result was that, by default, the research yielded information strategically useful to DTS, but only tangentially useful to the broader field of graduate theological education.

It should be noted, however, that while the data collected by Dallas Seminary in the admissions process were unique, those data were unique in

format only. Many of the criteria used to judge the qualification of applicants for admission to Dallas Seminary have also been used by many other seminaries and graduate schools of theology. It is this similarity that makes the research results transferable to graduate theological education in general.

CHAPTER 2

SYNTHESIS OF RELATED LITERATURE

Higher education research is replete with studies on enrollment management at colleges and universities in the United States and around the world. A search of the ERIC system database alone reveals over 4,000 articles written in the areas of recruitment and retention of students just since 1992. Obviously another study on student retention seems superfluous.

However, when one begins to narrow the focus, the number of research studies begins to drop dramatically. For instance, the number of studies focusing on some aspect of admissions in combination with retention is less than 100. When one centers that focus on graduate education, the number drops further, and when considering issues about admissions practices and retention or persistence in graduate *theological* education, the number of studies is almost nonexistent.

In the particular focus of this study—admissions criteria and their relationship to persistence in theological education—it appears that no research has been done. While this lack of research specifically related to this unique topic makes it difficult to build on previous studies, it does provide a compelling need.

Admissions Criteria as Predictors of Persistence

Some studies have been done in the professional school arena that may prove useful. In health-related fields, for example, some researches have focused on admissions criteria as predictors of persistence in certain programs. This section will attempt to address relevant portions of those related studies to see what impact they may have on the particular research question of this study.

In a research study on predicting dental school graduation by use of admissions data, Scheetz attempted to discover if admissions criteria could be used as predictors of graduation, and consequently to assist in the selection of those applicants most likely to complete dental school.[1] Using a method similar to that intended for this study, he determined that only one admissions variable was significant as a predictor of dental-school completion, the score on a dental aptitude test.[2]

As a result of his study, Scheetz concluded that the admissions criteria used by the University of Louisville School of Dentistry were of little value in predicting the successful completion of the dental-school program of study. He also concluded that reevaluation of the admissions criteria might be appropriate.[3]

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[1] James P. Scheetz, "Predicting Graduation from Dental School Using Admissions Data," *Journal of Dental Education* 51 (1987): 250-51.

[2] Ibid., p. 250.

[3] Ibid., p. 251.

These conclusions were not supported, however, in a similar study on academic success for architecture students.[4] In that study, scores on the Architectural School Aptitude Test correlated highly with first-year grade-point average but declined in predictability as students progressed through the program. The ASAT had little to do with predicting program completion.

Going back to Scheetz's study, all the variables were easily quantifiable and nonsubjective. Because of that, comparison to this research project falls short in that at least two of the variables to be explored here are more subjective. In the estimation of Dallas Theological Seminary, however, they are more likely to encourage commitment to the finishing of the program since those variables deal with applicant perceptions of God's involvement in their decision to pursue ministry training.

In a related study, Shehane and others evaluated existing admissions criteria and procedures to ascertain if they might accurately predict completion of a radiology program at East Tennessee State University.[5] The admissions criteria evaluated were applicants' academic record and an interview.

Shehane's research indicated that academic record was significant as a predictor of program completion while the interview was not. This conclusion was supported in a similar study in the field of nursing in which test scores

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[4] D. E. Domer and A. E. Johnson, Jr., "Selective Admissions and Academic Success: An Admissions Model for Architecture Students." *College and University* 58 (Fall 1982): 19-30.

[5] Donna R. Shehane *et al.* "Admission Significance Parameters of the Radiologic Technology Program." ERIC ED 382140 (November 1994). This study was presented as a paper at the Annual Meeting of the Mid-South Educational Research Association in Nashville, Tennessee, November 9-11, 1994.

ranked as the best predictors of nursing-program completion.[6] One might surmise that the interview process in Shehane's study is more closely related to the subjective elements of Dallas Seminary's ACR in that the latter are rated on the basis of references and biographical data supplied by the applicant—essentially a written interview.

In a study attempting to correlate admissions criteria and retention in a traditionally black college, noncognitive admissions factors were evaluated and recommended.[7] The authors of the study argue for the use of noncognitive criteria in the admissions evaluation, at least within certain subgroups. Some of the noncognitive factors considered were the extent of studying, ambition, and satisfaction with grades. These noncognitive variables along with traditional cognitive ones (grades, SAT/ACT scores, etc.) did correlate highly with persistence within certain class groups.

High student motivation and clear definition of field of study, concepts certainly related to Dallas Seminary's understanding of the motivational impact of believing in God's leading toward a specific ministry, proved to be predictive factors in success in graduate programs in five Canadian Universities.[8]

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[6] Mary H. Huch, Rex L. Leonard, and Kenneth U. Gutsch, "Nursing Education: Developing Specification Equations for Selection and Retention." *Journal of Professional Nursing* 8 (May–June 1992): 170-75.

[7] Linda K. Pratt and Karen M. Gentemann, "Predicting Academic Retention among Population Subgroups: The Use of Non-Cognitive Predictors." ERIC ED 246772 (May 1984). A paper presented at the Annual Forum of the Association for Institutional Research in Fort Worth, Texas, May 6-9, 1984.

[8] Edward A. Holdaway, "Organization and Administration of Graduate Studies in Canadian Universities." *The Canadian Journal of Higher Education* 24 (1994): 1-29.

The Unique Field of Theological Education

Fortunately some research has been done on retention issues in theological education. And while those studies do not have as their main focus the impact of admissions criteria on retention, they provide useful data that need to be considered in a research study of this type.

Because seminaries and theological graduate schools are concerned with the subjective aspects of an applicant's spiritual life and his or her perception of God's leading toward a life of ministry, studies of persistence in theological education usually contain some aspect of these types of variables. Morton,[9] for example, identified educational aspirations and commitment to goals as factors in persistence at Southwestern Baptist Theological Seminary. Both variables are closely related to belief in and commitment to God's leading and gifting for ministry—concepts rated in the ACR of Dallas Seminary.

Potvin and Muncada[10] identified "call from God" as a reason for persistence in seminary studies while preparing for the Catholic priesthood, citing comments that were indicative of the most frequent reason seminarians gave for persevering to ordination—a desire to be faithful to the calling of God in their lives.[11]

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[9] Rebecca Ann Morton, "A Study of Factors that Differentiate between Persisters and Nonpersisters at Southwestern Baptist Theological Seminary." Ed.D. diss., Southwestern Baptist Theological Seminary, 1989.

[10] Raymond H. Potvin and Felipe L. Muncada, *Seminary Outcomes: Perseverance and Withdrawal.* Washington, DC: Institute of Social and Behavioral Research, Catholic University of America, 1980.

[11] Ibid., p. 15.

This concept is supported throughout Feilding's book, *Education for Ministry,* in which he refers to commitment to a ministry calling as a prime factor to be considered for those preparing for full-time ministry,[12] but he does not discuss it in terms of predicting seminary success or completion.

These studies certainly address the concept of motivation for ministry as an important factor in persistence in theological education. Yet in most cases, the concepts have not been measured or used in admissions criteria. That fact is what has made this study proposal unique and important to Dallas Theological Seminary. If this aspect of the admissions process proves to correlate highly with persistence, this will give the Admissions Committee and the administration of the seminary a useful tool, not necessarily for determining whether to admit an applicant, but in tangential areas such as the awarding of financial aid or academic and career advising.

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[12] Charles R. Feilding, *Education for Ministry.* Dayton, OH: American Association of Theological Schools, 1966.

CHAPTER III

METHODOLOGY

Introduction

The objective of this study was to determine if a predictive correlation exists between the admissions process of Dallas Theological Seminary and persistence in the Master of Theology program, with the further objective of extrapolating that data to determine if a predictive correlation might exist between seminary admissions in general and persistence in theological education as a whole.

The data for the study were collected from the Admissions Committee Rating form used by the Dallas Seminary Admissions Office to rate the qualifications of and determine the acceptability of applicants.

The aim of this chapter is to provide a detailed description of the procedures followed in implementing this research. The chapter is divided into eight sections: (1) research design, (2) determining the population, (3) selecting and evaluating the instrument, (4) the procedures used for the collection of the data, (5) the variables used in the study and the nature of the ACR data, (6) the procedures for the analysis of the data, (7) testing the hypotheses, and (8) a brief description of how the data for the study are reported.

Research Design

The study was designed to determine the association between the Admissions Committee Rating of Dallas Theological Seminary (the ACR) and its component parts and the completion of the master of theology program of the Dallas Seminary. As a descriptive *ex post facto* study not requiring a control group, an experimental design was unnecessary. The data comprising the ACR were collected and analyzed with degree program completion.

Determining the Population

The population for this study included all students matriculating in the four-year master of theology degree program at Dallas Theological Seminary who had either graduated or withdrawn within eight years of matriculation—the published limit for completion of the Th.M. degree program—and for whom the appropriate admissions records were still maintained. Students still enrolled in the Th.M. program after the eight-year limit were considered as nonpersisters for the purposes of the study, even if they eventually went on to graduate.

The study was limited to the master of theology program because of the consistency over time that the admissions process provided with regard to that program. The Th.M. was the main, and only, master's degree program of Dallas Seminary for decades and was the program the current admissions process had in view when the latter was developed. Even though all of the

seminary's master's programs utilize the same admissions process, the Th.M. program was best suited for the criteria employed by the process.

The seminary's main student information system identified 788 students who matriculated in the Th.M. from 1964 to 1996, who also fit the parameters of the study. The number of participants in the study was less than half the number of students who actually matriculated in the Th.M. degree program over the same period of time. However, they were the only ones for whom corresponding admissions committee rating data were available, since the majority of admissions committee rating forms were destroyed when the educational records of students who either graduated or withdrew were microfilmed. Those students with matriculation dates before 1980 were included in the study because their admissions data remained intact.

Sufficient participants existed in the population to provide reliable evaluation of the data for the purpose of the study, and since the data for each member of the population were readily available and easily evaluated, sampling of the population was not necessary. Consequently no sampling techniques were required to ensure sample accuracy.

Selecting and Evaluating the Instrument

As already mentioned in the limitations section in Chapter 1, the instrument used to collect the Admissions Committee Rating (ACR) data for this study was the Admissions Committee Applicant Report or ACAR (see Appendix A). This form uses a Likert-scale type of format to rate applicants in each of the four categories that comprise the ACR: (1) strength of the

applicant's previous education, (2) references and church letter, (3) potential for success in ministry based on gifts and calling, and (4) previous experience in ministry.

No records in the Admissions Office of Dallas Seminary indicated that the ACAR form had ever been tested for reliability or validity. The seminary assumed that the form actually measured what it was intended to measure. The form had been used consistently for many years, and because it had not changed appreciably, there was no reason to believe that the understanding of the categories the instrument measured had changed significantly over time. Indeed, the categories themselves were self-explanatory. It was the judgment of individual admissions evaluators that determined the reliability and validity of the instrument over time.

However, since the data for the study were collected *ex post facto,* and since the ACAR form was the instrument used to collect the data, any determination of the reliability and validity of the instrument was for the most part moot. No other instrument was available to collect the data for the study. In fact, any other form for collection of data would have been undesirable, since the foundation of this study was the determination of the validity and reliability of the ACAR form by researching whether a correlation existed between the data collected on the form and the completion of the Th.M. degree program at Dallas Seminary.

Procedures for the Collection of the Data

After the population parameters were established, a determination was made to utilize the most easily quantified data available that were used

in the evaluation of applicants for admission to Dallas Seminary. Since all of the materials submitted by applicants to the seminary were evaluated and then rated on the Admissions Committee Rating Form, that form became the source for the data collected for the study—the Admissions Committee Rating. Because the study was based on the ACR ratings of applicants who ultimately matriculated, the data were preserved in the educational records maintained by Dallas Seminary.

The Admissions Committee Applicant Rating forms were gathered for as many of the population members as were available. Unfortunately, the seminary's history regarding the maintenance of admissions records directly affected the availability of ACAR forms.

Because the Family Educational Rights and Privacy Act of 1964 as Amended (FERPA) did not require that certain admissions records be maintained, and because of problems associated with the maintenance of such records, in late 1994 the Admissions Office determined it would no longer maintain certain application materials after an applicant matriculated. The ACAR form was one of those documents, and consequently the ACAR forms were culled from applicant's files before being transferred to the Registrar's Office on the matriculation of the applicant. Fortunately, most of those records were not yet destroyed and were subsequently available for this study. The ACAR forms of recent matriculants were not used due to the fact that most recent matriculants were still in the early stages of their studies. Exceptions were made in cases where recent matriculants had already chosen to withdraw from the institution.

The number of ACAR forms available for the study was also a function of the seminary's lack of a concise records retention policy. Until 1980, the seminary maintained all student records in hard-copy files stored in standard file cabinets. When the registrar determined that space in those cabinets was limited, he would initiate the processing of the older files for microfilming and subsequent archiving. It was standard procedure to microfilm everything maintained in the student files, including all admissions records. In 1987, the determination was made that only student transcripts should be maintained in perpetuity. As a result, the student records for the years 1980–82 (the records then ready for microfilming and archiving) were purged completely, and only the academic transcript was maintained. No admissions records were maintained.

In 1989, with the arrival of a new registrar, the seminary's records retention policy was revisited and redeveloped. That policy allowed for the microfilming of all documents that substantiated the academic transcript, but it did not provide for the retention of admissions records. Consequently, the student files processed for microfilming from 1982–84 did not include admissions data, and more to the point, the ACAR form.

Ultimately this study was the beneficiary of budget concerns at the seminary beginning in the late 1980s. Because financial resources were being restricted, most of the student files from 1985–1990 were not processed for microfilming. As a result, many of the ACAR forms were available for inclusion in this study.

After it was determined that the ACAR form would be the source for the data for the study, all extant ACAR forms were collected from student

files in the admissions and registrar's offices. The forms were then sorted by degree program and only the forms for students who matriculated in the Th.M. program were selected for data entry for the study.

With the inception of the study, the Admissions Office had determined that it would be in their best interests to maintain ACR data in the seminary's main computer system, mainly because those data were the basis for admissions decisions for all applicants. Consequently, and in conjunction with the Information Services Department of the institution, a module was developed in the seminary's main computer system to enter the individual scores comprising the ACR for each applicant. Those scores provided the data for the study.

Because the study attempted to evaluate the relationship of the ACR and persistence, it was important to control for other variables that might also be associated with persistence. Consequently, the independent variables that were also included in the study were: (1) Date of initial matriculation in the Th.M. degree, (2) age at matriculation, (3) gender, (4) marital status, (5) ethnicity, (6) nationality, (7) type(s) of previous education, and (8) whether the student received financial aid, and if so, the amount. These variables are explained more fully later in this study.

Research in retention in higher education would certainly indicate that other factors might exist that would correlate with persistence in higher education. However, it was not the intent of this study to include all possible variables that might impact persistence, but to identify those maintained by Dallas Seminary and include them as a means to control for their possible influence on the dependent variable studied. All potentially relevant

variables available in the seminary's database were included. Other variables might have been relevant, but because of the ex-post-facto nature of this study, only those data currently available were used.

The Study Variables and the Nature of the Data

Study Variables

Twenty variables were included in the study, one dependent variable (persistence/nonpersistence) and nineteen independent variables. The variables are described in the following paragraphs.

Dependent Variable

The first variable, the dependent variable of the research, was persistence in the Th.M. program of Dallas Theological Seminary. For purposes of the study, persistence was defined as completion of the degree as demonstrated by degree conferral within eight years of matriculation, the time limit for completion of the four-year Th.M. program. Nonpersisters were those who failed to complete the Th.M. in eight years. Students were frequently granted permission to exceed the eight-year limit for the degree, but for purposes of the study, such students were considered nonpersisters even if they eventually went on to complete the program.

Since the dependent variable was a nominal dichotomous variable (a student either persisted to graduation or did not), those who persisted were assigned a 1 and those who did not persist were assigned a 0. Of the 788 cases in the study, 572 were classified as persisters and 216 were classified as nonpersisters.

Independent Variables

The next five variables, all independent, were the Admissions Committee Ratings described previously in this chapter. These variables are the total ACR score and its four components (previous academics, references, gift and promise for ministry, and experience in ministry). These five variables are discrete, ratio variables. They are measured in half-point increments (i.e., 2.0, 2.5, etc.) with one the minimum score and fifteen the maximum score (for the components, the maximum total ACR score is 60). They are ratio variables since one can be referred to as twice as much or half as much as another. The ACR variables, along with the dependent variable, are the main focus of the research study.

Additional independent variables were included in the study for two purposes. Primarily, it was hoped that including variables other than those evaluated in the admissions process (in this case the ACR) would provide relevant comparative data as a benchmark to indicate and control for the effects of the ACR scores. Essentially, the research was attempting to establish whether a correlation existed between the ACR and persistence. Including other variables would provide information on whether any demonstrated correlation was a result of the ACR or other factors not normally considered in the admissions process. Tangentially, it was hoped that studying the relationship of other factors on persistence would provide useful information to the seminary about factors that impact persistence in the Th.M. program.

The additional variables included in the study and described in the following paragraphs, were selected for inclusion based on their generally

accepted relationship to persistence in higher education[1] and because of their interest to the administration of the seminary and the admissions office as perceived factors in retention and persistence.[2] Among the variables included were:

(1) Years since Matriculation—A continuous ratio variable included to determine if the date of admission to Dallas Seminary at various times in the seminary's history had any impact on a student's persistence. The range of matriculation dates was September 1964 through January 1996. The mode matriculation date was September 1986, when the largest number of cases in the study matriculated;

(2) Age at Matriculation—A continuous ratio variable calculated from each subject's date of birth as a function of matriculation date. The mean age at matriculation for the subjects of the study was 28 years, 4 months. Ages ranged approximately from a minimum age of 18 to a maximum of 56;

(3) Gender, Marital Status, Ethnicity, Nationality—All nominal dichotomous variables coded 1 or 0, depending on the class;

(4) Types of Institution Previously Attended—This variable was broken down into categories, each a nominal and dichotomous variable coded

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[1] Rebecca Ann Morton, "A Study of Factors that Differentiate between Persisters and Nonpersisters at Southwestern Baptist Theological Seminary." Ed.D. diss., Southwestern Baptist Theological Seminary, 1989, pp. 55-74.

[2] It was beyond the scope of this paper to explore all the factors that might impact persistence at Dallas Seminary. Many studies have been done, even within theological higher education, that provide useful information to institutions on factors impacting student persistence. Such factors, however, are not generally considered in the admissions process, and in most cases *may not* be legally considered because of compelling concerns over discrimination. Consequently their inclusion in this study was for comparative purposes only as already mentioned.

1 if the subject attended or 0 if the subject did not attend the types of institutions considered. The categories of institutions in this study were: (1) public colleges or universities, (2) private secular colleges or universities, (3) private Christian colleges or universities, (4) Bible colleges, (5) seminaries, and (6) foreign schools. These variables were included to ascertain if educational background other than academic performance had any relationship to persistence in the Th.M. program;

(5) Receipt of Financial Aid—A nominal dichotomous variable coded 1 if subjects received any financial aid from Dallas Seminary during their programs of study and coded 0 if subjects did not receive any institutional-based financial aid. The data for this variable were less readily available. Of the 788 subjects in the study, only 410 were determined to have either received or not received financial aid from the seminary. Of those, 331 received financial aid and 79 did not. The data were unavailable for the remaining 378 subjects;

(6) Amount of Financial Aid Received—The amounts of financial aid actually received could be determined for only 95 of the 331 subjects who received financial aid from the seminary. The amounts ranged from as low as $44 to as much as $23,309.

Preliminary tests were run on the data for completeness and viability for the study. Descriptive statistical analyses were run to provide an overview of the distributions in the data.

The Nature of the ACR Data Used in the Study

Dallas Seminary's Admissions Committee Rating (ACR) was calculated by the evaluation of each applicant in four categories by three members of the

seminary Admissions Committee. This process began once all preliminary application materials[3] were received by the Admissions Office. Each of the four categories was assigned a number from one to five (in half-point increments with five the maximum score) in a Likert-style format, based on the evaluator's assessment of the application materials. Each of three evaluators could assign a maximum score of 20 points to the candidate (five points for each of the four categories). The ACR was the sum of all three evaluations, so that an applicant could receive an ACR as high as 60 or as low as fifteen. An ACR of 45 was usually required for automatic admission to the seminary, while an ACR of less than 30 usually resulted in nonacceptance. Other factors were considered in making exceptions to admissions decisions, which were primarily based on the ACR.

The four components of the ACR as broadly described in the seminary catalog are: (1) previous academic record, (2) references, (3) apparent gifts and potential for Christian ministry, and (4) extent and quality of involvement in Christian service.[4]

The first category, previous academic record, was the most easily quantifiable and the most consistent measure across each evaluation, although an element of subjectivity could be applied to the ranking by each evaluator. Applicants were assigned a number for this category according to their cumulative grade-point average (GPA) across all previously attended

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[3] Appendix B contains a copy of the seminary admissions packet provided to all applicants.

[4] *Dallas Theological Seminary 1996–97 Catalog,* (Dallas, TX: Dallas Theological Seminary, March 1996), 63.

colleges or universities, whether the applicant completed a degree or not, and whether the studies were undertaken at the baccalaureate or graduate level. All GPAs were converted to a 4.0 scale so that consistency could be maintained in the ACR scores of this category.

The second category, references, was based on an evaluation of three personal references submitted by the individual plus a letter submitted by the applicant's home church. The three referees included a college professor, an employer, and a personal acquaintance or friend. Again, a rating from one to five was assigned based on the strength of the references. The church letter was designed to simply validate that the applicant had an ongoing relationship with a local church and was a member or regular attender in good standing, regularly involved in the life and ministries of the church.

These first two admission criteria used by Dallas Seminary in the admissions process were similar to those of many educational institutions. Most institutions of higher education utilize previous educational records and references in the admissions process. The last two components of the ACR, however, were somewhat unique because of the seminary's role as a conservative evangelical seminary, and its belief in the importance of divine guidance in the lives of those who seek to be ministers to the needs of a diverse culture, both in the United States and throughout the world.

Because of the conviction that those preparing for ministry should be doing so because of God's leading in their lives, and because of the conviction that those so led would also be appropriately gifted (or talented), the

Admissions Committee evaluated gift and promise for ministry as the third of the four categories comprising the ACR.[5]

The fourth component of the evaluation, also somewhat atypical, was the applicant's experience in some form of Christian ministry prior to their application to Dallas Seminary for admission. Ministry involvement was considered important as an indicator that the applicant not only believed he or she was called and gifted by God but had actually taken steps to serve in some aspect of ministry, a clear indicator that the applicant was committed to a ministry for which the training at Dallas Seminary would be beneficial.

Both the gift and promise for ministry and experience in ministry components of the ACR were evaluated from biographical information provided by the applicant as well as by relevant information provided in the applicant's references. The strength of ratings in each category was determined by the judgment of the evaluator in relation to the strength of these areas as presented by other applicants.

The four categories described above constituted the admission criteria used by Dallas Seminary in evaluating applicants for admission to the Seminary. The process presupposed that certain other criteria had already

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[5] An explanation here is important. The author realizes that many will consider evaluating and discussing the "call of God" or divine guidance in the lives of students desiring to go into full-time ministry as a very subjective variable, neither measurable nor quantifiable, and inappropriate for study especially for a doctoral dissertation. It is also realized that one's own religious sensibilities, or lack there-of, may predispose the reader to invalidate such a research study in its entirety. However, it is not the intent of this study to determine whether an applicant's call to ministry is valid or appropriate for admission to an accredited graduate school, but rather to consider instead whether the *evaluation* of that call has any correlation with persistence. In other words, Dallas Seminary has for many years evaluated "calling" as part of its admissions process, and consequently, it seems appropriate to consider whether that aspect of the Admissions Committee Rating does in fact have any correlation with persistence.

been met by applicants before proceeding to this evaluation stage of the admissions process. Those criteria, for example, were that applicants had obtained the appropriate prerequisite education, subscribed to the seminary's minimum doctrinal requirements, and were willing to enter into the seminary community on the basis of the standards published in the seminary's annual catalog.

Procedure for Analysis of Data

When all the ACAR forms were collected, the data from those forms were entered in the Seminary's main computer database. The data were personally identifiable by student. ACR ratings were entered as continuous interval data. *Age at matriculation* was entered as continuous ratio data. All other variables were nominal and were coded numerically as dichotomous data (i.e., ones and zeros).

The additional independent variables identified above were included in this study because of their likely connection with the dichotomous, dependent variable—graduation or nongraduation. Including them helped control for their influence on the dependent variables and consequently gave a more accurate picture of the association the ACR had with persistence. In other words, for the study to have relevance, the research needed to be designed to indicate whether persistence was truly a function of the ACR or simply a function of other factors unrelated to the ACR.

Once all the demographic data and the data from the ACAR forms were entered and the population members identified, the respective data were downloaded to a personal computer in a format readable by the

statistical, data-analysis software programs StatView 4.5[6] and SPSS/PC+ Advanced Statistics 4.0[7].

Preliminary tests were run on the data for completeness and to determine if enough association existed to warrant retaining them for the study. Descriptive statistical analyses were run to provide an overview of the distributions in the data.

Testing the Hypotheses

The first hypothesis of the study (a higher significant difference in mean ACR scores exists between persisters and nonpersisters) was tested using an unpaired *t*-test for independent samples.[8] The mean differences were determined to be statistically significant if the *t*-test yielded a *p* value of less than or equal to 0.05.[9] Even though the hypothesis specified direction (graduate ACR scores would be higher than nongraduate scores), one-tailed tests were not used. The reason for this was because there was no clear indication that the differences would be directional.

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6 Abacus Concepts, *Using StatView* and *StatView Reference* (Berkeley, CA: Abacus Concepts, Inc., 1996).

7 Marija J. Norusis and SPSS Inc., *SPSS Statistical Data Analysis* (Chicago: SPSS Inc., 1990).

8 The dependent variable in the research was mutually exclusive. Subjects were either persisters or nonpersisters, not both. The unpaired *t*-test, or *t*-test for independent samples, "compares the means of two groups and determines the likelihood of the observed difference occurring by chance. . . . The *t*-value expresses the difference between the mean difference and the hypothesized value in terms of the standard error." (*StatView Reference,* 37).

9 A *p,* or probability, value of ≤ 0.05 means that any observed difference in means is unlikely to have occurred by random error (i.e., only a five in 100 chance).

Effect size was also taken into consideration by calculating standard values (z–scores) for variable means.[10] In this case, "standardized mean differences in excess of 0.70 would be in the 'strong' range, those around 0.50 would be of 'moderate' size, and those less than 0.30 would be approaching 'weakness'."[11]

The second hypothesis of this study was tested by calculating the point-biserial correlation coefficients[12] for the variables as a function of persistence (graduation), and then transforming the coefficients to standardized z–scores to test the statistical significance of the correlations. Fisher's r to z Transformation procedure was used to establish the probability levels for the correlations.

The third hypothesis was tested using a statistical procedure known as discriminant analysis, a stepwise, multiple-regression correlation statistic. Discriminant analysis is ideal for examining differences or relationships between multiple independent variables and dependent variables. It is also

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[10] "Standard scores, sometimes called standard values or z–scores, are obtained by dividing the difference between each value and the mean by the standard deviation. Standardizing a variable gives it a mean of 0 and a standard deviation of 1 and makes it easier to compare variables of dissimilar magnitude" (*StatView Reference,* 364). Standard scores are calculated by the formula

$$z = \frac{X - \bar{X}}{s}$$

where z is the standard score, X is the individual value, $\bar{X}$ is the arithmetic mean, and s is the standard deviation.

[11] Daniel H. Robinson and Joel R. Levin, "Reflections on Statistical and Substantive Significance, With a Slice of Replication," *Educational Researcher* 26 (June/July 1997): 22.

[12] Point biserial correlations are correlations between a continuous variable (ACRs) and a dichotomous variable (graduate or nongraduate). Point biserial correlations are product-moment correlations that have the dichotomous variable coded as a continuous variable (1 and 0). George A. Ferguson, *Statistical Analysis in Psychology and Education,* 5th ed. (New York: McGraw-Hill Book Company, 1981): 427-28.

designed to "identify variables . . . important for distinguishing among . . . groups and to develop a procedure for predicting group membership for new cases whose group membership is undetermined."[13] According to William Klecka in his book *Discriminant Analysis,* ". . . discriminant techniques are especially helpful in predicting (or explaining) which students will be successful, based on their differences on several variables, prior to admission to a particular educational program."[14]

The discriminant function usually treats a dependent variable consisting of two groups of subjects. In the case of this study those groups are persisters or nonpersisters in the Th.M. program of Dallas Seminary. The correlations between the dependent variable and the independent variables are calculated using point-biserial correlation for nominal data, or product-moment correlations for continuous data. Multiple regression weights and equations are then calculated in a stepwise fashion until only those variables significantly impacting the resulting coefficient of determination are selected, at which time the regression ceases. The regression coefficients themselves indicate the strength of the relationship that exists and whether the correlation is significant as a predictor for each of the components of the ACR, and whether the total ACR itself is a predictor of persistence.

The end result of discriminant analysis is a prediction equation that can be helpful to Dallas Theological Seminary, and other similar seminaries,

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[13] *SPSS Statistical Data Analysis* , p. B-1.

[14] William R. Klecka, *Discriminant Analysis* (Newbury Park: Sage Publications, 1980), p. 5.

in identifying students who will be more likely to persist in their seminary studies.

Certain assumptions were made in this study consistent with the use of the discriminant analysis function. The first assumption was that each group studied is a sample from a multivariate normal population. Since the groups studied in this project comprised the population, this assumption cannot be violated. The second assumption was that the population covariance matrices were all equal. The population of this study may have exhibited characteristics different from the general population at large (i.e., all graduate school applicants in all institutions of higher education), but the qualities that made up the population for the research would not have been expected to vary except normally within the subpopulation of those applying to and attending seminaries and graduate theological schools. Consequently, covariant factors did not exist. The third assumption was that the dependent variables would be mutually exclusive. In this case they were, since a member of the population could only be either a graduate or nongraduate.

Before the discriminant function was run, a correlation matrix was developed by calculating the point biserial, product-moment correlation coefficient between all pairs of variables. This helped identify which variables studied actually correlated significantly with the dependent variable and should be included in the discriminant function.

The discriminant analysis procedure ultimately calculated correlation coefficients in a stepwise fashion indicating the strength of each of the variables studied in relation to persistence in the Th.M. program as measured by completion of the degree. The coefficients themselves indicated

the strength of the relationship that existed[15] and whether the correlation was useful as a predictor for each of the components of the ACR, and whether the total ACR score itself was a predictor of persistence. The predictive ability of the independent-variable equation would be expressed in terms of a percentage, which, depending on its magnitude, could be indicative of a strong predictive relationship between the variables and persistence in the Th.M. program.

Reporting of Data

After all statistical computations were made, data were reported tabularly and graphically as determined by the data themselves for the purposes of classification, analysis, and evaluation.

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[15] In his article, "AERA Editorial Policies Regarding Statistical Significance Testing: Three Suggested Reforms" (*Educational Researcher* 25 [March 1996]: 28-29), Bruce Thompson argues forcefully that simple statistical significance does not necessarily argue for relevance. With large sample sizes, a rather minor difference may prove to be statistically significant but still be to small to be of any real value. One of the methods for measuring effect size in correlations is by using the adjusted R^2, which indicates in percentage form the ability of the correlation to predict the relationship beyond mere chance adjusted for sample size. The statistical software packages used for this research calculate the adjusted R^2 to help the researcher take into consideration effect sizes.

CHAPTER IV

FINDINGS OF THE STUDY

This chapter presents the procedures used to analyze the data collected and organized from the Admissions Committee Rating forms used as the basis for making admission decisions for Th.M. students at Dallas Seminary. The chapter also presents the results of the analysis of those data. To accomplish this, the material is organized into three sections, (1) the classification and description of the data, (2) the statistical analysis of the data, and (3) the testing of the research hypotheses.

Classification and Description of the Data

Once all the Admissions Committee Ratings were entered into the seminary's main computer system, the raw data were then categorized and tabulated. The data were then downloaded in file formats compatible with personal computers where the data were subjected to classification and, ultimately, statistical analysis.

The seminary's main student information system identified 788 students who matriculated in the Th.M from 1964 to 1996, who also fit the parameters of the study. Table 1 shows the population distribution by matriculation date and completion rate (%). The completion rates in the table show an inverse correlation to the date of matriculation, and are simply a reflection of the fact that those students who matriculated closer to the end

date of the data collected for the study (fall 1996) were less likely to have graduated. Those few students who were included from 1993 through 1996 were included because they withdrew from the Th.M. program during that time period.

Approximately three-fourths, or 72.6 percent of the members of the study met the criteria for completion (graduated from the Th.M. degree within eight years of matriculation). A closer examination of Table 1 reveals that the completion rate would likely be higher if the majority of Th.M. students who matriculated after 1990 had actually been in the program long enough to have graduated. Looking at the data from 1964 through 1988 (eight years before the data cut-off date) reveals a completion rate closer to 83%.

Table 1. — Distribution and Completion Rate of Persisters and Nonpersisters by Matriculation Date

Year	*Pers.*	*Nonpers.*	*Total*	*%*	*Year*	*Pers.*	*Nonpers.*	*Total*	*%*
1964		1	1	0	1985	64	5	69	93
1965	1		1	100	1986	106	9	115	92
1973	1		1	100	1987	86	33	119	72
1975	2	1	3	67	1988	85	26	111	77
1976	1		1	100	1989	64	24	88	73
1978	1		1	100	1990	56	35	91	62
1979	3	1	4	75	1991	29	20	49	59
1980	9	1	10	90	1992	6	17	23	26
1981	5	2	7	71	1993	0	24	24	0
1982	9	2	11	82	1994	0	5	5	0
1983	17	2	19	89	1995	0	3	3	0
1984	27	3	30	90	1996	0	2	2	0
Totals						572	216	788	73

Data Frequencies and Distributions

Of the twenty variables used in the study, eighteen had no missing values for the 788 cases identified. Two of the variables did have missing values. These will be discussed later. Eight of the variables, all independent, are continuous, including the primary variables of the study—ACR total score and ACR component scores. The other continuous variables are years since matriculation, age at matriculation, and total amount of financial aid received. The remaining study variables are nominal—the primary dependent variable (graduation or nongraduation), and eleven secondary independent variables—gender, marital status, ethnicity, nationality, whether or not financial aid was received, and types of previous educational institutions attended (public college or university, private secular college or university, private Christian college or university, Bible college, seminary, and international college or university). Frequencies and distributions for the variables were computed and are discussed in this section.

ACR-Score Distributions and Frequencies

The hypotheses of this study focused on the relationship between the numerical rating (the Admissions Committee Rating, or ACR) and its component parts (as discussed previously in chapter three), and persistence in the Th.M. program (defined as graduating within eight years of initial matriculation). The ACR is derived for each applicant as part of the admissions process. While other variables are briefly evaluated in this study for their potential relationship to persistence, the primary focus is on the Admissions Committee Rating.

In using the stepwise, multiple-regression statistic, discriminant analysis, to statistically evaluate the relationship of the ACR to persistence, certain assumptions were made. First, all observations or values for the independent and dependent variables must be independent of each other. In other words, each observed value of the variables attributed to each case of the data must be unique to that case (i.e., data collected on the same object over time, or data which has a functional relationship to other data being studied). In the case of this study, the only variable that violated this assumption was the total ACR score, which is the sum of the scores assigned to each of the four component parts (academics, references, potential for ministry, and ministry experience). Consequently, the total Admissions Committee Rating was not computed in the regression analysis, as will be discussed later.

Another important assumption is that the values of the independent variables within the population (and subsequent variance in the population) are normally distributed. Figure 1 shows the distribution of the total ACR for each of the cases in the study. A normal curve is superimposed over each of the histograms in that figure. The ACR-Total Score histogram (fig. 1.b) shows clearly that the values of the ACR are normally distributed. Looking at the breakdown of the ACR-Total scores by persisters (fig. 1.c) and nonpersisters (fig. 1.d) reveals that they, too, closely approximate a normal distribution, though with slightly more variation than that of all scores combined.

Since the current study was also concerned with the components of the ACR, figure 2 shows the distribution of the ACR component scores for all

a. Frequency Table of ACR-Total Scores

From (≥)	To (<)	Total Count	Nongrad Count	Grad Count
30.0	33.0	1	1	0
33.0	36.0	5	4	1
36.0	39.0	22	5	17
39.0	42.0	79	23	56
42.0	45.0	139	46	93
45.0	48.0	226	56	170
48.0	51.0	206	55	151
51.0	54.0	85	17	68
54.0	57.0	22	7	15
57.0	60.0	3	2	1
	Total	788	216	572

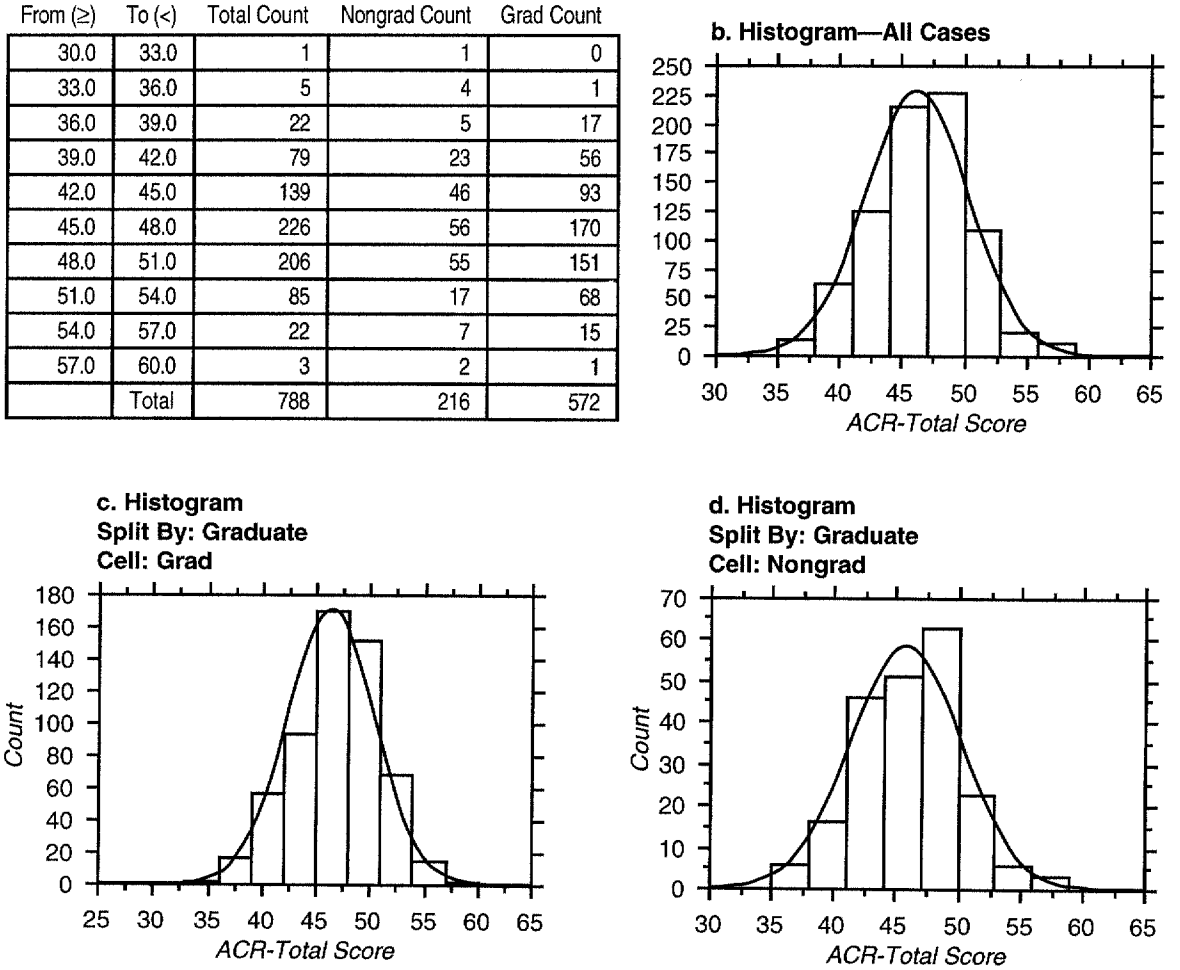

Fig. 1. Frequency Distribution of ACR-Total Scores

members of the study. Each of the histograms in figure 2 show the distribution of scores for each ACR component in comparison to a normal distribution. It is obvious at a glance that the ACR component scores do not as closely follow a normal distribution as do the ACR totals. However, the data do demonstrate normal tendencies and consequently are considered to meet the second assumption above.

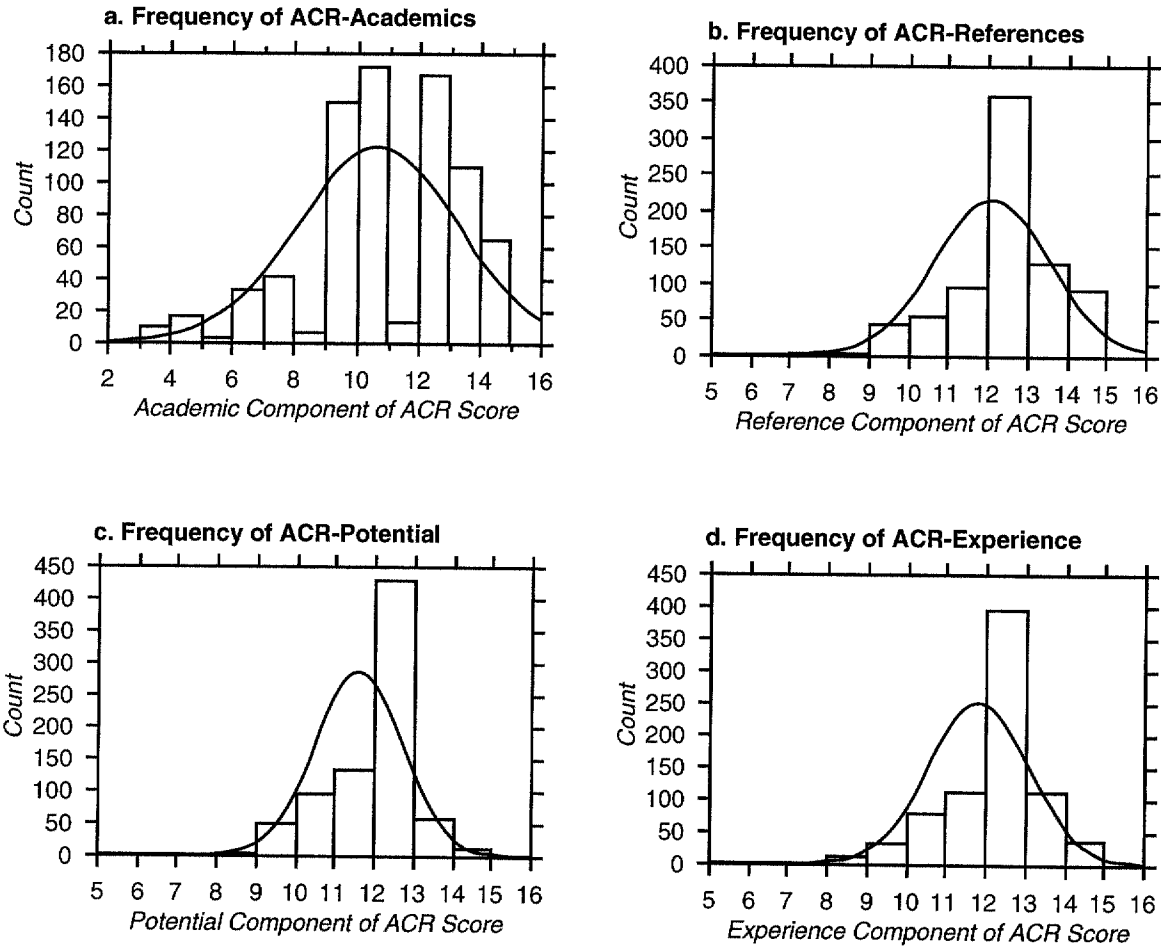

Fig. 2. Frequency Distribution of ACR-Component Scores

Secondary Continuous and Nominal Variables

Figure 3 shows the distribution of the number of years since each subject's initial matriculation into the Th.M. program at Dallas Seminary. The variable is calculated by subtracting the actual matriculation date of each subject from the latest matriculation date included in the study—January 1996. The range for the number of years since matriculation is 31 years, 4 months. The median number of years since initial matriculation is

eight years. More than 67 percent of the cases matriculated between six and twelve years before January 1996. Though the data appear to approximate a normal distribution (fig. 3.b), two values are clearly outside the expected range. In both cases matriculation was over thirty years ago (fig. 3.a). These two cases are unique in that they reflect individuals who initially began and then withdrew from seminary study in the 1960's. One then re-entered the Th.M. years later to complete a degree.

a. Frequency Table for Years since Matriculation
Split By: Graduate

From (≥)	To (<)	Total Count	Nongrad Count	Grad Count
0	3	26	26	0
3	6	171	80	91
6	9	301	76	225
9	12	231	24	207
12	15	37	6	31
15	18	15	2	13
18	21	4	1	3
21	24	1	0	1
24	27	0	0	0
27	30	0	0	0
30	33	2	1	1
	Total	788	216	572

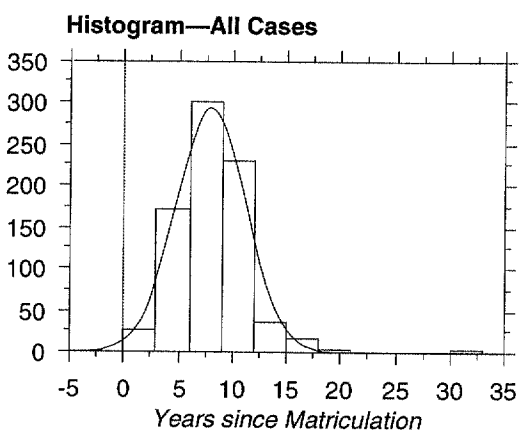

Fig. 3. Frequency Distribution of Years since Matriculation

The frequency distribution for age at matriculation is shown in figure 4. The subjects in the study ranged in age at matriculation from 17 years, 9 months, the youngest student to enroll at the seminary, to 55 years, 11 months. The *age at matriculation* variable range was 38 years, 2 months. The median matriculation age of subjects in the study was just over 27 years. The majority of subjects began studies in the Th.M. program at Dallas Seminary

in their twenties (69.9%). As of the writing of this paper, the average entering age of all students at Dallas Seminary is approximately 31 years.[1]

The histogram of ages at matriculation in figure 4.b clearly indicates that the distribution of ages is positively skewed. This is consistent with the fact that as a graduate institution, the majority of matriculants enter Dallas Seminary soon after completing a baccalaureate degree. If the majority of baccalaureate students graduate in their early twenties, one would expect the entering age in a master's degree program to follow soon after. The fact that the entering age of subjects in the study is predominantly in the upper twenties is a reflection of the trend Dallas Seminary has seen in which an increasing number of matriculants are entering seminary as a mid-life career change.

a. Frequency Table for Age at Matriculation
Split By: Graduate

From (≥)	To (<)	Total Count	Nongrad Count	Grad Count
15	18	1	0	1
18	21	0	0	0
21	24	183	39	144
24	27	205	49	156
27	30	163	51	112
30	33	104	23	81
33	36	53	21	32
36	39	38	17	21
39	42	20	11	9
42	45	11	2	9
45	48	5	2	3
48	51	2	0	2
51	54	1	0	1
54	57	2	1	1
	Total	788	216	572

b. Histogram—All Cases

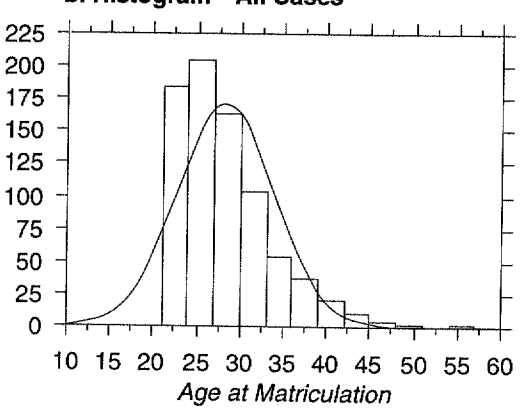

Fig. 4. Frequency Distribution of Age at Matriculation

[1] Dallas Theological Seminary Admissions Office statistics.

The remaining continuous variable is the *total amount of financial aid received* by subjects in the study. The raw data for this variable show the amount of financial aid received by subjects in the study varies widely, from as little as $44 to as much as $23,309. Unfortunately, the actual amounts of financial aid received were available for only 95 members of the study (fig. 5.a), reducing its power in the study due to its low *N,* even though only 410 were identified as either having received or not received financial aid (see fig. 6.k following). Table 2 shows the frequencies of the financial aid variables as a function of having received financial aid. Of the 331 subjects receiving financial aid, the amounts were available for only 95 (the total count for that variable), leaving 236 subjects known to have received financial but not the amount.

Table 2. — Frequency by Graduate of Financial Aid Variables for Those Receiving Financial Aid

Variable	*Total*	*Grads*	*Nongrads*
Number Receiving Financial Aid	331	268	63
Number for Whom Financial Aid Amount Is available	95	58	37

The frequency distribution for the amount of financial aid received (fig. 5.b) is a J-shaped distribution, indicating that it is extremely positively skewed.[2] This reflects the fact that the amount of financial aid provided to

[2] George A. Ferguson (*Statistical Analysis in Psychology and Education,* 5th ed. [New York: McGraw-Hill Book Company, 1981], 31-32) describes J-shaped distributions as examples of "extreme skewness," which is indicative of a mean and variation different from those if the distribution were normal (Ibid., 33).

each of the subjects in the study centered on the lower end of the range of values for the variable. In fact, figure 5.a indicates that more than half (65.3%) of the 95 subjects for whom the amounts of financial aid received are known received less than $4,000 in financial aid while in the Th.M. program.

a. Frequency Table for Total Financial Aid Received

From (≥)	To (<)	Total Count	Nongrad Count	Grad Count
0	2000	28	23	5
2000	4000	34	10	24
4000	6000	13	2	11
6000	8000	5	2	3
8000	10000	3	0	3
10000	12000	1	0	1
12000	14000	3	0	3
14000	16000	1	0	1
16000	18000	3	0	3
18000	20000	1	0	1
20000	22000	1	0	1
22000	24000	2	0	2
	Total	95	37	58

b. Histogram—All Cases

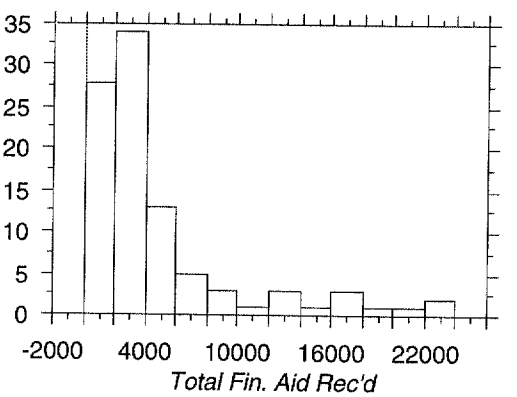

Fig. 5. Frequency Distribution of the Amount of Financial Aid Received

Several nominal variables were included in the study as well. The frequencies of those variables, subcategorized by whether the subjects graduated or did not graduate, are listed in figure 6. Among these variables are six that classify subjects based on the their types of previous education. These variables (see fig. 6.e, f, g, h, i, and j) indicate whether the subject attended one or more (subjects could be *yes* or *no* in more than one of these types of schools before attending seminary) of the types of higher education represented by the six variables. This information is useful in the admissions process in determining if the *type* of educational experience has any relationship to completion of the Th.M. greater or less than any relationship

a. Frequency by Gender

	Total Count	Nongrad Count	Grad Count
Female	19	9	10
Male	769	207	562
Total	788	216	572

b. Frequency by Marital Status

	Total Count	Nongrad Count	Grad Count
Single	160	79	81
Married	628	137	491
Total	788	216	572

c. Frequency by Ethnicity

	Total Count	Nongrad Count	Grad Count
Minority	173	41	132
White	615	175	440
Total	788	216	572

d. Frequency by Nationality

	Total Count	Nongrad Count	Grad Count
U.S.	735	211	524
Visa	53	5	48
Total	788	216	572

e. Frequency by Public Coll./Univ.

	Total Count	Nongrad Count	Grad Count
No	420	106	314
Yes	368	110	258
Total	788	216	572

f. Frequency by Private Secular Coll./Univ.

	Total Count	Nongrad Count	Grad Count
No	628	149	479
Yes	160	67	93
Total	788	216	572

g. Frequency by Private Chr. Coll./Univ.

	Total Count	Nongrad Count	Grad Count
No	666	185	481
Yes	122	31	91
Total	788	216	572

h. Frequency by Bible College

	Total Count	Nongrad Count	Grad Count
No	657	180	477
Yes	131	36	95
Total	788	216	572

i. Frequency by Seminary

	Total Count	Nongrad Count	Grad Count
Yes	11	11	0
No	777	205	572
Total	788	216	572

j. Frequency by Foreign Institution

	Total Count	Nongrad Count	Grad Count
No	733	208	525
Yes	55	8	47
Total	788	216	572

k. Frequency by Receipt of Financial Aid

	Total Count	Nongrad Count	Grad Count
No	79	62	17
Yes	331	63	268
Total	410	125	285

In tables e. through k., *no* means the subject *did not* attend that type of institution or *did not* receive financial aid and *yes* means the subject *did* attend that type of institution or *did* receive financial aid.

Fig. 6. Nominal Variable Frequencies by Graduation

that might exist between completion and the strength of the prior education (academic ACR score).

Some of the variables in figure 6 presented low frequencies which reduce their effectiveness in evaluating persistence. Figure 6.a, for example, indicates a low female frequency count for both graduates and nongraduates due largely to the fact that the Th.M. program at Dallas Theological Seminary has historically been a gender-specific program. While the current enrollment of women at Dallas Seminary is approximately 28 percent of the total enrollment[3], the majority of women enroll in master's-level programs other than the Th.M. Such a low *N* for women will reduce the likelihood of finding any appreciable relationship between persistence and nonpersistence in seminary studies based on gender.

Other low-*N* variables that have little statistical ability to predict persistence as defined in this study were nationality (fig. 6.d), and whether the subject previously attended another seminary (fig. 6.i) or foreign school (fig. 6.j) prior to enrolling in the Th.M. program at Dallas Seminary.

Two of the additional variables used in the study—the nominal variable indicating whether a subject received or did not receive financial aid, and the continuous variable indicating the amount of financial aid awarded—had a much different *N* because of the large number of missing cases. Only 410 of the 788 cases could be identified as either receiving or not receiving financial aid (see fig. 6.k). The amount of financial aid received was available for only 95 of the 788 cases (see table 2). The smaller *N* for these variables determined how they were used in the data analyses in this study as described more fully later.

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[3] From Fall 1996 Enrollment Statistics of Dallas Theological Seminary.

Means and Mean Differences

Before running descriptive statistical tests on the research data, box plots and bar graphs were created for each of the continuous variables to visually assess if any differences existed in those variables between graduates and nongraduates. Bar graphs were used to compare variable means for graduates and nongraduates, while box plots visually represent the range and percentile scores for the variables by graduate and nongraduate.[4] Figures 7 and 8 compare ACR scores.

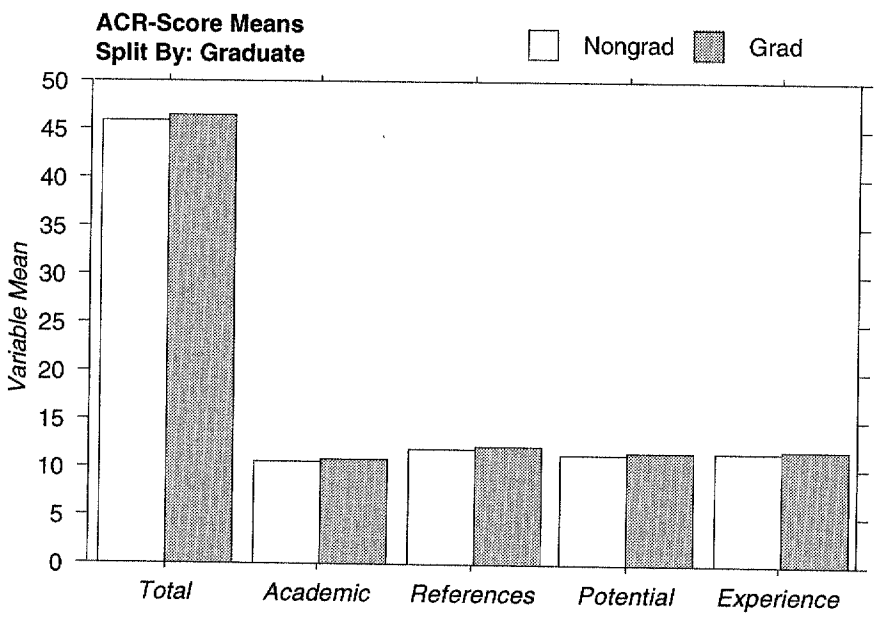

Fig. 7. ACR Mean Scores by Graduation

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[4] A *box plot* is a graph for displaying the 10th, 25th, 50th, 75th, and 90th percentiles of a variable." (Abacus Concepts, *StatView Reference* [Berkeley, CA: Abacus Concepts, Inc., 1996], 185). "Each box plot is composed of five horizontal lines that display the 10th, 25th, 50th, 75th, and 90th percentiles of a variable." (Ibid.) The values between the 25th and 75th percentiles are circumscribed by a box. "All values of a variable above the 90th percentile and below the 10th percentile are plotted separately by small circles, making box plots especially useful for displaying outliers." (Ibid.)

Figure 7 plots the mean scores for the five primary independent variables used in the study. The mean ACR scores for graduates and nongraduates appear to be little different from each other in all five cases, although it appears that the mean scores are slightly higher for graduates than for nongraduates in each case. Whether any real difference is significant or relevant will be evaluated further in this paper.

Initial observation of the box plot in figure 8 also indicates that ACR scores for graduates and nongraduates are very similar. Data ranges are also similar, and do not indicate any unusual values. Based on the figure 8, the total ACR scores appear to be slightly higher for graduates than nongraduates, as does the ministry experience score. Scores for previous academic performance, references, and potential for ministry are visually

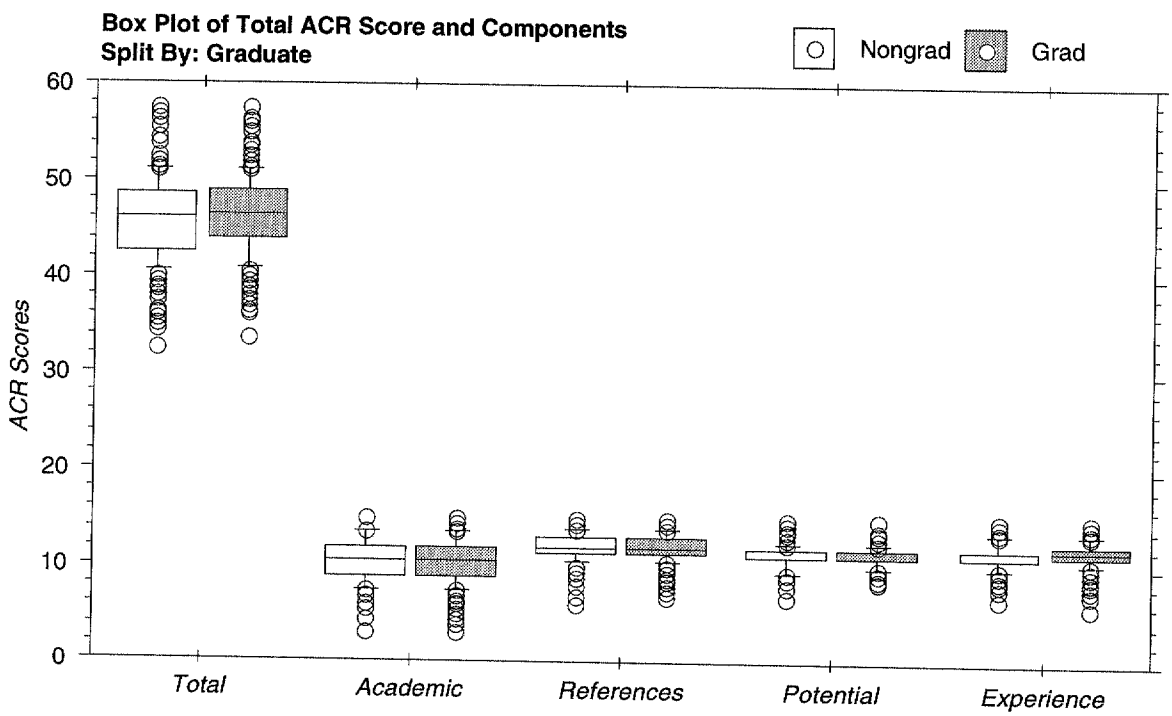

Fig. 8. Box Plot of ACR Total and Component Scores by Graduation

indistinguishable as a function of completion. One can observe, however, that some variation exists between the component scores. For example, the *reference* scores for both graduates and nongraduates appear to be higher than the *academic, potential,* and *experience* scores. The academic scores appear to be lower on average than the other component scores. Observation of the *potential* and *experience* scores seems to indicate they have less variation than the *academic* and *reference* scores.

The initial observations of the ACR data are not conclusive, and whether real differences exist will be evaluated by further analysis. The initial observations, however, certainly do not indicate any clear distinctions between graduates and nongraduates as a function of ACR scores.

Bar graphs and box plots were also produced (see figs. 9 and 11) for the remaining continuous variables *(years since initial matriculation, age at matriculation,* and *total amount of financial aid received).* Since the units of measure are identical, and the range of values similar, *years since*

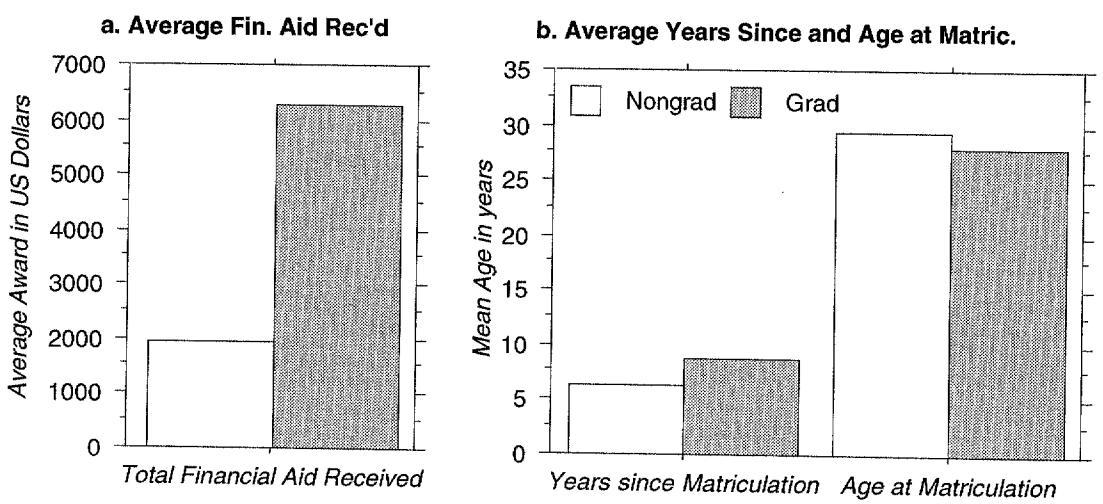

Fig. 9. Average Financial Aid Received and Average Years since and Age at Matriculation by Graduation

matriculation and *age at matriculation* were included in the same plots (see figs. 9.b and 11.b). The units of measure for *amount of financial aid received* required it be plotted separately.

Even though the *N* is small for the variable (95 out of 788 total cases in the study), figure 9.a clearly shows a difference between graduates and nongraduates in the average amount of financial aid received. The mean amount of aid received in all cases was almost $4,600. This compares to the median amount of $2,600 and a mode of $2,000. As figure 9.a indicates, the average aid received for graduates was over $6,000 and the average for nongraduates was almost $4,000 less at approximately $2,000.

The average years since matriculation and average age at matriculation do not show as clear a distinction in means. Figure 9.b visually indicates that those who matriculated longer ago were slightly more likely to complete than those who completed more recently. It also indicates that younger matriculants were slightly more likely to persist than older matriculants.

It should be noted, however, that ACR scores themselves are relatively time-neutral. Figure 10 is a bivariate scattergram showing the linear relationship of the total ACR score as a function of matriculation date. Casual observation supports the conclusion that no real relationship exists between ACR scores and date of matriculation. This is further supported by the calculation of

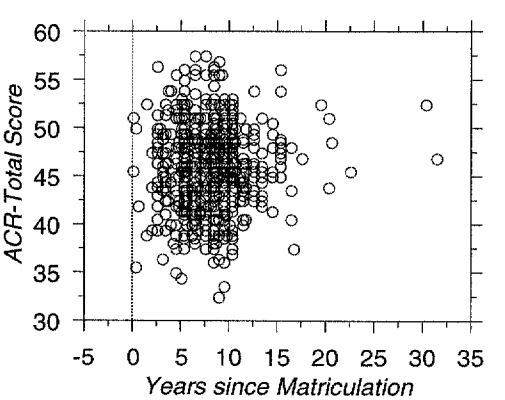

Fig. 10. ACR As a Function of Matriculation Date

the correlation between *total ACR score* and *years since matriculation.* The resulting correlation is 0.15 with a p-value of .6736, clearly larger than the 0.05 level established for significance in the study.

The box plots for *total financial aid received, years since matriculation,* and *age at matriculation* support previous conclusions. It is interesting to note, however, that the variation in the variables is greater, as is the range of values. Figure 11 shows the wide range of values for both graduates and nongraduates. In looking at total financial aid received (fig. 11.a), the box plot indicates that for graduates, amounts less than $18,000 were awarded in ninety percent of the cases. The plot for years since matriculation (fig. 11.b) shows two values for matriculants of over 30 years ago, one graduate and one nongraduate. Outliers are obvious as well in the plot for age at matriculation

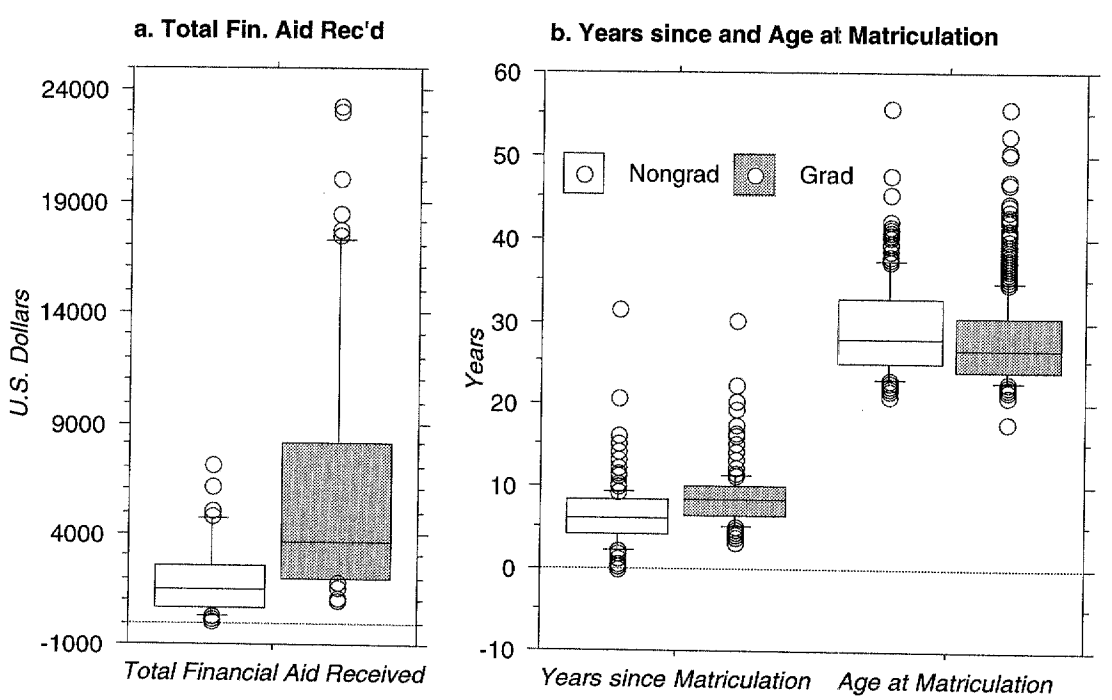

Fig. 11. Box Plots of Financial Aid Received and Years since and Age at Matriculation by Graduation

(fig. 11.b), with matriculants over 50 years of age in both graduate and nongraduate groups. The graduate group also shows a matriculant less than twenty years of age.

Bar graphs were created for each of the remaining nominal variables used in the research. Each case was assigned a 1 or a 0 to depict group membership. The nominal variables have been described in earlier sections of this research, however, table 3 provides the coding for the categories within each variable in a succinct format.

Table 3. — Nominal Variable Coding

Variable	*Coded 1*	*Coded 0*
Graduate (or Persister)	graduate	nongraduate
Gender	male	female
Marital Status	married	single
Ethnicity	white	minority
Nationality	U.S. citizen	int'l student
Received Financial Aid	yes	no
Attended Public College or University	yes	no
Attended Private Secular College or Univ.	yes	no
Attended Private Christian College or Univ.	yes	no
Attended Bible Institute/College	yes	no
Attended Seminary	yes	no
Attended Foreign (Int'l) College or Univ.	yes	no

Figure 12 depicts the means for each variable, classified by graduate and nongraduate. Because the variables were coded as either one or zero, the means for each variable range from zero to one. Preliminary observation reveals that the means for graduates and nongraduates are relatively close in

all the variables except marital status and whether subjects received financial aid. In the former case, graduates were more likely to have been married than nongraduates. In the latter case, and consistent with logical assumptions, those who received financial aid were more likely to have graduated than those who did not. Other variables, which graphically indicate a difference between graduates and nongraduates are gender, ethnicity, nationality, public college or university attendance, private secular college or university attendance, seminary attendance, and foreign college or university attendance. The two variables with little apparent difference in means if any are private Christian college or university attendance and Bible college attendance.

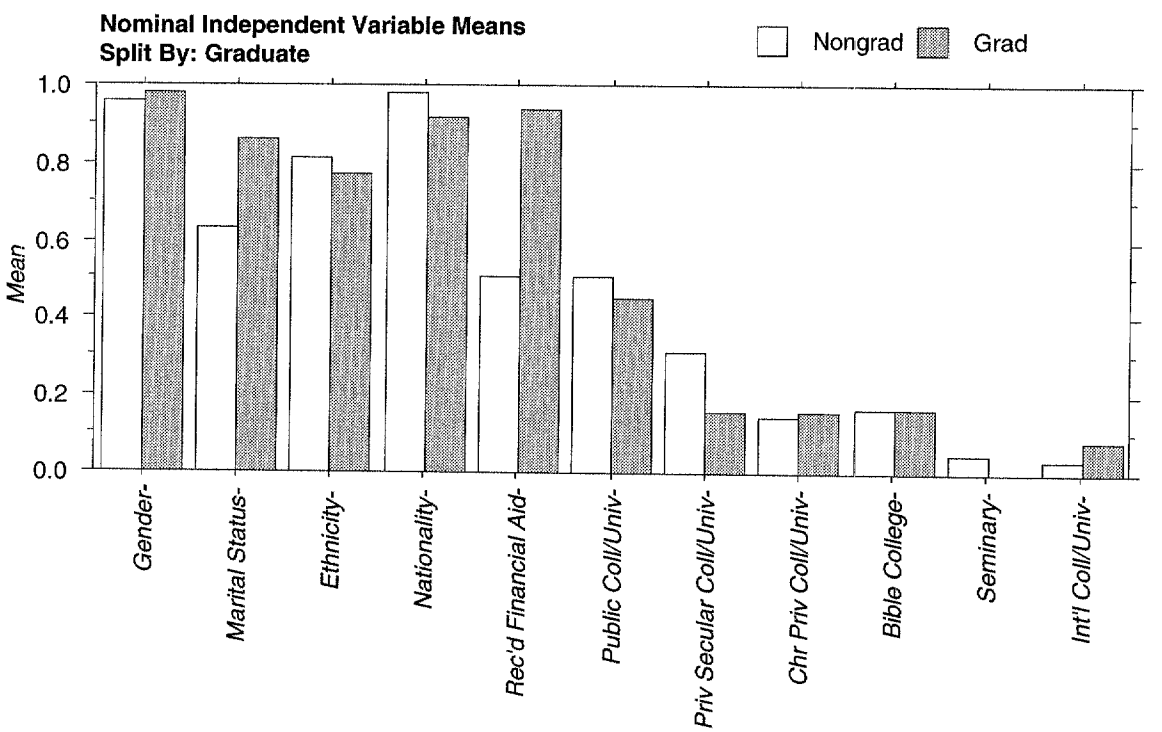

Fig. 12. Nominal Research Variables by Graduation

Preliminary statistical analysis of the variables used in the study resulted in the calculation of variable means for the data for all cases and as a function of completion. Table 4 lists each of the variables with corresponding mean for the total of all cases in each variable, and for graduates and nongraduates. The difference in means between graduates and nongraduates for each variable is also given.

Table 4. — Variable Means by Completion with Mean Difference

Variable Number and Name	*All Cases*	*Grads*	*Nongrads*	*Mean Difference*
1. ACR-Total	46.274	46.431	45.856	0.575
2. ACR-Academics	10.711	10.735	10.648	0.870
3. ACR-References	12.122	12.146	12.060	0.860
4. ACR-Potential	11.622	11.675	11.481	0.193
5. ACR-Experience	11.837	11.896	11.681	0.215
6. Years since Matriculation	8.020	8.630	6.417	0.213
7. Age at Matriculation	28.320	27.946	29.311	–1.365
8. Gender	0.976	0.983	0.958	0.024
9. Marital Status	0.797	0.858	0.634	0.224
10. Ethnicity	0.780	0.769	0.810	–0.041
11. Nationality	0.933	0.977	0.916	0.061
12. Public College/University	0.467	0.451	0.509	–0.058
13. Private Secular College/Univ.	0.203	0.163	0.310	–0.148
14. Private Christian College/Univ.	0.155	0.159	0.144	0.016
15. Bible College	0.166	0.166	0.167	0.001
16. Seminary	0.014	0.000	0.051	–0.051
17. Foreign School	0.070	0.082	0.037	0.045
18. Rec'd Fin. Aid	0.807	0.940	0.504	0.436
19. Total Financial Aid Received	$4,588	$6,272	$1,948	$4,324

A positive mean difference indicates that the mean for graduates is *larger* than the mean for nongraduates; a negative mean difference indicates

that the mean for graduates is *smaller* than the mean for nongraduates. A positive mean difference would also indicate a positive relationship, if indeed a significant relationship exists between the variable and completion. Conversely, a negative mean difference would indicate an inverse relationship if one is shown to exist.

The theoretical assumption behind the development of this study has been that those students who rated higher in the admissions process would be more likely to complete their studies at Dallas Theological Seminary. This assumption is consistent with the goal of most admissions offices in higher education—to recruit and admit students who will successfully complete the academic program to which they are admitted. The preliminary data in table 4 appear to support this assumption, at least as related to the ACR score and its components. For each of the five ACR variables (total, academics, references, potential, and experience), the mean score of graduates of the Th.M. (persisters in the study) is higher than the mean score for nongraduates (nonpersisters)[5]. Variables 18 and 19 also appear consistent with expectations indicating, at least preliminarily, that students who receive financial aid are more likely to complete their studies. Further testing of the data will confirm whether these preliminary observations are valid.

Statistical Analysis of the Data

The previous section discussed the characteristics of the data and some of the descriptive statistics leading to preliminary observations and analysis,

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[5] See also figure 7. ACR Mean Scores by Graduation, p. 55.

which guide the statistical analysis of the data. This section employed statistical tests to determine if any real differences exist between the dependent-variable categories of persistence (graduation or nongraduation from the Th.M. program of Dallas Seminary within the specified time limit for completing the degree) for each of the research variables. Statistical analyses were also used to determine if any predictive relationship exists between persistence and, primarily, the ACR scores of the research subjects, and, secondarily, the other research variables in the study. Results obtained by the use of the statistical tests in this section were statistically significant at the $p \leq 0.05$ level.

Unpaired *t*-Tests for Independent Samples

Means were calculated for each of the study's independent variables.[6] Group means were also calculated for each variable (by persister and nonpersister). The means were also converted to standard-score form (*z*–scores). Unpaired *t*–tests were then run on the data to determine if a statistically significant difference between group means existed, both in raw form and in standardized form. Table 5 on the following page shows the results of the analysis for all independent variables in the study.

Analysis of t*–Tests for ACR Scores*

This research was primarily interested in assessing whether any relationship might exist between Admissions Committee Rating scores and Th.M. completion. This evaluation was begun by comparing the mean ACR

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[6] See Table 4.— Variable Means by Completion with Mean Difference, p. 62.

scores for graduates and nongraduates to see if any statistically significant difference existed. The unpaired *t*–test, or *t*–test for independent samples, calculated the mean differences for the ACR variables for graduates and nongraduates (both in raw form and standard-score form) and calculated the *t*–values for the differences and the corresponding significance level. The results are presented in table 5 in order of decreasing statistical significance.

Calculation of the means for the five ACR scores (the *total* ACR score and the scores for each of the ACR components—previous *academic* performance, *references, potential* and gift for ministry, and ministry *experience*) for graduates and nongraduates revealed that a mean difference existed. Consistent with casual logical assumption, the means for each ACR variable were higher for graduates than for nongraduates.[7] However, the results in table 5 indicate that only two of the five ACR mean differences were statistically significant at the $p \leq 0.05$ level—ACR–Potential ($p = 0.0268$) and ACR–Experience ($p = 0.0305$). The mean differences between graduates for the ACR–Academics variable ($p = 0.6739$) and ACR–References variable ($p = 0.4600$) were clearly insignificant statistically.

The difference between graduates and nongraduates for the ACR–Total variable ($p = 0.0794$) was not significant at the 0.05 level, though nearly so (the perceived difference could be explained by chance only 8 out of 100 times). The fact that it was not statistically significant was due to the fact that it was a composite of the four ACR components, two of which were

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[7] It has been the assumption of the researcher from the inception of the research project that the strength of the applicant would correlate positively with completion. In other words, Th.M. graduates would have higher ACR scores than nongraduates.

Table 5. — Unpaired *t*–Test Results for Independent Means and Standard z-Scores

	Persisters (grads)				Nonpersisters (nongrads)								
Variable Name	Mean	Std. *z*-Mean	Std. Dev.	Std. *z*-Dev.	Mean	Std. *z*-Mean	Std. Dev.	Std. *z*-Dev.	Mean Diff.	Std. *z*-Diff.	DF	*t*-Value	*p*-Value
Rec'd Fin. Aid	0.940	0.337	0.237	0.601	0.504	-0.768	0.502	1.271	0.436	1.105	408	11.954	<0.0001
Tot. Fin. Aid Rec'd	$6,272	0.320	6027.8	1.145	$1,948	-0.501	1773.1	0.337	$4,324	0.821	93	4.241	<0.0001
Yrs since Matric.	8.630	0.192	2.790	0.884	6.417	-0.509	3.494	1.107	0.213	0.701	786	9.241	<0.0001
Marital Status	0.858	0.153	0.349	0.867	0.634	-0.404	0.483	1.199	0.224	0.557	786	7.194	<0.0001
Seminary	0.000	-0.119	0.000	0.000	0.051	0.315	0.220	1.877	-0.051	-0.434	786	-5.533	<0.0001
Priv. Sec. Coll./Univ.	0.163	-0.101	0.369	0.917	0.310	0.266	0.464	1.152	-0.148	-0.367	786	-4.651	<0.0001
Age at Matric.	27.946	-0.068	5.325	0.972	29.311	0.181	5.767	1.052	-1.365	-0.249	786	-3.135	0.0018
Nationality	0.916	-0.066	0.278	1.107	0.977	0.176	0.151	0.601	-0.061	-0.242	786	-3.052	0.0023
Int'l Coll./Univ.	0.082	0.049	0.275	1.078	0.037	-0.128	0.189	0.742	0.045	0.177	786	2.222	0.0266
ACR-Potential	11.675	0.048	1.029	0.941	11.481	-0.128	1.242	1.135	0.193	0.177	786	2.218	0.0268
ACR-Experience	11.896	0.047	1.195	0.958	11.681	-0.125	1.366	1.095	0.215	0.173	786	2.168	0.0305
Gender	0.983	0.043	0.131	0.855	0.958	-0.114	0.200	1.305	0.024	0.158	786	1.977	0.0484
ACR-Total	46.431	0.038	3.976	0.969	45.856	-0.102	4.409	1.074	0.575	0.140	786	1.757	0.0794
Public Coll./Univ.	0.451	-0.032	0.498	0.998	0.509	0.085	0.501	1.004	-0.058	-0.117	786	-1.461	0.1444
Ethnicity	0.769	-0.027	0.422	1.018	0.810	0.072	0.393	0.949	-0.041	-0.099	786	-1.239	0.2159
ACR-References	12.146	0.016	1.435	0.988	12.060	-0.043	1.501	1.033	0.860	0.059	786	0.739	0.4600
Priv. Chr. Coll./Univ.	0.159	0.012	0.366	1.011	0.144	-0.031	0.351	0.971	0.016	0.043	786	0.538	0.5904
ACR-Academics	10.735	0.009	2.605	1.007	10.648	-0.024	2.539	0.982	0.870	0.034	786	0.421	0.6739
Bible College	0.166	-0.0004	0.372	1.000	0.167	0.001	0.374	1.003	0.001	-0.002	786	0.020	0.9844

statistically significant but also two of which were clearly statistically insignificant.

The standardized mean differences calculated for each of the five ACR variables is also given in table 5. The standardized mean differences were calculated to determine effect size and to help assess whether any statistically-significant differences in group means were of any real logical value.[8] This was important in this study because of the large *N* (788 cases), which had the effect of making small differences significant by limiting the likelihood of random error.[9] Effect sizes are used to help describe the strength of the statistical difference or relationship. When considering standardized mean differences for this purpose, a "strong" difference would range in excess of 0.70, a "moderate" difference would range from 0.30 to 0.70, and a "weak" difference would be less than 0.30.[10]

Table 5 (column 10) shows that the standardized mean differences for ACR–Potential (0.177) and ACR-Experience (0.173) are both less than 0.30.

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[8] An excellent discussion of effect size can be found in two articles (Bruce Thompson, "AERA Editorial Policies Regarding Statistical Significance Testing: Three Suggested Reforms," *Educational Researcher* 25 [March 1996]: 26-30, and Daniel H. Robinson and Joel R. Levin, "Reflections on Statistical and Substantive Significance, With a Slice of Replication," *Educational Researcher* 26 [June/July 1997]: 21-26). The article by Robinson and Levin is a response to the article by Thompson calling for some modification to Thompson's suggestions. However, both articles concur that effect size is an overlooked, but essential aspect of educational and psychological research because it moves a researcher's focus away from looking solely at statistical significance and considering relevance.

[9] As sample size increases, its characteristics more closely reflect population parameters. The closer a sample gets to the size of the population, the closer the statistics of the sample come to the statistics of the population. Less variation would be expected, and consequently, statistical differences become increasingly significant as *N* increases. A corollary to this is that the same statistical significance can be achieved (i.e., $p \leq 0.05$) with increasingly smaller differences as *N* increases.

[10] Robinson and Levin, 22. See also chapter 3 of this dissertation, p. 42, note 15.

Consequently, the difference in mean ACR-Potential scores and ACR-Experience scores for graduates and nongraduates are statistically significant, their value in helping determine a significant relationship between ACR scores and persistence is clearly weak. Implications are addressed in more detail in chapter 5.

Analysis of t*–Tests for Secondary Independent Variables*

Table 5 also shows the results of the *t*–tests on the remaining independent variables. Of the fourteen variables, ten were determined to have a statistically significant difference between the means of graduates and nongraduates. Table 6 lists the ten variables with corresponding *p*–values in decreasing order of significance.

Table 6. — Statistically Significant Variables at the $p \leq 0.05$ Level

Variable	*p*–value	Std. *z* Mean Diff.
Received Financial Aid	<0.0001	1.105
Amount of Financial Aid Received	<0.0001	0.821
Years Since Matriculation	<0.0001	0.701
Marital Status	<0.0001	0.557
Seminary Attendance	<0.0001	-0.434
Private Secular Coll/Univ. Attendance	<0.0001	-0.367
Age at Matriculation	0.0018	-0.249
Nationality	0.0023	-0.242
Int'l Coll/Univ. Attendance	0.0266	0.177
Gender	0.0484	0.158

Table 6 also shows the standardized mean difference between graduates and nongraduates. The variables *years since matriculation,*

received financial aid, and total amount of financial aid received all had standardized mean differences in excess of 0.70, consequently making the mean difference between groups *strongly* significant.

The date when subjects began seminary studies had a strong (effect size of 0.701) relationship to completion, as did the amount of financial aid received (0.821). Whether subjects received financial aid, however, was clearly the strongest of the standardized mean differences (1.105), indicating a strong, statistically significant relationship between the receipt of financial aid and persistence, a fact generally well substantiated in retention studies.

The statistically significant differences between graduates and nongraduates as a function of marital status, previous attendance at a private secular college or university, and previous attendance at another seminary were moderate in effect size. One would have expected their relationship to persistence to be valid, but not so strong as to make them extremely useful in identifying persisters.

Marital status was the stronger of these variables (0.557), and indicated that married subjects were more likely to complete than single subjects, but again, not decisively so. Previous attendance at a private secular college or university or at another seminary had negative mean differences, indicating that students who previously attended these types of schools were less likely to complete seminary study. Even though these effect sizes were moderate (-0.367 and -0.434, respectively), they were at the lower end of that range and, consequently, moderately weak in strategic value.

Age at matriculation, gender, nationality, and attendance at an international college or university all presented statistically significant

differences in means between graduates and nongraduates. The low effect size for each, however, seriously limited their value in helping to predict persistence.

The four remaining study variables presented mean differences that were not statistically significant. Table 7 lists the variables with *p*–values and standardized mean differences in decreasing order of significance.

Table 7. — Statistically Insignificant Variables at the $p \leq 0.05$ Level

Variable	*p*–value	Std. *z* Mean Diff.
Public Coll/Univ. Attendance	0.1444	-0.117
Ethnicity	0.2159	-0.099
Private Christian Coll/Univ. Attendance	0.5904	0.043
Bible College Attendance	0.9844	-0.002

The previous discussion demonstrated which of the independent variables examined in this research study not only had a statistically significant difference in mean values for graduates and nongraduates, but also, which of those variables had differences of sufficient magnitude to provide insight into factors that impact persistence in the Th.M. program of Dallas Seminary. In the next section, correlations were run for the independent variables and the results analyzed to see if any significant relationships existed between the variables and persistence. All the independent variables were included. Attention was given specifically to those variables already determined to present significant differences in values between graduates and nongraduates.

Correlation Matrix and Analysis for Independent Variables

The point biserial correlation coefficient (r) was computed for each pair of variables used in the study. Table 8 presents the results in a correlation matrix, which indicates the relationship of each variable to each of the other variables used in the study. A point biserial correlation coefficient of zero indicates that no relationship exists between any two variables. A correlation of one indicates that a perfect relationship exists between any two variables. Positive values of the coefficient indicate a positive relationship (as the values of one variable increase, so do the values of the other variable). Negative values of the correlation coefficient indicate a negative, or inverse relationship (as the values of one variable increase, the values of the other variable decrease).

Table 9 summarizes the results of the correlation computations and lists the variables in descending order of coefficient magnitude. It includes not only the point biserial, product-moment correlation coefficients for the dependent variable (persistence) in relation to the independent variables of the research study, but also the partial-correlation coefficients[11] as well as Fisher's *r to z* transformation[12] with attendant *p*–values.

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[11] Partial-correlation calculations are useful when several variables are correlated in a correlation matrix. In simple terms, the partial-correlation coefficient describes the relationship between two variables with any potential influence by other variables removed (Abacus Concepts, *StatView Reference,* 45). See also the discussion in Ferguson, *Statistical Analysis in Psychology and Education,* 464-65.

[12] "To determine if a correlation coefficient is significantly different from zero, a [statistic known as] **Fisher's *r* to z transformation** is carried out on the correlation. This transforms the correlation coefficient to a variable with a standard normal distribution, allowing a probability level (*p* value) to be calculated for the null hypothesis that the correlation is equal to zero" (*StatView Reference,* 44).

Table 8. — Correlation Matrix of Research Variables

	Grad/Nongrad	ACR—Total	ACR—Academic	ACR—References	ACR—Potential	ACR—Experience	Yrs. since Matric.	Age at Matric.	Gender	Marital Status	Ethnicity	Nationality	Public Coll/Univ	Priv Secl Coll/U.	Priv Chr Coll/U.	Bible College	Seminary	Int'l Coll/Univ	Rec'd Fin. Aid	Tot Fin Aid Rec'd
Grad/Nongrad	**1.000**	0.063	0.015	0.026	0.079	0.077	0.313	-0.111	0.070	0.249	-0.044	-0.108	-0.052	-0.164	0.019	-0.001	-0.194	0.079	0.509	0.403
ACR-Total	0.063	**1.000**	0.702	0.632	0.673	0.509	0.015	-0.153	-0.042	0.072	0.068	-0.010	-0.082	-0.005	0.074	0.041	-0.024	0.030	0.072	-0.031
ACR-Academic	0.015	0.702	**1.000**	0.115	0.139	-0.010	0.038	-0.166	-0.029	-0.005	0.154	-0.023	-0.134	0.002	0.099	0.049	-0.035	0.027	0.007	-0.085
ACR-References	0.026	0.632	0.115	**1.000**	0.500	0.244	-0.041	-0.049	-0.072	0.049	0.026	0.026	0.040	0.025	0.013	-0.044	0.009	-0.016	0.061	-0.066
ACR-Potential	0.079	0.673	0.139	0.500	**1.000**	0.475	0.043	-0.096	0.029	0.111	-0.067	-0.028	-0.011	-0.022	0.002	0.011	-0.008	0.049	0.085	-0.034
ACR-Experience	0.077	0.509	-0.010	0.244	0.475	**1.000**	-0.016	-0.013	-0.017	0.081	-0.067	0.012	-0.034	-0.031	0.022	0.083	-0.010	0.018	0.081	0.172
Yrs since Matric.	0.313	0.015	0.038	-0.041	0.043	-0.016	**1.000**	-0.146	0.041	0.166	0.068	0.014	-0.113	-0.076	0.087	0.015	0.094	-0.045	0.574	0.161
Age at Matric.	-0.111	-0.153	-0.166	-0.049	-0.096	-0.013	-0.146	**1.000**	-0.101	0.017	-0.185	-0.037	0.213	0.040	-0.107	-0.086	0.035	0.096	-0.156	0.230
Gender	0.070	-0.042	-0.029	-0.072	0.029	-0.017	0.041	-0.101	**1.000**	0.147	0.037	0.024	-0.035	-0.044	0.022	0.048	0.019	0.011	-0.037	0.054
Marital Status	0.249	0.072	-0.005	0.049	0.111	0.081	0.166	0.017	0.147	**1.000**	0.045	-0.035	-0.052	-0.059	0.050	0.005	0.006	0.076	0.132	0.149
Ethnicity	-0.044	0.068	0.154	0.026	-0.067	-0.067	0.068	-0.185	0.037	0.045	**1.000**	0.506	0.054	-0.007	0.083	0.072	-0.041	-0.444	-0.180	-0.532
Nationality	-0.108	-0.010	-0.023	0.026	-0.028	0.012	0.014	-0.037	0.024	-0.035	0.506	**1.000**	0.170	0.123	0.101	0.093	-0.011	-0.742	-0.142	-0.362
Publ Coll/U.	-0.052	-0.082	-0.134	0.040	-0.011	-0.034	-0.113	0.213	-0.035	-0.052	0.054	0.170	**1.000**	-0.289	-0.295	-0.336	-0.003	-0.197	-0.132	-0.001
Priv. Sec. Coll/U.	-0.164	-0.005	0.002	0.025	-0.022	-0.031	-0.076	0.040	-0.044	-0.059	-0.007	0.123	-0.289	**1.000**	-0.164	-0.200	0.074	-0.114	-0.143	-0.146
Priv. Chr. Coll/U.	0.019	0.074	0.099	0.013	0.002	0.022	0.087	-0.107	0.022	0.050	0.083	0.101	-0.295	-0.164	**1.000**	-0.144	-0.021	-0.090	-0.053	-0.050
Bible College	-0.001	0.041	0.049	-0.044	0.011	0.083	0.015	-0.086	0.048	0.005	0.072	0.093	-0.336	-0.200	-0.144	**1.000**	-0.024	-0.096	0.060	-0.043
Seminary	-0.194	-0.024	-0.035	0.009	-0.008	-0.010	0.094	0.035	0.019	0.006	-0.041	-0.011	-0.003	0.074	-0.021	-0.024	**1.000**	0.010	0.034	•
Int'l Coll/U.	0.079	0.030	0.027	-0.016	0.049	0.018	-0.045	0.096	0.011	0.076	-0.444	-0.742	-0.197	-0.114	-0.090	-0.096	0.010	**1.000**	0.056	0.361
Rec'd Fin. Aid	0.509	0.072	0.007	0.061	0.085	0.081	0.574	-0.156	-0.037	0.132	-0.180	-0.142	-0.132	-0.143	-0.053	0.060	0.034	0.056	**1.000**	•
Tot Fin Aid Rec'd	0.403	-0.031	-0.085	-0.066	-0.034	0.172	0.161	0.230	0.054	0.149	-0.532	-0.362	-0.001	-0.146	-0.050	-0.043	•	0.361	•	**1.000**

• No correlation coefficient computed due to a variable that had a variance of 0.

Initial observation of table 9 reveals that the probability values for the correlation of each independent variable with the dependent variable are equal to the probability values calculated for the *t*–test for independent samples (see table 5). This would be expected since the same variable relationships are being considered in both statistics.

Table 9. — Summary Results of Correlation Calculations

Variable in Relationship to Persistence	No. of Cases	Corr. Coef.	Partial Corr.	*z*– Value	*p*– Value
Statistically Significant Variables					
Received Financial Aid	410	.509	.238	11.334	<.0001
Total Financial Aid Received	95	.403	.403	4.093	<.0001
Years since Matriculation	788	.313	.292	9.075	<.0001
Marital Status	788	.249	.202	7.112	<.0001
Seminary Attendance	788	-.194	-.234	-5.494	<.0001
Private Secular Coll/Univ. Attendance	788	-.164	-.143	-4.627	<.0001
Age at Matriculation	788	-.111	-.065	-3.127	.0018
Nationality	788	-.108	-.039	-3.044	.0023
Int'l College/Univ. Attendance	788	.079	-.029	2.218	.0265
ACR-Potential	788	.079	.018	2.214	.0268
ACR-Experience	788	.077	.033	2.164	.0304
Gender	788	.070	.035	1.974	.0484
Statistically Insignificant Variables					
ACR-Total	788	.063	-.022	1.754	.0794
Public College/Univ. Attendance	788	-.052	-.073	-1.459	.1444
Ethnicity	788	-.044	-.057	-1.237	.2160
ACR-References	788	.026	.027	.739	.4601
Private Chr. College/Univ. Attendance	788	.019	-.082	.538	.5905
ACR-Academic	788	.015	.022	.421	.6739
Bible College Attendance	788	-.001	-.083	-.020	.9844

Table 9 also shows that the correlation coefficients are relatively small for all variables, including those confirmed to be statistically significant at the 0.05 level. The partial correlations remove the influence of other variables on the relationship, and show that the true relationship between the variables listed is even smaller. It is interesting to note that as the correlations increased in magnitude, the statistical significance also increased. The implications of the size of the correlations as related to persistence are explored more fully in chapter 5.

Discriminant Analysis

Introduction to the Analysis

Based on the analyses in the previous sections, twelve of the nineteen independent variables utilized in this research were statistically different or statistically related as a function of the dependent variable, persistence in the Th.M. program at Dallas Seminary. The mean values for the twelve variables grouped by graduates and nongraduates presented statistically significant mean differences, and the correlation coefficients for the same variables showed a statistically significant relationship between the variables and persistence in the Th.M. program. The previous analyses also demonstrated that while the variables were statistically significant, their relatively small effect-sizes reduced their practical significance greatly. Table 9 categorizes the independent variables by statistical significance and lists them in descending order of significance.

The variables were next analyzed to see if their value in predicting completion in the Th.M. program was increased by combining their

relationships. The statistic used to accomplish this was a discriminant analysis, a multiple regression statistic designed to calculate a multiple correlation coefficient (R). The discriminant function mathematically computes the relationship of multiple independent variables, deriving a weighted multiple correlation that is designed to provide greater predictability of group membership than any of the correlation coefficients of the individual variables could predict in isolation.[13] "An F–ratio may be used to test whether an observed multiple correlation coefficient is significantly different from zero."[14]

The independent variables used in the discriminant analysis were grouped into three sets—ACR variables, non-ACR variables, and all variables combined—to be used in the various models of the discriminant analysis. Each variable set formed the pool of variables used in each statistical analysis. The results were categorized by the set of variables used in each model. The variable sets used are included in the *Analysis of Results* section that follows this introduction.

Because all observations or values of the independent and dependent variables must be independent of each other, the total ACR score, which is the sum of the scores assigned each of the four component parts (academics, references, potential for ministry, and ministry experience) could not be included in the discriminant analysis.[15] When running the multiple

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[13] Ferguson, *Statistical Analysis,* 466-73.

[14] Ibid., 471.

[15] See the section, *ACR-Scores Distributions and Frequencies,* earlier in this chapter.

regressions on the ACR data, only the four components of the ACR score were included.

The non-ACR variable, *total amount of financial aid received,* was excluded as well from the discriminant analysis for two reasons. First, of the 788 cases in the study, only 95 had actual amounts of financial aid identified. Second, since *amount of financial aid received* was an exact subset of the nominal variable, *received financial aid* (of which 410 case out of 788 were identified), it could not be included because it was not independent of the nominal variable.

The discriminant analysis model selects variables in a stepwise fashion based on the strength of their ability to explain or predict the dependent variable. The regression can be run in two ways. The first employs the stepwise methodology in a forward-selection mode. The model starts as an empty model. Variables are included at each step in order of their ability to explain or predict the dependent variable. The model stops when variables are no longer statistically significant in contributing to the multiple-regression correlation. The backward selection model starts with all the variables included in the model and at each step removes those variables which are statistically insignificant in influencing the multiple-regression coefficient. The criteria for including or excluding variables at each step of a forward- or backward-selection model is an *F*-ratio automatically calculated from the data used in the analysis. The same algorithms are used to assign or remove variables whichever model, forward or backward, is used. For the purposes of this study, the backward stepwise model was selected so that the initial influence of all the variables in the study could be measured.

Analysis of Results

The results of each discriminant analysis were summarized in tabular form. The variables used in the calculation were listed, as well as the multiple regression coefficient (R). In addition to R, the computer analysis program calculated the coefficient of determination (R^2).[16] R^2 is to R as r^2 is to r. It is the proportion of the dependent variable's variability that is explained by the independent variables used in the set.[17] In simpler terms, for example, an R^2 of .50 means that 50% is known of what can be known to predict the dependent variable from the independent variables in the model. Effect size for each analysis was evaluated based on the size of R.[18] An R value greater than 0.7 was considered strong; an R value from 0.3 to 0.7, was considered moderate; and an R value less than 0.30 was considered weak.

As mentioned previously, the discriminant analyses were run in a backward, stepwise format. For each set of variables, the analyses started with all the variables included, then removed in a stepwise fashion the variables that contributed least to the model. Variables were removed in order of least significance. Table 10 summarizes the results of each analysis model run on the independent variables.

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[16] An *adjusted* R^2 is also calculated by the computerized multiple regression program. The *adjusted* R^2, adjusts the value of R^2 based on the number of variables used in the model so that the number of variables used in the model is somewhat standardized (*StatView Reference,* 55).

[17] *StatView Reference,* 54-55.

[18] A "strong" difference would range in excess of 0.70, a "moderate" difference would range from 0.30 to 0.70, and a "weak" difference would be less than 0.30 (Robinson and Levin, "Reflections on Statistical and Substantive Significance," 22). See also note 9 in this chapter.

The discriminant analysis was first run on the primary variable of the study, the ACR component scores. The *ACR-total* variable was excluded since it was a composite of the ACR components, *academic, references, potential,* and *experience.*

At the end of each step in the analysis, the variables remaining in the model and the results of the regression are shown. The multiple regression coefficient (R) calculated at the beginning of the model with all four variables included was 0.93, R^2 was 0.009, and the probability level (p) for statistical significance was 0.1498. With all four ACR variables in the model, the regression coefficient was statistically insignificant. The model ran two steps, ACR-Academic was removed at the first step and ACR-References was removed at the second step. The remaining variables, ACR-Potential and ACR-Experience, met the criteria for inclusion in the model and were therefore retained. This is consistent with the t-test findings for the two variables' mean differences, which, of the four ACR variables, were the only two that were statistically significant.

The resulting regression coefficient (R) was statistically significant (p = 0.0387 ≤ 0.05). R^2 was .008 for the model. An effect-size of such a small magnitude is certainly weak and is supported by the fact that R^2 translates into a percentage of only 0.8 percent (only 0.8% of the variation between graduates and nongraduates can be accounted for by ACR-Potential and ACR-Experience combined).

The discriminant analysis regression was carried out again on the remaining, non-ACR independent variables in the study. Table 10 also summarizes the results of that analysis. Thirteen variables were included in

Table 10. — Stepwise Discriminant Analysis Summary

Regression	R	R^2	p	%
Regression 1—ACR Variables Only				
Variables at beginning of model (4 included)				
ACR-Academic , ACR-References, ACR-Potential, ACR-Experience	.093	.009	.1498	0.9
Variables removed in regression				
ACR-Academic , ACR-References				
Variables remaining at end of model				
ACR-Potential, ACR-Experience	.091	.008	.0387	0.8
Regression 2—Non-ACR Variables Only				
Variables at beginning of model (13 included)				
Yrs since Matric., Age at Matric., Gender, Marital Status, Ethnicity, Nationality, Publ C/U, Prv Sclr C/U, Prv Chr C/U, Bib. Coll., Seminary, Int'l C/U, Rec'd Fin. Aid	.644	.414	<.0001	41.4
Variables removed in regression				
Nationality, Gender, Age at Matric., Int'l C/U, Ethnicity, Publ. C/U, Bible College				
Variables remaining at end of model				
Yrs since Matric., Rec'd Fin. Aid, Seminary, Marital Status, Prv Sclr C/U, Prv Chr C/U,	.636	.404	<.0001	40.4
Regression 3—All Variables				
Variables at beginning of model (17 included)				
ACR-Academic, ACR-References, ACR-Pot'l, ACR-Expr., Yrs since Matric., Age at Matric., Gender, Marital Status, Ethnicity, Nationality, Publ C/U, Prv Sclr C/U, Prv Chr C/U, Bib. Coll., Seminary, Int'l C/U, Rec'd Fin. Aid	.652	.425	<.0001	42.5
Variables removed in regression				
Nationality, Gender, ACR-Academic, ACR-Potential, Int'l C/U, Age at Matric., Ethnicity, ACR-References, Publ C/U, Bib. Coll.				
Variables remaining at end of model				
Yrs since Matric., Rec'd Fin. Aid, Seminary, Marital Status, Prv Sclr C/U, ACR-Expr., Prv Chr C/U	.641	.411	<.0001	41.1

the non-ACR regression. At the beginning of the analysis, before the stepwise removal of variables not meeting the statistical criteria for the regression, a multiple regression correlation coefficient of 0.644 was calculated at a statistical significance level of $p<0.0001$. A correlation of this size is moderately strong and yielded an R^2 value of 0.414. The regression completed seven steps, removing the variables not meeting the statistical criteria in the order indicated in table 10. The resulting R was 0.636, still statistically significant at considerably less than the 0.05 probability level. The R^2 value was 0.404.

The discriminant analysis was run again for all independent variables in the study except for the total ACR score and the total amount of financial aid received, which violated the assumption of variable independence. Seventeen variables were initially included in the regression model as identified in table 10. The initial R and R^2 values were 0.652 and 0.425 respectively. The statistical significance was $p<0.0001$. The inclusion of the four ACR component variables in the model yielded an increase in R at the beginning of the model, but only a slight one, from 0.644 to 0.652. Ten variables were excluded from the model in each of ten successive steps before the analysis was complete. The seven remaining variables identified in table 10 met the regression criteria. The resulting R and R^2 values were 0.641 and 0.411 respectively. The inclusion of the four ACR variables had little impact on the final R values for the model.

The R values for the second and third regression models were the strongest correlations of the data with persistence in the Th.M. program. R values of almost 0.70 represent a moderately strong effect size. The resulting

R^2 value of 0.404 for the regression model for non-ACR variables only, and 0.411 for all study variables, yielded percentages of 40.4 percent and 41.1 percent respectively.

In summary, the three regression models each produced statistically-significant, multiple regression correlation coefficients, indicating a statistically significant relationship between the variables and persistence. In the case of the ACR variables, the correlation was less than weak, for the remaining variables in the study by themselves, and for all the variables in the study in combination, the correlations were much stronger. Chapter 5 explores in more detail whether the stronger correlations are more useful in predicting Th.M. completion.

Testing of the Research Hypotheses

The hypotheses of this study focused on the difference between the Admissions Committee Rating scores for graduates (persisters) and nongraduates (nonpersisters), and also on the relationship between the ACR and its component parts and persistence in the Th.M. program (defined as graduating within eight years of initial matriculation). The following hypotheses were tested.

1. The graduates (persisters) of the Th.M. degree program of Dallas Theological Seminary will have higher, statistically-significant total and component mean scores on the Admissions Committee Rating derived in the admissions process of Dallas Seminary than will nongraduates (nonpersisters).

2. There is a statistically-significant positive relationship between the Admissions Committee Rating total score and its component parts and the completion of the Th.M. degree program.

3. The combined relationship of the scores of the Admissions Committee Rating components to persistence is greater than the separate relationship of each component to persistence.

For the purposes of the research, statistical significance was determined if probability values of less than or equal to 0.05 were achieved.

The Testing of Research Hypothesis One

The first hypothesis was tested by calculating the mean ACR scores for graduates and nongraduates to see if the means differed between groups. Unpaired *t*–tests for independent samples were then carried out on the ACR scores to determine if the observed mean differences were statistically significant at the $p<0.05$ level. If statistically-significant mean differences existed, and the means were higher for graduates than nongraduates, then the hypothesis was substantiated and retained. If statistically-significant mean differences existed, but the mean scores for graduates were *lower* than the mean scores for nongraduates, then the hypothesis was rejected. The hypothesis was also rejected if mean differences were shown not to be statistically significant.

Casual observation of the data indicated that the higher mean scores were attached to graduates. As a result, determining if the means between groups were statistically-significant would result in retaining the hypothesis. Table 11 summarizes the results in descending order of statistical significance.

Table 11. — Summary of Mean Differences by Graduate

Variable Name	Grad Mean	Nongrad Mean	Mean Diff.	*p*-Value
ACR-Potential	11.675	11.481	0.193	0.0268
ACR-Experience	11.896	11.681	0.215	0.0305
ACR-Total	46.431	45.856	0.575	0.0794
ACR-References	12.146	12.060	0.860	0.4600
ACR-Academics	10.735	10.648	0.870	0.6739

Two of the ACR variables, ACR-Potential and ACR-Experience, had mean differences between groups that were statistically significant at the $p \leq 0.05$ level. The means of both variables were higher for graduates than nongraduates. Consequently, the hypothesis that a statistically significant difference would exist and that the mean scores would be higher for graduates than nongraduates was retained for those two variables.

The remaining ACR variables, Total, References, and Academics had *p*-values greater than 0.05. Even though the differences between the means of each of the three variables appeared to be higher for graduates than for nongraduates, the fact that those differences were statistically insignificant meant that the perceived differences could likely have occurred by random error. Statistically then, the means for the three variables were not different between groups and the hypothesis was rejected.

Other variables were included in the study for informational purposes. However those variables were not considered in the hypotheses for the research project and consequently are excluded here from discussion. Their influence in the study will be discussed in more detail in chapter 5.

The Testing of Research Hypothesis Two

The second research hypothesis was tested by calculating the point biserial correlations between each of the independent ACR variables and the nominal dependent variable, graduate or nongraduate. The correlations were then converted to standard-score form by using Fisher's r to z transformation and a p-value was calculated. If the correlation coefficient was positive and was significant at the $p \leq 0.05$ level, then the hypothesis was retained. If the correlation was statistically insignificant, or if the correlation coefficient was significant but negative, then the hypothesis was rejected. Table 12 summarizes the results of the correlation.

Table 12. — Summary of Correlation Coefficients by Graduate

Variable	Correlation Coefficient	z– Value	p– Value
ACR-Potential	0.079	2.214	0.0268
ACR-Experience	0.077	2.164	0.0304
ACR-Total	0.063	1.754	0.0794
ACR-References	0.026	0.739	0.4601
ACR-Academics	0.015	0.421	0.6739

The results of the correlation analysis are identical to the results of the test of independent means. Both ACR-Potential and ACR-Experience had correlations that were statistically significant, and both correlations were positive, consequently the hypothesis was substantiated for both variables. On the other hand, the correlation coefficients for ACR-Total, ACR-References, and ACR-Academics were statistically insignificant, even though

they appeared positive. As a result, the hypothesis was rejected for those three variables.

The Testing of Research Hypothesis Three

The third research hypothesis was tested by using the multiple regression method known as discriminant analysis. Discriminant analysis calculates a multiple regression correlation coefficient that expresses the combined effect of the relationship of several independent variables on one dependent variable. The analysis was run in a backward stepwise format, which starts with all the variables being considered in the model, and then in stepwise fashion removes variables that have little relationship to the dependent variable and do not meet the inclusion criteria for statistical significance. The discriminant analysis was carried out on the four component ACR variables. Through stepwise, multiple regression, the analysis removed the ACR-Academic variable and the ACR-References variable from the model. The resulting multiple regression correlation coefficient (R) was 0.091, which indicates the strength of the combined relationship of ACR-Potential and ACR-Experience to persistence. The significance level of R was p=0.387, which confirms the value's statistical significance at the $p \leq 0.05$ level.

Table 12 shows that the correlation coefficients for ACR-Potential and ACR-Experience were 0.79 and 0.77 respectively. Thus the combined relationship of ACR-Potential and ACR-Experience is stronger than the relationship of either individually. Consequently the hypothesis was substantiated and retained.

Summary

Five Admissions Committee Rating variables were considered in this research study—the total ACR score by itself and then each of the four component scores, previous academic strength, references, potential and gift for ministry, and experience in ministry. Of the five, only two were determined to be statistically significant as a function of Th.M. program completion—potential for ministry and experience in ministry.

The hypothesis that graduates would have, on average, statistically-significant, higher ratings than nongraduates on the total ACR and on each of the ACR components was substantiated on potential and experience ratings and thereby retained. The hypothesis was rejected for the *total* ACR scores and on the ACR scores for previous academics and personal references. In other words, for these latter three no difference between graduate ratings and nongraduate ratings existed.

Likewise the hypothesis that a statistically-significant, positive relationship would exist between Th.M. completion and the total ACR score and each of its four component scores was true only for the ACR potential and experience ratings. It was not true for the total ACR score and the previous academics and references ratings.

The hypothesis that the combined relationship of ACR variables would be greater than the variables individually was also confirmed. The implications of these findings and the influence of the other independent variables considered in this study on Th.M. completion will be considered in more detail in chapter five.

CHAPTER V

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

The primary goal of this research was to determine if the admissions process of Dallas Theological Seminary had any connection with completion of the seminary's main degree program, the Master of Theology (Th.M.) degree program. Prior to this research, the logical assumption of the researcher and others at Dallas Seminary was that stronger applicants would be more likely to succeed in seminary study. In fact, one of the major assumptions that appears commonly held among recruitment and admissions professionals is that the admissions process itself is designed to admit only those students who have presented sufficient information in the application process to suggest that they will indeed succeed in their studies and eventually graduate. This is the case at least in institutions that are selective in their admissions practices. Few such institutions of higher education are willing to admit students they know do not have the qualifications to succeed.

A secondary goal in this research was to look at other factors, generally known from the plethora of retention studies in higher education,[1] that might also impact completion of the four-year Th.M. but that were not normally considered (or in some cases not considered on legal grounds) in the

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[1] For an excellent discussion of factors impacting persistence in seminary education see, Rebecca Ann Morton, "A Study of Factors that Differentiate between Persisters and Nonpersisters at Southwestern Baptist Theological Seminary." Ed.D. diss., Southwestern Baptist Theological Seminary, 1989.

admissions process. These factors were also analyzed by the same statistical procedures to see how they compared with the ACR in predicting persistence. No strategic design influenced the selection of these factors. Only those that were readily available in Dallas Seminary's database were considered.

The purpose of this chapter is to provide a summary of the findings of this research along with conclusions and recommendations for the admissions practices of Dallas Seminary. The discussion is divided into three sections: (1) a summary of the research procedure and discussion of research results, (2) implications of the research results on seminary admissions and persistence, and (3) recommendations for further research.

Summary of Research Procedure and Discussion of Results

Summary of Research Procedure

Persistence, or completion, in the study was measured by whether a subject graduated or did not graduate. To see if a connection existed between Th.M. completion and the strength of the admissions evaluation, the admissions data collected for Th.M. students was analyzed to see if differences existed in the data for Th.M. graduates as opposed to nongraduates and whether enough of a relationship existed between the admissions data and completion to enable the seminary to predict Th.M. completion based on the strength of the admissions evaluation.

The admissions data evaluated in the research came from the seminary's Admissions Committee Applicant Report, which quantified the data for each applicant in four areas: (1) the strength of the applicant's previous academic experiences (grade-point average), (2) the strength of the

applicant's personal references, (3) the strength of the applicant's potential and promise for ministry, including perceived divine guidance, and (4) the strength of the applicant's previous ministry experiences. The combined numerical value assigned for each applicant in the process was the Admissions Committee Rating, or ACR. It was this rating, and the ratings of the four components, that were statistically analyzed to see if any relationship existed between the process and degree completion. The research criteria were met in 788 cases. These 788 cases became the sample for the study.

The ACR ratings and secondary variables were evaluated using an unpaired *t*–test for independent samples to determine if any real difference existed between the ratings of graduates and nongraduates. Standardized mean differences were also calculated to determine how relevant any statistical differences might be. Point-biserial, product-moment correlation coefficients were also calculated for the ACR ratings and secondary variables in relationship to Th.M. completion. The correlation coefficients were then converted to standardized values by using Fisher's *r* to *z* Transformation in order to evaluate the statistical significance of the correlations. Finally, the ACR ratings and secondary variables were analyzed by the stepwise, multiple regression statistic, discriminant analysis, to determine if the combined relationship of the variables to persistence would yield a stronger correlation.

Discussion of Research Results

The statistics used to analyze the research data to determine if statistically-significant differences in the research variables existed between graduates and nongraduates, and those used to determine whether a

statistically-significant relationship existed between those variables and completion, yielded identical results. A discussion of the analysis findings follows for the primary research data (ACR ratings) and for the secondary data (other demographic factors influencing completion).

Research Findings on ACR Ratings and Persistence

The ACR variables, total ACR score, ACR score for previous academic strength, ACR score for personal references, ACR score for potential and promise for ministry, and ACR score for previous ministry experience, were analyzed statistically by the test of significance for independent means (unpaired *t*-test) and the product-moment correlation calculation. Both statistical procedures yielded the same results. Table 13 summarizes the results of the analysis of the ACR variables in descending order of significance.

Table 13. — Summary of Analysis of ACR Ratings

Variable	Mean Diff.	Corr. Value	*p*– Value
ACR-Potential	0.193	0.079	0.027
ACR-Experience	0.215	0.077	0.030
ACR-Total	0.575	0.063	0.079
ACR-References	0.860	0.026	0.460
ACR-Academics	0.870	0.015	0.674

Only two of the five ACR variables, potential for ministry and ministry experience, were statistically significant as far as their ability to discriminate between persisters and nonpersisters (graduates and nongraduates) was

concerned. The means of the variables for graduates and nongraduates were not only statistically different but also higher for graduates than nongraduates, confirming the hypothesis. The remaining three variables, total ACR rating, previous academics, and personal references, were statistically insignificant in differentiating between graduates and nongraduates.

The discriminant analysis resulted in a model that combined only ACR-Potential and ACR-Experience. This was consistent with the findings of the *t*–tests and correlation procedures. The coefficient resulting from the discriminant analysis was 0.091, which was greater than either of the correlations for *potential* and *experience* individually (0.079 and 0.077 respectively).

In addition to statistical significance, the research also looked at effect size, the practical strength of the relationship that is shown to be statistically significant. This is important in correlational studies since statistical significance increases inversely to the absolute value of the magnitude of the correlation coefficient as N increases.[2] According to authors, Bruce Thompson,[3] Daniel Robinson, and Joel Levin,[4] in their articles interacting on effect size and statistical significance, the consideration of effect size is too often overlooked in statistical research. The result being that determining

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[2] Ibid.

[3] Bruce Thompson, "AERA Editorial Policies Regarding Statistical Significance Testing: Three Suggested Reforms," *Educational Researcher* 25 (March 1996): 26-30.

[4] Daniel H. Robinson and Joel R. Levin, "Reflections on Statistical and Substantive Significance, With a Slice of Replication," *Educational Researcher* 26 (June/July 1997): 21-26.

statistical significance solely is the end of most research, without considering that even though a statistically-significant relationship between variables may exist, it may be so small as to be practically irrelevant. The variable with the greatest statistical significance, for example, *whether the subject received financial aid* (p <0.0001), had a correlation coefficient of only .509, a value of only moderate practical significance, as demonstrated by the data in table 14. Table 14 indicates the relative importance of effect sizes for various ranges in values of correlation coefficients.[5]

Table 14. — Effect-Size Ranges

Correlation Coefficient	**Effect Size**
> 0.70	strong
≤ 0.70 but >0.30	moderate
≤ 0.30	weak

Effect size was considered in this research to determine if any real differences that might exist in the ACR ratings had any practical significance. Table 13 also lists the correlation coefficients and standardized mean differences for the ACR ratings. Comparing those to the data in table 14 reveals that for all the ACR variables, the effect size for the relationships between graduates and nongraduates on the basis of ACR ratings is very weak, even for the ACR variables, ministry potential and ministry

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[5] Ibid., 22. Tabulated from information presented.

experience, which were statistically significant. The combined relationship of ministry potential and ministry experience (R = 0.091) to completion is also a very weak, albeit statistically-significant, relationship.

The remaining correlations, even those confirmed to be statistically significant at the 0.05 probability level, were also too small to be of real value in predicting persistence. This was confirmed by employing the square of the correlation coefficient, which is a simple proportion of the ratio between two variances.[6] As a proportion, r^2 can predict the percentage of the variance in one variable that can be explained by another variable. Thus as in an earlier example, the correlation between students who received financial aid and persistence was .509. Converting to r^2 yielded the proportion 0.259, which in terms of a percentage was 25.9%. This means that only 25.9% is known of what needs to be known to predict persistence based on whether a subject received financial aid.

A closer look at the five ACR-variable correlations confirmed the earlier conclusions reached from the *t*–tests run on the ACR mean differences between graduates and nongraduates. Only two of the ACR correlations were statistically significant—ACR-Potential and ACR-Experience. Yet both variables had such small correlations (0.079 and 0.077, respectively) that they were practically insignificant. Again, this was confirmed by employing r^2. In the case of the ACR-Potential score (the ACR variable with the highest correlation with persistence), persistence could be predicted only 0.62% of the time based on what is known of the relationship between the variables.

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[6] Ferguson, *Statistical Analysis,* 129-30.

Based on statistical analysis and the consideration of effect-size, then, the research has shown that there is a statistically significant, but very weak relationship between the ACR ratings for ministry potential and ministry experience and completion of the Th.M. degree program at Dallas Seminary. There is no relationship, however, between program completion and the *total* ACR rating, nor the ACR ratings on previous academics and personal references.

The discriminant analysis of the ACR-Scores as predictors of Th.M. completion yielded an ability to predict group membership (graduate or nongraduate) based on the ministry potential and ministry experience scores of the ACR in less than one percent of the cases. The implications this has on admissions at Dallas Seminary will be discussed later in this chapter.

Research Findings on Secondary Study Variables

In addition to analyzing the ACR Ratings used in the admissions process as predictors of program completion, this research also looked at several other factors to determine how they related to program completion. Those factors were: years since matriculation (based on initial matriculation date as of the last date data was included for this research, January 1996), age at matriculation, gender, marital status, ethnicity, nationality, previous public college or university attendance, previous private secular college or university attendance, previous private Christian college or university attendance, previous Bible college or institute attendance, previous seminary attendance, previous international college or university attendance, whether or not financial aid was received (this was known for only 410 of the 788 study subjects), and the amount of financial aid received (known for only 95

of the study subjects). This information, though not directly impacting the connection between admissions criteria and seminary completion, was of interest to the seminary for other reasons.

These factors were basically demographic in nature, and were selected because of the availability of most of the data for each of the subjects in the research. The same statistical procedures applied to the ACR ratings were also applied to these variables. The results of the *t*–tests for independent samples and the calculation of the product-moment correlation coefficients yielded statistical-significance values that were exactly the same for each variable.

Of the fourteen secondary variables evaluated, ten proved to be statistically significant. They are listed in descending order of significance in table 15. Again, effect size was considered for these variables. Going back to

Table 15. — Summary of Analysis of Statistically-Significant Secondary Variables

Variable	Mean Diff.	Corr. Value	*p*– Value
Rec'd Financial Aid	0.436	.509	<.0001
Total Financial Aid Rec'd	$4,324	.403	<.0001
Years since Matriculation	0.213	.313	<.0001
Marital Status	0.224	.249	<.0001
Seminary Attendance	-0.051	-.194	<.0001
Priv. Secular C/U Attendance	-0.148	-.164	<.0001
Age at Matriculation	-1.365	-.111	.0018
Nationality	-0.061	-.018	.0023
International C/U Attendance	0.045	.079	.0265
Gender	0.024	.070	.0484

the data on effect size in table 14, three of the variables—whether or not subjects received financial aid, the total amount of financial aid received, and the number of years since matriculation—had moderately weak effect sizes based on their correlation coefficients (0.509, 0.403, and 0.313 respectively). The effect sizes for the remaining variables—marital status, previous seminary attendance, private secular college or university attendance, age at matriculation, nationality, international college or university attendance, and gender—were all in the "weak" range, and as a result should not be considered practically significant even though they were statistically significant.

The remaining four secondary variables—previous public college or university attendance, ethnicity, previous private Christian college or university attendance, and previous Bible college or institute attendance—were determined to have no statistical relationship to completion of the Th.M. degree program.

A few interesting observations surface as a result of some of the data from the secondary variables. First, regarding years since matriculation, this variable did not take into account the fact that many Th.M. students matriculating since the fall semester of 1992, who might otherwise have been expected to graduate, would not yet have graduated at the time of this research study. This was due to the fact that the Th.M. degree program at Dallas Seminary is a four-year program, and almost half of all Th.M. students take five or more years to complete their studies. The *years since matriculation* variable, then, included students who may have matriculated in the Th.M. program as late as January 1996, and because most would not

have graduated, they were likely to be included as non-persisters. Further analysis revealed that a statistically significant relationship existed between year of matriculation and program completion, but the effect size was small enough that it had little practical significance. The variable itself, was also of little practical use, because the date of matriculation cannot be manipulated. In other words, even if statistics show that those who matriculated earlier historically were more likely to persist, nothing can be done to change that for current matriculants; it is simply interesting information that may lead to characterizations about the nature of today's students.

Second, it was interesting that two of the variables appeared to contradict preconceptions about the nature of persisters and nonpersisters. Age at matriculation, for example, indicated that students who were younger when they matriculated were more likely to complete their studies than students who were older when they matriculated. The untested assumption of the researcher was that older students would be more likely to complete because of maturity and because of higher motivation. Again, though, while a statistically significant relationship did exist, the effect size was so small as to make it practically insignificant.

The second variable was ethnicity. Casual observation of the relationship between ethnicity and persistence indicated that minorities were more likely to complete their studies than were nonminorities. This appears to go against mainstream thought which argues that minorities are more at risk for dropping out. The specifics of this were not explored, however, since ethnicity proved to be a statistically insignificant variable in terms of relationship to persistence.

Third, a higher proportion of students who previously attended a private secular college or university were nonpersisters, and no one who previously attended seminary went on to graduate from Dallas Seminary. In the latter case as discussed earlier,[7] this was likely due to the low N for those subjects in the study who previously attended another seminary other than Dallas Seminary. The difference, however, though real, was again too small to be of practical significance.

A discriminant analysis was also carried out on the thirteen of the secondary factors.[8] The analysis removed in stepwise fashion seven of the factors from the model—nationality, gender, age at matriculation, previous international college or university attendance, ethnicity, previous public college or university attendance, and previous Bible college or institute attendance, in that order—because they did not contribute to the model's ability to predict persistence based on the analysis criteria. Six variables were retained as contributing to the ability of the model to predict persistence—years since matriculation, whether or not financial aid was received, previous seminary attendance, marital status, previous private secular college or university attendance, and private Christian college or university attendance—resulting in a multiple regression correlation

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[7] In figure 6.i (chap. 4, p. 53), only eleven members of the research study actually attended a seminary before transferring to Dallas Seminary. Of those eleven subjects, none went on to graduate. Clearly the data on seminary attendance is of little value as a predictor.

[8] The amount of financial aid received was excluded from the discriminant analysis because it violated one of the required assumptions—mutual independence of the variables. Since the total amount of financial aid received was a subset of the variable "whether or not financial aid was received," it could not also be included in the model. This is the same reason for which ACR-Total could not be included in the analysis of the ACR-rating variables.

coefficient of 0.636. This coefficient indicated a much stronger relationship to completion than did any of the included variables individually.

Research Findings on Discriminant Analysis of ACR and Non-ACR Variables

To see how the combined relationship of ACR factors and non-ACR factors improved the ability to predict persistence, the discriminant analysis model was run again for all independent variables in the study. Seventeen variables were included in the model and ten removed in the stepwise fashion. Seven variables were retained in the model—years since matriculation, whether or not financial aid was received, previous seminary attendance, marital status, previous private secular college or university attendance, ministry experience, and private Christian college or university attendance. The resulting multiple regression correlation coefficient was 0.641, only slightly stronger than coefficient for the non-ACR factors only (R = 0.636). The implication is that adding the ACR ratings to the prediction model increased the practical significance of the model only slightly. Ultimately, These data indicate that the ability to predict persistence in the Th.M. program is improved significantly when all the variables considered are included in the discriminant analysis, but the ability to predict has little to do with ACR.

Implications of the Research Results on Admissions and Persistence

This section will discuss the implications of the research on the admissions process of Dallas Theological Seminary and on persistence in the

seminary's major four-year master's degree program, the Th.M. First, implications of the research on seminary admissions processes in general will be discussed, with a focus on the connection of the admissions process with persistence in seminary study. Second, the implications of the research on persistence in seminary study will be discussed.

Implications of Research on Seminary Admissions

At the outset of this research project, it was hoped that a sufficiently strong relationship would exist between the numerical Admissions Committee Rating, derived from the admissions-evaluation process of Dallas Theological Seminary, and persistence in seminary studies as defined by graduating with a degree, so that the seminary might be better able to predict persistence or completion based on the strength of the applicant. This research has shown, however, that while a positive relationship did exist, it was so small as to be practically irrelevant as a means of predicting seminary completion based on admissions criteria.

The correlation between the ACR and persistence yielded an ability to predict persistence only slightly better than a fifty-fifty chance (50.8%).[9] In fact, the seminary would be better served by predicting persistence based on

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[9] The multiple regression correlation coefficient ($R = 0.091$) of the combined ACR factors that were statistically significant—potential and promise for ministry and ministry experience—yielded an R^2 proportion of 0.008, which translates into a percentage of 0.8 percent. In simple terms, this means that the ability to predict persistence from the ACR is about 0.8 percent more likely than a 50 percent chance.

the seminary's known graduation rate, which for this study was about 73 percent of all subjects.[10]

Of what value then is this study? Does it lead to an assumption that the admissions process of Dallas Seminary is somehow flawed? The answer is "no." Just because the research proved that little relationship exists between the ACR as the product of the applicant evaluation process and the ability to predict persistence doesn't mean that the admissions process itself is at fault. One could look at the fact that 73 percent of the study subjects completed the Th.M. and conclude that the admissions process was successful in identifying individuals who went on to complete their studies in 73 percent of the cases. The fact of admissions is that it helps identify those who are likely to succeed in seminary study because they have the academic ability and desire to do so. As many retention studies in higher education have shown, and in fact the observations from the non-admission-related variables of this study have shown, there are many factors that impact program completion more strongly than the strength of the admissions evaluation. There are, however, benefits to this research that can hopefully improve the ability of the admissions committee of Dallas Seminary, and in fact the ability of other seminaries that use similar admissions criteria, to make admission decisions that lead to improved student persistence.

This research has shown that of the four categories evaluated in the admissions process (previous academic performance, personal references,

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[10] Of the 788 subjects in the study, 572 completed the Th.M. for a completion rate of 72.6%.

potential and promise for ministry, and experience in ministry), two were shown to have at least a small relationship to completion—potential and promise for ministry and ministry experience. These two factors are a reflection of the applicant's own conviction that he or she is called to prepare for ministry. In the first, potential and promise for ministry, the rating an applicant receives is based largely on their perception and the perception of others that the applicant has the gifts and abilities necessary for successful Christian ministry. It is also a reflection of the applicant's belief in divine leading to prepare for ministry. The second, ministry experience, is a measure of the applicant's commitment to ministry as evidenced by his or her involvement in ministry before enrolling in a seminary program of study. One would expect that a higher commitment to preparation would be reflected in the ACR scores for these categories, and one would further expect that a higher commitment to beginning seminary study would likely carry over to a higher commitment to completing seminary study.[11]

The implication for the admissions process at Dallas Seminary is to consider weighting the ratings for ministry potential and experience more heavily than the ratings for previous academics and personal references. In other words, if an applicant receives a total Admissions Committee Rating of 35 (which at Dallas Seminary would be lower than the 45 needed for automatic acceptance and therefore require special committee action), but that total is comprised of higher than average scores on potential and

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[11] See Raymond H. Potvin and Felipe L. Muncada, *Seminary Outcomes: Perseverance and Withdrawal.* Washington, DC: Institute of Social and Behavioral Research, Catholic University of America, 1980.

experience, the committee could conclude that the applicant would have a better opportunity of succeeding at Dallas Seminary than if the ACR of 35 was comprised of high academic and references ratings and lower potential and experience ratings. Considering the impact of an applicant's commitment to ministry would be useful in other seminaries as well where admissions decisions are made for reasons other than academics and references alone, but that also consider educational goal and motivation.

Implications of Research on Seminary Persistence

Other factors in this research were demonstrated to correlate more highly with seminary persistence than admissions criteria. A number of those factors bear explanation as they may have value in helping Dallas Seminary evaluate factors that help students complete their seminary education.

Of the factors considered in this study, the ones that seemed to have the least overall relationship to persistence were the types of previous education before matriculating at Dallas Seminary. All the correlations for these factors were extremely low, and since these factors were unrelated to the admissions process, seemed unlikely to give practical help to the seminary on that basis.

The number of years since matriculation did correlate more highly with completion than most of the other factors considered. It indicated that seminary students who began their studies longer ago were more likely to complete. This likely reflects the fact that the nature of seminary studies was different in the 70s and 80s than it is in the 90s. Trends in higher education have seemed to move toward a more part-time-oriented student population for whom education is secondary to other life responsibilities. This has been

the case at least at Dallas Seminary, where a far greater percentage of the student body is part time.[12] Unfortunately, there is no way to admit students in the past, so this information, while interesting is of little value to seminaries in increasing completion rates.

Age at matriculation showed an inverse relationship to completion. Students who were younger at matriculation were slightly more likely to complete than older students, but students who were married were more likely to complete than students who were single. Other factors that presented statistically-significant relationships to persistence were gender (males slightly more likely to complete than females), ethnicity (minorities were more likely to complete than Caucasians, and nationality (US citizens were more likely to persist than international students). While all these factors were statistically significant, the size of the differences was so small that no practical significance existed in their ability to predict persistence.

The one factor that seemed to have the greatest ability to predict persistence was whether or not a student received financial aid. Based on the receipt of financial aid alone, the seminary's ability to predict persistence increases by almost 26 percent.[13] This confirms that financial assistance is an

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[12] The Full-Time Equivalent (FTE) enrollment at Dallas Seminary reached an all-time high in the fall of 1983 at 1,038 compared to a total headcount of 1,462, or 70.9% of the student body was full-time. In the fall of 1995, the seminary had an all-time-high total headcount of 1,564 compared to an FTE of 936. The resulting percentage of full-time students to head count was 59.8%.

[13] R for this variable was 0.509, resulting in an R^2 value of .259, or a percentage of 25.9%. If a correlation of 0 means that group membership could be predicted accurately 50% of the time (a fifty-fifty chance), then a correlation of 0.509 increases the ability to predict group membership to almost 76%.

important factor in persistence and should result in stronger efforts to develop additional sources of financial aid for seminary students.

The research did indicate that combining the abilities of all the non-admissions factors to predict persistence resulted in the ability to improve prediction by almost 41 percent.[14] However, the factors cannot be practically combined in such a way as to identify at risk groups that might benefit from specialized attention by the seminary. At best, these factors could become the basis for further study on retention factors at the seminary.

In summary, the non-ACR, or non-admissions factors considered in this study, proved to be more informational than beneficial in identifying groups that could benefit from specialized seminary resources. The one exception would be the fairly strong connection between the receipt of financial aid and program completion. Dallas Seminary and other seminaries would benefit from finding additional and creative ways to help students fund seminary education.

Recommendations for Further Research

This research project has only scratched the surface in addressing such issues as admissions in theological graduate education and persistence in theological education. A far-greater number of studies have dealt with factors influencing seminary persistence, but almost none exist on evaluating admissions processes and criteria as they relate to theological education. The

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[14] The R^2 value was 0.411 for the discriminant analysis on the non-admissions factors studied in this research, yielding a percentage of 41.1%.

findings of this research have led to the suggestion of a number of areas that bear further study in graduate theological education.

1. This study has shown a connection between age and completion, albeit a slight one. More work needs to be done to see what impact the age of students has on completion and persistence and whether or not age itself is a factor or simply a spurious correlation of other factors that impact persistence.

2. This study has hinted at the fact that minority students at Dallas Seminary are slightly more likely to persist than nonminority students. Further research needs to be done in this area, and, more broadly, by addressing the nature of graduate theological education as a multi-ethnic enterprise. This issue needs to be explored in relationship to financial aid considerations as well, to determine if apparent differences due to ethnicity are truly a function of ethnicity and not the fact that a greater number of minorities might receive some form of financial aid. Clarification also needs to be made between American-born minorities and internationals who have become naturalized citizens or permanent residents of the United States. This distinction did not exist in the ethnicity variable considered in this study.

3. This research indicated that virtually no relationship exists between previous academic performance and seminary completion. If this is true, why do so many admissions processes focus on the strength of an applicant's previous academic history? Further study needs to be done to identify how previous education impacts persistence, not only in terms of grade-point averages, but also in types of previous education and breadth of

education. A serious question to answer is what impact admitting students with lower grade-point averages will have on the overall educational process.

4. This research indicated a relationship between date of matriculation and seminary completion. Seminary admissions cannot be made retroactive to ensure success, but research could be done to see what factors make it more difficult for seminary students in the 90s to complete their education that were not true of seminary student in the 60s, 70s, or 80s. Implications of such research could be very useful in addressing the unique needs of today's students.

5. This research was an *ex-post-facto* study. The data was already available and no instrument was developed that was tested for reliability and validity. Dallas Seminary's Admissions Committee Applicant Report should be evaluated as an instrument for collecting admissions data. Research could be done to evaluate the process by which the Admissions Committee Rating is obtained. Such research could extend to other institutions to evaluate the effectiveness of their admissions procedures as well.

6. This study defined persistence in terms of graduation from a degree program. Many other factors, however, may be better indicators of persistence. For example, for professional theological education, whether or not a student enters ministry may be a better indicator of persistence.

7. This research looked primarily at the relationship of the strength of an applicant to persistence. A tangentially-related study could focus on admissions criteria and drop-out rates over time. In other words are the stronger applicants more likely to succeed in the first year of study, the second? Do applicant's who rate lower in the admissions process tend to drop

out of seminary sooner if at all? Answers to these questions may provide better insight into the effectiveness of admissions processes.

8. This study looked at the types of educational institutions previously attended as variables in the study. However, an area not explored in this study, but which would certainly be valuable in admissions evaluations, is what type of educational background have applicants had. Studies on whether applicants with a liberal arts background, for example, have an advantage over applicants who may have a professional background such as in business, engineering, or law, could be useful when advising potential applicants. Results of such a study could recommend types of courses and programs of study that would be advantageous in preparing for seminary study.

This researcher is aware that many other related topics exist for further study. It is his hope, however, that the conclusions reached here will be of some small assistance to those who seek to train qualified men and women for ministry, especially for those to whom it falls to determine whether applicants will get that chance.

APPENDIX A

ADMISSIONS COMMITTEE APPLICANT REPORT FORMS

Pre-1990 ACAR

Dallas Theological Seminary
ADMISSIONS COMMITTEE APPLICANT REPORT

NAME: BIRTHDATE: ID:
PROGRAM: MARITAL:
COLLEGE:

ADMISSIONS COUNSELOR:

A. COLLEGE GRADE-POINT AVERAGE

_____ _____ _____ 5 pts 3.75 - 4.00 GPA
_____ _____ _____ 4.5 pts 3.45 - 3.74 GPA
_____ _____ _____ 4 pts 3.15 - 3.44 GPA
_____ _____ _____ 3.5 pts 2.85 - 3.14 GPA
_____ _____ _____ 3 pts 2.55 - 2.84 GPA
_____ _____ _____ 2.5 pts 2.40 - 2.54 GPA
_____ _____ _____ 2 pts 2.25 - 2.39 GPA
_____ _____ _____ 1.5 pts 2.10 - 2.24 GPA
_____ _____ _____ 1 pts below 2.10 GPA

B. REFERENCES

_____ _____ _____ 5 pts Excellent
_____ _____ _____ 4 pts Strong
_____ _____ _____ 3 pts Acceptable
_____ _____ _____ 2 pts Possible questions, but not strongly negative
_____ _____ _____ 1 pts Strong doubt

C. GIFT AND PROMISE FOR CHRISTIAN SERVICE

_____ _____ _____ 5 pts Unusual gifts and promise of outstanding ministry
_____ _____ _____ 4 pts Well-gifted, shows promise of solid ministry
_____ _____ _____ 3 pts Evidence of gift, some promise for ministry
_____ _____ _____ 2 pts Some question regarding gift or promise
_____ _____ _____ 1 pts No gift evident or shows definite lack of promise

D. CHRISTIAN EXPERIENCE AND SERVICE

_____ _____ _____ 5 pts Outstanding initiative and experience
_____ _____ _____ 4 pts Exercised gifts to extent of opportunities
_____ _____ _____ 3 pts Taken some opportunities to exercise gifts
_____ _____ _____ 2 pts Taken a few opportunities to exercise gifts
_____ _____ _____ 1 pts Taken no opportunities to exercise gifts

_____ _____ _____ TOTAL POINTS

_____ _____ _____ Do you recommend acceptance?
_____ _____ _____ Do you recommend rejection?

_____ _____ _____ Committee member's initials

PLEASE USE REVERSE SIDE FOR COMMENTS.

Post-1990 ACAR

Thu Jun 13 1996 16:31 — Dallas Theological Seminary — ADMISSIONS COMMITTEE APPLICANT REPORT — Page 1 DScommrpt

NAME: Contoveros, John G. BIRTHDATE: 06/15/1953 ID: 14111
PROGRAM: MARITAL: S
COLLEGE: Dallas Theo Sem A 08/24/1992 THM .00
WV Univ A 12/01/1975 BSR .00
CUM GPA: .000

ADMISSIONS COUNSELOR: UNASSIGNED

A. COLLEGE GRADE-POINT AVERAGE

_____ 5 pts 3.75 - 4.00 GPA
_____ 4.5 pts 3.45 - 3.74 GPA
_____ 4 pts 3.15 - 3.44 GPA
_____ 3.5 pts 2.85 - 3.14 GPA
_____ 3 pts 2.55 - 2.84 GPA
_____ 2.5 pts 2.40 - 2.54 GPA
_____ 2 pts 2.25 - 2.39 GPA
_____ 1.5 pts 2.10 - 2.24 GPA
_____ 1 pts below 2.10 GPA

B. REFERENCES

_____ 5 pts Excellent
_____ 4 pts Strong
_____ 3 pts Acceptable
_____ 2 pts Possible questions, but not strongly negative
_____ 1 pts Strong doubt

C. GIFT AND PROMISE FOR CHRISTIAN SERVICE

_____ 5 pts Unusual gifts and promise of outstanding ministry
_____ 4 pts Well-gifted, shows promise of solid ministry
_____ 3 pts Evidence of gift, some promise for ministry
_____ 2 pts Some question regarding gift or promise
_____ 1 pts No gift evident or shows definite lack of promise

D. CHRISTIAN EXPERIENCE AND SERVICE

_____ 5 pts Outstanding initiative and experience
_____ 4 pts Exercised gifts to extent of opportunities
_____ 3 pts Taken some opportunities to exercise gifts
_____ 2 pts Taken a few opportunities to exercise gifts
_____ 1 pts Taken no opportunities to exercise gifts

_____ TOTAL POINTS

_____ Do you recommend acceptance?
_____ Do you recommend rejection?

_____ Committee member's initials _____ Date

PLEASE USE REVERSE SIDE FOR COMMENTS.

APPENDIX B

DALLAS THEOLOGICAL SEMINARY

APPLICATION FOR ADMISSION

DALLAS THEOLOGICAL SEMINARY

APPLICATION FOR ADMISSION PACKET

Within the context of its theological convictions and mission, Dallas Theological Seminary does not discriminate on the basis of race, color, gender, age, national and ethnic origin, or disability.

APPLICATION INSTRUCTIONS

This is a self-managed application. You control the gathering and submitting of all credentials necessary to complete your application. Please collect all documentation required and submit it to Dallas Theological Seminary in a single, oversized envelope along with a $30 application fee.

These instructions are designed to answer some of the questions commonly asked about applying for admission. If you have questions that are not answered by these instructions or the catalog, please call the Admissions Office at (800) 992-0998 or (214) 841-3661. For security reasons, we cannot accept applications by fax.

Before applying, you should first read the DTS catalog regarding the degree program in which you are interested and the section "Admission Procedures." Applicants who are not U.S. residents should read the section "International Students."

Applicants for the Certificate of Graduate Studies and for Nondegree (for credit) status have special instructions in Sections 4 and 5 (below) to reduce the admission requirements. Applicants to the Doctor of Ministry program should complete the application in the back of the D.Min. Handbook.

The following instructions correspond to the specified sections of the Application for Admission.

1. PERSONAL IDENTIFICATION

Please help us to identify you by name and location. If you are currently a student, please give your school address and phone, and indicate the dates when we can reach you at that address in the spaces for "phone from ___ to ___." If you list a fax number in the space indicated, we will assume we can send a fax to that number without calling ahead to inform you we are doing so.

2. COURSE OF STUDY

You should select the course of study that best aligns with your ministry goals and your purposes in coming to Dallas Seminary. Applicants without the prerequisite college degree cannot be considered for degree programs. However, we will consider you for a certificate in the program equivalent to the degree program you select.

The **Certificate of Graduate Studies** is a nondegree 30-hour program with only a few required courses that leads to the awarding of a certificate at graduation. **Nondegree** status allows the occasional student to complete courses of his or her choice, with no recognition at a commencement ceremony.

All of our degree programs are available at the Dallas campus. You may earn either the Master of Arts in Biblical Studies or the Certificate of Graduate Studies at most of our extension campuses. If you apply for another degree program and plan to enroll at an extension campus, be aware that you will need to come to the Dallas campus for at least part of your program. We offer no degrees or certificates entirely by correspondence. We offer a limited number of courses by correspondence for supplementing a residence program or for personal enrichment.

3. ACADEMIC BACKGROUND

Your application must include transcripts of your work at *every* college and university where you completed (or will have completed) 12 or more semester hours. This includes, but is not limited to, schools from which you transferred work to earn a degree at another school.

You should request that transcript(s) be sent to *you* and then included, *unopened*, with your self-managed application. You may use the Request for College Transcript form in this application packet for this purpose. If you have attended more than one school, photocopy the form and send one to each school.

If you do not remember the address of your college, you may call our Admissions Office and we will try to find it. Fill in your own address as the address to which they should send the transcript. Your signature is mandatory; a school cannot send your transcript without your signature on the request. Be aware that some schools charge a fee for providing a transcript.

When your college transcript arrives, *do not open it*. Enclose your *unopened* transcript(s) with your application. If we receive it already *opened*, we must consider it an unofficial transcript. We will use it for considering you for admission but your acceptance will be conditioned on our receiving an official transcript (i.e., unopened by you or sent directly to us) from each school where you received a prerequisite degree.

The Graduate Record Exam (GRE) or the Miller Analogies Test (MAT) is required for admission to Dallas Seminary for certain applicants. Please consult the catalog concerning which applicants are required to submit GRE or MAT scores. If you plan to submit GRE or MAT scores, please let the Admissions Office know when you have arranged to take the exam.

4. REFERENCES

You must list three people who know you well and have agreed to serve as references for you. One of your references should be from your pastor or person in a position of spiritual oversight over you. If you are in school or recently graduated, the second reference should be from one of your professors. If you are out of school, the second reference should be from your employer or a business associate. We ask that your references not be related to you, such as a parent or parent-in-law, brother-in-law, etc. *For Nondegree and Certificate of Graduate Studies applicants*, only two reference forms are required, one being from your pastor.

Your self-managed application requires you to distribute and collect the attached reference forms. You should first complete the top of each form where you print your name, indicate whether you waive your right to see your references after matriculation, and sign your name and print your address. With the reference form, give your reference a self-addressed, stamped, security-style business envelope and ask him or her to complete the form, seal it in the envelope, sign across the envelope flap, and send it back to you. When you receive the returned reference form, *do not open it* but submit it with your other application materials.

5. CHURCH RELATIONSHIP

Preparation for Christian ministry is nurtured in the local church before seminary study. Ask your church to write a letter confirming your fellowship/membership and expressing endorsement of your seminary plans. You may use the Validation of Church Relationship form to make this request.

Applicants for the M.A. in Biblical Studies major, Certificate of Graduate Studies, or Nondegree program: although a call to the ministry is not required for your admission, your ministry potential in general is a criterion in admission evaluation. Your church's ministry endorsement helps establish that potential.

As with the references (see above), the church should send the statement to you with the church official's signature across the flap, and you should submit it *unopened* with your application.

6. PERSONAL STATUS

Please specify your marital status, your sex, your spouse's name, and whether or not you or your spouse have been divorced.

If either you or your spouse have been divorced or separated please submit a statement discussing each occurrence. The fact that you have been divorced does not mean you will not be admitted. However, the Admissions Committee must understand the situation(s) in order to evaluate your potential for success in seminary study and in future ministry. For each divorce, please discuss when and why it occurred (including contributing causes), who filed for the divorce, attempts at reconciliation, the resolution including the status of children from the marriage, and how you feel the divorce may affect your future ministry.

If you have been separated but not divorced, please discuss the conditions leading to the separation and the resolution of the event.

7. CITIZENSHIP

Please specify your citizenship status. International students who plan to attend Dallas Seminary on a student (F-1 or J-1) visa will be asked, after being provisionally accepted, to document their source(s) of financial support for their first 12 months of study.

8. ENGLISH PROFICIENCY

The demonstration of English proficiency is required of *all* applicants for whom English is not the native or birth language, even applicants who are United States citizens, have attended American or English-speaking colleges and universities, and are long-time residents of English-speaking countries.

The catalog specifies how to take the TOEFL and TWE exams. If you are in Dallas during the application period, you can arrange with the Admissions secretary to take a proficiency exam at the seminary. There is a $50 charge for taking this test.

If you need to submit English proficiency scores and have not already made plans to take the required tests, you should make these plans before applying.

9. BIOGRAPHICAL FACTS ABOUT THE APPLICANT

Only two statements need be attached: your conversion and your ministry direction. The remaining questions may be answered on the application form. If you prefer to submit a separate personal statement covering all areas requested in this section, you may do so. Please sign your statements.

Your salvation

Please attach a statement about your conversion to Christianity. If you do not typically express your experience in terms of being "born again," please state what a person must do to receive eternal life and when you took that step.

Your employment and leadership experience

Provide short answers that will enable the Admissions Committee to evaluate your experience and leadership in Christian ministry and in your employment. Please include dates of employment where applicable.

Your potential and direction for ministry

The requested ministry statement should describe how you sense the Lord is leading you toward Christian ministry and how studying at Dallas Seminary could help you reach these goals.

Regarding your finances, the Admissions Committee is concerned that you have realistically "counted the cost" of attending Dallas Seminary. Our Financial Aid office has information about student loan programs, need-based scholarship grants, and easy-payment plans. You may apply for financial aid once you have applied for admission. *If you have more than $10,000 in debt* other than student loans or a home mortgage, you must submit the Financial Aid Application along with your application for admission; this application is bound into the back of the catalog. All applicants for aid are required to submit financial aid transcripts (which are different from grade transcripts) from every school attended. Contact your college's financial aid office to ask that a financial aid transcript be sent to Dallas Seminary.

10. SPOUSE'S INFORMATION STATEMENT

Please ask your spouse to prepare a statement of conversion as well as his or her support for your seminary studies. Your spouse should sign the statement. *If you are a Nondegree or Certificate of Graduate Studies applicant, this statement is not required.*

11. LIFESTYLE COMMITMENT

Please affirm your commitment to the seminary's Standards of Conduct for students. You can locate these in the catalog index.

12. COMMUNITY QUALIFICATIONS

Please affirm your adherence to these specific doctrines. If you have questions about these doctrines which are not clarified by our Doctrinal Statement in the back of the catalog, please contact the Admissions Office.

INCOMING STUDENT INFORMATION

This information will not be considered when the Admissions Committee evaluates your application. We need this information for statistical reporting purposes and to get to know you better and "link" you into the seminary family after acceptance. If you would prefer to submit this information after you have been accepted, photocopy the Incoming Student Information page and initial the box "Information to Be Supplied" on that page of the application.

DETACH HERE BEFORE MAILING

DALLAS THEOLOGICAL SEMINARY

APPLICATION FOR ADMISSION

1. PERSONAL IDENTIFICATION

Last or family name, first name, middle name _____ Name you go by _____ Social Security number _____

Other name under which you attended college: _____

Present mailing address _____ ( ) _____ home phone, from: __/__/__ to __/__/__

_____ ( ) _____ work phone (if we may contact you there)

Permanent mailing address _____

_____ ( ) _____ phone

FAX (optional) ( ) _____ E-mail address (optional) _____

Date of birth: _____ Place of birth: _____

Where do you consider your hometown to be? _____

2. COURSE OF STUDY Check program:

☐ Master of Arts or corresponding Certificate program. Check major:

☐ Biblical Counseling ☐ Biblical Studies ☐ Corporate Chaplaincy

☐ Biblical Exegesis and Linguistics ☐ Christian Education ☐ Cross-cultural Ministries

(Admission to the Biblical Counseling major requires an interview with and approval by departmental faculty, *after* acceptance as an M.A. student. You will first be considered for the Biblical Studies major, and then contacted regarding the interview.)

☐ Th.M. or corresponding Certificate of Theology Ministry Track if known: _____

☐ S.T.M. (M.Div. or B.D. prerequisite) Ministry Track: _____

☐ Ph.D. Major: _____ Completed master's thesis? ☐ No ☐ Yes: at which school? _____

Note: the Doctor of Ministry degree uses a different application form; please contact the Admissions Office.

Note: for the following programs there are special reduced application procedures. Refer to the application instructions.

☐ Certificate of Graduate Studies

☐ Nondegree Student

When do you plan to begin your studies? (Check one. Application deadline is two months before classes begin.)

☐ Fall Semester 199____ (begins at the end of August; application deadline is July 1)

☐ Wintersession 199____ (begins just after Christmas; application deadline is November 1)

☐ Spring Semester 199____ (begins around the second week of January; application deadline is November 15)

☐ Summer School 199____ (sessions begin mid-May through mid-July; application deadline is two months before first class)

Are you planning to be a summers-only student? ☐ Yes ☐ No

Where will you enroll? (Check one)

☐ Dallas
☐ Chattanooga area (classes meet in Dayton, Tenn.)
☐ Houston
☐ San Antonio
☐ Tampa area (classes meet in Tampa and New Port Richey, Fla.)
☐ Correspondence only

Have you applied to Dallas Seminary before? ☐ Yes ☐ No

If an alumnus or former student at DTS, when were you enrolled? _____

For Admissions Office Use Only

☐ $30 Fee
Initials _____
Photo _____
Addl. Info _____
ID _____

continued

3. ACADEMIC BACKGROUND

For each school attended beyond high school, give:

Name of institution	Attended from/to	Degree or diploma	Year degree was/will be received	Check if less than 12 hours completed
				☐
				☐
				☐
				☐

Please request that an official transcript be sent by each school to you, to be enclosed unopened with your application. Use the Request for College Transcript form for this purpose. You need not send a transcript from a school where you took less than 12 semester hours.

Have you ever been expelled or suspended by any school? ☐ Yes ☐ No
Are you under any kind of disciplinary action or pending action by any school? ☐ Yes ☐ No
If yes, attach statement describing the situation.

4. REFERENCES

Please complete the "waiver of rights" section of each reference form and request your references complete it and return it to you in a sealed envelope with his or her signature across the flap. The first reference should be from your pastor or a person in a position of spiritual oversight over you. If you are a college student, the second reference should be from one of your professors. If you are out of college, the second reference should be from an employer or a business associate.

NAME OF PASTORAL REFERENCE _____ POSITION _____

ADDRESS (include zip code) _____

NAME OF EDUCATIONAL OR PROFESSIONAL REFERENCE _____ POSITION _____

ADDRESS (include zip code) _____

NAME OF REFERENCE (not required for CGS or nondegree applicants) _____ POSITION _____

ADDRESS (include zip code) _____

5. CHURCH RELATIONSHIP

Name of local church where you are a member or in current fellowship (give name and location):

_____

With what ecclesiastical body is this church affiliated?

_____

Are you licensed? ☐ Yes ☐ No Are you ordained? ☐ Yes ☐ No

Please request a letter from the official board of your church stating that you are (1) a member or participant in good standing and (2) endorsed by them as having promise for effective ministry. You may use the Validation of Church Relationship form for making this request. The letter should be in a sealed envelope with the church official's signature across the sealed flap.

6. PERSONAL STATUS

Marital status: ☐ Single ☐ Married ☐ Engaged ☐ Widowed ☐ Separated

Sex: ☐ Male ☐ Female

Ever separated or divorced? ☐ Yes ☐ No If yes, attach statement. See instructions for details.

Spouse's name: _____

Spouse's date of birth: _____ Date of marriage: _____

Spouse ever separated or divorced? ☐ Yes ☐ No If yes, attach statement. See instructions for details.

7. CITIZENSHIP

Are you a/an (check one):

- ☐ Citizen of U.S.A. by birth?
- ☐ Naturalized citizen of the U.S.A.? When? _____
- ☐ Permanent resident or resident alien (holder of green card)?
- ☐ International student coming on a visa? What type visa? _____

If you are a permanent resident or international student,
what is your country of citizenship? _____

8. ENGLISH PROFICIENCY

Is English your native or birth language? ☐ Yes ☐ No

Applicants for whom English is not their native or birth language must take the Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE). This does apply to applicants who are U.S. citizens or permanent residents. The Institution Code for reporting TOEFL/TWE scores to DTS is 6156.

Date when TOEFL was or will be taken: _____ (Required) Date when TWE was or will be taken: _____ (Required)

9. BIOGRAPHICAL FACTS ABOUT THE APPLICANT

These questions are to guide you in presenting yourself to the Admissions Committee. You may choose to submit your own statement covering all of these areas.

Your salvation
Please attach a signed statement describing your conversion. (Length: one-half to one page.)

Your employment and leadership experience
List types and dates of employment in which you have engaged. If currently employed full-time, state position.

_____

_____

_____

In what campus organizations, extracurricular activities, service organizations, fraternal societies, etc., have you taken an active part?

_____

_____

_____

List Christian service/ministry activities in which you have engaged (include dates).

_____

_____

_____

What opportunities have you taken to demonstrate leadership, and what evidence of success in leadership have you seen?

What other facts would help the Admissions Committee evaluate your experience in Christian service?

Your potential and direction for ministry

Please attach a signed statement describing your conviction about the Lord's leading you into ministry. Please discuss your commitment to Christian service in the area of your particular interest and how Dallas Seminary can help you achieve this. *Applicants for nonprofessional programs (the M.A. with Biblical Studies major, the Certificate of Graduate Studies, and Nondegree applicants) should describe why they want to take classes at Dallas Seminary.* (Length: one page.)

How is your health at present?

Have you ever been under mental or emotional health care? ☐ Yes ☐ No
If yes, what has been the resolution of the care and what ongoing care is in process?

Are you on a sound financial basis at this time? ☐ Yes ☐ No
Amount of your indebtedness to your previous school(s): $ _____
Amount of student loan balance outstanding: $ _____
Amount of all other indebtedness (excluding home mortgage): $ _____ (If this amount is $10,000 or more, please complete the Application for Financial Aid and include it with your Application for Admission.)
Amount of loan repayments currently past due: $ _____

Please explain any delinquencies of debt repayments.

What is your plan for meeting the expenses of seminary study? Include expected annual income.

Have you been convicted of a crime? ☐ Yes ☐ No If so, please discuss the circumstances and the resolution of any conviction.

What other facts would help the Admissions Committee evaluate your potential for Christian ministry?

10. SPOUSE'S INFORMATION STATEMENT

Please attach a signed statement written by your spouse describing his or her conversion and whether he or she is in agreement with your plans to enter the seminary. This statement is not required if you are applying for Certificate of Graduate Study or Nondegree admission.

11. LIFESTYLE COMMITMENT

Have you read the *Standards of Conduct* stated in the catalog (see catalog index)? ☐ Yes ☐ No

Do you agree to abide by the *Standards of Conduct* stated in the catalog? ☐ Yes ☐ No

12. COMMUNITY QUALIFICATIONS

Have you read the Doctrinal Statement of the seminary in its entirety?
(located in the catalog or "We Believe" booklet) ☐ Yes ☐ No

Every member of the faculty affirms his or her full agreement with the Doctrinal Statement every year. Students (to be admitted and to graduate) must adhere to the following doctrines:

the authority and inerrancy of Scripture,
the Trinity,
the full deity and humanity of Christ,
the spiritual lostness of the human race,
the substitutionary atonement and bodily resurrection of Christ,
salvation by faith alone,
and the physical return of Christ.

Do you adhere to the above doctrines? ☐ Yes ☐ No

In the interest of campus unity, do you agree not to promote views contrary to the Doctrinal Statement of the seminary? ☐ Yes ☐ No

I promise, in submission to the Holy Spirit's guidance, that if admitted to Dallas Seminary I will at all times conduct myself as a Christian, faithfully and diligently apply myself to the studies as required by the seminary curriculum, promptly meet all financial and other obligations, carefully observe the rules and regulations as set forth by the seminary and its faculty, and submit to the authority of the faculty and administration. (I understand that faithful adherence to this promise is expected throughout my seminary career.) I also affirm that the facts in this application and accompanying biographical statement(s) are true to the best of my knowledge.

_____ _____

Signature of Applicant Date

APPLICANT'S CHECKLIST

☐ 1. All questions answered?
☐ 2. $30 nonrefundable application fee enclosed?
☐ 3. Transcript(s) enclosed in sealed, unopened envelope(s)?
☐ 4. Church letter enclosed in sealed envelope?
☐ 5. Arrangements begun to take TOEFL and TWE?
(If English is not native or birth language)
☐ 6. Reference forms (distributed with "waiver of rights" section filled out) enclosed in sealed envelopes?
☐ 7. Applicant's and/or spouse's signed statements on divorce (if applicable) enclosed?
☐ 8. Applicant's signed conversion statement enclosed?
☐ 9. Applicant's signed statement of the Lord's leading or reason for applying enclosed?
☐ 10. Spouse's signed information statement (if applicable) enclosed?

_____Information to Be Supplied
(Initials)

INCOMING STUDENT INFORMATION

(THIS INFORMATION WILL NOT BE USED IN CONSIDERING YOU FOR ADMISSION.)
You may photocopy this page if you wish to submit this information after acceptance.

Please send a photograph of yourself and, if married or engaged, a photograph of your spouse or fiancé/fiancée. We prefer that the photos be of head-and-shoulders, 2"x2" or wallet size.

Ethnic origin (required for statistical reporting purposes):

- ☐ Non-Resident Alien (i.e., will attend DTS under a _____ [fill in] visa status)
- ☐ American Indian or Alaskan native
- ☐ Asian or Pacific Islander
- ☐ Black or African-American
- ☐ Hispanic
- ☐ White, non-Hispanic

Please list any physical disabilities or limitations, such as blindness or hearing problems.

_____

Name of parents: _____

Parents' address: _____

Parents' phone: _____

May we send your parents *Kindred Spirit* magazine? ☐ Yes ☐ No

Name of parents-in-law: _____

Address of parents-in-law: _____

Phone of parents-in-law: _____

May we send your parents-in-law *Kindred Spirit* magazine? ☐ Yes ☐ No

Names of children and dates of birth: _____

_____

How did you first hear about Dallas Theological Seminary? _____

_____

What or who prompted you to apply to Dallas Seminary? _____

_____

Are you a veteran who will receive veteran's benefits during your studies? ☐ Yes ☐ No

What abilities do you have in music and/or art? _____

_____

Please indicate in which of the following campus or Christian groups you have leadership experience:

- ☐ Bible Study Fellowship
- ☐ Baptist Student Union
- ☐ Campus Crusade for Christ
- ☐ Campus Life
- ☐ Fellowship of Christian Athletes
- ☐ InterVarsity Christian Fellowship
- ☐ Navigators
- ☐ Young Life
- ☐ Other: _____

DALLAS THEOLOGICAL SEMINARY
3909 Swiss Avenue
Dallas, Texas 75204

REQUEST FOR COLLEGE TRANSCRIPT

Applicant: Please photocopy this form, complete it (including signature), and send it to each college, university, seminary, or learning institution you have attended since high school where you have completed at least 12 semester hours.

TO:

_____
Registrar

_____
Name of Institution

_____

_____

_____
Address of Institution

Please send me a copy of my academic transcript for the purpose of enclosing with my self-managed application for admission to Dallas Theological Seminary.

The seminary asks you, as Registrar, to **please sign across the sealed envelope flap.**

_____
Name by which I attended your school

_____
Years of attendance

_____
Degree(s) earned

_____
Social Security number

_____
Date of birth

_____
Applicant's signature

_____
Applicant's name (printed)

_____
Address to which transcript should be mailed

_____
City, State, Zip

( )_____
Daytime phone

DALLAS THEOLOGICAL SEMINARY
3909 Swiss Avenue
Dallas, Texas 75204

VALIDATION OF CHURCH RELATIONSHIP

Dear Pastor or Church Officer:

_____ is applying for admission to Dallas Theological Seminary. We ask that you validate that he/she is a member in good standing and is endorsed by you as having promise for effective ministry. If the applicant is not a member but is a regular attender, please qualify your statement accordingly.

The Admissions Committee prefers you use your church letterhead to write this statement. If this is not feasible, you may make your statement on this form. Be sure the statement is *signed* and includes the *title or position* of the signer.

To increase the applicant's control over the timetable of the application process, we are using a self-managed application. Please (1) seal the church endorsement in an envelope, (2) sign across the flap, and (3) **return to the applicant** the sealed envelope to be included with his or her application.

Admissions Office
Dallas Theological Seminary

If not using church letterhead, please use the space below to write your statement.

Date_____ Signature _____

Name (please print) _____ Position _____

Name of church _____ Address _____

Phone ( ) _____ _____

Please comment with any insights/concerns you have regarding this applicant's qualifications in the areas above.

_____

_____

How is this person gifted for vocational Christian service?

_____

_____

Do you have any reason to doubt the applicant's personal integrity? If so, please specify.

_____

If the applicant is married, how would you evaluate his/her marriage relationship?
☐ Don't know ☐ Superficial ☐ Detached, aloof ☐ Reserved ☐ Warm, growing ☐ Good communication

Comments:

_____

_____

Listed below are some of the tendencies which, if present, may reduce the effectiveness of the student. Underline any characteristics or traits which you have noted in the applicant:

Impatient	Critical of others	Argumentative	Domineering	Lacking tact
Intolerant	Easily offended	Self-centered	Sullen	Irritable
"Cocky"	Aloof	Discouraged	Rude	Nervous
Easily embarrassed	Quick-tempered	Frequently worried	Depressed	Given to exclusive
Impersonal	Lacking in humor	Prejudiced toward	Anxious	and absorbing
Tense	or inability to	groups, races, or	Rigid, not	friendships, i.e.,
Unteachable	take a joke	nationalities	adaptable	"crushes"

Comments:

_____

_____

What do you believe to be the applicant's motivation in applying to Dallas Theological Seminary?

_____

_____

How would you rate the applicant's potential success in Christian ministry?

☐ Exceptionally good ☐ Very good ☐ Good ☐ Fair ☐ Poor

Do you have any reservations in recommending this person?

_____

_____

If there are additional facts which we should know, please write them on a separate sheet. You may include the names and addresses of additional references which you think would be of help in evaluating this application. Thank you.

Date_____ Signature _____

Name (please print) _____ Position _____

Address _____

_____

Phone ( ) _____

To increase the applicant's control over the timetable of the application process, we are using a self-managed application. Please (1) **seal** this completed form in an envelope, (2) **sign** across the flap, and (3) **return to the applicant** the sealed envelope to be included with his or her application.

REV 1/97

REFERENCE FORM

DALLAS THEOLOGICAL SEMINARY

_____ has given your name as a reference in applying for entrance to our seminary. Instructions are given in the box at the end of the form for your submitting this reference form to us, securely, through the applicant. We appreciate your honest estimate of this applicant's personality and character traits, and will treat your reply as confidential. Thank you for your assistance to us and to the applicant.

Name of Applicant (Please Print)

NOTICE: PUBLIC LAW 93-380, the Family Education Rights and Privacy Act of 1974 grants all students the right to inspect and review all their official records. This right extends to letters of recommendation, except that a student may waive his/her right to inspect and review letters of recommendation by signing a waiver.

☐ I have waived my right to see this and other recommendations.
☐ I have *not* waived my right to see this and other recommendations.

_____ _____

Signature of Applicant — Applicant's Address

Failure to sign the above indicates that the applicant has not waived his/her right to see this recommendation.

How long have you known the applicant? _____

In what relationship? ☐ Teacher ☐ Pastor ☐ Friend ☐ Employer ☐ Adviser ☐ Other _____

Please rate the candidate by circling one or more items under each of the headings below. If you wish, describe briefly and concretely specific instances which support or interpret your judgment. Do not circle items of which you feel uncertain or in which you have had no opportunity to observe.

(a) Physical condition
- Frequently incapacitated
- Somewhat below par
- Fairly healthy
- Good health

(b) Sociability or friendliness
- Avoided by others
- Tolerated by others
- Liked by others
- Well-liked by others
- Sought by others

(c) Intelligence
- Learns and thinks slowly
- Average mental ability
- Alert; has a good mind
- Brilliant; exceptional capacity

(d) Achievement (ability to formulate, execute, and carry plans to conclusion)
- Does only what is assigned
- Starts but does not finish
- Meets average expectations
- Resourceful and effective
- Superior creative ability

(e) Leadership (ability to inspire others and maintain their confidence)
- Makes no effort to lead
- Tries but lacks ability
- Has some leadership promise
- Good leadership ability
- Unusual ability to lead

(f) Teamwork (ability to work with others)
- Frequently causes friction
- Prefers to work alone
- Usually cooperative
- Able to work with those of different personality or temperament
- Most effective in teamwork

(g) Responsiveness (to the feelings and needs of others)
- Slow to sense how others feel
- Reasonably responsive
- Understanding and thoughtful
- Responds with unusual insight and consideration

(h) Emotional Adjustment
- Yields to urges or cravings
- Tense, fearful, worried
- Easily angered, easily frustrated
- Downhearted, blue, depressed
- Maintains balance, self-controlled

(i) Teachability
- Rigid, argumentative
- Highly opinionated
- Open-minded
- Willing to receive instruction
- Eager to receive instruction

(j) Perseverance (in completing task)
- Gives up easily or easily discouraged
- Needs encouragement to persevere
- Persists in most circumstances
- Persists even under adversity

(k) Self-image
- Insecure
- Inferiority complex
- Self-confident
- May be prone to boast
- Modest, true estimate of self

(l) Wisdom in use of money
- Talks frequently of debt or financial worries
- Expects others to meet needs
- Careless
- Extravagant
- Careful, has a budget

This page has been inserted during digitization.

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