AN INVESTIGATION OF THE PREDICTIVE RELATIONSHIP OF ACADEMIC VARIABLES IN THREE DIFFERENT LEARNING ENVIRONMENTS TO THE INTENTIONS OF MUSIC EDUCATION MAJORS TO LEAVE THE DEGREE PROGRAM

Alton L. Corley, BME, MM

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Approved:

Darhyl Ramsey, Committee Chair
Hildegard Froehlich, Committee Member
Debbie Rohwer, Committee Member
Roger Warner, Committee Member
Warren Henry, Chair of the Department of Music Education
James Scott, Dean of the College of Music
C. Neal Tate, Dean of the Robert B. Toulouse School of Graduate Studies

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Attrition rates among students in music teacher training programs have contributed to a shortage of qualified music teachers for the nation's schools. The purpose of this study was to investigate the predictive relationship of academic variables in three different learning environments and the intent of a select population of music education majors to leave the degree program.

The study drew upon the work of Tinto, Bean and Astin to form a theoretical foundation for examining variables unique to student withdrawal from the music education degree plan. Variables were examined within the context of three different learning environments: (1) applied lessons, (2) ensembles and (3) non-performance courses. Participants were 95 freshmen and sophomore music education majors at a public university who were enrolled in the music education degree program during the spring semester, 2002. Data included participant responses on the Music Student Inventory (MSI), a questionnaire developed specifically for the study, and grade data from university records.

Independent variables in the study included participants' perceptions of (1) Ensemble experiences, (2) Applied lesson experiences, (3) Non-performance music course experiences, (3) Course requirements, and (4) Performance growth. Additional variables included: (1) Ensemble placement, (2) Course grades for music theory, applied lessons and aural skills, and (3) cumulative grade point averages. Gender interactions

were also examined. The dependent variable in the study was *intent to withdraw from the music education program*.

Data were analyzed using a binary logistic regression procedure. Results of the analysis indicated that none of the variables tested were statistically significant predictors of subjects' intentions to withdraw from the music education degree program. Gender interactions were not evident among the variables. Although statistically insignificant, the strongest predictor of the variables represented by questionnaire responses was *lesson experiences*. The analysis of course grades for music theory, applied lessons and aural skills failed to produce a statistically significant main effect, but applied lesson grades produced the strongest effect in the model.

Results of the study suggest that students' intentions to withdraw from the music education program are related to variables other than those representing the academic component of the music education program.

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CHAPTER 1

INTRODUCTION, RATIONALE AND PURPOSE

Introduction

According to Asmus (1999), a decline of new students entering music education programs and a rise in attrition rates among music teacher training programs has resulted in a shortage of qualified individuals to teach music in the nation's schools. The Music Educators National Conference (MENC, 2001) reported shortages of music teachers in different parts of the country, however, little research has been done to determine withdrawal patterns among music education students in the nation's higher education programs. Instead, most research in the music profession is focused on the methodology and curriculum of music teaching and learning. Although the study of methods, materials and curriculum is essential to the training of future music teachers, such knowledge only furthers our understanding of how teaching occurs. Just as important is the understanding of who becomes a teacher. Who drops out of the music education program before graduation? Is there a representative profile of the successful music education student? What contributes to the undergraduate students' integration into the academic and social environments of the music education program?

Research designed to address these questions is scarce, despite an apparent need to examine the problem. Studies are needed that specifically examine why undergraduate music education students withdraw from the degree plan. Variables contributing to student persistence/withdrawal need to be identified, and student's perceptions of their undergraduate music experiences need to be probed. Models are needed that explore the sociological and institutional influences in a music education student's collegiate experience in an effort to identify predictors of student attrition. If factors impacting withdrawal decisions among music

education students are identified, measures can be developed to provide counselors and advisors information necessary to engage students in intervention programs prior to their decisions to withdraw.

Background

Attrition in Higher Education

Attrition is an issue of ongoing concern for institutions of higher education (Gillespie & Noble, 1992; Fife & Barnet, 1986). Although 100% retention may be an unreasonable or even an undesirable goal (Rummel, A., Acton, D., Costello, & Pielow, G., 1999), there is both a financial and a philosophical incentive to retain students. Financially, more students mean more money for the institution since many government and private funds are awarded based on student enrollment. Philosophically, the incentive to retain students reflects a general feeling among educators that higher education has the potential to positively impact students' lives. Since student development occurs through studying, attending classes, and interacting with the collegiate environment, students who withdraw prior to graduation are not able to fully realize the developmental benefits of higher education (Astin, 1993). Although the reasons for student withdrawal may be related to both individual and institutional factors, attrition research provides insight into understanding and identifying these reasons. Attrition research holds great potential for describing the nature of how higher education sees its role. (Boyle, 1989).

Attrition research has been conducted in higher education environments for over 50 years, with some studies describing differences between students who persist and those who withdraw. Other studies describe the variables that influence student withdrawal behavior. Early research suggested that attrition could be predicted solely on the basis of a student's background characteristics, such as high school background and socioeconomic status. Later research

examined external factors and institutional factors. Currently, there is a predominance of research that suggests that attrition is a complex issue, largely contextual in nature that involves the interaction of student, institution and external factors. A general consensus exists among current researchers that attrition studies are an important means of gathering information about the populations and environments associated with institutions of higher education.

One of the most frequently examined populations in attrition studies is college freshmen. Depending on which statistic is quoted, from 50% to 33% of the college students beginning higher education degrees will not graduate from the school that they entered. According to Dennis (1998), the national freshman to sophomore attrition rate is almost 30%. From field observations and data collected through the American College Testing Program, Levitz, Noel and Richter (1999) report that after the first year, attrition rates are halved each subsequent year. This finding supports Tinto's (1987) theory that early stage separation from a previously established social system is the most difficult step for a college student beginning to socially integrate into an institution. Furthermore, the work of Levitz, Noel and Richter (1999) adds to a consensus in research literature that the best strategy for reducing attrition is one directed at freshman and sophomore students.

Although considerable progress has been made in identifying factors contributing to student attrition behavior, researchers have just begun to examine those factors within the context of individual degree programs. Since dropout rates appear to be related to college majors (Astin, 1977, 1993; Kroc, Howard, Woodard, & Hull, 1997) the examination of attrition within certain fields of study provides departments within the university a basis on which to review policies that may contribute to student withdrawal. Although smaller in scope than their parent institutions, individual collegiate departments and their associated degree plans represent

institutions unto themselves, and each department can be viewed as a microcosm of the larger university environment. In this regard, past research into factors affecting student attrition in higher education may provide insight into the student withdrawal behavior within specific fields of study. At the same time, some major fields may represent such specialized populations and environments that factors affecting student attrition cannot be identified when examined solely through existing models. In order to investigate factors contributing to the attrition patterns of students within specific courses of study, new models need to be developed that probe deeper into the unique aspects of degree programs and the unique populations that they serve.

Attrition Theories

Numerous attrition theories have been proposed in the last 25 years involving attrition in higher education that hold potential for examining factors specifically to music education majors. Some of these theories are based on psychological models (Waterman and Waterman, 1974; Redmore, 1983) while others are based on sociological models (Tinto, 1987; Bean, 1982; Astin, 1975). The psychological models emphasize the roles individual personality and disposition play in influencing the student's willingness and ability to meet the academic and social demands of the institution. On the other hand, the sociological models tend to view institutions of higher learning as microcosms of society. These theories belong to a larger classification of theories labeled by Pascarella and Terenzini (1991) as "college impact" models, which in turn are part of the enormous body of research addressing the impact of higher education on students' lives. In their description of the theories belonging to this classification, the researchers state:

"These 'college impact' models tend to be more eclectic and to identify sets of variables that are presumed to exert an influence on one or more aspects of student change, with particular emphasis on between- and within-institutional effects on change or development" (Pascarella &

Terenzini, p. 17). All of the impact theories attempt to explain processes related to student change, but they do so in ways that involve different approaches and dimensions. Researchers and practitioners now confront questions about the similarities and differences in the models and the appropriateness of each model for the particular environment being considered.

One of the earliest models of attrition was Astin's (1970a, 1970b) theory of student involvement. Astin's model, initially focusing on student background characteristics, later included the extent that students became involved with academic and social elements of higher education (Astin, 1975, 1993). In addition to entry characteristics of students (race, gender, socioeconomic status, etc.), Astin acknowledged GPA and faculty interaction as important variables in determining the level of student involvement, which in turn influenced their decisions to remain at their institutions. Astin's theory holds potential for music education research because music education students may have different levels of program involvement imposed on them as a result of their performance abilitites. Furthermore, music education students' background experiences in music may influence their decisions to persist in the music education program.

Bean's (1980) theory examined student withdrawal behavior by comparing it to turnover in work organizations. Thus, Bean hypothesized that organizational determinants were expected to affect student satisfaction, which in turn affected dropout. Some of Bean's variables were institutional quality, university grade point average (GPA), goal commitment, and development. Later studies (Bean & Metzner, 1985; Metzner & Bean, 1987) added the variable *intent to leave* as the second strongest predictor of dropout behavior (behind GPA). Bean and Metzner's work supported earlier findings reported by Pascarella, Duby and Iverson (1983) who found *intent to leave* a strong predictor of dropout behavior. These findings suggest that researchers who regress

variables on the dependent variable *intent to leave* may be able to identify students planning to withdraw before they actually withdraw from their institutions. Bean's model holds potential for the examination of attrition among music education students because the inclusion of organizational variables could be pertinent when examining a specific major field.

One of the models accepted by educators as particularly useful for explaining the causes of student departure from higher education is Tinto's (1987) model of student departure (Boyle, 1989). Unlike other models that describe factors contributing to student change in college, Tinto's approach draws on the prior research of Durkheim (1951), Van Gennep (1960), and Spady (1970) to specifically address the problem of student attrition. Tinto's model emphasizes that student attrition is not the result of individual or institutional factors, but rather the interaction between the two. (Tinto, 1975, 1987) Essentially the theory hypothesizes that persistence is a function of the match between an individual's motivation and academic ability and the institution's academic and social environment. Major variables in Tinto's model are social and academic integration, commitments, background characteristics, external forces, and withdrawal decisions. Because of its focus on the holistic interaction between students and their collegiate environments, Tinto's theory may provide the most flexibility for application to specific environments and student populations.

Although Tinto's model is often conceptualized as a linear flowchart, Pascarella and Terenzini (1983) caution against looking at the model as an equation aimed at predicting withdrawal behavior. The researchers state: "Since Tinto's model portrays in some detail the longitudinal process of student-institutional fit leading to persistence/withdrawal behavior, it is an important contribution to our *understanding* of the attrition phenomenon, rather than simply an algorithm for predicting it" (p. 215). This supports the earlier contention of Pascarella and

Terenzini (1980) that the model only generally described the particular variables believed to be most important in attrition. (Pascarella and Terenzini, 1980) According to Pascarella and Terenzini (1980), the model provided "considerable utility for focusing the thinking of researchers and administrators, " but the researchers also noted that "the time may be near for specifying the variables and relations more precisely so that more crisply focused research may proceed" (p. 281).

Academic Integration

This study will focus on the academic component of the attrition problem because it is the one common element between the theories of Tinto, Astin, and Bean that has been consistently related to student departure in numerous studies (e.g., Astin, 1993; Howell, 1999; McGrath, M. & Braunstein, 1997; Munro, 1981; Mutter, 1992; Nora, Attinasi, & Matonak, 1990; Stage, 1989). Although the three theories examine student attrition from slightly different angles, they suggest that academic factors relating to student attrition may include (1)student grade point averages, (2) student perceptions of academic growth and (3) interactions with faculty. Through extensive use in attrition models, these variables have become commonly associated with "academic integration," because they represent student achievement and student involvement with faculty and coursework. In contrast, "social integration" variables represent the nature and quality of students' peer relationships and extracurricular activities. The two constructs overlap somewhat in regard to interaction with faculty. Tinto (1987) identifies the difference between formal and informal faculty interactions and classifies the two types of interactions as academic (formal) or social (informal). However, the researcher also suggests that any student-faculty interaction, whether formal or informal, has the potential to impact the student academically. Tinto's suggestion is plausible, because informal conversations between students and faculty

members may center on school-related issues without specifically addressing individual student problems. It is reasonable to assume that such conversations could make a strong impact on students and their decisions about academic work.

Likewise, it is reasonable to assume that a student's major field of study may impact the quantity and quality of faculty interactions. For students choosing major fields with only a limited number of specialized courses, a significant amount of class time may be spent in large, lecture-style classes with minimal faculty contact. For these students, something as simple as a brief conversation in a hallway with a faculty member might contribute to their overall academic integration.

Similarly, students may evaluate academic growth differently, depending on the nature of their major field curriculum. If students are involved in a curriculum requiring substantial skill development, such as fine arts or physical education, they may evaluate growth in terms of skill improvement and performance level. However, students in major fields such as philosophy or business may evaluate their academic growth in terms of scholarship and increased body of knowledge.

In this regard, attrition models that identify academic growth and faculty interaction as important predictor variables should be considered in light of the curriculum and environment of the students being studied. When samples are drawn randomly from all degree majors, differences in curriculums, faculty contacts, and course requirements are controlled. However, if the attrition models are applied to specific populations, efforts should be made to control the unique curricular and environmental aspects of the population.

The Music Student's Academic Environment

The nature of the music education student's curriculum places the student in a unique environment regarding student-faculty interaction and academic integration. Since music education students have regularly scheduled private lessons with faculty as a required part of their academic program, their interaction with faculty is potentially greater than that of students in other degree plans. As a result, the opportunities for faculty and peer interaction may differ considerably for music education students and non-music students. This is particularly important in light of retention theories suggesting a strong positive relationship between faculty interaction and academic integration.

Likewise, the performing ensemble component of a music education student's degree program represents a unique academic variable not present in the curriculum of non-music students. Since ensembles meet both in and out of class time, and members are required to participate in events that would otherwise be considered extracurricular, participating in an ensemble may enhance the opportunity for social integration through peer relationships. Although this study will not specifically measure peer interaction, it could be a variable affecting attrition among music education majors. It is possible that the perception of academic growth held by students in performing ensembles is partially related to the peer relationships they develop while in the group. Furthermore, the performance skill level of each auditioned ensemble may represent an academic achievement criterion for its members. Therefore, students who earn positions in more prestigious ensembles might be more likely to report satisfaction with their academic program than those who do not qualify for the top groups.

The final component of the music education student's academic program involves non-performance courses, such as music theory and music history. These major-specific courses

comprise a significant portion of the music education major's course load, even at the freshman and sophomore levels. Again, this marks a difference between music education students and non-music students, since other major fields do not commonly include major-specific courses until later in the degree plan. This distinction is important because the use of GPA as a possible predictive measure among music education students will more likely include a higher percentage of major-specific grades than commonly found among non-music students.

Brown and Alley's (1983) study of attrition among music education students included measures for private lessons, ensemble participation, and overall academic achievement. However, since the study was the first to examine issues relating to attrition among music education students, it raised many questions as to the nature of the curricular elements involved in the music education degree plan and the relationship of those elements to student withdrawal. The researchers confirmed the importance of academic performance in their retention model, because cumulative GPA emerged as a statistically significant predictor of persistence/withdrawal. However, the researchers did not investigate how specific music courses impacted GPA or how other academic variables, such as faculty interactions, related to persistence.

With Brown and Alley's (1983) study standing as one of the only research efforts toward identifying factors relating to student attrition among undergraduate music education majors, a need exists for additional studies that probe the problem of music education student attrition while building on related research. This study will build on existing research in several ways: (1) The study will target freshman and sophomore students. The first two years represent the span of time in which a student will most likely dropout of college (Levitz, Noel, & Richter, 1999). (2) Scales developed and tested by Pascarella and Terenzini (1980) for measuring *academic*

integration in Tinto's model will be modified to specifically reflect the three different learning environments of the music education student: applied lessons, ensemble experiences, and non-performance courses. (3) Bean's variable *intent to leave* will be employed as a dependent variable in order to possibly identify at-risk students prior to their actual withdrawal. In addition, *intent to leave* can be measured at the same time as the independent variables, preventing possible maturation and history threats associated with measuring withdrawal behavior at some later time. (4) Brown and Alley's (1983) identification of GPA and jury grade as strong correlates to retention among music education students will be explored further by the inclusion of student grades in music theory, aural skills and applied lessons as separate variables. Music theory and aural skills are common core components of the music education student's non-performance curriculum, while applied lessons represents a specific performance component. Another expansion of the Brown and Alley (1983) study will be the use of a measure indicating ensemble placement. Where Brown and Alley totaled the number of ensembles in which students participated, this study will account for the level of a student's primary ensemble placement as determined by audition results.

Rationale

Music education programs may be losing talented, qualified students because of a lack of knowledge about factors and characteristics describing who persists and who withdraws from the degree plan. Although certain factors may be assumed to be important, such as individual musical skill or commitment, there is a lack of empirical evidence substantiating such assumptions. Because of the complexity of the problem, there is a need for a research agenda that will probe deeply into the world of music teacher training in an effort to describe the sociological influences and relationships that define a music education student's collegiate experience. The

broad scope of the agenda should include the development of explanatory models, data collection instruments, student profiles and intervention programs. This study will represent only part of such a research agenda, by examining select academic variables influencing student withdrawal decisions. The study will not attempt to isolate causal relationships between the independent and dependent variables. Instead, the study will examine the likelihood of subjects changing their persistence intentions as a result of changes in the independent variables. This methodology is consistent with research literature that attempts to identify which variables are potential predictors of student withdrawal decisions. Identifying which variables impact departure intentions among music education students is one of the first steps toward developing a model of music education student departure.

A predictor model of music education student departure would likely include additional components of the music education experience beyond just academics. Social, environmental and goal components might be included, and both main effects and interaction effects could be examined. However, including all of the potential attrition components was not feasible for the current study. As a result, the choice to examine only the academic component of the music education environment provided a means to keep the study at a manageable size while allowing a greater degree of specificity toward the unique aspects of the music education program.

Future studies should continue this research by examining the many other social and environmental components of the program that could also impact students' decisions to withdraw from the degree program. Interaction effects between the different program components should also be examined.

Purpose

The purpose of this study is to investigate the predictive influence of variables in three different academic learning environments on the intentions of music education majors to leave the degree program.

Research questions

1) Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?

2) Do student perceptions of their course requirements predict their intent to withdraw from the music education degree plan?

3) Do student perceptions of their overall development as performers predict their intent to withdraw from the music education degree plan?

4) Do student grades in music theory, aural skills and applied lessons predict student intent to withdraw from the music education degree plan?

5) Do students' cumulative grade point averages predict their intentions to withdraw from the music education degree plan?

6) Does gender interact with the other independent variables in the study in the prediction of student intentions to withdraw from the music education program?

7) Does ensemble placement predict student intent to withdraw from the music education program?

These questions will provide specific information about whether or not the academic experiences of music education majors impact their decisions to withdraw from the degree plan. If important predictor variables can be identified, future researchers may be able to use the

variables to develop a definitive model that explains why music education students choose to leave the program before degree completion.

CHAPTER 2

REVIEW OF LITERATURE

There is a large body of research and theory exploring the impact of social, organizational and individual factors on student attrition from college. The literature indicates that the causes of attrition vary, and that strategies designed to reduce attrition produce different results at different institutions. As a result, many researchers choose to conduct studies in the unique culture and environment of their own institutions. Still, those studying attrition in higher education have identified many important variables contributing to student's decisions to persist or withdraw, including GPA, social integration, academic integration, placement tests, age, gender, marriage, residence, personality, family support, commitment level, and teaching quality. These variables may be grouped into four large categories, representing four general approaches to the problem: (1) psychological variables, (2) social stratification, (3) institutional characteristics, and (4) interaction between student and institution. The first two approaches tend to emphasize personal and environmental factors (both internal and external) that might effect the psychology of the student, and in turn, the student's decision to persist or withdraw. On the other hand, the last two approaches tend to focus on differences in schools and how those differences contribute to the overall collegiate experience of the student. These four approaches only represent general trends in the literature, since many studies do not fit cleanly into one category or the other. However, the grouping provides a certain level of organization to the immense body of literature.

Psychological Variables

The psychological perspective to student attrition places the emphasis on the role of individual psychological characteristics in the college student departure process such as

personality or identity. Often the data in these approaches are measured as the student enters the institution, during orientation or first semester classes. In such studies, the psychological measure collected early in the student's college life is later examined in light of whether or not the student persists until graduation. Theories guiding psychological approaches may be represented by Chickering (1969), or Erikson (1968), who argue that establishing a sense of identity is a major developmental task for the transition from adolescence into early childhood. Rossman and Kirk (1970) and Waterman and Waterman (1972) have emphasized the roles of individual personality and disposition in the student's willingness and ability to meet social and academic demands of college. Fremont (1998) also found evidence supporting the relationship between personality variables and college student departure. Fremont's data, collected during freshmen orientation, indicated a statistically significant positive relationship ($p < .001$) between the personality preference "perceiving" as indicated by the Meyers Briggs Type Indicator® instrument and dropout proneness.

Other psychological variables have also been examined, such as motivation (Stage, 1989), life task predominance (Brower, 1992), and self-efficacy (Peterson, 1993). In a recent study, Bray, Braxton & Sullivan (1999) examined the effects of stress-coping strategies on social integration in college. Assuming the positive relationship between social integration and student persistence as described by Tinto (1975), the researchers hypothesized that certain stress-coping strategies would reduce student stress in ways that would help students become socially integrated. Analysis of data from the study suggested that social integration was directly impacted by several stress coping strategies: (a) active coping, (b) positive reinterpretation and growth, and (c) denial. The findings support the consideration of psychological factors for possible basis elaboration of existing attrition theories.

Since psychological perspectives tend to focus on the individual attributes of each student, the models provide insight for counselors and advisors who work with students one-on-one. Knowledge of identity issues, stress-coping strategies and the many other psychological traits associated with student behavior will enable advisors to more effectively recognize students who are at risk of dropping out of college. Likewise, faculty who are able to identify at-risk students in their classrooms may be able to intervene in the student's behalf before they actually withdraw. In this regard, the psychological models provide in important source of information for all faculty and staff who are directly involved with students. However, attrition is a complicated problem, and many researchers have chosen to look beyond psychological characteristics for additional explanatory power. Two of these factors that lie beyond the reach of the psychological perspectives are environmental influences and institutional characteristics.

Social Stratification

Where the psychological models examine student departure as a product of individual student maladjustment, models focusing on social stratification attempt to account for certain environmental influences on behavior that some psychological approaches fail to examine. For example, Pincus (1980) argues that student attrition must be understood not as isolated individual events, but as part of a larger process of social stratification in which race and gender are important factors.

Gender Effects

Although attrition studies often report main effects or interaction effects relating to gender, the relationship between gender and student attrition is not consistent. Some studies suggest that women are less likely to withdraw from courses than men (National Center for Educational Statistics, 1996; Tinto, 1993; Woodley, 1983), and that women tend to perform

better than men in their degree programs. (Hoskins & Newsead 1997). On the other hand, women may be more likely to withdraw than men (Johnson, 1997). One of the possible explanations for the disparity of results among studies focusing on gender effects is that the effects are mediated by field of study. Clarke (1988) found that women performed better in professional subjects and biological sciences while men performed better in mathematics, arts, and physical sciences, which would support the apparent tendency of women to choose such fields of study. Kroc, Howard, Hull and Woodard's (1997) study of more than 204, 000 freshmen indicated that women comprised 76.2% of the education majors in the sample and 69% of the students in health-related professions. In contrast, only 17.6 % of the engineering majors were women. However, the four-year graduation rate in the sample of over 130,000 subjects was 11% higher for women than the comparable graduation rate for men (Kroc, Howard, Hull and Woodard 1997).

Using Kroc, Howard, Hull & Woodard's (1997) study as a guide, Mallory (1998), examined undergraduate women who chose majors in physical and biological sciences in an effort to isolate factors relating to female persisters. The researcher found that women who persisted as science majors had better study habits and more informal faculty contacts than women in other fields.

Overall, the research literature suggests that gender effects are common in studies among undergraduate populations. However, the strength of the variable appears largely related to contextual factors, such as major field and institutional type. Therefore, gender will likely remain a descriptive variable in future retention studies to help identify unique characteristics of the population being studied.

Ethnicity

When compared to gender effects, research literature regarding ethnicity is more consistent. In general, ethnicity is presumed to be correlated with persistence. (Suen, 1983; Astin, 1997). However, as with gender, ethnicity is a variable that is often examined within the larger context of social stratification, and is therefore studied in conjunction with other factors. For example, Campbell (1999) examined social integration variables in a study of African-American male students who were enrolled in racially integrated institutions or historically Black colleges. Campbell utilized archival records, surveys, and personal interviews to determine the rate of social integration among the participants and found evidence supporting the relationship between social integration and graduation rates. These findings contrasted earlier findings (Mallinckrodt, 1988) that indicated no significant relationship between social support and dropout intentions among Black students. Campbell (1999) also reported differences between the two types of institutions regarding students' family incomes and parental education, with integrated schools showing significantly higher incomes and higher levels of parental education than historically Black colleges.

In contrast, McGrath & Braunstein (1997) found no statistically significant differences between age, gender, race, ethnicity and retention in an analysis of data from a study performed with 322 freshmen at Iona College in Rochelle, NY. The only statistically significant predictors of freshmen retention (as determined by stepwise logistic regression) was the first semester grade point average and the students' impressions of other students. However, the researchers found statistically significant differences between persisters and non-persisters with three other variables: socioeconomic background, high school grade point average, and SAT scores. These findings support those reported by the National Center for Education (1997) in regard to the

importance of socioeconomic status. The NCES (1997) report on a national cohort of high school sophomores indicated not only did socioeconomic status (SES) affect postsecondary enrollment, but it also was strongly associated with persistence. From the students who entered postsecondary programs, 51.3 % of the highest SES group persisted compared to 7.2% of the lowest SES group.

However, unlike McGrath & Braunstein's (1997) study, the NCES report suggests that ethnicity is an important factor in degree persistence. Only 12.2 % of Black subjects persisted, compared to 27.5 % of the White subjects and 45.6% of the Asian subjects. Hispanic subjects persisted at a rate of 9.9 % and American Indian/Alaskan native subjects persisted at the lowest rate of 7.2%.

Robinson (1996) also examined ethnicity, SES and gender variables in a study conducted at two institutions. Robinson divided the independent variable *persistence* into two parts (persistence at the institution and persistence in higher education), and utilized Tinto's (1975) model to test several hypotheses including the effects of ethnicity, gender, and socioeconomic status on persistence. There were no statistically significant relationships for gender in any of the analyses, and no direct effects were evident for socioeconomic status, gender or ethnicity when collectively used as a predictor variable. However, ethnicity and socioeconomic status were significantly correlated with the persistence measures. This finding suggests that the importance of ethnicity and socioeconomic status in the predictive model may have been evident had the two variables been entered separately in the path analysis.

Howell (1999), on the other hand, found a statistically significant relationship between ethnicity and persistence. Utilizing a survey instrument developed by Pascarella and Terenzini (1980), Howell measured a randomly selected sample of 400 registered third-year students and

110 voluntarily withdrawn students at a large northeastern state university. Twice as many minority students in the sample departed as non-minority students (p=.03). However, as with Robinson's (1996) findings, gender was not a significant risk factor in student departure.

Liu and Liu (1999) reported findings similar to Howell (1999) regarding ethnicity and gender. Focusing on commuter students at a midwestern school (n = 14, 476), the researchers examined the effects of variables relating to gender, race, native/transfer status, and age on persistence (stay VS dropout). Liu and Liu's data provided evidence that race impacted persistence within the context of student-faculty relationships, but gender effects were not significant.

Socioeconomic Status

In addition to race and gender issues, finances and socioeconomic status are important factors when examining the impact of social stratification on college student attrition. (Mohr, Eiche & Sedlacek, 1998). Cabrera, Stampen & Hansen (1990) examined the student's ability to pay for college expenses. The researchers added the variable *ability to pay* to the academic, social and goal variables of Tinto's model, hypothesizing that ability to pay would directly affect a student's decision to persist in college. The researchers also hypothesized that ability to pay would produce indirect effects on persistence by moderating the effects of commitments, academic integration and social integration. Results suggested that students from higher socioeconomic groups were more likely to persist than students from lower socioeconomic groups, but indirect effects of ability to pay were only evident regarding goal commitments. Ability to pay had no mediating effects on academic or social integration.

Cabrera, Stampen & Hansen's (1990) findings have since been supported by other studies in the literature that identify strong correlation between socioeconomic status and degree

completion (Johnes, 1990; NCES, 1997; Tinto, 1993). Related factors such as working while in college and dealing with financial hardships have also been shown to have an impact on persistence. (Nora, Cabrera, Hagedorn, & Pascarella, 1996).

Summary of Social Stratification Studies

The literature suggests that gender, ethnicity and socioeconomic factors should be taken into consideration when examining college attrition among undergraduate students. However, the variables may not always produce direct effects on students' decisions to persist or withdraw from college. Gender and ethnicity may interact with other variables such as *faculty contact* or *peer support* to produce indirect effects on withdrawal behavior. In studies involving large samples, such as those conducted by the U. S. Department of Education (NCES, 1996, 1997), ethnicity appears to be an important predictor of student withdrawal behavior, but in smaller, localized studies, the effects of ethnicity are inconsistent. Likewise, gender effects are inconsistent, and the literature suggests that major field may moderate gender effects. Socioeconomic status, on the other hand, appears directly related to persistence in college, but does not necessarily impact other retention variables such as academic or social integration. A student's socioeconomic status is more likely to be related to hours spent in off-campus jobs, thus impacting the hours spent studying, or *time on task* as labeled by Bagayoko & Kelley (1994).

The importance of these variables in a research design depends on the questions being asked by the researcher and the context for the study. For example, if an attrition study is being conducted in an exclusive private university, socioeconomic status may have little effect on persistence or withdrawal decisions. However, in a public commuter college, SES may be considerably more important. Likewise, if an attrition study is being conducted among students

majoring in science or engineering, gender issues may be more important than in other populations. The best research design will result from a careful examination of social stratification variables as they apply to the particular population being studied and the research questions being examined.

Institutional Characteristics

Studies focusing on institutional characteristics attempt to account for the unique practices, processes and populations of the institution itself, such as the prestige of the school, the length of the program (2 or 4 years) the school's intervention and orientation plans and the school's special populations. Included in this group of studies are studies that examine community colleges and technical schools.

Community Colleges and Technical Schools

An extensive number of studies examine dropout among community college students because community colleges have lower persistence rates than 4-year schools, and the reasons for student departure in the two different settings may not be the same. Adelman's (1999) report from a national cohort of students indicated that only 26% of students who began undergraduate careers in community colleges formally transferred to 4-year institutions. This finding supported earlier figures compiled in 1989-90 that indicated only 8% of students beginning college in 2-year institutions obtained their degree in five years, compared to 57% of students beginning in four year schools (NCES, 1997). In an effort to explain this low persistence rate, researchers have examined many variables that represent the unique characteristics of the two environments. For example, Tinto (1987) claims that students must be both academically and socially integrated in the collegiate environment in order to persist. However, 2-year programs do not offer the same level of social involvement for students as 4-year programs, so it is possible that academic

factors may play a more crucial role for students in 2-year programs who decide to dropout (Braxton, Sullivan & Johnson, 1997).

For example, in a study of community college students, Mutter (1992) reported a pronounced relationship between academic integration and persistence as indicated by the amount of hours spent studying and the amount of academic and career-related conversations with faculty. However, interaction effects were evident between ethnicity and other variables. Notably, White non-persisters reported significantly higher numbers of informal conversations with faculty than persisters. This finding is inconsistent with much of the research literature that generally reports a positive relationship between informal faculty interactions and persistence. In Mutter's (1992) study, frequent informal conversations with faculty was only significantly related to persistence among Black students.

Another study identifying the importance of academic components in community colleges was done by Biel, Reisen, Zea, & Caplan (1999) who examined academic integration, social integration, and goal commitments. Data suggested that not only did academic integration predicted retention, but also social integration and goal commitment. On the other hand, Pittman's (1997) study of technical institutes supports just the opposite. Pittman found that academic and social integration variables were not statistically significant when comparing students who persisted with those who withdrew. The only variable that produced a statistically significant relationship was "intent to return", supporting Bean's (1980) earlier findings that identified "intent to return" as a statistically significant predictor variable.

Academic Preparedness

Although academic integration has been a source of inquiry for retention studies in community college settings, attention as also been devoted to the overall academic preparedness

of their student populations. Since students who struggle academically are more likely to enter community colleges than four-year colleges, some researchers conducting studies at community colleges have focused on academic preparedness of students. Nora, Attinasi, & Matonak (1990), examined academic and social integration variables, background characteristics and initial commitment among underprepared, first-time freshmen in a two-year community college. The data suggested that academic integration and pre-college schooling were both positively related to retention, while social integration and initial commitments yielded negative direct effects on retention.

Moss (1994) also focused on underprepared students in the community college setting. However, Moss not only measured student perceptions about academic and social integration, but also the perceptions of administrators, counselors and faculty. A comparison of the two measures indicated statistically significant differences in the perceptions of students and the perceptions of college administrators, counselors, and faculty about student integration variables. Administrators, counselors, and faculty perceived underprepared student's academic integration at lower levels than the students themselves, and administrators and counselors perceived underprepared students' gains from attending colleges at lower levels than faculty and students. Moss's (1994) study suggests that regardless of the time spent matching students to colleges, the process of integration into the collegiate environment for underprepared students is not equally understood by students and faculty alike. This lack of a common understanding between students and faculty illuminates the need for further study of the institutional environment and how institutional factors contribute to student withdrawal.

Young's (1999) study of developmental education students in Texas furthered the line of inquiry into institutional factors affecting retention among students who were receiving remedial

academic courses. Focusing on institutional and intervention factors, Young (1999) attempted to isolate institutional characteristics that most affected retention among Texas community college developmental education students. Using qualitative methodology, Young identified 5 important factors influencing student retention in developmental education programs: (1) organization structure of the department, (2) financial aid (3) ability to create a sense of belonging (4) special population programs, and (5) intensity of intervention. Young's findings support Bean's (1980) argument that student attrition should be examined in light of organizational and environmental factors.

Summary of Institutional Characteristics

The characteristics of each institutional environment have the potential to impact student withdrawal. Research literature indicates that two-year institutions have much higher attrition rates than four-year institutions. Community colleges do not have the same social environment as 4-year schools, and students in community colleges may be academically unprepared for college coursework. As a result, the populations of community colleges are different than populations of 4-year schools, and attrition studies often focus on describing the populations in terms of social and academic integration. In that regard, academic factors generally produce significant effects among community college student attrition while social and goal variables are inconsistent.

Interactionist Attrition Theories

Acknowledging that psychological, social and institutional factors may be individually important to persistence, researchers utilizing an interactionist approach choose to examine these factors in a holistic fashion. The interactionist approach emphasizes the relationship between the many sociological factors that develop as students become integrated in the institutional environment of higher education. These factors commonly include motivation, goals, academic

success, peer group interaction, faculty contact, and institutional services, although some researchers have added additional variables, such as finances (Cabrera, Stampen & Hansen, 1990; Nora, 1992) or academic program (Lovitts, 1997; Schutt, 1996). However, the basic tenet of the interactionist approach has remains consistent: the students' own pre-entry attributes interacting with their formal and informal college experiences have a bearing on their social and academic integration into college life, which in turn influences their commitment to persist or withdraw (Lynch, Brannick, Clancy & Drudy, 1999).Thus, researchers utilizing an interactionist approach assume that a student's likelihood to persist is a function of the match between the student's academic and social characteristics and the institution's academic and social environment. The more a student is academically and socially integrated into college life, the more likely they are to persist. (Astin, 1984; Nora, 1987; Pascarella & Terenzini, 1980; Tinto, 1997). Among the theories supporting an interactionist approach are the theories of Spady (1970), Tinto (1975), Bean (1980) and Astin (1977), all of whom examine the retention issue from slightly different perspectives.

Spady's Theory of Integration

The first significant research on the issue of student retention was done in the early 1970's by Spady. (Sadler, Cohen, & Kockesen, 1997) It provides the first theoretical model of the dropout process in higher education. Spady's (1970, 1971) model proposes that social integration develops from shared group values, academic performance, normative congruence and support of friends. When these factors are positive, they increase institutional commitment, which in turn, reduces a student's likelihood of withdrawing. The model suggests that student background characteristics (family and personal characteristics and skills) also play a role in the attrition process.

Vincent Tinto's Theory of Student Integration

Tinto's (1975) theoretical theory of student attrition was pivotal in the study of student persistence (Stage, 1988). He based his work on the studies of several earlier researchers, including Spady (1970) and Van Gennep (1960), but Tinto also drew heavily on Durkheim's (1961) notion of suicide and social integration. Tinto's theory described the process of student integration in academic and social systems at particular institutions, suggesting that student departures from college were affected not only by their own attributes and actions but also by the actions and attributes of other members of the institution. In order to explain the integration process, Tinto applied Van Gennep's notion of "rites of passage" to the collegiate environment. Tinto theorizes that students who integrate into an institution move through three main stages; separation, transition, and incorporation. The extent to which students are able to negotiate the three stages determines whether or not they will persist. Tinto's model helped define the interactionist approach, because it focused not only on student learning factors, but also on the environment in which the learning took place. It encompassed a number of factors, including pre-college attributes, student goals/ commitments prior to college entry, formal and informal college experiences, personal/normative integration and goals/commitments after college entry. Tinto states, "A concern for the education of students and their integration as full members in the social and intellectual life of the institution appear to be the two most important principles of successful retention programs." (Tinto, 1987, p. 187).

Tinto's model provides researchers a framework with which to examine attrition behaviors, but the model assumes that the inherent constructs are separable and not highly correlated. This assumption is challenged by Beil, Reisen, Zea, and Caplan (1999), who suggest that multicollinearity may be responsible for the inconsistent results of previous studies based on

Tinto's model. Beil, Reisen, Zea and Caplan chose to examine the social and academic components of the model separately to avoid the complications of collinearity. Other researchers, however, have tested Tinto's entire model (Pascarella & Terenzini, 1983; Robinson, 1996; Schutt, 1996; Stage, 1989) and found the model beneficial in identifying factors contributing to student attrition. To test Tinto's model, Pascarella and Terenzini (1980) developed a measure to specifically assess the model's dimensions. Since their development, these scales have been applied in a variety of contexts and have consistently produced strong measures of validity and reliability.

After Tinto (1975) first developed his theory, it was revised by the author (Tinto, 1987) and tested by numerous researchers. (Pascarella & Terenzini, 1983; Mutter, 1992; Robinson, 1996; Schutt, 1996; Pittman, 1997; Beil, Reisen, Zea and Caplan, 1999; and Campbell, 1999) Accounting for a variety of contexts, these researchers found the theory to be beneficial in explaining student attrition.

Special applications of Tinto's theory. Another application of Tinto's theory was done by Getzlaf, Sedlacek, Kearney, & Blackwell (1984). The data from the study suggested that Tinto's theory was not only beneficial in discriminating between persisters and nonpersisters, but also beneficial to discriminating between dropouts and transfers. Analysis of the data suggested that college academic performance and academic ability (as determined by a standardized test of verbal ability) contributed significantly in distinguishing between dropouts and transfer students. Regarding the usefulness of Tinto's model in comparing dropout and transfer students, the researchers conclude: "The comparison of the dropout and transfer samples suggests that the integrative constructs of Tinto's model may be relevant to differentiating these samples when the constructs are used outside of the original model." (p. 266).

Mallette and Cabrera (1991) also examined dropouts and transfers with the Tinto model and concluded that different types of withdrawal behavior held different determinants. This finding supported Tinto's proposition about the importance of distinguishing between students who dropout and those who transfer to another school. Mallette and Cabrera's (1991) study suggested that faculty concern, academic performance, final institutional commitment and finance attitudes were statistically significant in explaining the difference between persisters and dropouts, but only goal and institutional commitments were significant discriminators between persisters and transfers.

Missing variables. A major gap in Tinto's theory according to Cabrera, Castandeda, Nora, and Hengstler (1992), is the lack of control for external factors that might contribute to students' perceptions, commitments and preferences, which in turn could affect persistence. For example, the variables *parental support* or *ability to pay* could bias a student's perception of the institutional environment, impacting the student's decision to persist or withdraw. Although parental support and ability to pay are not directly represented in Tinto's model, the variables may be inherent in the construct "goals and commitment," which is one of the major components of the model. Some researchers have found Tinto's model useful in exploring such factors (Cabrera, Stampen, and Hansen, 1990; Nora, Attinasi and Matonak, 1990), but external and environmental factors are more specifically addressed in John Bean's (1980) theory of student attrition.

Another variable arguably absent from Tinto's (1975) model is a measure of student effort and study time. Bagayoko & Kelley (1994) argue for the addition of the independent variable *time on task* to any model focusing on undergraduate attrition. Citing the "power law of performance" as discussed by Newel and Rosenbloom (1981), Bagayoko & Kelley propose that

retention models omitting a measure for time on task are seriously deficient in their ability to explain attrition.

Modifications to Tinto's (1975) model. Tinto's (1975) model helps explain student dropout behavior by identifying student and institutional characteristics that contribute to student integration into the collegiate environment. To more effectively address the characteristics of unique populations, Tinto's model is often modified or expanded. For example, Buell (1997) examined factors associated with childcare teachers' persistence in college course work by combining elements of Tinto's (1975) and Bean's (1985) models. Buell added the variables family measures, job measures and finances to the instructional integration variables commonly associated with Tinto's (1975) model. Data indicated significant differences between students who re-enrolled the subsequent quarter and those who did not, with persisters reporting more family support and greater commitment to earning a degree.

Unlike Buell who added several components to Tinto's (1975) model, Arnson (1998) only slightly modified the model for a study of persistence among students in respiratory therapy programs. Arnson's data suggested no significant relationships between student persistence and any of the model's variables. Since the results were largely inconsistent with other studies using Tinto's model, the researcher conducted follow-up interviews. Arnson reported that information gained from the interviews suggested that further modifications to Tinto's (1975, 1987) model might be necessary for use with respiratory therapy students. Essentially, Arnson argued that student perception of support and encouragement was critically important to social integration and institutional commitment. Arnson's conclusions seemed to indicate that Tinto's (1975, 1987) model would better fit respiratory therapy students if modified to place more emphasis on encouragement from faculty and peers.

In contrast to Arnson's minimal modifications, Schutt's (1996) modified Tinto's (1993) model more extensively for a study of student-athletes. Schutt's approach involved adding a new section to the common scales developed by Pascarella and Terenzini (1980) that dealt with academic and social interactions within the athletic environment. For example, the researcher added items to the questionnaire that assessed student opinions about their interactions with coaches and teammates. Also, Schutt controlled for the differences between players participating in revenue and non-revenue producing sports. Data from the study indicated that the difference between the two student athlete subgroups was greater than the difference between athletes and non-athletes on several variables. Overall, Schutt's study underscored the necessity for modifying existing retention models when applying them to special populations.

Whereas Schutt (1996) specifically acknowledged Tinto's (1993) model as a foundation for his study, Johnson's (1997) research was built on a broad theoretical base that included parts of different models. However, Johnson's overall design most closely represented the main constructs of Tinto's (1975) theory. Johnson modified the model by slightly re-defining academic integration and adding measures for student beliefs about the benefits of college. Johnson (1997) also added an independent variable specifically related to age of the student. The researcher felt that the variables chosen for the study more effectively related to the distinct environment of the school being examined, a four-year university serving mostly commuter students. After following the sample in the study for 6 years, Johnson (1997) found that four variables were significant discriminators of persistence: GPA, student beliefs, academic climate and gender. Analysis of the academic climate items indicated that retained students agreed more strongly that dropouts with the following statements: (1) I got to know the faculty, (2) It was easy to get answers to questions I had about things related to my education at this institution (3)

this institution has a well educated faculty, (4) I had adequate opportunity to interact with the faculty. Both persisters and non-persisters agreed that the institution provided a good climate for learning and that their academic experience was positive. However, students who had closer contact with the faculty were more likely to persist. The greatest difference between persisters and non-persisters was indicated by the item dealing with students' ease of obtaining answers to questions ($p<.001$). These results suggest that student-faculty involvement is important regardless of whether or not a student is attending a residential university or a university comprised mostly of commuter students.

John Bean's Theory of Student Attrition

Avoiding the relationship with Durkheim's suicide theory, Bean (1980, 1983) developed an attrition theory based on the work of Price (1977), which centered on turnover in organizations. Price defined turnover in the following manner: "Turnover is the degree of individual movement across the membership boundary of a social system." (p. 4.) Bean's theory was based on the assumption that students chose to leave their respective institutions for reasons similar to those that caused employees to leave their work organizations. Possible reasons included such variables as routinization, centralization and institutional quality. Bean's comparison between student persistence and organizational turnover stressed the relationship of student beliefs, attitudes and intentions. Students' beliefs and attitudes were shaped by different components of their institutions, such as organizational variables, instructional courses, friends, etc., and these beliefs eventually determined students' intentions to persist or withdraw. Bean and associates tested different variations of the student attrition model, with results largely supporting the importance of organizational, personal and environmental variables in students' decisions to persist or withdraw.

Although Bean's model of student attrition is based on a theory of organizational turnover, it includes many variables common to Tinto's student integration model, such as institutional fit and entry characteristics. Bean acknowledged that the theories guiding his research were consistent with those guiding Tinto's model; however, Bean argued that the theoretical basis of Tinto's model, the link between dropping out of school and suicide, was insufficiently supported by evidence. (Bean, 1980). A notable difference between the two models is Bean's emphasis on external and environmental variables, such as finances, transfer opportunities, and family support. However, a particularly important difference between the two theories is Bean's identification of *intent to leave/persist* as an outcome of an unsuccessful or successful match between the student and the institution. *Intent to leave* was measured in several studies (Bean, 1982; Pascarella, Duby, and Iverson, 1983; and Metzner and Bean, 1987), each identifying "intentions" as the strongest predictor of withdrawal behavior. Results from these studies led Bean to propose that environmental, organizational and personal variables affecting persistence were more likely to be indirect, mediated through behavioral intentions. This proposition was later supported in a study comparing the theories of Bean and Tinto (Cabrera, Castaneda, Nora, and Hengstler, 1992). The researchers reported, "This proposition holds not only for the Student Attrition Model, but for the Student Integration Model as well. Most of the effects of institutional and personal factors (Academic Integration, Social Integration, Institutional Commitment and Goal Commitment) were found to be channeled through Intent to Persist." (p. 159) The importance of *intent to leave/persist* suggests that future researchers may be able to identify which students are most likely to leave higher education before they voluntarily withdraw.

Alexander Astin's I-E-O Theory

Astin's (1997) theory of student retention is part of the author's comprehensive study of issues in higher education spanning more than thirty years. As part of an overall examination of "college impact" (Astin, 1977), Astin's work in the area of retention focused on the development of predictive equations for determining expected retention rates in all types of institutions. These equations were developed from multi-institutional, longitudinal data, and they included only variables pertaining to students' entry characteristics. Astin (1997) reports: "Indeed, more than half of the variance in institutional retention rates can be attributed directly to differences in the kind of students who initially enroll, rather than to any differential institutional effect" (p. 648). From entering freshmen characteristics, the four variables that contributed the bulk of the variance were (1) students high school GPA's, (2) admission test scores (SAT, ACT), (3) gender and (4) ethnicity. In other studies, Astin added environmental factors to the regression equations, such as faculty measures, peer group measures, and students' outside interests. (Dey and Astin, 1993; Astin, 1997). By combining input variables, environmental variables and outcomes (I-E-O), Astin developed the "student involvement" theory of college student development that closely aligns with Tinto's theory of student integration. Essentially a distillation of earlier ideas, the student involvement theory proclaims that involvement has tremendous potential to enhance most aspects of the undergraduate student's cognitive and affective development. Involvement refers to the investment of psychological and physical energy in tasks, people, and activities in all areas of the collegiate environment.

Although Astin specified numerous environmental variables that appeared to impact retention (major field, campus residency, type of institution, faculty environment, etc.), the strongest influence on undergraduate college students was their peer groups. Astin (1993) states,

"Viewed as a whole, the many empirical findings from this study seem to warrant the following general conclusion: *the student's peer group is the single most potent source of influence on growth and development during the undergraduate years*." (p.398)

This conclusion indicates a similarity between Astin and Tinto's theories: students who do not become socially integrated at a given institution will most likely leave that institution. Another similarity in the two theories is their identification of non-academic factors as important influences in student persistence. However, the theories differ in the way they approach the problem. Astin's work focuses on student behaviors while Tinto's work focuses on student perceptions and how those perceptions change across time. Tinto's description of the social integration process establishes three main stages: separation, transition, and incorporation. As students move from one stage to the next, their perceptions change about the degree to which they are a part of the academic and social systems of the institution. On the other hand, Astin's model focuses on a behavioral explanation of student involvement as determined by numerous entry and environmental variables. For example, rather than asking a student to respond to the statement: "My non-classroom interactions with faculty have had a positive influence on my intellectual growth," Astin's item would be stated: "Indicate how many hours per week you have talked with faculty outside of class." The two statements reflect the factor, "interactions with faculty," but Astin and Tinto examine the factor from different perspectives.

Astin's I-E-O/student involvement theory offers unique contributions to the field of attrition research, although some researchers suggest that Astin's propositions do not really constitute a theory. According to Pascarella and Terenzini (1991), Astin offers more of a general, conceptual orientation than a strict systematic view. Although certain researchers may challenge the proposition of "student involvement" as a theory, Astin's ideas of college impact and college

retention factors are well documented in the research literature. Likewise, the theories of Bean and Tinto serve as the basis of a sizable body of retention research. Currently, Tinto's student integration theory and Bean's student attrition theory are the most widely used models for student retention studies (Bagayoko & Kelley, 1994). The popularity of the models has grown because some researchers feel that Tinto and Bean's theories provide a more comprehensive theoretical framework from which to study college departure decisions (Cabrera, Castaneda, Nora & Hengstler, 1992). Others have supported Astin's model for the strength of its predictive equations (Kroc, Howard, Hull, and Woodard, 1997). The three models (Tinto, 1975; Bean, 1980; Astin, 1997) each examine attrition in higher education from a slightly different perspective, but numerous common elements are evident across all of the models. From these theories and supporting studies, six main constructs can be identified: (1) academic and social integration, (2) student involvement (3) student/faculty interaction, (4) first year importance (5) commitment level, and (6) college fit. A particular point of argument among researchers is the sixth factor, which refers to how well students' background characteristics match the institution. Some researchers believe that a bad fit cannot be corrected within the institution. However, it is included here because of its importance in Tinto's model and its frequent appearance in related studies. The other constructs, unlike college fit, are consistently represented in the literature, with little disagreement among researchers as to their relative importance.

Retention Studies of Music Students

Only a few studies have addressed retention/attrition among undergraduate music education students. With so few studies, there is not evidence of a preferred attrition model among researchers. However, many of the variables examined in the existing studies can be

compared to the academic and social integration factors of the previously discussed interaction theories.

In a study specifically designed to examine attrition among undergraduate music education students, Brown and Alley (1983) examined academic and commitment variables in a longitudinal study among music education students at a large university. Instead of just measuring enrollment at the end of one year, the researchers measured retention after four years for two freshmen classes (1978, 1979). They included as variables: (1) enrollment status (dependent variable), (2) college GPA, (3) high school GPA, (4) jury grade, (5) score from Aliferis-Stecklein music achievement test, (6) essay written during first week of study, addressing "Why I want to be a music educator," (7) participation in music organizations, and (8) videotaped teaching competencies. The overall attrition for the 1978 freshman students (N=103) at the end of 4 years was 62%, with 32% continuing their studies. The remaining 6% graduated. The 1979 class (N= 98) had an attrition rate of 39% after 3 years, with 58% continuing and 3% graduating.

Brown and Alley found students' cumulative GPA's to be the strongest predictor of persistence among the music education students (42%), supporting the findings of attrition studies based on the sociological models discussed earlier. However, a notable difference from the assumptions of certain research models (Tinto, 1975) was Brown and Alley's finding regarding goal commitment (written essay). The data produced no statistically significant relationships between a measure of goal commitment and dropout behavior. On the other hand, the study did find a relationship (32%) between music education students' jury grades and attrition. Although not as strong as cumulative grade point average, the relationship between jury grades and attrition indicates a need for further examination of this variable.

Jury grades represent an element of academic performance for music education students that does not exist for students in other major fields of study, and it points to one of the special academic components of the music education environment that may define music education students as a unique population. Since most of a music education student's course load is comprised of specialty music classes, such as music theory, music history, performing ensembles, and applied lessons, the cumulative GPA of freshmen and sophomore music education students will likely reflect a much stronger presence of the major field than other disciplines.

Another noteworthy finding from Brown and Alley's (1983) study is that all music education variables other than GPA and jury grades contributed only slightly to the regression correlations. However, Brown and Alley did not account for audition placement in their consideration of "participation in music organizations." The researchers only accounted for the number of organizations in which a student was registered in the first term of study. Since high audition scores often reflect academic success and social recognition, the addition of audition placement to Brown and Alley's variables may have produced different results. Furthermore, Brown and Alley's study did not differentiate between students who dropped out of school entirely and those who transferred to another school or changed their major field of study.

Brown and Alley's study can be theoretically linked to both Astin and Tinto. As in Astin's studies, the researchers examined entry characteristics (high school GPA, essay, Aliferis-Stecklein test) and they collected performance data rather than perceptual data. However, the inclusion of "overall college GPA," "jury grade" and "essay (desire to be a music teacher)" is more linked with Tinto's model. These variables represent the constructs "goal commitment" and "academic integration, " both of which are major components in the interactionist model.

Still, neither Astin's nor Tinto's model is fully represented in Brown and Alley's study due to missing components of each. For example, missing from the Brown and Alley study was a measure of faculty-student interaction and a measure of student-peer involvement. Data collected on faculty and peers may have helped explain relationships between jury grade, ensemble participation, and attrition. Furthermore, the stepwise multiple regressions used by the researchers are largely dependent on the order in which variables are added to the analysis. To this effect, Brown and Alley offered the following statement: "The reader is cautioned to view results presented here as a preliminary exploration into the complex set of factors contributing to college attrition and to consider variable definitions and order of presentation along with results as a totality rather than as isolated or discrete entities" (p. 280).

A slightly different approach to the problem of student attrition is the purposeful reduction of student enrollment by music school administrators who feel that strict selection and retention criteria should be enforced in music education programs. Such policies may reduce attrition by reducing diversity in the student population. Shellahamer (1984) surveyed college faculty who were involved with music education programs to determine selection and retention criteria imposed by their institutions. In addition, Shellahamer examined: (1) efforts being used for validating selection and retention criteria, (2) predictive ability of selection and retention criteria on future music teacher success, and (3) appropriate procedures for establishing validity of selection and retention criteria. The results indicated that 74% of the respondents utilized some sort of selection criteria. The most common criteria were auditions and placement exams. Retention criteria were utilized by 90% of the respondents, with the most common being GPA, piano proficiency, and jury grade. Shellahamer found that only 12% of the respondents had used research attempts to establish validity of their selection and retention criteria.

Although Shellahamer's study focused only on students majoring in music education as a subset of the larger population of music majors, the results tend to support Tinto's model regarding academic integration. Of the schools reporting, 76% indicated the maintenance of a specified GPA for all college-level coursework as the major retention criteria. Other criteria included (1) jury grade, 69%, (2) piano proficiency, 74%, (3) specified GPA for music coursework, 55%, and (4) specified GPA for music education coursework, 49%. All of these criteria represent Tinto's construct "academic integration." But in Shellahamer's study, the construct was represented through each institution's criterion for continued enrollment.

One hundred and five schools, chosen randomly from a list of 150 NASM institutions granting music education degrees, returned Shellahamer's (1984) survey. A smaller, more select study by Wilson (1990) focused on African-American music students in historically Black colleges and universities. Wilson surveyed 22 music executives (58% of the original sample) to determine effectiveness of recruitment and retention practices. Using percentages, frequencies and chi-square statistics, Wilson identified several factors influencing recruitment, retention and support, including financial resources, special assistance programs, and presence of African-American faculty. Wilson also identified retention strategies that focused on the social needs of African American students, thus supporting theoretical models utilizing social integration components. Although Wilson did not base the study on a specific theoretical model, Wilson's study reflects the theory of Tinto. Not only did the study measure perceptions, but it also examined many of the academic and social integration factors discussed by Tinto. For example, items included: "Orientation activities that begin soon after admission, social interaction with faculty, early warning system for detecting difficulty in freshman theory, and frequent

monitoring of student's academic performance" (p. 149). All of these items indicate a theoretical base of academic and social integration.

Where Wilson (1990) focused on African American music students, Kilian (1998) studied two-year music students enrolled on 106 campuses in the California Community Colleges system. Kilian examined student assessment procedures (initial, progressive, and terminal) and student advisement/support systems. Kilian also measured the affect of assessment and advisement systems on student success (retention, program completion, transfer rates to 4 year schools, and employment). Results from Kilian's study indicate that assessments of music students are not significantly effective in promoting retention, program completion or transfer to 4-year schools. However, Kilian's statistical procedures and methodology compared "high participation" and "low participation" schools' scores with *t*- tests, instead of examining interactions between variables across the entire sample. The only significant relationship indicated in the Kilian study was in the comparison of student advisement procedures and "securing employment."

Summary of Literature Review

A great deal of research literature has been devoted to attrition/retention among college students. The research is usually contextual in nature, describing specific populations or institutions, and findings are not always generalizable beyond the population described. Methodologies include both quantitative and qualitative approaches. Quantitative approaches often utilize questionnaires and institutional records for gathering data, and qualitative approaches gather data through interviews of administrators and/or students. Overall, the most frequently appearing methodology is the quantitative approach that employs some sort of statistical procedure, usually correlation or regression, to examine any number of variables that

are potentially related to student persistence. Researchers frequently use variables related to one of the pre-existing models such as those proposed by Tinto (1975), Bean (1980) or Astin (1993).

Among the studies based on interactionists' models, there is evidence that background characteristics, academic factors, social factors and goal commitments are all somehow related to persistence, as well as environmental variables and persistence intentions. These factors are usually operationalized in some manner, such as Pascarella and Terenzini's (1980) approach to Tinto's (1975) "academic integration." Pascarella and Terenzini developed scales to measure academic integration that included student perceptions about faculty concern and student perceptions of academic growth. However, Johnson (1997) operationalized the same construct as "academic climate", and used survey items slightly different from those developed by Pascarella and Terenzini (1980). Although some researchers choose to measure all of these factors in their studies, other researchers have argued that the factors cannot be effectively isolated. Thus, studies are sometimes designed to examine only isolated constructs from the interactionists' models. Studies may attempt to isolate predictive factors or simply describe relationships within their chosen populations. Overall, the literature tends to support the importance of social and academic integration as contributing elements to student retention. Likewise, research literature supports the idea that persistence and retention is a complicated issue that must be considered within the context of each institution and its institutional environment. Although the theoretical models of Tinto, Bean and Astin offer assistance in identifying some of the important issues regarding student persistence, the theories will not provide prescriptive solutions for retention problems in all environments. Instead, the theories provide a foundation for further research into the unique academic and social variables present different populations and learning environments.

CHAPTER 3

METHODS AND PROCEDURES

This study investigated the predictive influence of variables in three different academic learning environments on intent among music education majors to leave the degree program.

Research Questions

1) Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?

2) Do student perceptions of their course requirements predict their intent to withdraw from the degree plan?

3) Do student perceptions of their overall development as performers predict their intent to withdraw from the music education degree plan?

4) Do student grades in music theory, aural skills and applied lessons predict their intent to withdraw from the music education degree plan?

5) Do students' cumulative grade point averages predict their intentions to withdraw from the music education degree plan?

6) Does ensemble placement predict student intent to withdraw from the music education program?

7) Does gender interact with the other independent variables in the study in the prediction of student intentions to withdraw from the music education program?

Sample

The sample for the study was drawn from students enrolled in the music education department at the University of North Texas during the spring semester, 2002. All freshmen and sophomore students who were registered as music education majors were invited to participate in

the study, regardless of declared specialization within the music education department. Freshmen and sophomore students were the focus of the study, because research literature suggests that most dropout and major field changes occur during the first two years of college attendance (Kroc, Howard, Hull, & Woodard, 1997; Levitz, Noel, & Richter, 1999). Of the 117 freshmen and sophomore students registered as music education majors as of January 2002, 101 students (86%) participated in the study. Two students chose not to participate in the study, and the remaining 14 students registered as music education majors could not be located during the data collection period. Six completed questionnaires from subjects who identified themselves as music education majors were excluded from the study, because the subjects were not listed as music education majors in university records.

Participation in the study was voluntary and was not related to participants' grades or coursework. After data had been collected, the researcher coded participants' responses to remove all identification, establishing anonymity for data analysis and data reporting procedures. Participant's names were not reported at any time. Ethnic representation among the subjects was: 64% White, 23% Hispanic, 9% Black, 3% Other (Asian, Pacific Islander, Middle Eastern) and 1% Native American. The sample included 49 women and 46 men. Primary instrument representation among subjects was: 2 piano, 10 strings, 37 vocal and 46 winds/percussion.

Data Collection Procedures

Data was collected from two sources: existing grade data (by permission) and Music Student Inventory questionnaire (Appendix C). Each subject's permission was obtained by signature on an explanatory form approved by the Institutional Review Board. A list of all freshmen and sophomore music education majors was obtained from university records and sorted according to music theory classes. Four semesters of music theory was required for music

education majors, so most freshmen and sophomore students were enrolled in a theory course. Therefore, the music theory classes provided convenient access to the study's target population.

The Music Student Inventory (MSI) questionnaire and Institutional Review Board permission sheet were given to students during their music theory classes between April 15 and April 26, 2002. After securing permission from the music theory department chair, the music theory instructors who taught undergraduate classes were individually contacted to arrange a suitable presentation time. The following music theory classes were included: Fundamentals of Theory, Music Theory I, Music Theory II, Music Theory III, and Music Theory IV. Each course had only one section and one instructor, with the exception of Music Theory IV, which had five sections divided between two instructors. Students absent during the first presentation of the questionnaire were given an opportunity to participate later in a follow-up presentation to the class. If subjects were not present for either theory class presentation, they were contacted individually before and after ensemble classes. The explanation of the project and administration of the questionnaire took approximately 20 minutes.

The administration of the questionnaire was done entirely by the researcher, and instructions were given to all subjects according to a prepared script. (Appendix D) Students were not required to participate in the study and were not offered incentives for participation; however, students were given class time to complete the questionnaires and were allowed to leave class when done. Since participation was voluntary, no attempt was made during the collection of questionnaires to determine who did or did not participate; however, an attempt was made to verify that students who returned completed questionnaires had signed the appropriate permission statements. In accordance with Institutional Review Board procedures, participants were asked to sign a participation agreement in the presence of a witness. The students

participating in the study served as witnesses for each other and signed each other's permission forms where indicated.

After receiving subjects' written permission, existing grade data was compiled from university records for the following courses: applied music, music theory, and aural skills. The data reflected grades from the fall semester, 2000 to the spring semester, 2002, and included grades posted in May 2002. Grade data did not include the names of specific instructors or sections of the courses being examined, only the semester grades as entered in university records. Each subject's posted grades in the specified courses were combined with his or her responses on the MSI. Cumulative grade point averages for each subject were also included in the data set. After all data had been collected, individual identification was removed to protect the anonymity of the subjects.

Development of the Music Student Inventory

Item Development

Since there were no existing instruments for identifying factors relating to intentions of music education students to withdraw from the degree program, a new student response questionnaire was created by modifying instruments designed to measure college attrition. A pilot version of the questionnaire, the Music Student Inventory-Pilot (MSI-Pilot) was adapted from two earlier instruments by Pascarella and Terenzini (1980, 1983), originally developed for measuring attrition among college students according to the constructs in Tinto's (1975) theory. However, since the MSI-Pilot was designed to examine factors relating to dropout intent within a specific major field, the social and goal components of Pascarella and Terenzini's instrument were omitted to allow for further expansion of the academic component. This expansion facilitated the examination of Pascarella and Terenzini's academic constructs within the three

different learning environments of a music education student: private lessons, ensembles, and non-performance coursework. An additional component of the MSI-Pilot measured student perceptions of *informal interaction with faculty.* Although this construct was included as a social construct in Pascarella and Terenzini's (1980) original instrument, it was included in the pilot version of the MSI-Pilot because student interaction with faculty, whether formal or informal may have the potential to develop and enhance academic achievement (Tinto, 1987). Furthermore, research literature has suggested that student interaction with faculty may be a significant factor relating to college dropout intention among undergraduate students. (Mutter, 1992; Pascarella & Terenzini, 1980; Terenzini & Pascarella, 1978).

Pascarella and Terenzini's (1983) revised instrument added three items to the *interactions with faculty* section of their earlier instrument to further examine the extent of faculty contacts. By adding these statements, to their original instrument, the Pascarella and Terenzini (1983) hoped to further explore Tinto's idea that student interactions with faculty had the potential to influence academic integration as well as social integration. The researchers stated: "Thus, in this study different aspects of students' extent and quality of interaction with faculty were considered as measures of either academic or social integration" (p. 217).
The new items measured the frequency of freshmen year non-class contacts with faculty of 10 minutes duration or more for the following purposes:

(1) "To get basic information and advice about my academic program."

(2) "To discuss intellectual or course-related matters."

(3) "To discuss matters related to your future career." (p. 217)

These three items were included in the MSI-Pilot, but the were modified in several ways. First, each item was re-written with "primary ensemble director", "applied music teacher", and

"non-performance music faculty" substituted for the word "faculty" in the original statement. Next, "academic program" in the first statement was changed to "music education program" in order to increase specificity. Finally, the third statement, "How many non-class contacts of 10 minutes or more have you had with faculty to discuss matters related to your future career?" was changed to, "How many non-class contacts of 10 minutes or more have you had with faculty to socialize informally." Although the re-wording of this item changed its original intent, panel members felt that the modification was consistent with the subscale factor *informal interactions with faculty*, and that the re-wording helped avoid redundancy with the subsequent item: "Time spent with my applied music teacher outside of class has had a positive influence on my career goals and aspirations."

Internal consistency on the subscales of Pascarella and Terenzini's (1980) instrument were reported by the researchers as follows: *Faculty concern for student development and teaching*, Alpha = .82 (5 items); *Academic and intellectual development*, Alpha = .74 (7 items); *Interactions with faculty*, Alpha = .83 (5 items). In order to adapt these constructs for presentation in the MSI-Pilot, the individual items in each of Pascarella and Terenzini's (1980) scales were restated to account for the unique characteristics of the music education degree. For example, one item from the scale labeled, *Faculty concern for student development and teaching* was originally stated as follows: "Few of the faculty members I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students" (Pascarella and Terenzini, 1980, p. 66). This item was rewritten as three items in the MSI-Pilot to account for the three musical teaching environments: (1) "My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students." (2) "My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and

importance to students." (3) "Few of the non-performance music faculty I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students."

Similarly, items in the original Pascarella and Terenzini (1980) scale labeled *Academic and intellectual development* were divided into two components: (1) academic/intellectual growth through experiences in non-performance coursework and (2) performing/musical growth through lessons and ensembles. For example: Pascarella and Terenzini's (1980) statement, "Few of my courses this year have been intellectually stimulating," was re-stated as three items in the MSI-Pilot: (1) "My primary performing ensemble has been musically stimulating." (2) "My private lessons have been musically stimulating." (3) "My non-performance music courses have been intellectually stimulating." The first draft of the MSI-Pilot contained 68 statements reflecting Pascarella and Terenzini's construct of academic integration as it applied to ensembles, lessons, and non-performance coursework for music students, plus two items addressing the dependent variable.

The dependent variable in the study, *intent to withdraw from music education*, was measured by the statement: "I intend to return to this university next semester to continue my degree plan as a music education major (yes/no)."

If students indicated a "no" response, they were asked to respond to the final item:

> Instead of continuing my music education degree plan at this university next fall, I intend to:
>
> A. Change majors within the music department
>
> B. Change majors to something outside the music department, but remain at this university

C. Remain a music education major, but transfer to a different college or university

D. Change major and transfer to a different school

E. Withdraw from college altogether

F. Temporarily withdraw, but return later to this school as a music education major

G. Undecided

The seven choices for this item represent common withdrawal behaviors. The item was included for descriptive purposes only, and was not statistically analyzed in this study.

Six other items on the MSI-Pilot were intended for descriptive purposes only. These items were in the "informal faculty contacts" section of the questionnaire:

13. Time spent with my applied music teacher outside of class has had a positive influence on my personal growth, values and attitudes.

14. Time spent with my applied music teacher outside of class has had a positive influence on my career goals and aspirations.

20. Time spent with my ensemble director outside rehearsals has had a positive influence on my personal growth, values and attitudes.

21. Time spent with my ensemble director outside rehearsals has had a positive influence on my career goals.

27. Time spent with the non-performance music faculty outside the classroom has had a positive influence on my personal growth, values and attitudes.

28. Time spent with the non-performance music faculty outside the classroom has had a positive influence on my career goals and aspirations.

These six items, modified from Pascarella and Terenzini's (1980) instrument, referred to the nature and quality of informal faculty contacts with students. The original Pascarella and Terenzini wording for the beginning of each statement was: "My non-classroom interactions with faculty…" For example, item 13 in the MSI-Pilot was originally worded: "My non-classroom interactions with faculty have had a positive influences on my personal growth, values and attitudes." In the final version of the MSI-Pilot, the wording was changed to: "*Time spent* with my applied music teacher outside of class has had a positive influence on my personal growth, values and attitudes." The same modification was made to the beginning of statements 14, 20, 21, 27, 28. This change was made so subjects would respond to the items only if they had actually interacted with faculty outside of class. If the subjects had not met with faculty outside of class, they may have defaulted to a response of "no opinion", which would have meant something different than a "no opinion" response from those who had engaged in non-faculty contact. Therefore, re-wording the items helped avoid the double meaning of the "no opinion" response. To further clarify this section for the participants, statements in the MSI-Pilot instructions advised participants to omit items 13, 14, 20, 21, 27, 28 if they had not interacted with faculty outside of class.

The 48 MSI-Pilot items addressing academic integration in three learning environments and the 2 items addressing the dependent variable *intent to persist in music education*, comprised the main body of the instrument. To complete the instrument, an introductory section was added to collect information on student background characteristics. Included in this section were responses for (1) student classification, (2) gender, (3) major field, (4) primary performing ensemble and (5) music education specialization (strings, band, choir, general music). Only major field and primary performing ensemble responses were examined in the pilot study. The

other items were included for later study. The primary performing ensemble was coded and entered in the data set for each participant, and responses were analyzed as a separate independent variable Table 1 shows ensembles and coding used in the pilot study. Pilot study participants who did not indicate "music education" as their major field of study were eliminated from the analysis. All other background items included in this section of the MSI-Pilot provided data for future study and were not examined in the pilot study.

Table 1

Ensemble Coding for the MSI-Pilot

Ensemble	Assigned numerical value
Wind Ensemble	4
Symphonic Band	3
Concert Band/Brass Band	2
Other	1
A cappella Choir	4
Concert Choir	3
Women's/Men's Chorus	2
Other	1
Symphony Orchestra	4
Other	1

Content Validity

An initial measure of content validity for the MSI-Pilot was obtained from a panel of 5 experts. Panel selection criteria included: (1) knowledge of research procedures, (2) involvement in music education, and (3) local accessibility. Two members had earned Ph.D. degrees in music education and two had earned Ph.D. degrees in higher education. The final panel member was concluding a Ph.D. program in a music education. Instrument specializations represented among panel members were 1 string, 1 vocal, 2 wind/percussion and 1 piano. At the time of the study, two panel members were college professors, two were secondary school teachers, and one was a private instructor. All members had extensive experience with music teaching at all levels.

Panel members were asked to perform three tasks: (1) to edit the items for clarity, (2) to examine how well MSI-Pilot items reflected the original statements and factors of Pascarella and Terenzini's (1980) instrument, and (3) to examine the final MSI-Pilot questionnaire for overall appropriateness as an instrument to measure degree program attrition among music education students.

Revisions from panel input reduced the original 68 items to the 50 items found in the final instrument. From the 50 items, 48 measured student perceptions of academic factors within the music education program and 2 items measuring the dependent variable "intent to persist" (Appendix A). Items rejected were those eliciting emotional responses, such as: "I think my lesson teacher wants me to quit the music program," and "My lesson teacher acts as though my lessons are a waste of his or her time." Other items were rejected because they did not seem pertinent to the original item. For example, "My ensemble director does not know my name." was originally included as one of the items referring to Pascarella and Terenzini's (1980) statement: "Few of the faculty members I have had contact with are generally interested in

students." However, the item was rejected, because panel members found name recognition to be an inadequate representation of "general interest in students." Items were also rejected if they seemed redundant with items in other subsections of the questionnaire. For example, the panel retained no MSI-Pilot items for Pasacarella and Terenzini's statement: "Most of the faculty I have had contact with are interested in helping students grow in more than just academic areas." The panel felt the original statement's intent was addressed in the items of the *informal interactions with faculty* subsection that dealt with personal growth, values, attitudes, career goals and aspirations. (Appendix B)

Wording changes recommended by the panel were generally aimed at clarifying the application of the original statements to the specifics of music education. For example, Pascarella and Terenzini's statement, "Most faculty members I have had contact with are generally interested in teaching." was re-worded as "Few of the non-performance music faculty members I have had contact with are generally interested in students." The word "students" was substituted for "teaching" in an effort to remove possible confusion between actions of the instructor and course material. The panel indicated that participants in the study might perceive "teaching" as a particular course of study, as in the case of music education courses. In that case, participants might respond to the item based on how they perceived their teachers' interest in the study of teaching methodology. However, the intent of the item was to reflect participants' perceptions about faculty concern for student development as observed in classroom behaviors. By changing the word "teaching" to "students", the emphasis was placed on instructor behaviors rather than course content.

Another change suggested by the panel involved the negative statements on the questionnaire. The draft version of the MSI-Pilot contained more negative statements referencing

non-performance experiences than ensemble or applied lesson experiences. Changes were made to avoid excessive negative statements in any one area. Table 2 shows the 9 negative statements included in the final version of the MSI-Pilot: 2 items (4, 33) referred to ensemble experiences, 2 items (7, 9) referred to non-performance experiences, 1 item (2) referred to applied lesson experiences, and the remaining 4 negative items (38, 41, 44, 46) referred to course requirements and overall experiences.

Table 2

Reverse-scored Items on the MSI-Pilot

2. I do not seem to be one of the students that my lesson teacher seems particularly interested in.	38. I have had a difficult time finding a balance between the performance and academic requirements of the music education program.
4. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.	41. I have had a difficult time managing the competitive aspects of the music program.
7. Few of the non-performance music faculty I have had contact with are generally interested in students.	44. I feel that certain components of the music education degree at this university are unreasonable.
9. Few of the non-performance music faculty I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students.	46. I am unhappy with the attitude of many faculty members toward music education majors.
33. My primary performing ensemble experience has been disappointing to me.	

Following revisions, the panel examined the MSI-Pilot for overall appropriateness as an instrument to measure degree program attrition among undergraduate music education students. The panel indicated that Pascarella and Terenzini's (1980) three factors (1) faculty concern for

student development and teaching, (2) academic and intellectual development and (3) interactions with faculty, were appropriate constructs on which to build the MSI-Pilot. Likewise the panel agreed that the examination of these factors within the environments of ensemble experiences, applied lessons and non-performance classes was an appropriate manner in which to adapt the constructs to a music education setting. The MSI-Pilot was deemed suitable for the age group, because it compared to the Pascarella and Terenzini (1980, 1983) instruments originally developed for undergraduate settings. Additionally, all items reflected courses and experiences common among undergraduate music education students.

Additional validity for was established through factor analysis of pilot data. Factor loadings were computed with the statistical software package SPSS© (SPSS for Windows 11.01 Copyright SPSS, Inc., 1989-2001, All rights reserved). Factor loading values were squared to indicate commonality between the items and the factors. These squared values represented coefficients of determination for the items in each factor. A mean of the item validity coefficients for each factor was computed to produce a validity coefficient representing the entire scale. These scale coefficients indicated a measure of effect size for the scale, essentially describing the degree to which the scale represented the construct inherent in the factor. Table 3 shows the squared factor loadings and effect sizes for each scale in the MSI-pilot data. Effect sizes for the 5 scales, ranged from .50-.65, which indicated a strong relationship between the five scales and their related factor constructs.

Table 3

Coefficients of Determination and Factor Effect Sizes

Factor/Item Number	Coefficient of Determination
Factor 1: Ensemble experiences	
35. My primary performing ensemble has been musically stimulating.	.69
4. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.	.63
6. My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.	.53
5. My ensemble director is an outstanding teacher.	.42
33. My primary performing ensemble experience has been disappointing to me.	.34
Coefficient of Determination for Factor 1 Items	.52
Factor 2: Lesson experiences	
3. My lesson teacher is an outstanding teacher.	.65
34. My private lessons have been musically stimulating.	.62
1. My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.	.59
2. I do not seem to be one of the students that my lesson teacher seems particularly interested in.	.46
Coefficient of Determination for Factor 2 Items	.58

(*table continues*)

Table 3 (*continued*)

Factor/Item Number	Coefficient of Determination
Factor 3: Performance growth	
36. My interest in musical performing has increased since coming to this university.	.66
46. I am unhappy with the attitude of many faculty members toward music education majors.	.59
31. My performing experiences have had a positive influence on my overall growth.	.44
41. I have had a difficult time managing the competitive aspects of the music program.	.30
Coefficient of Determination for Factor 3 Items	.50
Factor 4: Non-performance experiences	
42. My non-performance music courses have been intellectually stimulating.	.58
43. I have achieved what I anticipated I would in my non-performance music courses.	.53
8. Most of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.	.42
Coefficient of Determination for Factor 4 Items	.52
Factor 5: Satisfaction with course requirements	
44. I feel that certain components of the music education degree at this university are unreasonable.	.69
48. I am satisfied with the course requirements of my music education degree program.	.60
Coefficient of Determination for Factor 5 Items	.65

Reliability

Reliability for the instrument was based on pilot data (N = 77) using Cronbach's Alpha as a test for internal consistency. For the data on the overall instrument, the Alpha reliability coefficient was .71. Revisions to the original instrument resulted in the elimination of 30 items (discussed below), increasing the overall reliability coefficient to .74. Alpha reliability coefficients for the data on each revised subscale were calculated as follows: ensemble experiences, .78; lesson experiences, 76; non-performance experiences, .57; performance growth, .69; and curriculum satisfaction, .60. Since the item pool was kept small in order to allow examination of more factors, subscale Alpha reliabilities were somewhat low. Although two of the subscales were close to the Alpha reliability coefficients of Pascarella and Terenzini's (1980) scales, the three subscales with the lowest reliability coefficients on the MSI-pilot (.57, .60, and .69) would have likely produced stronger alpha values had more items been included. However, more items for each factor would have necessitated the reduction of factors to avoid an excessively long instrument. Because of the exploratory nature of the study, the pilot version of the MSI-pilot was constructed with more factors, accepting the risk of moderate reliability coefficients resulting from the limited item pool.

Scaling

Scaling of the instrument was based on a Likert model with the following five choices: no opinion, strongly disagree, disagree, agree, and strongly agree. Items were scored as follows: 0 = no opinion, 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. Scores on reverse-scored items (2, 4, 7, 9, 33, 38, 41, 44, 46) were adjusted during data entry. "No opinion" responses on reverse-scored items were scored 0. Background items on the MSI-pilot were not scaled in the Likert format. Instead, subjects were asked to circle responses for: Gender (M, F),

Classification (Fr., Soph., Jr., and Sr.), and Specialization within the music education program (Strings, Band, Choir, Gen. Music/Elem). For an indication of primary performing ensemble and degree major, blanks were provided for subjects' written responses. All individual data items were considered nominal or ordinal data.

The final two items on the instrument assessed the dichotomous dependent variable *intent to withdraw from the music education program*. Subjects responded to the first intent item with a "yes" or "no" response indicating their intention to re-enroll the following semester as a music education major. A "yes" response indicated intentions to remain in the music education program, whereas a "no" response indicated intent to withdraw from the program. These responses were coded 0 = yes and 1=no in order to facilitate logistic regression analysis. Logistic regression analysis accesses the probability of changing from 0 to 1 based on predictor variables. Thus, *intention to withdraw from the music education program* was given the risk factor value of 1. The final item on the instrument was included to provide data for future study. It provided several choices for non-persisting students to indicate their plans (i.e., transfer to another school, change majors, etc.). Choices on this item were scored 1-7 as they appeared on the instrument.

Pilot Study Data Collection

A pilot test of the instrument was conducted with 85 students enrolled in music education courses during the fall semester, 2001 at the University of North Texas. Pilot study participants were excluded from the cohort of students comprising subjects in the final study. Two intact classes participated in the pilot: "principles of music study", an introductory course in music education, and "music in secondary schools", a course focusing on junior high and high school methods. Participation was voluntary and students were given class time to complete the

instrument. From the 85 students who volunteered to participate, 77 surveys were usable. Surveys were deemed unusable if they were missing data from entire subsections of the questionnaire. For example, students who were not enrolled in performing ensembles or applied lessons were unable to complete the items on the instrument that referenced student participation in those settings. Their surveys were largely incomplete and were therefore unusable in the pilot data set. Also, students majoring in areas other than music education were eliminated from the data set. For single items left unanswered on an otherwise completed survey, the value of 0 was entered representing a "no opinion" response for the missing response.

Data Analysis of MSI-Pilot

Pilot data was analyzed using statistical procedures as performed by the SPSS (2001) software package. A factor analysis was performed on items 1-49 and ensemble placement to determine a measure of construct validity. Since data analysis was to include a subsequent regression equation, the factor analysis was performed using Varimax orthogonal rotation. This analysis indicated the presence of 15 factors explaining 75% of the variance.

Further examination of pilot data indicated that approximately 85% of the subjects had little or no contact with faculty outside of class. Table 4 shows descriptive statistics on the items referencing the quantity of faculty contacts. Even though the *informal interaction with faculty* section of the MSI-pilot was presented in three parts (ensemble director, lesson teacher and non-performance faculty), informal faculty contact was minimal in all three categories. As a result, the *informal interaction with faculty* subsection of the MSI-pilot was deleted from further analysis.

Table 4

Cumulative Percents for Subjects' Informal Interactions with Faculty

Item	Less than 2 non-class contacts	Less than 4 non-class contacts
10. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to discuss intellectual or course-related matters?	52%	70%
11. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to get information and advice about the music education program?	83%	90%
12. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to socialize informally?	66 %	79 %
17. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to discuss intellectual or course-related matters?	83%	93%
18. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to get information and advice about the music education program?	87%	94%
19. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to socialize informally?	83 %	90 %

(*table continues*)

Table 4 (*continued*)

Item	Less than 2 non-class contacts	Less than 4 non-class contacts
24. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to discuss intellectual or course- related matters?	75%	87%
25. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to get information and advice about the music education program?	80 %	95 %
26. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to socialize informally?	87 %	92 %

After removing the items representing informal faculty contacts and item 49 (dependent variable), factor analysis indicated the presence of 10 factors explaining 70% of the variance. Table 5 shows item loadings for the 10 factors and indicates which items were deleted from further analysis. With the exception of item 8, items with shared variance greater than .3 in two or more factors were eliminated. Item 8 loaded strongest with non-performance experiences, although it shared variance with factor 7, course requirements. However, since other items referencing non-performance experiences were inconsistent in the factor analysis, item 8 was retained to strengthen the reliability of the subscale referring to non-performance experiences. Overall, data from the non-performance items on the MSI-Pilot indicated more inconsistency than the other subsections of the questionnaire. This may have been related to the more generic

nature of the non-performance items when compared to the other subsections. Questionnaire items dealing with primary ensembles and applied lessons focused on subjects' experiences with specific teachers and courses, but items dealing with non-performance classes focused on the collective experience from several different teachers and courses.

Table 5

Factor Loadings and Item Deletions

Item Number (X = Deleted Items)	Main Factor Loading	Other factors
Factor 1: Ensemble experiences		
35. My primary performing ensemble has been musically stimulating.	.845	
4. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.	.731	9 (.328)
6. My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.	.668	9 (.362)
5. My ensemble director is an outstanding teacher.	.667	2 (.310) 4 (.325)
33. My primary performing ensemble experience has been disappointing to me.	.631	
Factor 2: Lesson experiences		
3. My lesson teacher is an outstanding teacher.	.818	
34. My private lessons have been musically stimulating.	.754	
1. My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.	.742	

(*table continues*)

Table 5 (*continued*)

Item Number (X = Deleted Items)	Main Factor Loading	Other factors
2. I do not seem to be one of the students that my lesson teacher seems particularly interested in.	.657	
X 39. I have achieved what I anticipated I would in my applied lessons.	.487	5 (.426) 6 (.392)
Factor 3: Performance growth		
36. My interest in musical performing has increased since coming to this university.	.850	
31. My performing experiences have had a positive influence on my overall growth.	.672	
46. I am unhappy with the attitude of many faculty members toward music education majors.	.569	
X 47. My overall interest in music teaching and learning has increased since coming to this university.	.539	4 (.425) 5 (.359)
41. I have had a difficult time managing the competitive aspects of the music program.	.504	
Factor 4: Non-performance experiences		
42. My non-performance music courses have been intellectually stimulating.	.731	
43. I have achieved what I anticipated I would in my non-performance music courses.	.716	
8. Most of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.	.566	7 (.418) 9 (-.338)

(*table continues*)

Table 5 (*continued*)

Item Number (X = Deleted Items)	Main Factor Loading	Other factors
Factor 5: Overall satisfaction		
X 45. I am satisfied with my overall experience in the music education program at this university.	.720	
X 37. I am satisfied with the extent of my musical development since enrolling in this university.	.622	3 (.386)
Factor 6: Undetermined		
X 9. Few of the non-performance music faculty I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students.	.769	
X 40. I have achieved what I anticipated I would in ensemble auditions.	.722	
Factor 7: Satisfaction with course requirements		
44. I feel that certain components of the music education degree at this university are unreasonable.	.836	
48. I am satisfied with the course requirements of my music education degree program.	.708	5 (.425)

(*table continues*)

Table 5 (*continued*)

Item Number (X = Deleted Items)	Main Factor Loading	Other factors
Factor 8: Undetermined		
X 7. Few of the non-performance music faculty have had contact with are generally interested in students.	.726	
X 32. I am satisfied with my private lesson experience at this university.	-.515	4 (-.340) 5 (.368)
Factor 9: Integration into music environment		
X 38. I have had a difficult time finding a balance between the performance and academic requirements of the music education program.	.795	
Factor 10: Ensemble placement		
Ensemble placement (from background information)	.806	

After eliminating items 39, 47, 45, 37, 9, 40, 7, 32, and 38, the factor analysis was repeated with Varimax rotation to obtain the best fit for the data This analysis indicated a 6 factor solution explaining 64% of the variance, containing a total of 18 items (1,2,3,4,5,6,8,31,33,34,35,36,41,42,43,44,46,48,) and the background item, ensemble placement. Retained items represented the following factors: (1) ensemble experiences, (2) lesson experiences, (3) non-performance coursework experiences, (4) growth and development as a performer, (5) satisfaction with degree requirements, and (6) ensemble placement. Table 6 shows factor loadings for the 18 student response items and the item indicating ensemble placement.

Table 6

Factor Loadings for All Items Retained on the MSI-Pilot

Factor/Item	Main Factor Loading	Other factors
Factor 1: Ensemble experiences		
35. My primary performing ensemble has been musically stimulating.	.830	
4. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.	.793	
6. My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.	.727	
5. My ensemble director is an outstanding teacher.	.651	
33. My primary performing ensemble experience has been disappointing to me.	.582	3 (.334)
Factor 2: Lesson experiences		
3. My lesson teacher is an outstanding teacher.	.804	
34. My private lessons have been musically stimulating.	.789	
1. My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.	.766	
2. I do not seem to be one of the students that my lesson teacher seems particularly interested in.	.678	

(*table continues*)

Table 6 (*continued*)

Factor/Item	Main Factor Loading	Other factors
Factor 3: Performance growth		
36. My interest in musical performing has increased since coming to this university.	.810	
46. I am unhappy with the attitude of many faculty members toward music education majors.	.712	
31. My performing experiences have had a positive influence on my overall growth.	.665	6 (-.454)
41. I have had a difficult time managing the competitive aspects of the music program.	.544	1 (.308)
Factor 4: Non-performance experiences		
42. My non-performance music courses have been intellectually stimulating.	.761	
43. I have achieved what I anticipated I would in my non-performance music courses.	.726	
8. Most of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.	.650	6 (-.463)
Factor 5: Satisfaction with course requirements		
44. I feel that certain components of the music education degree at this university are unreasonable.	.833	
48. I am satisfied with the course requirements of my music education degree program.	.776	

(*table continues*)

Table 6 (*continued*)

Factor/Item	Main Factor Loading	Other factors
Factor 6: Ensemble placement		
Primary performance ensemble (from background information)	.822	

Included in the fourth factor were two items that deserve discussion: "I am unhappy with the attitude of many faculty members toward music education majors." and "I have had a difficult time managing the competitive aspects of the music program." These two items may have grouped with statements representing performing experiences because music education students are often placed in queue behind students majoring in performance when attempting to schedule applied lessons with primary performance faculty members. As a result, during the course of their degrees, music education majors may find certain applied faculty members inaccessible. Similarly, a music education student's overall performance experience may be affected by the inability to compete for ensemble placement with students majoring in performance. Although the nature of this condition is highly speculative, it is reasonable to assume that music education students devote a certain amount of time to specialty courses that could otherwise be spent on performance practice. In that regard, the competitive aspects of the music program could affect the music education student's perception of his or her performing experiences.

Item Groupings and Factor Labels

Pilot study data suggested modifications to the MSI-Pilot based on the factor loadings of individual items, since the items in the MSI-Pilot did not load on factors as anticipated. In

Pascarella and Terenzini's (1980) instrument, a clear distinction was made between student perceptions of faculty and student perceptions of academic growth. This may have been partially facilitated by the broad-based examination of faculty and courses, effectively removing student perceptions of specific faculty members and specific classes. However, in order to probe deeper into the unique academic environment of the music education student, this study examined the original Pascarella and Terenzini in three different learning environments: ensemble experiences, applied lessons, and non-performance classes. As a result, some items in the MSI-Pilot queried student perceptions of certain teachers and their respective classes. For example, when students responded to items about their applied lesson teachers, they were responding to images of one specific faculty member. Likewise, students responded to items about their primary performing ensemble and the ensemble's director. This specificity allowed for a closer look at the academic world of the music education student, but it created a perceptual connection between certain faculty members and items on the MSI-Pilot. As a result, the data from the pilot study suggested that students did not separate their feelings about course quality from their feelings about the teacher. In other words, the two separate scales on Pascarella and Terenzini's (1980) instrument representing (1) *faculty concern for student development and teaching* and (2) *academic and intellectual growth* were not so clearly separated in the MSI-Pilot data during factor analysis. Instead, the MSI-Pilot data indicated new factors that formed according to the three learning environments, ensembles, lessons, and non-performance classes. These factors contained questionnaire items that reflected both *faculty concern* and *academic growth* in the same scale, instead of just one or the other as in Pascarella and Terenzini's scales. Therefore, the scales to be used in the final version of the MSI-Pilot, despite being originally adapted from Pascarella and Terenzini's (1980) instrument, will not maintain the same labels as in the original instrument.

Instead, the scales will be labeled according to the pilot data item loadings emerging in the factor analysis: (1) ensemble experiences, (2) lesson experiences, (3) non-performance experiences, (4) performance growth, and (5) satisfaction with course requirements.

Regression Analysis on MSI-Pilot Data

The MSI-Pilot scales as defined from factor analysis were analyzed using logistic regression procedures in the SPSS (2001) computer software package. Logistic regression provides two types of inferential tests: tests of models and tests of individual predictors (Tabachnick & Fidell, 1996). The main purpose of this study was to identify individual predictors of student intentions to withdraw from the music education program, so the focus of the regression analysis centered on the examination of the individual predictor variables.

Table 7 shows the results of the regression analysis for each of the MSI-Pilot variables. The dependent variable, *intent to withdraw*, was coded 0 for subjects indicating intentions of persisting in the program and 1 for subjects indicating intentions of withdrawing from the program. The regression coefficient *B* for each predictor variable represents the change in log odds of the variable "intent to persist/withdraw" related to a one-unit increase in the predictor variable. This coefficient corresponds to the unstandardized *b* coefficient in ordinary least squares regression. If *B* is a positive value, the log odds of a subject changing intentions from persisting to withdrawing *increase* as the scores on the predictor variable increase. If *B* is a negative value, the log odds of a student changing their intentions from persisting to withdrawing *decrease* with an increase in the score of the predictor variable. Higher scores on the scales of the MSI indicated a more positive experience with the music program, so the assumption in the study was that the *B* coefficients would be negative. Negative coefficients would indicate that an

increase in positive experiences in the music program (as indicated by higher scores on the MSI) would decrease the likelihood that students would intend to withdraw from the program.

Because information related to odds (as opposed to log odds) of an event occurring is easier to understand and communicate, SPSS (2001) provides a regression coefficient related to the odds of the dependent variable occurring (Cizek & Fitzgerald, 1999). The odds ratio is presented as the Exp(*B*) statistic. It is the number by which the odds of withdrawal intentions are multiplied for each one-unit increase in the independent variable. The Exp(*B*) statistic for each predictor variable in this study is the odds that a change in student withdrawal intentions (from persisting to withdrawing) is associated with an increase in the predictor variable. An Exp(*B*) coefficient of 1 would indicate no change in the odds associated with the predictor variable. Values of Exp(*B*) greater than 1 indicate that the odds of withdrawal intentions increase with an increase in the predictor variable, while values less than one indicate that the odds of withdrawal intentions decrease with an increase in the predictor variable. For example, if the Exp(*B*) statistic for *lesson experiences* is .593, the statistic would indicate that a one unit increase in *lesson experiences* decreases the odds of withdrawal intentions by 40.7%. (The odds of *withdrawal intent* is multiplied by .593, which is .407 less than 1.) When paired with a negative *B* coefficient, the Exp(*B*) value less than zero indicated that increased satisfaction and academic performance among subjects were related to a decreased likelihood of withdrawal from the music education program.

Although the odds ratio helps researchers conceptualize change in the dependent variable, Menard (1995) cautions that the Exp(*B*) statistic should not be considered a separate measure of relationship between the dependent variable and the independent variables. The odds ratio

presents the same information as the regression coefficient, only it presents the information in a different way.

Statistical significance for the predictor variables is calculated based on the Wald statistic, the default formula in SPSS (2001). The Wald statistic is an asymptotic chi-square distribution, representing the squared ratio of *B* to its standard error. The formula for calculating the Wald statistic, $W = (B/S.E.)^2$, parallels the formula for the *t* ratio in linear regression and corresponds to significance testing of *b* coefficients in ordinary least squares regression. Significance levels associated with the Wald statistic indicate whether or not the *B* coefficients differ from zero more than what might be attributed to chance alone. However, since the Wald statistic is calculated on *B* coefficients and their standard errors, care must be taken to guard against Type II errors. There is a flaw in the Wald statistic in that large effects may produce large standard errors that in turn lower the Wald value (Menard, 1995). Thus very large effects may return low significance values. The likelihood ratio test, which compares the regression model with and without the independent variables, provides an accurate alternative to the Wald statistic if distortions are present in the data.

Analysis of the data was performed by examining the independent variables separately in a series of six different regression equations. For this procedure, the cut point was set at .85, representing the proportion of subjects indicating intent to remain in the music education program compared to subjects indicating intent to withdraw from the program. The default value (.5) was designed to accommodate balanced cells in the dependent variable, so changing the default value allowed a more representative examination of the MSI-Pilot data. Results of the six regressions are shown in Table 7.

Table 7

Logistic Regressions for MSI-Pilot Variables: One Variable Models

Variable	*B*	*SE*	Wald	*df*	Sig.	Exp(*B*)
Perf-Growth	-.186	.100	3.460	1	.063	.830
Constant	.021	.973	.000	1	.983	1.021
Lessons	.011	.099	.013	1	.911	1.011
Constant	-1.927	1.254	2.362	1	.124	.146
Ens. Exp.	-.018	.074	.061	1	.804	.982
Constant	-1.541	1.053	2.141	1	.143	.214
Non-Perf.	-.008	.137	.004	1	.953	.992
Constant	-1.728	1.124	2.364	1	.124	.178
Courses	-.022	.198	.013	1	.910	.978
Constant	-1.699	.875	3.774	1	.052	.183
Ens. Plc.	.204	.294	.481	1	.488	1.226
Constant	-2.193	.686	10.213	1	.001	.112

The regression analyses indicated that none of the variables tested from the MSI-Pilot data were statistically significant predictors of subjects' intentions to withdraw from the music education program. Out of the six variables analyzed, *performance growth* was the strongest variable tested. The Wald value for the *performance growth* was 3.46 ($df = 1$, $p < .06$). Although the variable failed to meet the .05 alpha level, it was noteworthy when compared to the

other variables tested. If dependent variable cell sizes had been more balanced, *performance growth* may have reached a statistically significant level in the equation. Likewise, the weak performance of the other variables tested may have been related to unbalanced cells or overall sample size.

Pilot Data Analysis of Grades

An additional pilot test was performed with existing grade data gathered from university records for 156 music education students enrolled as freshmen or sophomores during the fall, 2000, and spring, 2001, semesters. Grades were scored 4 = A, 3 = B, 2 = C, 1 = D, 0 = F. All students in the sample who registered at University of North Texas for the fall, 2001 semester in some major field of study other than music education were coded 1 (intent to withdrawal from music education), while those remaining in the music education degree plan were coded 0 (intent to persist in music education). Subjects in the study were not identified and were not contacted by the researcher. Analysis was performed on data drawn from the following course grades: Music theory, applied music, and aural skills. In order to determine the potential for regression analysis, a factor analysis was performed on the three grade variables. Results of the factor analysis indicated the presence of only one factor, suggesting that regression analysis on the grade data as three separate independent variables would not be appropriate. Therefore, in the main study, grades in music theory, aural skills and applied lessons were examined collectively as a single independent variable in the regression equation.

Regression Analysis of Grade Data

Grade data for 156 freshmen and sophomore music education majors was collected from university records as part of the pilot study. The data included students' declared degree majors upon returning the following semester. From the 2000-01 cohort of 156 students, 43 students

(28%) withdrew from the music education program; therefore, a cut point of .72 was set for the SPSS regression equation instead of the default value of .5. However, 47 subjects (30%) were missing data on one or more of the three variables being examined and were thus eliminated from analysis. Therefore, the full model analysis contained 94 subjects who persisted and 15 subjects who withdrew. This indicated a 16% withdrawal rate in the full model analysis.

The grades from music theory, aural skills and lessons showed statistically significant correlations, supporting the single factor loading during factor analysis. Pearson correlation coefficients are shown in Table 8.

Table 8

Correlation Coefficients for Music Theory, Aural Skills and Lessons

	Theory	Aural	Lessons
Theory	1.000	.629**	.479**
Aural		1.000	.479**
Lessons			1.000

** Correlation is significant at the .01 level

Coefficients of determination for the correlations were moderate to low (T/A =.395, T/L = .22, A/L = .22). The largest correlation and coefficient of determination (theory and aural skills) was not surprising, since the two courses were related. The low effect sizes for the relationship between lessons and the other two variables suggested that not all students who were successful in their lessons were successful in their theory and aural skills classes.

Since factor analysis and correlation coefficients indicated that grades in music theory, lessons and aural skills were not clearly separable, the focus of the logistic regression using these three variables was on the strength of the overall model as opposed to the strength of the

individual variables. When the three variables were entered together in one step of the regression equation, the resulting model was significantly different than the constant-only model. Results of the analysis are shown in Table 9.

Table 9

Logistic Regression on Grades in Music Theory, Aural Skills and Applied Lessons

Variables	*B*	S.E.	Wald	df	Sig.	Exp(*B*)	Odds
Theory	-.188	.307	.375	1	.540	.829	17%
Aural Skills	.477	.377	1.601	1	.206	1.611	61%
Lessons	-1.391	.406	11.750	1	.001	.249	75%
Model chi-square = 21.694			*df* = 1		$p < .000$		

Since more than one independent variable was used in the regression equation, model coefficients were included in the analysis. Model statistics indicate how well the predictor variables work together to predict the dependent variable. The model chi-square value in Table 9 was 21.694 ($p < .000$), indicating that the inclusion of the predictors significantly improved the constant-only model. The strongest predictor variable (Wald = 11.75, $p < .001$) was *lessons*. The *B* and Exp(*B*) coefficients for *lessons* indicated a 75% chance that students would change their intentions from persistence to withdrawal as applied lesson grades decreased. *Theory* and *aural skills* did not show statistically significant coefficients in the analysis.

The order in which variables are entered into a regression equation may affect the outcome, so further analysis was performed on the pilot grade data by examining each variable separately. Table 9a shows the results of three single variable models created from the data. Each

independent variable was entered into the equation separately and compared against the constant only model. Missing data changed the dependent variable cell counts in each analysis. Therefore, to maintain a certain level of consistency, the original cut value of .72 was retained.

Table 9a

Single Variable Logistic Regression Models: Grade Data

Variables	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Aural	-.186	.194	.916	1	.338	.830
Constant	-1.028	..611	.2.863	1	.092	.358
N = 123	Persisters = 102		Non-persisters = 21			
Lessons	-.939	.213	19.459	1	.000	.391
Constant	1.637	.677	5.843	1	.016	5.139
N = 135	Persisters = 104		Non-persisters = 31			
Theory	-.400	.154	6.780	1	.009	.670
Constant	-.467	.353	1.752	1	.186	.627
N = 138	Persisters = 108		Non-persisters = 30			

The first variable examined, aural skills, was not a statistically significant predictor and was thus eliminated from further analysis. However, lesson grades and theory grades produced noteworthy effects.

When entered separately, both *lessons* and *theory* were statistically significant predictors. *Lessons* maintained its predictive strength from the full model analysis with a Wald value of 19.459 (p = 000), and *theory* produced a Wald value of 6.780 ($p < .009$). However, when *lessons*

and *theory* were entered into the model at the same time, a suppressor effect was evident between the two variables. Table 9b shows the regression analysis for lessons and theory together.

Table 9b

Logistic Regression: Lessons/Theory Model

Variables	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Lessons	-1.208	.301	16.095	1	.000	.299
Theory	.130	.228	.327	1	.567	1.139
Constant	2.009	.824	5.952	1	.015	7.459

Model chi-square = 28.060 *df* 1 $p < 000$

Note. *N* = 126 Persisters = 101 Non-persisters = 25

The suppressor effect may have been due to multicollinearity between the variables, and the unbalanced cell sizes in the dependent variable. Table 10 shows the correlation matrix for the independent variables *lessons* and *theory*, and the dependent variable *persistence in the music education program*. It also shows a partial correlation matrix for *theory* and *withdrawal*, with *lessons* controlled.

Table 10

Partial Correlations: Theory, Lessons, and Intent to Withdraw from Music Education

		Intent	Theory	Lessons
No controls	Intent	1.000	-.1971 (p = .013)	-.507 (p = .000)
	Theory		1.000	.479 (p = .000)
	Lessons			1.000

		Intent	Theory
Controlling for *Lessons*	Intent	1.000	.060 (p = .252)
	Theory		1.000

The "no controls" correlation matrix shows *theory* significantly correlated with the dependent variable *intent to withdraw from the music education program* (*p* = .01). However, when the variable *lessons* is controlled in the partial correlation matrix, *theory* ceases to be statistically significant. The effect indicates a multicollinearity problem between the two variables. When the correlation between independent variables is stronger than the correlation between the independent variables and the dependent variable, multicollinearity problems may occur. Even though the effect sizes are moderate, the correlation between *theory* and *lessons* is stronger than the correlation between *theory* and *intent*.

Identifying the multicollinearity problem, however, still does not fully explain the performance of the variables in the regression model. If the effects of *theory* were being

enhanced by *lessons* then the variable should not have produced statistically significant regression coefficients when analyzed alone. Furthermore, as a variable in the regression equation, *lessons* suppressed the strength of *theory* when *theory* was entered into the model first. If multicollinearity were fully responsible for the suppressor effect, then *theory* should have suppressed *lessons* when entered first. However, since the suppressed variable was always *theory* regardless of the entry position, the problem was likely associated with the unbalanced cells of persisters and non-persisters.

Grade Data Summary

Grade data analysis indicated a statistically significant improvement in the model with the predictors as compared to the constant only model. Both theory and lessons were statistically significant predictors, although they did not perform well as predictors when entered into the equation at the same time. This inconsistency may have been due partially to multicollinearity between the two variables, and partially to the lack of variance in the dependent variable. In other words, due to the small number of students indicating intent to withdraw from the program, there was not a clear indication of which variables were important. As a result, both variables were statistically significant separately, but not together in the model. Still, the presence of at least one strong predictor variable in the model supported the inclusion of grade data predictors in the main study.

Main Study

Instrument

The instrument for the main study was modified slightly to facilitate administration to all students in music theory classes. Since the music theory classes included students from all degree majors, one item was added to the MSI-Pilot for non-music education majors to account

for an item on the pilot instrument that was music education specific. On the pilot version of the MSI, item 16 was stated: "I am unhappy with the attitude of many faculty members toward music education majors." In the main study, a similar item was added: "I am unhappy with the attitude of many faculty members toward students in my declared major." Since the main study targeted music education students, the new item was not included in data analysis.

Other revisions to the instrument were made in the "Background Information" section: (1) The title of the instrument was changed from Music Student Inventory-Pilot to Music Student Inventory (MSI), (2) The item "specialization within music education" was changed to provide specific major performing instruments (3) The item "primary performing ensemble" was changed to "primary lab ensemble" and "other ensembles".

Data Analysis

All analysis of data collected on the MSI was prepared with the SPSS (2001) statistical software package. Descriptive statistics were provided as needed to further understanding of the regression equations. Since the score on each individual item was ordinally scaled, non-parametric descriptors were used, including medians, modes, and frequencies. However, means were calculated for scores on each scale of the MSI and were used in the regression equations. Means were calculated on items marked with a value of 1-4. Unanswered items and items marked "no opinion" were omitted when means were calculated. This was done in order to remove the bias associated with the 0 value for a "no opinion" response. A 0 value for "no opinion" would have been scored lower than "strongly disagree," the most negative response on the scale. Omitting the "no opinion" response and deriving means for each scale provided an unbiased value representing the subjects' responses.

To examine how variables in the study related to students' persistence intentions, logistic regression analysis was employed. The mean scores for all scales on the MSI and scores for each grade data variable were regressed individually on the dichotomous, dependent variable, *intent to withdraw from the music education program* using logistic regression analysis. Logistic regression is a non-parametric technique that accounts for the presence of dichotomous independent or dependent variables.

The logistic equation shares some processes with multiple regression, but the main focus of the procedure is different. Tabachnick and Fidell (1996) explain: "The difference between multiple regression and logistic regression is that the linear portion of the equation ($A = B_1X_1 + B_2X_2 + B_3X_3$) is not the end in itself, but is used to find the odds of being in one of the categories" (p. 581). It is appealing for statistical analysis of data containing dichotomous dependent variables because it provides an estimate of probability that ranges between 0 and 1. Kleinbaum (1994) explains:

> "The logistic model, therefore, is set up to ensure that whatever estimate of risk we get, it will always be some number between 0 and 1. Thus, for the logistic model, we can never get a risk estimate either above 1 or below 0. This is not always true for other possible models, which is why the logistic model is often the first choice when a probability is to be estimated" (p. 6).

Unlike multiple regression analysis and discriminant function analysis, logistic regression has no assumptions about the distributions of the predictor variables. Predictors do not have to be discrete, normally distributed, or linearly related. Furthermore, predictors can be any mix of continuous, discrete and dichotomous variables. (Tabachnick & Fidell, 1996). Each research question was analyzed as follows:

1) *Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?*

Items on the MSI relating to ensembles, private lessons and non-performance music courses were averaged by section to form mean scores for the three separate scales. Items 10-14 referred to ensemble experiences, under the scale name "Primary Performance Lab". Items 6-9 referred to lesson experiences, under the scale name "Applied Lessons (Primary Instrument)". Items 1-3 referred to non-performance course experiences under the scale name "Non performance Music Classes". The means were then regressed on the dependent variable *intent to withdraw from the music education degree program*

2) *Do student perceptions of their course requirements predict their intent to withdraw from the degree plan?*

Means for items 4 and 5 were calculated to form a score representing the independent variable *satisfaction with course requirements*, which was regressed on the dependent variable *intent to withdraw from music education.*

3) *Do student perceptions of their development as performers predict their intent to withdraw from the music education degree plan?*

Means for items 15 - 18 were calculated to form a score representing the independent variable *performance growth.* This score was regressed on the dependent variable *intent to withdraw from the music education degree program.*

4) *Do student grades in music theory, aural skills and applied lessons, predict student intent to withdraw from the program?*

Letters grades for each subject in the study were collected from university records for music theory, aural skills and applied lesson courses and converted to a 4-point

numerical scale as follows: A = 4, B = 3, C = 2, D = 1, F = 0. Grade data was collected in May 2002 after spring semester grades were posted and included all grades available for each participant in the courses targeted. Sophomores commonly had four semesters of each course, while freshmen commonly had two. A mean score was calculated in order to account for the different number of semesters subjects had enrolled in each course. Grades of W (withdrawal) or I (incomplete) were not included, but grades of WF (withdraw failing) were entered as "0", which was consistent with university policies for calculating grade point averages. Grade data were analyzed two ways. Grades in the three courses were examined together in a single model and separately in three single-variable models. This was done in order to account for the possibility of suppressor effects between the grade data variables as evidenced in pilot data.

5) *Do students' cumulative grade point averages predict their decisions to withdraw from the music education degree plan?* The student's GPA as indicated in university records represented an independent variable regressed on the dependent variable *intent to withdraw*.

6) *Does student ensemble placement predict student intent to withdraw from the music education program?*

Data for ensemble placement was collected in the general background section of the MSI. Participants wrote in the name of their primary performing lab. Scores were assigned to student responses based on the skill level requirements of the different ensembles available, with a score of 4 given to those ensembles with the highest skill demands and a score of 1 given to the ensembles with lowest demands. Students who were not performing in an ensemble were given 0 points for the scale. The hierarchy of ensembles was established for each performing specialty (winds, choir, orchestra), but comparisons between the disciplines were not be made. The scores

computed for ensemble placement were entered in the regression equation as a separate independent variable.

7) *Does gender interact with the other independent variables in the study in the prediction of student intent to withdraw from the music education program?*

To examine gender interactions in this study, a series of *t*-tests were performed with the mean scores of women and men on all variables in the study, including MSI variables, course grades (music theory, applied lessons, aural skills), and GPA.

Analysis Summary

Logistic regression analysis was performed in an effort to identify main effects for each variable as a predictor for subjects' intentions to persist or withdraw in the music education program. The variables were not analyzed together as a model. The 8 variables examined for main effects were (1) ensemble experiences, (2) lesson experiences, (3) non-performance course experiences, (4) satisfaction with course requirements, (5) performance growth (6) academic performance (combined music theory, aural skills and applied lesson grades), (7) cumulative GPA, and (8) ensemble placement. Although the pilot data suggested multicollinearity between subjects' grades in theory, aural skills and lesson, there was no assurance the same effect would be present in the main study. Therefore, the main study analysis examined grade data for music theory, aural skills, and lessons both as separate variables and together as a model representing *academic performance*.

CHAPTER 4

RESULTS

The purpose of this study was to investigate the predictive influence of variables in three different academic learning environments on the intentions of music education majors to leave the degree program. Data were gathered during the spring semester, 2002 at the University of North Texas from freshmen and sophomore music education majors. The data included participant responses from a questionnaire developed specifically for the study and participant grades in three different music courses. Grade data was extracted from university records after spring semester grade reports had been filed.

Sample

Of the 127 freshmen and sophomore students registered as music education majors as of January 2002, 109 (86%) returned questionnaires. Examination of the questionnaires indicated 14 of the responses were from students who had earlier participated in the pilot study. These questionnaires were eliminated from the final sample, leaving 95 subjects in the study. Ethnic representation among the subjects was: 64% White, 23% Hispanic, 8% Black, 4% Asian, Pacific Islander, Middle Eastern and 1% Native American. The sample included 49 women and 46 men.

Data collection

The Music Student Inventory (MSI) questionnaire (Appendix C) and Institutional Review Board permission sheet were given to freshmen and sophomore students during their music theory classes between April 15 and April 26, 2002. Music theory classes were used for data collection because they facilitated contact with most of the freshmen and sophomore students in the college of music. Following administration of the questionnaire and permission forms, grade data were collected from university records for a two-year period between fall 2002 and spring

2002 for music theory, aural skills, and applied lessons. Grades in the specified courses for subjects participating in the study were added to subjects' responses on the MSI.

Regression Analysis Procedures

Regression analysis was performed on the data from the Music Student Inventory (MSI) to address the individual research questions. Since the dependent variable (intent) was dichotomous, a binary logistic procedure from the SPSS (2001) statistical software package was used. To account for the unbalanced cell sizes (75/20), data collected in the study were analyzed two different ways. One analysis used all cases with a regression cut point set at .79 to account for the unbalanced cell sizes. The second analysis maintained the default cut point of .5, but used 20 randomly sampled cases from the larger cell (stayers) to balance the number of cases in the smaller cell (leavers). Some participants were not enrolled in performance labs or lessons at the time of the study, so they were unable to respond to those sections of their questionnaire. As a result, slightly different sample sizes were produced for each variable. However, since each variable in the study was examined separately, the regression analyses were performed on whatever data was available.

Logistic regression measures the probability that a dependent variable will change from 0 to 1 based on a one unit increase in the value of an independent (predictor) variable. For the dependent variable in this study, subjects who indicated intent to persist in the program were scored 0 and those who indicated intent to withdraw from the program were scored 1. Therefore, the regression analysis tested the probability that subjects would change their intentions from persisting to withdrawing based upon changes in the predictor variables.

The statistical procedures used in the study examined the predictive strength of each of the 9 variables separately rather than the performance of the variables together as a predictive

model. As a result, multiple statistical testing of the same data inflated the Type I error risk in the study. To maintain an experimentwise alpha level at .05, the Bonferroni adjustment procedure was used to set significance levels for each individual regression analysis at .006. (.05 / 9 = .0055)

Regression coefficients reported in the tables include: (a) *B* - unstandardized regression coefficient, (b) *SE* – standard error, (c) Wald statistic – used to determine statistical significance, (d) *df* - degrees of freedom, (e) Sig - statistical significance, and (f) Exp(*B*) – odds ratio of change in the dependent variable per one unit change in predictor variable. In addition, the Nagelkerke R^2 coefficient provided a measure of effect size and the model chi-square coefficient indicated the extent that the constant-only model was improved by the addition of the predictor variables. Specific information regarding output coefficients and logistic regression procedures was provided in Chapter 3.

Research Question One

Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?

Items on the MSI relating to ensembles, private lessons and non-performance music courses were summed by section to form scores for three separate scales. Items 10-14 referred to ensemble experiences. These items referred to experiences encountered through large ensemble participation. Subjects were asked to respond to statements about musical stimulation and overall satisfaction. Included in this scale were items reflecting subjects' feelings about their ensemble directors. Items 6-9 referred to lesson experiences. Items 1-3 referred to non-performance course experiences. The mean values for each scale were then regressed individually on the dependent

variable *intent to withdraw from the music education program.* Results of the regression analysis for the full selection of cases are shown in Table 11a.

Table 11a

Logistic Regression Analysis for Ensemble Experiences, Lesson Experiences and Non-performance Course Experiences

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Ensemble Exp.	.402	.413	.949	1	.330	1.495
constant	-2.628	1.311	4.022	1	.045	.072
Lesson Exp.	-.522	.359	2.120	1	.145	.593
constant	.306	1.151	.071	1	.790	1.358
Non-Perf Exp.	-.736	.525	1.965	1	.161	.479
constant	.756	1.471	.264	1	.607	2.129

Note. Dependent variable was *intent to persist*. Questionnaire item responses were combined to form a mean scale value for each variable. Cut point for analysis was set at .79 Sample sizes: Ensemble Exp, *N* = 91; Lesson Exp, *N* = 93; Non-performance Course Exp, *N* = 94.

The regression analysis suggested that none of the variables in research question one (*ensemble experiences, lesson experiences,* and *non-performance course experiences*) were statistically significant predictors of intent to withdraw from the music education program.

Ensemble experiences. The positive values of the *B* and Exp(*B*) coefficients for *ensemble experiences* indicated that the odds of subjects changing their intentions from persisting to withdrawing actually increased about 50% as scores for *ensemble experience* increased. In other words, results suggested that subjects were actually more likely to withdraw from the music education program if their ensemble experiences were positive. However, the

effect was not statistically significant and may have been related to sample size or other variables. Further discussion of the effect will be presented in Chapter 5.

Lesson experiences. The strongest predictor of the three variables was *lesson experiences*, with a *B* value of -.522 and an Exp(*B*) value of .593. Together, the two coefficients for *lesson experiences* indicated that a one unit increase in scores on the MSI decreased the odds of withdrawal intentions by 40.7%. In other words, higher scores on lessons experiences were associated with subjects' intentions to remain in the music education program. However, the Wald statistic and related significance level (2.120, $p < .145$) failed to meet the .006 alpha level needed for statistical significance in the study.

Because *lessons experiences* produced a stronger effect in the analysis than either *ensemble experiences* or *non-performance course experiences*, further examination was warranted. Therefore, the correlation between *lesson experiences* and the dependent variable *intent to withdraw* was calculated, as recommended by Garson (2002) for verifying the statistical significance of an independent variable in logistic regression.

Subjects' scores of the 4 MSI items representing *lesson experiences* were used to examine the variable's relationship with the dependent variable, *intent to withdraw from the music education program*. Using a Pearson point-biserial correlation procedure to account for the dichotomous dependent variable, results indicated a statistically significant negative relationship between *lesson experiences* and *intent to withdraw* ($r = -.251$, $p < .007$). A negative correlative relationship indicates that lower scores on one variable tend to go with higher scores on the other. On the dependent variable *intent to withdraw*, subjects intending to persist were scored 0 and subjects intending to withdraw were scored 1. Thus the negative correlation

coefficient (-.251) suggested that lower scores on *lesson experiences* were related to an increase in withdrawal intentions.

Despite the statistically significant correlation between *lesson experiences* and *intent to withdraw*, the coefficient of determination (r^2 = .06) indicated a weak effect. Only 6% of the variance in *intent to withdraw* was attributable to *lesson experiences*. Nevertheless, the findings from the analysis of *lesson experiences* confirmed the presence of a relationship with the dependent variable *intent to withdraw from the music education program*.

Non-performance course experiences. Results of logistic regression analysis on data representing *non-performance course experiences* indicated a *B* coefficient value of -.736 and an Exp(*B*) value of .479. These coefficients indicated that the odds of subjects changing their intentions from persistence to withdrawal decreased about 52% as non-performance course experiences increased. The Wald value was 1.965, which corresponded to a statistical significance value of .161. This value did not meet the .006 alpha level of the study.

When repeated with 40 cases (20 randomly selected persisters and 20 non-persisters), the regression equation again indicated no statistically significant variables. Table 11b shows results from logistic regression analysis performed on the MSI scales for *ensemble experiences*, *lesson experiences* and *non-performance course experiences* with balanced cells.

Table 11b

Logistic Regression Analysis for Ensemble Experiences, Lesson Experiences, and Non-performance Course Experiences with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Ensemble Exp.	.220	.522	.177	1	.674	1.246
constant	-.680	1.653	.169	1	.681	.507
Lesson Exp.	-.899	.538	2.792	1	.095	.407
constant	2.959	1.825	2.628	1	.105	19.272
Non-Perf Exp.	-.143	.656	.048	1	.827	.867
constant	-.391	1.821	.046	1	.830	1.479

Note. Cases were randomly sampled from the group of 75 persisters to match the smaller group of non-persisters. Number of cases per variable: Ensemble experiences, $N = 36$, Lesson Experiences, $N = 38$, Non-performance course experiences, $N = 40$. Cut point for the analyses was .5.

The results of the balanced cell analysis illustrated a picture similar to that of the full set of cases. None of the independent variables tested produced a statistically significant regression coefficient. *Lesson experiences* produced a stronger effect in the smaller sample, but the odds ratio was close to that produced by the larger sample. The Exp(*B*) value for *lesson experiences* in the balanced cell analysis indicated that subjects were 60% less likely to change their intentions from persisting to withdrawing if the scores on the lesson scale of the MSI increased. The 60% odds of the balanced cell sample compared to 40% odds in the full sample. *Ensemble experiences* became weaker in the balanced cell analysis, but like the larger sample, the relationship between higher scores on *ensemble experiences* and subjects' withdrawal intentions remained positive, and the effect was not statistically significant ($p < .674$). *Non-performance courses* produced a weaker effect in the balanced cell analysis than with the large sample. The *B*

value fell slightly from -.736 to -.143 ($p < .827$), but like *lesson experiences* and *ensemble experiences*, the effect failed to reach statistical significance.

Research Question Two

Do student perceptions of their course requirements predict their intent to withdraw from the degree plan?

Subjects in the study responded to two items on the MSI representing their perceptions of course requirements in the music education degree plan. Items 4 and 5 indicated the degree to which subjects felt that the music education course requirements were reasonable and the overall satisfaction level of the subjects toward their required courses. From the scores on the MSI, means were calculated and then regressed on the dependent variable *intent to persist*. Two subjects left all items in this scale blank, so the analysis was conducted with 93 subjects. Table 12a shows the results of logistic regression analysis with 93 cases for the variable.

Table 12a

Logistic Regression Analysis for Courses Requirements

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Courses	-.400	.392	1.040	1	.308	.670
constant	-.312	.980	.101	1	.750	.730

Note. $N = 93$. Cut point set at .79. Questionnaire item responses were combined to form a mean scale value for *perception of courses*.

Results suggested that the variable *course requirements* was not a statistically significant predictor of students' intentions to persist or withdraw from the music education program. The *B* coefficient of -.400 and the Exp(*B*) value of .670 indicated that subjects were

about 33% less likely to change their intentions from persistence to withdrawal as scores on *course requirements* increased. The statistical significance value for the variable was .308.

Descriptive statistics indicated very little difference in the *course requirements* scores of subjects intending to persist and those intending to withdraw from the music education program. Scores from the two groups produced similar group means, standard deviations and medians (persist: $M = 2.541$, $Mdn = 3$, $SD = .653$; withdraw: $M = 2.375$, $Mdn = 2$, $SD = .621$). The modes for the two groups were slightly different, with those intending to persist showing the higher value (persist: Mode = 3; withdraw: Mode = 2).

Repeated with balanced cells, the predictive strength of the variable weakened considerably. Table 12b shows regression analysis on *perception of courses* performed with 40 cases.

Table 12b

Logistic Regression Analysis for Perception of Courses with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Courses	.073	.479	.024	1	.878	1.076
constant	-.122	.1.174	.011	1	.917	.885

Note. $N = 38$. Cut point set at .5. Questionnaire item responses were combined to form a mean scale value for *perception of courses*.

The balanced cell analysis for *courses* produced a Wald statistic of .024, which corresponded to a p-value of .878. As in the analysis of the full set of cases, the balanced cell procedure suggested that *perception of courses* was not a statistically significant predictor of

students' intentions to persist or withdraw from the music education program. Furthermore, the effect of *courses* in the balanced cell analysis weakened to the point that the variable actually indicated a positive relationship between withdrawal intent and higher scores on the MSI. However, like *ensemble experiences*, reasons for the positive relationship may have been related to sample size or other variables.

Research Question Three

Do student perceptions of their overall development as performers predict their intent to withdraw from the music education degree plan?

This research question dealt with how the subjects perceived their overall growth and development as performers in the music program. Labeled *performance growth* on the MSI, items 15-19 comprised the scale for this variable, but only items 15, 16, 18, and 19 were used in the analysis. Item 17 (a re-statement of item 16) was included in the MSI to accommodate future research of music students in degree major fields other than music education; therefore it was excluded from the current analysis.

All 95 subjects were included in the analysis of performance growth. Regression procedures indicated a *B* value of .246 and an Exp(*B*) value of 1.278, which was not high enough to suggest a statistically significant effect. The positive value of *B* and a value of Exp(*B*) greater than 1 indicated that subjects were actually more likely to change their intent from persistence to withdrawal as their perceptions of performance growth became increasingly positive. Specifically, likelihood of subjects changing their intentions from persistence to withdrawal from the music education program increased by about 28% when performance growth scores increased by one unit and all other variables were held constant. However, the effect was not statistically significant and may have been due to the unbalanced cell sizes. Additional analysis

indicated that MSI scores collected for *performance growth* tended to group around the midpoint of the scale for both groups of subjects. The mean score for subjects intending to persist was 2.803 (SD = .536), and the mean for subjects intending to withdraw was 2.872 (*SD* = .549). Medians and modes from the two groups were almost identical: *Mdn* = 3, and mode = 2.8 respectively.

Table 13a shows the results of logistic regression procedures applied to *performance growth* with all subjects included (*N* = 95).

Table 13a

Logistic Regression Analysis for Performance Growth

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Perf. Growth	.246	.481	.261	1	.610	1.278
constant	-2.029	1.398	2.087	1	.149	.133

Note. Cut point set at 79. All cases included in analysis.

Results of the regression procedures on *performance growth* indicate a Wald value of .261 and a *p*-value of .610. The results suggest that *performance growth* is not a statistically significant predictor of students' intentions to withdraw from the music education program.

Table 13b shows the results of the same procedure applied to performance growth with balanced cells (*N* = 40).

Table 13b

Logistic Regression Analysis for Performance Growth with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Perf. Growth	.291	.597	.236	1	.627	1.337
constant	-.822	1.722	.228	1	.633	.439

Note. $N = 40$. Cut point set at .5.

As in the regression procedures on the full set of cases, analysis of *performance growth* with balanced cells ($N = 40$) failed to produce a statistically significant regression coefficient. The results of the procedure support the findings from the full set of cases that suggests *performance growth* is not a statistically significant predictor of student intentions to withdraw from the music education program.

Research Question Four

Do student grades in music theory, aural skills and applied lessons predict student intent to withdraw from the music education degree plan?

Grades in music theory, aural skills and applied lessons were examined two ways: as a model and as individual variables. As a model, the grade data represented an overall measure of academic performance in music classes, in contrast to the student perception measures collected in the MSI. In the pilot study, factor analysis of grade data indicated subjects' grades in music theory, applied lessons and aural skills all loaded on one factor. Therefore, the model chi-square value in the logistic regression analysis was used to indicate the collective performance of the variables as a predictor of subjects' intentions to persist or withdraw from the music education

program. The model chi-square statistic indicates the predictive strength of the model following the addition of the independent variables.

The three grade data measures were examined separately as individual variables to help clarify the full model analysis. This was necessary because logistic regression analysis of the three grade data measures in the pilot study suggested a suppressor effect between music theory grades and applied lesson grades. By examining the three grade measures individually, it was possible to determine if the suppressor effect was also present in the main study data.

Subjects in the study provided written permission for grade data to be gathered from existing university records. The Institutional Review Board aided in the collection of grade data by compiling subjects' grades in music theory, aural skills and applied lessons. Grade data was included for all semesters in which subjects had been enrolled in the specified classes. Incomplete courses and course withdrawals were not included, unless the grade was labeled "WF" (withdraw failing). All "withdraw failing" grades were entered in the analysis as a failing grade. The university grade data was formatted in letter grades (A, B, C, etc.), which were converted to a 4-point numerical scale (A = 4, B = 3, C = 2, D = 1, F = 0). The numerical values were then used to calculate means for all grades in the specified courses for each subject. For example, if a subject had completed 3 music theory classes, those three grades were used for the subject's score on the variable *music theory grades*. Likewise, if a subject had completed only one music theory class, the grade earned for that single class represented the subject's score on the variable. Since the focus of the analysis was to examine the overall academic performance of subjects in music theory, aural skills, and applied lessons, no attempts were made to account for specific courses, instructors, or course sections.

Table 14a shows logistic regression results for subjects' grades in *music theory*, *aural skills* and *applied lessons* when entered as three separate variables.

Table 14a

Logistic Regression Analysis for Grades in Music Theory, Aural Skills, and Applied Lessons: Single Variable Models

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Music Theory .	-.442	.240	3.385	1	.066	.643
constant	-.190	.625	.092	1	.761	.827
Model chi-square = 3.437		*df* = 1	Sig. = .064		Nagelkerke R^2 = .056	
Aural Skills.	-.334	.228	2.147	1	.143	.716
constant	-.418	.635	.434	1	.510	.658
Model chi-square = 2.131		*df* = 1	Sig. = .144		Nagelkerke R^2 = .039	
Applied Lessons	-.683	.403	2.871	1	.090	.505
constant	1.000	1.396	.514	1	.473	2.719
Model chi-square = 2.873		*df* = 1	Sig. = .090		Nagelkerke R^2 = .053	

Note. Dependent variable was *intent to persist*. Means were calculated after letter grades were converted to a 4-point scale (A = 4, B = 3, C = 2, D =1, F = 0). Cut point for analysis was set at .79 Sample sizes: Music Theory, *N* = 93; Aural Skills , *N* = 84; Applied Lessons *N* = 83.

None of the variables produced a statistically significant effect in the single-variable models. The strongest model included *music theory grades*, which produced a Wald value of 3.385, and a statistical significance value of .066. Although the statistical significance value for *music theory grades* failed to meet the .006 significance value set for the study, the variable was noteworthy because it indicated a stronger predictive effect than any other variable in the study.

The *B* value of -.442 and corresponding Exp (*B*) value of .643 indicated that the odds of subjects changing their intentions from persistence to withdrawal from the music education program decreased about 36% if their music theory scores increased. In other words, higher grades in music theory were associated with persistence in the degree program.

A comparable effect, however, was produced by applied lesson grades as a single variable regression model. Although the Wald value (2.871) for applied lesson grades and its significance value (.090) indicated a slightly weaker effect than the corresponding values for music theory grades, the *B* and Exp(*B*) coefficients for the variable indicated that the odds of subjects changing their intentions from persistence to withdrawal decreased about 50% if their grades in applied lessons increased. These odds compared to a 36% change in odds for music theory grades. However, the Nagelkerke R^2 values for the two single variable models were almost identical (applied lessons = .053, music theory = .056). Since the Nagelkerke R^2 coefficients represented strength of association, their values suggested that only about 5% of the change in the dependent variable in each model was attributed to its corresponding independent variable.

Although *aural skills grades* produced a stronger effect than most of the MSI variables, results of the analysis indicated that the variable was not a statistically significant predictor of intent to withdraw from the music education program. Grades for *aural skills* produced a Wald value of 2.147 and a corresponding statistical significance value of .143, falling short of the necessary significance value of .006 set for the study. The *B* value of -.334 and the Exp(*B*) value of .716 indicated that the odds of subject intentions changing from persistence to withdrawal decreased about 28% as aural skill scores increased.

The final variable reflecting academic performance in specific coursework was *applied lessons.* As in the case of *music theory* and *aural skills, applied lessons* failed to meet statistical significance criteria when entered into the regression equation. Results of the analysis indicated a Wald value of 2.871, and a statistical significance value of .09. The *B* and Exp(*B*) coefficients indicated that the odds of subjects changing their intentions from persistence to withdrawal were 50% if their applied lesson grades decreased one unit.

In addition to examining theory, aural skills and lesson grades separately among the full sample (*N* = 95) with a cut point of .79, the variables were also examined in balanced cells (*N* = 40) with a cut point of .5. As in the data gathered from the MSI, sample sizes changed for each variable because not all subjects had enrolled in all classes. Results of the balanced cell analysis are shown in Table 14b.

Table 14b

Logistic Regression Analysis for Grades in Music Theory, Aural Skills, and Applied Lessons: Single Variable Models with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Music Theory .	-.249	.277	.807	1	.369	.780
constant	.586	.731	.643	1	.423	1.797
Model chi-square = .823		*df* = 1	Sig. = .364		Nagelkerke R^2 = .029	
Aural Skills.	-.370	.283	1.712	1	.191	.691
constant	1.001	.846	1.400	1	.237	2.721
Model chi-square = 1.827		*df* = 1	Sig. = .176		Nagelkerke R^2 = .066	

(*table continues*)

Table 14b (*continued*)

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Applied Lessons	-1.557	.829	3.526	1	.060	.211
constant	5.482	2.976	3.392	1	.066	240.208

Model chi-square = 4.727 *df* = 1 Sig. = .030 Nagelkerke R^2 = .183

Note. Dependent variable was *intent to persist*. Means were calculated after letter grades were converted to a 4-point scale (A = 4, B = 3, C = 2, D =1, F = 0). Cut point for analysis was set at .5 Sample sizes: Music Theory, *N* = 38; Aural Skills, *N* = 36; Applied Lessons *N* = 32.

Results from the balanced cell analysis were similar to the results for the complete sample in that none of the variables were statistically significant predictors of subjects' intentions to withdraw from the music education program. However, the relative importance of the variables changed somewhat between the two samples. In the large sample, grades for *music theory* was the strongest predictor ($p < .066$) and grades for *applied lessons* was the second strongest ($p < .090$). But in the balanced cell analysis, *applied lessons* became the strongest predictor ($p < .060$) of the three variables. The Exp(*B*) coefficient for applied lessons in the balanced cell analysis indicated that the odds of subjects changing their intentions from persistence to withdrawal increased 79% as their scores in applied lessons decreased one unit. Both *music theory* and *aural skills* weakened in the balanced cell analysis when compared to the analysis of the full sample.

The results of logistic regression analysis performed on music theory grades, lesson grades and aural skills grades together as a model are shown in Table 15a. All variables were entered together on one step of the regression procedure.

Table 15a

Logistic Regression Analysis for Grades in Music Theory, Aural Skills, and Applied Lessons: One Model

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Music Theory	.051	.325	.024	1	.876	1.052
Applied Lessons	-.571	.471	1.470	1	.225	.565
Aural Skills.	-.116	.288	.163	1	.687	.890
Constant	.778	1.444	.291	1	.590	2.178

Model Chi-square = 2.280 *df* = 3 Sig. = .516 Nagelkerke R^2 = .048

Note. Dependent variable was *intent to persist/withdraw from music education*. Means were calculated after letter grades were converted to a 4-point scale (A = 4, B = 3, C = 2, D =1, F = 0). Cut point for analysis was set at .75. *N* = 74

When entered together, grades in music theory, applied lessons and aural skills failed to produce a statistically significant model chi-square coefficient. The model chi-square value was 2.280, which corresponded to a statistical significance value of .516. The Nagelkerke R square statistic, an indication of effect size, was .048, suggesting that only 4% of the models' effect could be attributed to the predictor variables.

The strongest predictor among the three variables in the model was applied lessons, with a statistical significance value of .225. The *B* coefficient value of -.571 and the Exp(*B*) value of .565 indicated that the odds of subjects changing their intentions from persistence to withdrawal from the music education program decreased about 43% as grades in applied lessons increased. The weakest predictor variable was music theory, with a statistical significance value of .876.

This value was noticeably weaker than that found in the analysis of music theory in the single variable model (p <.066).

Interestingly, the predictive strength of all individual variables weakened when entered together in the same model. This suggested that the suppressor effect found among grade variables in the pilot study data persisted in the main study data. The suppressor effect may have been partially due to collinearity between music theory and applied lesson variables. A Pearson product moment correlation coefficient calculated for the two variables was .485 (p <.001). Although statistically significant, the coefficient of determination (R^2) was only .24, a value well below the .80 value identified as potentially problematic by Menard (1995). Still, collinearity between music theory and applied lessons may have biased the results.

Another possible explanation of the suppressor effect between music theory and applied lessons may be related to the unbalanced cells of the dependent variable. When analyzed together in the balanced cell model, both *music theory* and *applied lessons* produced stronger results than in the single variable models. *Music theory* increased from a Wald value of .807 (p < .369) to a Wald value of 3.741 (p < .053). Likewise, *applied lessons* increased from a Wald value of 3.526 (p < .06) to a Wald value of 3.770 (p < .052). These results suggest that the suppressor effect between *music theory* and *applied lessons* may have been partially due to cell size within the sample.

The last analysis of grade data involved the examination of the grade model with balanced cells. Results of the balanced cell regression analysis performed on music theory, aural skills, and applied lesson grades as a single model is shown in Table 15b.

Table 15b

Logistic Regression Analysis for Grades in Music Theory, Aural Skills, and Applied Lessons: One Model with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Music Theory	1.140	.590	3.741	1	.053	3.127
Applied Lessons	-2.933	1.510	3.770	1	.052	.053
Aural Skills.	-.550	.486	1.279	1	.258	.577
Constant	9.189	4.508	4.155	1	.042	9788.330
Model Chi-square = 9.037	*df* = 3	Sig. = .029	Nagelkerke R square = .347			

Note. Dependent variable was *intent to persist/withdraw from music education*. Means were calculated after letter grades were converted to a 4-point scale (A = 4, B = 3, C = 2, D =1, F = 0). Cut point for analysis was set at .5. *N* = 30

Results of the balanced cell analysis indicated a model chi-square value of 9.037 and a statistical significance value of .029. Although this significance value suggested a trend toward statistical significance, the Nagelkerke R square statistic was .347, indicating that only 34% of the main effect could be attributed to the model's variables. The strongest individual predictor variable in the balanced cell model was *applied lessons*, which produced a statistical significance value of .052. This was consistent with the full sample model where *applied lessons* also showed the greatest statistical significance value (.225).

Although individual grade measures in the full sample analysis suggested a suppressor effect when entered together as a model, the grade measures in the balanced cell analysis appeared to be strengthened by simultaneous entry. Both effects suggested the likelihood of collinearity among the variables and may have been related to sample size.

Research Question Five

Do students' cumulative grade point averages predict their intentions to withdraw from the music education degree plan?

Cumulative grade point averages (GPA's) were gathered from university records for all subjects in the study. GPA's were calculated by the university on a 4-point scale, taking into account the number of credit hours attempted and completed by students. The final GPA used in the study included subjects' grades for all courses through the spring semester, 2002.

Table 16a shows logistic regression results for the independent variable *cumulative GPA* when regressed on the dependent variable *intent to withdraw from the music education program*.

Table 16a

Logistic Regression Analysis for Cumulative GPA (N = 95)

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
GPA	-.549	.374	2.159	1	.142	.577
constant	-.314	1.119	.078	1	.779	1.368

Note. *N* = 95. Cut point set at .79.

Results from the analysis indicated that cumulative grade point average (GPA) was not a statistically significant predictor of subject's intentions to withdraw from the music education program. The Wald value for GPA was 2.149, with a significance value of .142, which failed to meet the .006 level set for the study. The *B* coefficient value was -.549 and the Exp(*B*) value was .577, which indicated that the odds of subjects' changing their intentions from persistence to withdrawal from the music education program decreased about 42% as cumulative GPA increased.

The mean GPA for subjects indicating intentions to persist in the music education program was 3.094, compared to a mean GPA of 2.849 for those indicating intentions to withdraw from the program. These values suggest very little difference between the two groups in reference to grade point averages.

Cumulative GPA was also examined with balanced cells. Results of the analysis are shown in Table 16b.

Table 16b

Logistic Regression Analysis for Cumulative Grade Point Average (N = 40)

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
GPA	-.177	.427	.171	1	.680	.838
constant	.512	1.280	.160	1	.689	1.669

Note. *N* = 40. Cumulative grade point average collected from existing university records. Cut point set at .5.

Research Question Six

Does ensemble placement predict student intent to withdraw from the music education program?

Ensemble placement was determined by subject responses to the MSI item "Primary lab ensemble". Subjects were asked to write the name of the primary lab ensemble in which they were enrolled at the time of the study. Examples of ensemble names were provided for clarification, and an additional blank was provided for other ensembles, such as chamber groups and small jazz groups. The written responses provided by subjects were converted to a numerical score between 1 and 4 according to the level of selectivity associated with the group. The most selective vocal, wind and string groups were scored 4 and the least selective were

scored 1. Students not participating in a primary performance lab were scored 0. Students participating in labs on secondary instruments were scored 1. For subjects enrolled in two primary labs the higher score was entered. Each subject in the study was given only one score for *ensemble placement.* Table 17a shows the results of regression procedures performed for ensemble placement with the full selection of cases (N = 95).

Table 17a

Logistic Regression Analysis for Ensemble Placement

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Ens. Placement	-.211	.298	.501	1	.479	.810
constant	-.912	.602	2.297	1	.130	.402

Note. Cut point set at .79 One score per student based on primary large ensemble enrollment status.

Regression analysis indicated a Wald value for *ensemble* placement of .501, with a corresponding significance value of .479. The *B* value of -.211 and the Exp(*B*) value of .810 indicated that the odds of subjects changing their intentions from persistence to withdrawal decreased 19% if ensemble placement scores increased.

A closer examination of the data revealed that subjects in the study regardless of persistence intentions were mostly members of the less selective ensembles. Both groups (intent to persist, intent to withdraw) had identical modes and medians for ensemble placement (Mode = 2, *Mdn* = 2) Only three of the 20 subjects (6%) indicating intentions to withdraw from the program scored higher than 2 on ensemble placement. Similarly 11of the 75 subjects (6. 8%) indicating intentions to continue in the music education program scored higher than 2 on the variable. Because the groups were almost identical in regards to ensemble placement, the

variable failed to show any predictive strength in the regression analysis. Table 17b shows the analysis of *ensemble placement* performed with balanced cell sizes (N = 34).

Table 17b

Logistic Regression Analysis for Ensemble Placement with Balanced Cells

Variable	*B*	*SE*	Wald	*df*	Sig	Exp(*B*)
Ens. Placement	-.389	.372	1.092	1	.296	.678
constant	.797	.833	.916	1	.338	2.219

Note. Cut point set at .5. One score per student based on primary large ensemble enrollment status.

The regression procedure performed on *ensemble placement* with balanced cells (N = 40) indicated slightly more predictive strength for the variable than the corresponding procedure with all cases, but scores on the variable still failed to show statistical significance. The *B* and Exp(*B*) statistics indicated that subjects were 32% less likely to change intentions from persistence to withdrawal if ensemble placement scores increased. However, comparable to the analysis with all cases, results of the balanced cell analysis suggested that ensemble placement was not a statistically significant predictor of student intentions to withdraw from the music education program.

Research Question Seven

Does gender interact with the other independent variables in the study in the prediction of student intentions to withdraw from the music education program?

There were slightly more women (49) in the full sample than men (46), for a proportion of 51.5 % women to 48.5% men. To determine the influence of gender on the other variables in the study, t-tests were performed on the group mean scores of women and men on each of the

MSI scales. The subjects' scores for items in each scale were used to produce mean scores for men and women's responses on each scale. The group means on each scale represented the dependent variables in each analysis and *gender* served as the grouping variable. Equality of variances was verified by Levene's test on all variables, except *ensemble placement* ($F = 5.592$, $p < .02$). Therefore, the *t* values for unequal variances were used for *ensemble placement*. Descriptive data is shown in Table 18.

Table 18

Descriptive Data for MSI variables according to Gender

Variable	Gender	*N*	*M*	*Mdn*	*SD*	*SE*
Ensemble Exp.	F	46	3.03	2	671	.098
(5 Items)	M	45	2.98	3	.705	.105
Lesson Exp.	F	48	3.22	3.25	.728	.105
(4 Items)	M	45	3.30	3.50	.623	.092
Non-Perf. Exp.	F	49	2.85	3	.476	.068
(3 Items)	M	45	2.86	3	.502	.074
Courses	F	49	2.47	2.50	.656	.093
(2 Items)	M	44	2.55	2.50	.636	.095
Perf. Growth	F	49	2.77	3	.583	.083
(5 Items)	M	46	2.87	3	.485	.071
Ensemble Plc.	F	48		2		
	M	46		2		

Note. Items on MSI were scored: 1-strongly disagree, 2 - disagree, 3 - agree, 4 - strongly agree. Means were derived for each scale. "No opinion" responses were omitted. Ensemble Placement = Ordinal data

Table 19 shows results of 6 separate t-tests for independent means conducted where gender was the grouping variable for each test and the MSI scales were the dependent variables.

The alpha level needed for statistical significance in the t-tests was set at .005, a slightly more conservative value than the .006 significance value established by the Bonferroni adjustment procedure for the study.

Table 19

Results of t-tests for Gender on MSI Variables

Variable	*t*	*df*	Sig. (2 –tailed)	Std. Error Diff.	99% CI of Difference Lower	Upper
Ensemble Exp.	.345	89	.731	.144	-.330	.429
Lesson Exp.	-.538	91	.592	.141	-.447	.295
Non-Perf. Exp.	-.122	92	.903	.100	-.277	.253
Courses	-.566	91	.573	.134	-.430	.278
Perf. Growth	-.917	93	.362	.110	-.391	.180
Ens. Placmnt.	-1.262	87.35	.210	.180	-.710	.250

Note. Equal variance not assumed for *ensemble placement.* For all variables, *t* critical value = 2.915 ($df = 60$, $p < .005$)

In the comparison of group means between men and women on the MSI scales, none of the variables measured produced a *t* value greater than or equal to the *t* critical value, 2.915 ($p < .005$). Therefore, the results of the *t*-tests suggested that no statistically significant differences were evident in the mean scores of women and men on the MSI scales.

Gender effects were also examined on subject's course grades in music theory, applied lessons and aural skills. Mean scores were calculated for the subjects' grades in the specified courses as entered in university records. From the individual mean scores, a group mean was calculated for both men and women on each variable (theory, lessons and aural skills). These

group means served as the dependent variables in each analysis and *gender* served as the grouping variable. Equality of variances was confirmed for the three course grade variables with Levene's test.

The same procedure was followed for the examination of gender effects on cumulative grade point average (GPA). Group means were derived for women and men's GPA's. These means were then used as dependent variables in a *t*-test analysis with gender serving as the grouping variable. Equality of variances was confirmed by Levene's test for GPA. Descriptive data is shown in Table 20.

Table 20

Descriptive Data for Course Grades according to Gender

Variable	Gender	*N*	*M*	*SD*	*SE*
Music Theory.	F	48	2.43	1.05	.151
	M	45	2.85	1.01	.151
Applied Lessons	F	41	3.51	.605	.094
	M	42	3.53	.651	.100
Aural Skills	F	43	2.88	1.13	.172
	M	41	2.62	1.13	.177
GPA	F	49	2.97	1.47	.20
	M	46	2.85	1.35	.20

Table 21 shows the results of *t*-tests for men's and women's group means on *music theory, applied lessons, aural skills* and *GPA*.

Table 21

Results of t-tests for Gender on Grade Data

Variable	*t*	*df*	Sig. (2 –tailed)	Std. Error Diff.	99% CI of Diff Lower	Upper
Music Theory	-1.978	91	.051	.214	-.986	.140
Applied Lessons	-.200	81	.842	.138	-.392	.337
Aural Skills	1.026	82	.308	.247	-.398	.905
GPA	-1.176	93	.243	.134	-.508	.194

Note. For all variables, *t* critical value = 2.915 ($df = 60$, $p < .005$)

In the comparison of group means between men and women on course grades in music theory, applied lessons and aural skills, none of the variables measured produced a *t* value greater than or equal to the *t* critical value, 2.915 ($p < .005$, $df = 60$). Therefore, the results of the *t*-tests suggest that no statistically significant differences are evident in the mean scores of women and men. Likewise, the comparison of group means between men and women's GPA's, indicated no statistically significant differences between genders.

CHAPTER 5

DISCUSSION, IMPLICATIONS and RECOMMENDATIONS

Discussion

Summary of the Study

Attrition among college music education students is a growing concern in the music teaching profession. Music Educators National Conference (MENC, 2001) recently reported regional music teacher shortages across the country, and there remains a concern among music educators that the lack of certified music teachers entering the profession may severely impact future music programs in the nation's schools. Hickey (2002) reported that there were roughly 7000 public school music jobs available in June 2000, but only 3700 graduates completed music education degrees the same year. The problem also extends into higher education, where vacancies for music education positions have continued to rise since 1980. Hickey (2002) stated:

> The problem in music education is that not only is there a need to train more music educators at the Baccalaureate level in order to fill the growing public school job vacancies, there is also a need to keep up with the growing number of job vacancies in higher education in order to prepare future K-12 music teachers. (p. 6)

Despite the shortage of degreed music teachers, little has been done to investigate why music education students withdraw from the degree program prior to degree completion. Brown and Alley's (1983) research suggested that academic performance was a predictor of attrition among music education students, as measured by students' overall grade point averages. The researchers also found a relationship between music education students' jury grades and attrition. However, Brown and Alley's (1983) research only began to investigate the problem. Since

music teacher shortages have continued to increase in the last decade, more research is needed that investigates institutional, social and environmental variables impacting music education students' decisions to withdraw from the degree program.

Although little research can be found addressing attrition among music education majors, an enormous body of research has examined attrition among undergraduate college students in general. From this body of literature, several attrition models have emerged that explain college student departure. Some of these models identify social and academic integration as important predictors to college student withdrawal (Pascarella and Terenzini, 1980; Tinto, 1993). Such models reflect a sociological perspective that focuses on the interaction of students with faculty and peers in the collegiate environment. Other models have focused on the impact of environmental influences, such as finances, off-campus jobs and housing (Bean, 1980; Cabrera, Stampen & Hansen, 1990). Still other models suggest that college student attrition can be largely predicted with knowledge of background variables alone, such as high school grade point average, gender, and ethnicity (Astin, 1977). Collectively the research literature suggests that academic, social, and environmental variables may all influence college student attrition, but the relative impact of the variables is not consistent. One of the most consistent predictors, however, is the satisfaction and success of the student in the academic environment.

Academic *integration* (Tinto, 1987, 1993) or academic *involvement* (Astin, 1993) refers to how well a student fits into the academic environment of the college or university. It can be measured by students' perceptions of: (a) intellectual growth, (b) faculty concern, and (c) faculty interaction (Pascarella and Terenzini, 1983), or it can be measured by academic performance assessments, such as cumulative grade point averages and SAT scores (Astin, 1977, 1993). This study examines both grade data and student responses in an effort to provide a comprehensive

look at the unique academic environment of students enrolled in the music education degree plan.

Music education students represent a unique population among college students because the curriculum places the students into three distinct learning environments. Private lessons provide music education students a regularly scheduled one-on-one interaction with faculty. Performing ensembles provide music education students a group-learning environment where individual performance expectations are influenced by group needs. Lastly, classroom experiences provide instruction for music education students in a traditional collegiate learning environment similar to other classroom settings outside the music program.

Purpose. The purpose of this study was to investigate the predictive influence of variables in three different academic learning environments on the intentions of music education majors to leave the degree program.

Research Questions.

1) Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?

2) Do student perceptions of their course requirements predict their intent to withdraw from the degree plan?

3) Do student perceptions of their overall development as performers predict their intent to withdraw from the music education degree plan?

4) Do student grades in music theory, aural skills and applied lessons predict student intent to withdraw from the music education degree plan?

5) Do students' cumulative grade point averages predict their intentions to withdraw from the music education degree plan?

6) Does ensemble placement predict student intent to withdraw from the music education program?

7) Does gender interact with the other independent variables in the study in the prediction of student intentions to withdraw from the music education program?

Methodology. In order to answer the research questions, a new instrument was needed. Building upon existing college attrition models (Pascarella & Terenzini, 1980, 1983), the Music Student Inventory (MSI) was developed to measure students' perceptions of academic factors within the music department. The MSI included 21 items in which subjects marked a Likert scales with 5 choices: (a) no opinion, (b) strongly disagree, (c) disagree, (d) agree, (e) strongly agree. The items were grouped according to (a) lesson experiences, (b) ensemble experiences, (c) coursework satisfaction, (d) non-performance classes, and (e) performance growth. The MSI also included a background section that collected information about each subject's gender, primary performance lab and major performing instrument. Names and identification numbers for subjects were collected to help organize the data but were not a part of the analysis.

In addition to the data collected with the MSI, grade data was collected from university records for three music classes: applied lessons, music theory and aural skills. Grades for applied lessons were included because they provided an academic performance measure of the one-on-one learning environment. Furthermore, Brown and Alley (1983) identified *jury grade* as an important predictor of withdrawal among music education students. Grades for music theory and aural skills were used as an academic performance measure of the classroom learning environment. Since four semesters of music theory and aural skills were required in the music education curriculum, most freshmen and sophomore music education students had enrolled in each course, unlike music history or other non-performance courses. Primary lab ensembles

were also included in the curriculum of freshmen and sophomore music education students. Pilot data indicated that student grades in the different ensembles were mostly A's, so ensemble placement was used as an indicator of student performance instead of grades. Subjects were given a numerical score based on the prestige and skill requirements associated with the ensemble in which they were placed after auditions for the spring semester. The use of ensemble placement further advanced Brown and Alley's (1983) investigation of ensemble participation as a predictor of withdrawal among music education students.

Data for the study was gathered during the spring semester, 2002 at a large research university. The Music Student Inventory (MSI) was given to freshmen and sophomore students enrolled in the music education degree program during their music theory classes. Freshmen and sophomores were the target population, because the research literature indicated the highest percentage of dropout and major field changes typically occur during the first two years of college (Dennis, 1998; Kroc, Howard, Hull, & Woodward, 1997; Levitz, Noel & Richter, 1999). Participation in the study was voluntary although subjects were given class time to complete the MSI and were allowed to leave when finished. Students who were absent during the theory class presentations were contacted through follow-up visits and personal consultations. From the 127 freshmen and sophomore students registered as music education majors in the spring semester, 2002, 109 (86%) returned questionnaires. After examining the 109 completed questionnaires, 14 questionnaires were eliminated from students who had participated in the pilot study, leaving a total of 95 participants in the main study.

Data collected for the study was analyzed using the SPSS 10.07 statistical software program. Statistical procedures for the study included Pearson correlation, *t*-tests for independent means and binary logistic regression. The regression analyses were conducted two

ways in order to account for the unbalanced cell sizes: (1) all available cases, with the default .5 cut point changed to .79 to match the unbalanced cell sizes, and (2) a random sample of cases selected from the larger cell to match the total number of cases of the smaller cell, with the cut point remaining at the default value of .5. Tables 11-15 and table 18 in Chapter 4 show the results of the regression analyses. The balanced cell analyses showed little improvement in statistical significance from the analyses conducted with all cases. Therefore, the following discussion will focus on the regression analyses performed with all available cases.

Research Question One

Do student perceptions of their experiences with ensembles, private lessons and non-performance courses predict their intent to withdraw from the music education degree plan?

The three variables *ensemble experiences*, *lesson experiences* and *non-performance course experiences* represented the three different learning environments of the music education student examined in the study. Subjects' responses from the MSI were analyzed with a binary logistic regression procedure in order to assess the predictive strength of the variables separately on the dependent variable *intent to withdraw from the music education degree program*. None of the three variables produced a statistically significant regression coefficient, suggesting that the variables were not strong predictors of students' intentions to persist or withdraw from the degree program.

Ensemble experiences. The regression analysis indicated a nominal effect for the variable. The statistical significance value ($p < .330$) for *ensemble experiences* was calculated from the Wald statistic and failed to meet the .006 criterion set for statistical significance in the study. Results indicated that odds of subjects changing their intentions from persisting to withdrawing actually increased slightly as scores on the *ensemble experiences* scale of the MSI

increased. A possible explanation for the finding was that subjects who had particularly satisfying ensemble experiences might have changed their degree majors from music education to music performance. However, data from item 21 on the MSI indicated that only 23% of the subjects who intended to withdraw from the music education program planned to change majors within the music department. This would suggest that the positive relationship between higher scores on the ensemble experience section of the MSI and subjects intentions to withdraw from the program was more likely related to the unbalanced cells than a shift toward performance.

The variable *ensemble experiences* as measured from five items on the MSI that solicited subjects' responses about their ensemble directors and personal perceptions of musical stimulation. The items were broadly stated in order to capture an overall impression of the subjects' ensemble experiences**.** Mean scores on the MSI for *ensemble experiences* indicated that subjects were mostly positive about their ensemble experiences, regardless of their intentions to persist or withdraw from the program.

Positive perceptions of their ensemble experiences may have been partially related to the inherent qualities of music and musical performing. For example, some researchers in past research have suggested that the activity of performing music has reinforcing qualities that contribute to positive student attitudes regardless of teacher reinforcement (Madsen & Alley, 1979; Madsen & Duke, 1985). Similarly, Duke and Henninger (1998) reported that student attitudes and feelings of self-efficacy in rehearsals were strongly influenced by the accomplishment of music performance goals, and that student attitudes were largely unaffected by corrective verbalizations from the teacher.

These studies suggest that ensemble experiences typically remain positive for students if they are able to respond frequently during rehearsals and achieve their own performance goals.

Therefore, subjects responding to the MSI scale *ensemble experiences* may have actually been considering the extent of their own musical growth and achievement more than the extent of their growth as a result of participating in the ensemble. On the other hand, the lack of statistical significance for *ensemble experience*s as a predictor of withdrawal intentions may have simply indicated the willingness of subjects to accept their ensemble experiences, good or bad, as part of their overall development.

Overall, the findings from the analysis of *ensemble experiences* suggest that students make decisions to withdraw based on variables other than their experiences in major lab ensembles. As a result, music educators should not assume that students withdraw from music education programs as a result of a poor ensemble experience or remain in programs because of positive experiences. However, it should be noted that *ensemble experiences* might produce different results when examined in collegiate music programs with fewer primary labs or in programs where students are not able to change ensembles every semester.

Lesson experiences. Applied lesson experiences on the MSI were measured by four items that solicited subjects' responses about faculty concern for student development and overall impressions of musical stimulation. Regression analysis with all available cases indicated that the variable was not a statistically significant predictor of subjects' withdrawal intentions. Although data for *lesson experiences* failed to meet statistical significance, it was the strongest of the MSI variables; therefore, follow-up procedures were performed on data from *lesson experiences*. Results of the follow-up procedures showed a statistically significant correlation between *lesson experiences* and the dependent variable *intent to withdraw* ($p < 007$), but the effect size of the relationship was small. Therefore, the correlation procedure essentially supported the results of the logistic regression: a relationship between the two variables existed,

but further study would be needed to confirm the importance of the variable as a predictor of *intent to withdraw from the music education program*.

The results of analysis on *lesson experiences* are particularly noteworthy in light of previous college attrition research that identifies the importance of student-faculty interaction in predicting student attrition. Research conducted among undergraduate students generally supports the predictive relationship between student-faculty interactions and withdrawal behavior (Mutter, 1992; Pascarella & Terenzini, 1980; Terenzini & Pascarella, 1978). Student interactions with faculty may be formal or informal, but any direct contact between undergraduate students and faculty has the potential to impact withdrawal decisions.

For undergraduate students in non-music degree programs, one-on-one contact with faculty may be rare. Contact generally occurs in classroom interactions and brief appointments during office hours. On the other hand, music students have close, personal interaction with faculty on a regular basis through their applied lessons. Therefore, it is important to note the contrast between previous attrition research and findings from this study. Analysis of data from the MSI suggests that one-on-one faculty contact as provided through applied music lessons is not a primary influence on music education students' intentions to persist or withdraw from the degree program. However, previous research (Mutter, 1992; Pascarella & Terenzini, 1980; Terenzini & Pascarella, 1978) suggested that interaction with faculty was a significant factor related to college dropout intentions among undergraduate students.

Non-performance course experiences. Non-performance courses as measured by the MSI referred to all courses taught in the traditional classroom setting, such as music theory, music history and music education. The scale was labeled "non-performance music classes" on the MSI and contained 3 items that assessed subjects' perceptions of faculty efficacy, intellectual

stimulation, and overall achievement. The findings suggested that the variable was not a statistically significant predictor of subjects' intentions to persist or withdraw from the program.

The lack of variance in the scores could indicate subjects' overall satisfaction with non-performance courses, but it could also indicate a problem with the data collection instrument. All items on the MSI are stated in a way that is consistent with other instruments designed to measure college attrition. However, by default, items for *lesson experiences* and *ensemble experiences* referred to specific courses and teachers, whereas items for *non-performance courses* referred to all classroom courses collectively. This was because most subjects were enrolled in several non-performance courses, but only one ensemble and lesson course. Therefore, subjects' perceptions of faculty members and classroom experiences had to be "averaged" in order to respond to the non-performance items. As a result, scores for the items in the *non-performance courses* scale tended to regress toward the mean and show less variance than scores for *ensemble experiences* and *lesson experiences*.

Research Question Two

Do student perceptions of their course requirements predict their intent to withdraw from the degree plan?

The variable was included in the study to account for the possibility that subjects might be satisfied with their learning experiences but dissatisfied with the required coursework and components of the degree plan. The scale solicited responses about specific components of the degree program and overall program satisfaction. Two items on the MSI formed the *course requirements* scale.

When entered into the logistic regression analysis, data for *course requirements* failed to produce a statistically significant main effect. However, as in the case of *non-performance*

courses, a lack of variance was evident in scores for *course requirements*. The lack of variance in the scores suggested a need for more items in the scale. Additional questionnaire items would increase the variance in the scores, which could possibly affect the performance of the variable in the regression analysis. The results may also be related to the grade classification of the participants. Freshmen and sophomore students have only a limited knowledge of the curriculum, so it is possible that their opinions about course requirements are not fully developed. Overall, the data for *course requirements* produced results that were consistent with results of *lesson experiences*, *ensemble experiences* and *non-performance courses*. The analysis suggested that subjects' perceptions of the music education course requirements did not impact their decisions to withdraw from the music education program.

Results for *course requirements* in this study supported earlier findings from Cabrera, Stampen and Hansen's (1990) study of college persistence among undergraduates. The researchers reported that the variable *satisfaction with curriculum* was not a statistically significant predictor of persisters and dropouts. Although Cabrera, Stampen and Hansen (1990) examined persistence in college rather than persistence in a specific degree plan, the independent variable *satisfaction with curriculum* used in their study reflected the same construct as *course requirements.*

Research Question Three

Do student perceptions of their overall development as performers predict their intent to withdraw from the music education degree plan?

This research question examined the extent that subjects felt they had grown as performers while enrolled in the music education program. The variable was measured by four items focused on different aspects of a subject's performing experience and was intended to

provide an overall measure of perceived growth and development. The variable was a music-specific application of the broader variable, *academic and intellectual growth* as found in Pascarella and Terenzini's (1980) college attrition instrument.

Analysis of the data suggested that *performance growth* as operationally defined by the items in the MSI was not a statistically significant predictor for subjects' intentions to withdraw from the music education program. Additionally, the findings suggested that most subjects in the study, regardless of intent to persist or withdraw, were slightly more satisfied than dissatisfied with their overall growth and development as performers.

These results were similar to Johnson's (1997) findings that indicated no statistically significant differences between commuter college persisters and dropouts on questionnaire items regarding *academic experience* and *learning climate.* In addition, the findings for *performance growth* on the MSI support earlier conclusions from Schlake's (1995) study regarding persistence in college. In a measure of college freshmen, Schlake (1995) found that persisters and dropouts were not significantly different in regard to their level of satisfaction with academic experiences. Although the variables chosen by Johnson (1997) and Schlake (1995) are broader than *performance growth*, they are related to *performance growth* in their representation of satisfaction with the overall academic environment.

Research Question Four

Do student grades in music theory, aural skills and applied lessons predict student intent to withdraw from the music education degree plan?

Grades from music theory, aural skills and applied lessons were included in the study in an effort to provide an academic performance measure that specifically addressed music education curriculum. The three courses were chosen from the overall curriculum because they

were common course requirements for freshmen and sophomore music education students. The grades for *music history* were not included because most freshmen had not taken the course. Grades for primary lab ensembles were not included because 92% of the primary lab grades awarded to music education students were A's. The lack of variance in the primary lab grades offered little benefit to the study.

In the pilot study, factor analysis procedures performed on grade data from the three music courses, music theory, aural skills, and applied lessons suggested the presence of a single factor representing the three variables. However, when analyzed together as a regression model, the results indicated a suppressor effect among the three grade data variables. Specifically, the main effects associated with grades from *music theory* and *applied lessons* tended to weaken when both variables were present in the regression model. Although suppressor effects are sometimes caused by collinearity among variables in regression equations, such effects may also be caused by other sources of error. In order to obtain a clearer picture of the data in the main study, subjects' grades in music theory, aural skills and applied lessons were examined separately as three one-variable models and together as a single model.

When examined as separate, single-variable models, regression analysis for the three models using music theory, aural skills and applied lessons produced similar results. None of the three models indicated statistically significant predictor effects.

The strongest of the three models, however, was the model containing *music theory grades* as the predictor variable. Although the predictive effect failed to reach statistical significance, it indicated a measure of importance among the other variables in the study. As a single variable, *music theory grades* produced the strongest effect of all variables in the study. A

comparable effect was produced by *applied lesson grades* as a single variable regression model; however, *applied lesson grades* indicated a slightly weaker main effect than music *theory* grades.

The remaining variable examined in a single-variable model was *aural skills grades*. This variable was the weakest of the three course grade variables. Subject grades in aural skills failed to produce a statistically significant effect when entered in the regression analysis.

When grouped together, subjects' grades in music theory, applied lessons and aural skills collectively represented a measure of academic performance in music coursework. Results of the regression analysis performed on the three variables as a model indicated that the model was not a statistically significant predictor of subjects' intentions to withdraw from the music education curriculum.

The change in statistical significance values between the two different procedures suggests that the suppressor effect found in the analysis of pilot data was also present in analysis of main study data.

Results also suggest the need for further study of *music theory grades* and *applied lesson grades* as predictors of intent among music education majors to leave the program. The p-values produced by these two variables suggest the possibility of a statistically significant relationship with the dependent variable if examined individually. However, future studies should specifically examine the two variables for interaction effects when entered in the same model. Such research might provide insight into why *music theory grades* and *applied lesson grades* tend to weaken when entered together.

Overall, the results of logistic regression analysis performed on a model representing academic performance in music coursework (music theory, applied lessons and aural skills) indicated that the model was not a statistically significant predictor of subjects' intentions to

withdraw from the music education program. However, among the individual variables examined in the model, *applied lessons* produced the strongest effect. The effect produced by *applied lessons* suggested that higher lesson grades were associated with a decreased likelihood of withdrawal from the music education program. This result supported Brown and Alley's (1983) findings that students' jury grades were highly correlated to persistence/dropout among freshmen and transfer music education students, and that students' applied lesson grades were crucial academic performance variables for degree persistence among music education majors.

Research Question Five

Do students' cumulative grade point averages predict their intentions to withdraw from the music education degree plan?

The relationship between cumulative grade point average (GPA) and student attrition has been confirmed in the research literature. (Cubeta, 1997; Howell, 1999; Kim, 1999; Metzner & Bean, 1987; Minear, 1997; Washington, 1996). Students who are struggling academically are generally more likely to dropout of school than those with higher grades. However, it is less apparent how cumulative GPA impacts a student's decision to remain in the same degree major. Brown and Alley (1983) found that cumulative GPA produced the highest correlation among variables examined in a study of persistence among freshmen and transfer music education majors. Therefore, the variable was included in this study because of its potential relationship with student intentions to withdraw from the music education degree major.

The lack of predictive strength for GPA as a variable in the regression procedure was surprising in light of Brown and Alley's (1983) findings. However, the data showed very little difference between the GPA's of those intending to persist and those intending to withdraw from the degree program.

Research Question Six

Does ensemble placement predict student intent to withdraw from the music education program?

The variable *ensemble placement* was included in this study to determine if membership in certain ensembles was a predictor of subjects' intentions to withdraw from the music education degree program. As a predictor variable, *ensemble placement* did not produce a statistically significant effect in the study.

The primary lab ensemble represents one of three learning environments for students majoring in music education, along with classroom and applied lesson environments. For most music education students, ensemble participation is an important part of the curriculum. In L'Roy's (1983) examination of occupational identity among music education majors, the researcher reported that high school ensemble directors were often the "significant others" in the music major's life before entering college. L'Roy (1983) also found that music education students most frequently identified their high school ensembles as a main contributor to their decisions to enter the profession.

Brown and Alley (1983) examined a slightly different aspect of ensemble participation in their study of attrition among music education majors. One of the variables in their study was the total number of ensembles in which subjects were participating. The variable failed to show a statistically significant relationship with dropout among music education students, but as defined in the study, the variable did not address relative placement of subjects following auditions.

Auditions are commonly used to assign students to various ensembles, and a certain level of prestige is associated with membership in the top groups. In contrast, placement in the less

prestigious groups may have a negative impact on some students, particularly if they previously held top positions in their high school programs.

Data indicated very little variance in the ensemble placement scores of subjects. The lack of variance in the data for *ensemble placement* was noteworthy because it identified that very few freshmen and sophomore music education majors earned placement in the more selective performance ensembles.

The lack of music education majors in top performing ensembles supports the findings of Shellahamer (1984) who conducted a study of selection and retention requirements for music education students. Shellahamer (1984) reported that auditions were required for entrance into the music education program at 70.5% of the institutions in the study. Furthermore, Shellahamer (1984) reported that over half the institutions in the study advised students to major in music education if they did not perform well enough to be accepted as performance majors.

Consistent with Shellahamer's (1984) findings, evidence from this study indicates a high proportion of music education majors in less prestigious ensembles. However, it was beyond the scope of the study to examine possible interaction effects between *ensemble placement*, *student classification* and *degree major*. Interacting with *student classification*, an examination of *ensemble placement* on students' intentions to withdraw from the music education degree could become increasingly significant as students reach junior and senior status. Likewise, an interaction between *degree major* and *ensemble placement* could possibly identify a tendency for students to select or change majors based on their selection for certain performing ensembles.

Research Question Seven

Does gender interact with the other independent variables in the study in the prediction of student intentions to withdraw from the music education program?

Existing research literature on college attrition indicates that gender is sometimes an interacting variable, because men and women often respond differently to social and academic factors in the college environment (Tinto, 1993; Pascarella & Terenzini, 1980)

There were 49 women subjects in the study compared to 46 men. Descriptive statistics indicated that mean scores on the MSI scales for men and women were almost identical. Likewise, standard deviations and standard errors indicated only nominal differences. Results of *t*-test analyses suggested that no statistical differences between the mean scores of men and women on any of the MSI variables ($p < .006$). Overall, results suggested that subjects' responses to the questionnaire were not influenced by gender.

Similar results were produced by the t-tests on group means from subjects' grades in music theory, applied lessons and aural skills. The t-tests revealed no statistically significant differences between mean scores of women and men for grades in music theory, applied lessons or aural skills ($p< .006$). The same was true for mean GPA's of men and women. No statistically significant differences between the mean scores of the two genders were evident.

In certain regards, the results of the gender *t*-tests were not surprising. Sample sizes for women and men subjects were almost equal, and both men and women had equal access to courses, instructors and ensembles. There were no course prerequisites associated with gender, with the exception of women's chorus and men's chorus, both of which received equal weighting in the *ensemble placement* scale of the MSI.

On the other hand, it is not unusual for gender to be an interactive variable in attrition research, particularly when *faculty contact* and *social integration* are being considered. For example, Piazza (1996) reported statistically significant gender interactions in a study at a proprietary institution. Piazza's results suggested that gender interacted with academic

performance scores and faculty contacts to influence students' decisions about persisting in school. Although this study focused only on academic integration, the potential for gender interaction still existed due to the unique learning environments provided through applied lessons and ensembles.

The lack of statistical significance for *gender* in the study suggests that men and women in the first two years of their music education program share similar perceptions of academic issues within the music curriculum and perform equally well in their coursework.

Implications

The purpose of this study was to investigate the predictive relationship of academic variables in three different learning environments to intent among music education majors to leave the degree program. Data collected from university records and questionnaire responses were analyzed with logistic regression procedures to determine the strength of the variables in predicting withdrawal intent among freshmen and sophomore music education students. The study was exploratory in nature, due to a lack of previous research addressing student attrition within specific major fields. As a result, findings from the study should not be considered conclusive, but rather should be examined for their potential impact on future research. Overall, results of the study illuminated several important points for ongoing attrition research in music education programs.

Predictive Strength of the Variables

Logistic regression analysis for the academic variables in the study showed none of the variables to be statistically significant in predicting withdrawal intent among subjects. These results suggest that students' intentions to withdraw from the music education program may be related to variables other than those associated with the academic system of the institution.

Although *academic integration* has a magnitude of support in research literature as a predictor of student persistence/withdrawal in college, Braxton and Lien (2000) argue that the influence of the variable varies between single-institutional and multi-institutional tests. Braxton and Lien (2000) report that multi-institutional appraisals provide robust empirical backing for academic integration as a predictor of commitment and departure decisions while single institutional tests render only modest support for the variable. Furthermore, Braxton and Lien (2000) suggest that Tinto (1975) may have misspecified academic integration. Tinto (1975) suggests that academic integration is indexed in both a student's intellectual growth and the congruency between the student's growth and the intellectual environment of the institution. Tinto also acknowledges that academic achievement plays a role in academic integration.

Extended to the music education program, a student's withdrawal from the program would involve both musical growth and the congruency of that growth with the beliefs and values inherent in the different learning environments of the music education curriculum. In addition, the student's academic and musical achievement would impact their withdrawal intentions. This study accounted for these variables by using data collected from the MSI and university records. Student beliefs and attitudes were represented by the questionnaire, and course grades and GPA represented academic achievement.

However, Braxton and Lien (2000) suggested that academic integration would be better indexed by the student compatibility with prevailing attitudes, values and beliefs at various levels of the academic system, such as faculty instructional goals, curriculum goals and individual courses offered by faculty. Furthermore, the researchers stressed the potential importance of personality type as a mediating factor in student withdrawal decisions. Applied to this study, Braxton and Lien's (2000) theory would require the addition of several new variables to the MSI.

There might also be a need to examine the interaction of personality type with the other variables in the study.

Braxton and Lien (2000) focused on the performance of *academic integration* as a predictor variable in their discussion of Tinto's theory, and their concerns highlight the challenge of designing a study that adequately addresses the specific attributes of withdrawal patterns within a select student population. In this study, academic factors were the focus of the study because such factors identified the unique characteristics of the degree major, and the inclusion of additional components would have made the size of the study unmanageable. However, the study may not have utilized enough specific academic variables to fully measure student incongruence with the music education academic system.

Placing additional academic variables in the study might enhance the measure of the academic system, but the other components of Tinto's (1993) model may be equally important predictors of student departure from the music education program. Social integration, background characteristics and goal commitment are all included in Tinto's (1993) student departure model, and the interaction of these variables is central to the researcher's theory of student departure. Results of this study suggest the inclusion of social and goal components from Tinto's (1993) model in future research on student withdrawal from the music education program. If additional components were added to the MSI, care would have to be exercised to insure that the instrument remained a reasonable length. If the length could be controlled, the instrument would facilitate the examination of individual variables, interaction effects between the variables, and overall model effects.

When studying college persistence among third-year students, Howell (1999) found that only one of the five variables, *institutional and goal commitment* produced a statistically

significant main effect. However, when all five predictors were considered together as a model, the model was statistically significant ($p < .01$). Howell's (1999) findings support Tinto's (1993) theory that college student departure should be considered in light of the interactions that occur among variables. Applied to this study, Howell's (1999) findings support the examination of goal, academic and social variables together as a model for determining withdrawal intentions among music education majors.

The question remains, however, as to whether or not the theories of Tinto (1993), Astin (1993), and Bean (1980) are well suited for the narrower focus of student departure from a specific degree major field. Theories dealing with college student attrition were used as a foundation for this study, because little research existed that specifically addressed student withdrawal from the music education degree plan. Constructs of the theories were applied to the music education setting through the development and implementation of a new program-specific data collection instrument. The lack of statistical significance for all variables in the study suggests that (a) further development and testing may be needed for the instrument, and (b) additional constructs may need to be added to the study, and (c) the variables and constructs in the study may need to be evaluated collectively as a model and (d) an original model of student withdrawal from the music education degree plan may be needed.

Three Learning Environments

Music education majors participate in three distinct learning environments, (1) non-performance courses, generally taught in classroom settings, (2) applied lessons, taught in one-on one settings, and (3) performance ensembles, taught in large group settings. These learning environments create an overall learning experience different from that of students in other degree majors. Non-performance music courses taught in traditional classroom environments are similar

to classroom experiences found elsewhere on campus, but applied lessons and performing ensembles are notably different.

Analysis of subjects' course grades and questionnaire responses suggest that the applied lesson experience makes the greatest impact on subjects' intentions to continue with the program. Although *lesson experiences* in the regression analysis failed to reach statistical significance, the variable was nevertheless significantly correlated with the dependent variable, *intent to withdraw from the music education program*. Likewise, *applied lesson grades* produced the strongest effect among grade data variables. This result supports conclusions from earlier research identifying the importance of the applied lesson experience for college music students (Brown and Alley, 1983; L'Roy, 1984). In a broader sense, the finding also suggests that one-on-one, individualized learning in an institutional environment has the potential to greatly impact students' perceptions.

Among the other variables in the analysis, *music theory grades* showed the next strongest potential for statistical significance. Future studies should continue to explore the impact of this variable on withdrawal intentions among music education majors. If future research confirms a relationship between music theory grades and attrition from the music education program, it may be possible to design intervention efforts aimed specifically at raising music theory grades for struggling students.

Recommendations

More research is needed to determine causes for premature student withdrawal from music education programs. With so few studies in the research literature addressing attrition among students of specific major fields, work is needed that isolates variables, develops models,

and refines methodology. Future researchers can build on this study by addressing the following recommendations:

Sampling

Sampling procedures should be carefully examined to provide the most unbiased sample available. If all music education majors enrolled at a given time could be included, the results would be more reflective of the population. This study targeted freshmen and sophomore students, because college attrition often occurs during the first two years. However, the low percentage of subjects indicating intentions to withdraw from the program suggests that students in the music education program may make such decisions later in their schooling.

During the junior year, music education students are required to pass proficiency tests on applied and secondary instruments, and they begin more intense music education coursework. The increased focus on specific courses within the music education curriculum illuminates aspects of the degree program that are not necessarily apparent during the freshmen and sophomore years. As a result, music education students may form decisions about withdrawing from the degree plan after they enter their junior year.

This conclusion supports findings from Minear's (1997) study of retention patterns among science majors. In contrast to other published studies, Minear (1977) found the majority of changing and dropping behaviors to occur during the junior year, instead of the freshmen and sophomore years.

Future studies among music education majors should include all grade classifications in order to determine if withdrawal intentions increase or decrease in upperclassmen years.

Longitudinal Design

In addition to expanding the sample to include all grade level classifications, a longitudinal design is needed to identify changes in music education students' withdrawal intentions across several academic years. Tinto (1987) argued that individual departure from college arose from a longitudinal process of interactions between an individual with various attributes and dispositions and the institution's academic and social systems. Even though Tinto's (1987) theory dealt with college departure instead of departure from a specific degree major, it is logical to assume that the longitudinal process described by Tinto (1987) could be an important factor when examining departure from the music education degree plan. If it were possible to collect data from music education students on a regular basis across several years, patterns might arise in the data that helped explain the *process* of changing from persistence intentions to withdrawal intentions.

A longitudinal design would also allow the comparison of withdrawal *intentions* and actual withdrawal *behavior*. This study used subjects' *intentions* to withdraw from the music education program as the dependent variable. The use of *withdrawal intentions* as a dependent variable instead of *withdrawal behavior* has two distinct advantages. Examining the problem in this manner allows researchers a chance to identify students who are considering withdrawing from the program before they actually depart. Such knowledge may enable intervention efforts in the students' behalf, eventually leading to an overall reduction in the withdrawal rate.

The second advantage involves data collection. By the time *withdrawal behavior* can be verified from institutional sources, other events may have happened to a student that were not reflected in their questionnaire responses. Similarly, if data is collected at the beginning of a new semester on a sample drawn from the previous semester, students who have withdrawn may be impossible to locate or may not wish to participate in the study. On the other hand, w*ithdrawal*

intent can be included as part of a questionnaire administered at any time during the semester with data analysis occurring almost immediately.

However, intentions and behaviors are clearly two different variables. Both variables are important, but behavior marks the evidence of intentions carried out. Students who indicate their intent to withdraw from the program may not follow through with their intentions, and students who initially plan to re-enroll in the program may suddenly decide to withdraw. A longitudinal research design would help control these issues by providing data on both intent and behavior across several academic years. The relationships of both dependent variables to the independent variables could be separately examined and results could be compared.

Instrument

The Music Student Inventory (MSI) was developed for this study. Future use of the instrument should include an instrument revision phase to improve overall validity and reliability of the instrument. Additional items should be added to each section of the instrument for increased variability, and the response scale should be expanded to allow a broader range of responses. In addition, a qualitative component should be added to provide additional feedback for participants beyond the questionnaire's statements.

A qualitative component would provide an opportunity to collect information from students beyond the specific constructs of the MSI. For example, interviews in both groups (persisting and withdrawing) would provide students a chance share their experiences about their courses and learning environment. This could lead to the identification of new variables. Participant observation of classes would provide insight into how the classes were structured and how the material was presented.

Tinto (1997) utilized both qualitative and quantitative components in a recent study of learning communities and persistence among first year students at a community college. The researcher conducted interviews, observed classrooms and collected documents, in addition to administering a questionnaire. Tinto (1997) reported that the qualitative component of the study provided direct insight into how the learning communities influenced persistence.

Limitations

The first limitation of the study was that the subjects were located at one university during one specific semester. While this was consistent with attrition theories supporting the impact of institutional characteristics on student withdrawal patterns, the study's findings cannot be generalized to other student populations in other institutions.

The method of data collection may have also influenced the findings. Subjects' responses to the questionnaire were recorded during a short period of time slightly before the end of the semester. Their responses may or may not have been reflective of their perceptions earlier or later in the semester. Furthermore, questionnaire responses represented only the perceptions of the subjects. The questionnaire data was not based on observable behaviors.

Another limitation of the study was that sampling did not account for all freshmen and sophomore music education majors. Although the participation rate represented 86% of the total population, the remaining 14% may have impacted the findings had they participated in the study.

Finally, the actual withdrawal behaviors of the participants were not measured and included as a variable in the study. This research focused on subjects' self-reported intentions to persist or withdraw from the music education program. Subjects may or may not have actually acted on the intentions they reported.

Conclusion

While persistence and withdrawal behaviors among undergraduate music education majors remains a cloudy issue, future researchers can use the results of this study to help isolate variables and refine methodology. The results of the study suggest that academic factors unique to the music program are not significant predictors of student's intentions to withdraw from the music education degree major. However, the apparent impact of applied lesson experiences, applied lesson grades and music theory grades were strong enough to warrant further examination and evaluation.

APPENDIX A

MUSIC STUDENT INVENTORY PILOT

ITEMS AND CONSTRUCTS

Music Education Student Inventory Pilot: Items and Constructs

Faculty Concern for Student Development

Applied Lessons (Primary performance area)

1. My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.

2. I do not seem to be one of the students that my lesson teacher seems particularly interested in.

3. My lesson teacher is an outstanding teacher.

Primary Performing Ensemble

4. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.

5. My ensemble director is an outstanding teacher.

6. My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.

Non-performance Music Classes

7. Few of the non-performance music faculty I have had contact with are generally interested in students.

8. Most of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.

9. Few of the non-performance music faculty I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students.

Informal Interaction with Music Faculty

Applied Lesson Teacher (Primary performance area)

10. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to discuss intellectual or course-related matters? ___

11. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to get information and advice about the music education program? ___

12. How many non-class contacts of 10 minutes or more have you had this semester with your applied music teacher to socialize informally? ___

13. Time spent with my applied music teacher outside of class has had a positive influence on my personal growth, values and attitudes.

14. Time spent with my applied music teacher outside of class has had a positive influence on my career goals and aspirations.

15. Since coming to this university, I have developed a close personal relationship with my applied music teacher.

Primary Ensemble Director

16. I am satisfied with the opportunities to meet and interact informally with my applied music teacher.

17. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to discuss intellectual or course-related matters? ___

18. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to get information and advice about the music education program? ___

19. How many non-class contacts of 10 minutes or more have you had this semester with your primary ensemble director to socialize informally? ___

20. Time spent with my ensemble director outside rehearsals has had a positive influence on my personal growth, values and attitudes.

21. Time spent with my ensemble director outside rehearsals has had a positive influence on my career goals.

22. I am satisfied with the opportunities to meet and interact informally with my ensemble director.

23. Since coming to this university I have developed a close personal relationship with my ensemble director.

Non-performance music faculty

24. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to discuss intellectual or course-related matters? ___

25. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to get information and advice about the music education program? ___

26. How many non-class contacts of 10 minutes or more have you had this semester with non-performance music faculty to socialize informally? ___

27. Time spent with the non-performance music faculty outside the classroom has had a positive influence on my personal growth, values and attitudes.

28. Time spent with the non-performance music faculty outside the classroom has had a positive influence on my career goals and aspirations.

29. Since coming to this university, I have developed a close personal relationship with at least one music faculty member in a non-performance area.

30. I am satisfied with the opportunities to meet and interact informally with non-performance music faculty members.

Intellectual and Musical Growth

31. My performing experiences have had a positive influence on my overall growth.

32. I am satisfied with my private lesson experience at this university.

33. My primary performing ensemble experience has been disappointing to me.

34. My private lessons have been musically stimulating.

35. My primary performing ensemble has been musically stimulating.

36. My interest in musical performing has increased since coming to this university.

37. I am satisfied with the extent of my musical development since enrolling in this university.

38. I have had a difficult time finding a balance between the performance and academic requirements of the music education program.

39. I have achieved what I anticipated I would in my applied lessons.

40. I have achieved what I anticipated I would in ensemble auditions.

41. I have had a difficult time managing the competitive aspects of the music program.

42. My non-performance music courses have been intellectually stimulating.

43. I have achieved what I anticipated I would in my non-performance music courses.

44. I feel that certain components of the music education degree at this university are unreasonable.

45. I am satisfied with my overall experience in the music education program at this university.

46. I am unhappy with the attitude of many faculty members toward music education majors.

47. My overall interest in music teaching and learning has increased since coming to this university.

48. I am satisfied with the course requirements of my music education degree program.

Intentions to Continue

49. I intend to return next semester to this university and continue my degree plan in music education.

50. Instead of continuing my degree plan in music education at this university next fall, I intend to:

A. Change majors within the music department.

B. Change majors to something outside the music department, but remain at this university.

C. Remain a music education major, but transfer to a different college or university.

D. Change majors and transfer to a different school.

E. Withdraw from college altogether.

F. Temporarily withdraw, but return later to this school as a music education major.

G. Undecided.

APPENDIX B

INSTRUMENT DEVELOPMENT: PANEL OF EXPERTS' REVISIONS

Instrument Development: Panel of Experts' Revisions

PT= Pascarella and Terenzini (1980, 1983) items

Bold Titles: Pascarella and Terenzini (1980, 1983) subsection titles

Bulleted items: Items retained for use in the MSI-Pilot

X = Items deleted from the MSI-Pilot as a result of input from panel of experts

Italics: Re-wording of MSI-Pilot items as suggested by panel of experts

Faculty concern for student development and teaching

PT 1. Few of the faculty members I have had contact with are generally interested in students.

X I think my lesson teacher wants me to quit the music program altogether.

X My lesson teacher seems to enjoy working with me.

X When receiving instruction in a group, my lesson teacher will not look at me or acknowledge me.

- I do not seem to be one of the students that my lesson teacher seems particularly interested in.

X My ensemble director does not know my name.

- Few of the non-performance music faculty I have had contact with are generally interested in students.

- My ensemble director is not really interested in me as a person, but only in my ability to perform my part.

X I feel intimidated by my lesson teacher

PT 2. Few of the faculty members I have had contact with are generally outstanding or superior teachers.

- My lesson teacher is an outstanding teacher.

- My ensemble director is an outstanding teacher.

- Few of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.

PT 3. Few of the faculty members I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students.

X My lesson teacher always speaks to me when we see each other outside of class.

- My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.

X I have not attempted to talk to my ensemble director outside rehearsals.

- My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.

- Few of the non-performance music faculty I have had contact with are willing to spend time outside of class to discuss issues of interest and importance to students.

PT 4. Most of the faculty I have had contact with are interested in helping students grow in more than just academic areas.

X My lesson teacher seems interested in helping me grow in more than just musical skills.

X My ensemble director is interested in helping me grow in more than just musical skills.

X Most of the non-performance music faculty I have had contact with are interested in helping students grow in more than just academic areas.

PT 5. Most faculty members I have had contact with are genuinely interested in teaching.

X My lesson teacher acts as though my lessons are a waste of his or her time.

X I feel like my lesson teacher is genuinely interested in teaching.

X My ensemble director is genuinely interested in teaching.

X Most of the music education faculty I have had contact with are genuinely interested in teaching.

X Most of the music history and theory faculty I have had contact with are genuinely interested in teaching.

PT 5a. How many non-class contacts of 10 minutes or more have you had with faculty to get basic information and advice about your academic program?

- How many non-class contacts of 10 minutes or more have you had with music education faculty to get basic information and advice about the music education program?

(1) How many non-class contacts of 10 minutes or more have you had with your applied music teacher to get information and advice about the music education program?

(2) How many non-class contacts of 10 minutes or more have you had with your primary ensemble director to get information and advice about the music education program?

(3) How many non-class contacts of 10 minutes or more have you had with non-performance music faculty to get information and advice about the music education program?

PT 5b. How many non-class contacts of 10 minutes or more have you had with faculty to discuss intellectual or course-related matters?

- How many non-class contacts of 10 minutes or more have you had with music faculty to discuss intellectual or course-related matters?

(1) How many non-class contacts of 10 minutes or more have you had with your applied music teacher to discuss intellectual or course-related matters?

(2) How many non-class contacts of 10 minutes or more have you had with your primary ensemble director to discuss intellectual or course-related matters?

(3) How many non-class contacts of 10 minutes or more have you had with non-performance music faculty to discuss intellectual or course-related matters?

PT 5c.How many non-class contacts of 10 minutes or more have you had with faculty to discuss matters related to your future career?

- How many non-class contacts of 10 minutes or more have you had with music faculty to discuss matters related to your future career?

(1) How many non-class contacts of 10 minutes or more have you had with your applied lesson teacher to socialize informally?

(2) How many non-class contacts of 10 minutes or more have you had with your primary ensemble director to socialize informally?

(3) How many non-class contacts of 10 minutes or more have you had with non-performance music faculty to socialize informally?

Informal Interactions with faculty

PT 6. My non-classroom interactions with faculty have had a positive influence on my personal growth, values and attitudes.

- The non-lesson interactions with my teacher have had a positive influence on my personal growth, values and attitudes.

Time spent with my applied lesson teacher outside of class has had a positive influence on my personal growth, values and attitudes.

- My non-rehearsal interactions with my ensemble director have had a positive influence on my personal growth.

Time spent with my ensemble director outside rehearsals has had a positive influence on my personal growth, values and attitudes

- My non-classroom interactions with music education faculty have had a positive influence on my personal growth, values and attitudes.

Time spent with the non-performance music faculty outside the classroom has had a positive influence on my personal growth, values and attitudes.

X My non-classroom interactions with music history and theory faculty have had a positive influence on my personal growth values and attitudes.

PT 7. My non-classroom interactions with faculty have had a positive influence on my intellectual growth and interest in ideas

X My non-classroom interactions with my lesson teacher have had a positive influence on my intellectual growth and interest in ideas.

X My non-classroom interactions with music education faculty have had a positive influence on my intellectual growth and interest in ideas.

X My non-classroom interactions with music history and theory faculty have had a positive influence on my intellectual growth and interest in ideas.

PT 8. My non-classroom interactions with faculty have had a positive influence on my career goals and aspirations.

- My non-lesson interactions with my teacher have had a positive influence on my career goals and aspirations.

  Time spent with my applied music teacher outside class has had a positive influence on my career goals and aspirations.

- My non-rehearsal interactions with my ensemble director have had a positive influence on my career goals.

  Time spent with my ensemble director outside rehearsals has had a positive influence on my career goals.

- My non-classroom interactions with non-performance music faculty have had a positive influence on my career goals and aspirations.

  Time spent with the non-performance music faculty outside the classroom has had a positive influence on my career goals and aspirations.

X My lesson teacher has encouraged me to change majors from music education to performance.

PT 9. Since coming to this university, I have developed a close personal relationship with at least one faculty member.

- Since coming to this university, I have developed a close personal relationship with my lesson teacher.

  Since coming to this university, I have developed a close personal relationship with my applied music teacher.

- Since coming to this university I have developed a close personal relationship with at least one of my ensemble directors.

  Since coming to this university, I have developed a close personal relationship with my ensemble director.

- Since coming to this university, I have developed a close personal relationship with at least one music faculty member in a non-performance area.

PT 10. I am satisfied with the opportunities to meet and interact informally with faculty members.

- I am satisfied with the opportunities to meet and interact informally with my lesson teacher.

  I am satisfied with the opportunities to meet and interact informally with my applied music teacher.

- I am satisfied with the opportunities to meet and interact informally with non-performance music faculty members.

- I am satisfied with the opportunities to meet and interact informally with my ensemble director.

Academic and intellectual development

PT 18. I am satisfied with the extent of my intellectual development since enrolling in this university.

X I am satisfied with the extent of my intellectual development since enrolling in this university.

- I am satisfied with the extent of my musical development since enrolling in this university.

PT 19. My academic experience has had a positive influence on my intellectual growth and interest in ideas.

- My musical performing experiences have had a positive influence on my overall growth and interest in ideas.

  My performing experiences have had a positive influence on my overall growth.

- My coursework in non-performance music classes has had a positive influence on my intellectual growth and interest in ideas.

  My non-performance music courses have been intellectually stimulating

PT 20. I am satisfied with my academic experience at this university.

- I am satisfied with my overall experience in the music education program at this university.
- I am satisfied with the course requirements of my music education degree program.
- I am satisfied with my ensemble experience at this university.

  My primary performing experience has been disappointing to me.

- I am satisfied with my private lesson experience at this university.
- I feel that certain components of the music education degree at this university are unreasonable.
- I am unhappy with the attitudes of many faculty members toward music education majors.

PT 21. Few of my courses this year have been intellectually stimulating.

- My performance courses have been musically stimulating.

  My primary performing ensemble has been musically stimulating

  My private lessons have been musically stimulating.

- My music theory and music history courses have been intellectually stimulating.

  My non-performance music courses have been intellectually stimulating.

X My music education courses have been intellectually stimulating.

PT 22. My interest in ideas and intellectual matters has increased since coming to this university.

X My interest in music theory and history has increased since coming to this university.

- My interest in studying music education has increased since coming to this university.

  My overall interest in music teaching and learning has increased since coming to this university.

- My interest in musical performing has increased since coming to this university.

PT 24. I have performed academically as well as I anticipated I would.

- I have achieved what I anticipated I would in my non-performance music courses.

- I have achieved what I anticipated I would in my major performance area.

    I have achieved what I anticipated I would in my applied lessons.

- I have performed as well as I anticipated I would in ensemble auditions.

    I have achieved what I anticipated I would in ensemble auditions.

X I have had a difficult time balancing school and non-school demands.

- I have had a difficult time managing the performance and academic requirements of the music education program.

    I have had a difficult time finding a balance between the performance and academic requirements of the music education program.

    I have had a difficult time managing the competitive aspects of the music program.

- I intend to return next semester to this university and continue my degree plan in music education.

- Instead of continuing my music education work at this university next fall, I intend to:

    Change majors within the music department.

    Change majors to something outside the music department, but remain at this university

    Remain a music education major, but transfer to a different college or university.

    Change major and transfer to a different school

    Withdraw from college altogether

    Temporarily withdraw, but return later to this school as a music education major.

APPENDIX C

MUSIC STUDENT INVENTORY

Music Student Inventory

Background Information

Name (Last, First): _____UNT Student ID Number_____

Classification: Fr. Soph. Jr. Sr. Gender: M F

Primary lab ensemble (specify): _____Other Ensembles_____

(A Cappella Choir, Symphonic Band, Orchestra, etc.) (Brass Band, WW Quintet, Combos, etc.)

Degree Major: (Performance, Music Ed., Comp, Jazz Studies, etc.): _____

Major Instrument: Voice Piano Guitar Winds/Percussion Strings

Please circle a response for each of the 21 items.

Non-performance Music Classes *(Music Theory, Music Education, Music History, etc.)*

49. Most of the non-performance music faculty I have had contact with are generally outstanding or superior teachers.

No opinion Strongly disagree Disagree Agree Strongly agree

50. My non-performance music courses have been intellectually stimulating.

No opinion Strongly disagree Disagree Agree Strongly agree

51. I have achieved what I anticipated I would in my non-performance music courses.

No opinion Strongly disagree Disagree Agree Strongly agree

Course Requirements

52. I feel that certain components of my music degree at this university are unreasonable.

No opinion Strongly disagree Disagree Agree Strongly agree

53. I am satisfied with the course requirements of my music degree program.

No opinion Strongly disagree Disagree Agree Strongly agree

Applied Lessons (Primary Instrument)

54. My lesson teacher is willing to spend time outside of class talking about issues of interest and importance to students.

No opinion Strongly disagree Disagree Agree Strongly agree

55. I am not one of the students that my lesson teacher is particularly interested in.

No opinion Strongly disagree Disagree Agree Strongly agree

56. My private lessons have been musically stimulating.

No opinion Strongly disagree Disagree Agree Strongly agree

57. My lesson teacher is an outstanding teacher.

No opinion Strongly disagree Disagree Agree Strongly agree

Primary Performance Lab

58. My ensemble director is an outstanding teacher.

No opinion Strongly disagree Disagree Agree Strongly agree

59. My primary performing ensemble experience has been disappointing to me.

No opinion Strongly disagree Disagree Agree Strongly agree

60. My ensemble director is not really interested in me as a person, but only in my ability to perform my part.

No opinion Strongly disagree Disagree Agree Strongly agree

61. My primary performing ensemble has been musically stimulating.

No opinion Strongly disagree Disagree Agree Strongly agree

62. My ensemble director is willing to spend time outside of rehearsals to discuss issues of interest and importance to students.

No opinion Strongly disagree Disagree Agree Strongly agree

Performance Growth

63. My performing experiences have had a positive influence on my overall growth.

No opinion Strongly disagree Disagree Agree Strongly agree

64. I am unhappy with the attitude of many faculty members toward music education majors.

No opinion Strongly disagree Disagree Agree Strongly agree

65. I am unhappy with the attitude of many faculty members toward students in my declared major.

No opinion Strongly disagree Disagree Agree Strongly agree

66. My interest in musical performing has increased since coming to this university.

No opinion Strongly disagree Disagree Agree Strongly agree

67. I have had a difficult time managing the competitive aspects of the music program.

No opinion Strongly disagree Disagree Agree Strongly agree

Intentions to Continue

68. I intend to return next fall to this university and continue the same music degree plan.

YES NO

If you answered NO to the above question, please circle the letter for the response that most represents your reason for not returning.

69. Instead of continuing my current music degree at this university next fall, I intend to:

A. Change majors within the music department.

B. Change majors to something outside the music department, but remain at this university.

C. Retain the same major, but transfer to a different college or university.

D. Change majors and transfer to a different school.

E. Withdraw from college altogether.

F. Temporarily withdraw, but return later to this school as a music education major.

G. Undecided

APPENDIX D

VERBAL INSTRUCTIONS

QUESTIONNAIRE VERBAL INSTRUCTIONS

This study examines factors relating to why music majors choose to leave their degree programs.

Your participation will be totally anonymous and will have no bearing on your grades in this or any other class.

Names and ID#'s will be used ONLY to organize the information.

In addition to the questionnaire, the study will use your grades in music theory, aural skills and applied lessons as well as your cumulative GPA. These will be gathered from university records.

Once the data has been compiled, I will remove all personal identification and will not report anyone's individual responses or grades.

The first two pages of the questionnaire explain details of the study as required by the UNT institutional review board. If you are willing to participate, please do the following steps:

1. Place your name on the top

2. Initial the bottom of page one

3. Sign and date the back of the form (April 15)

4. Exchange the form with someone next to you-- sign and date for each other on the Witness line

5. Date the line next to the researcher's name

6. Complete all items on the questionnaire

ANY QUESTIONS?

I have extra copies of the Participation form if anyone wants one.

I appreciate your participation in the study…a few minutes of your time will help me eventually graduate!

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