DEVELOPMENT OF A MULTI-DIMENSIONAL

EDUCATIONAL COMMITMENT SCALE

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CHAPTER 1
INTRODUCTION

Within the realm of higher education in the United States, researchers and policy makers alike are greatly concerned with student enrollment and matriculation toward a college degree. Much of this focus can be attributed to national reports indicating that during 1999, about 25% of four-year college freshmen and approximately 45% of two-year college freshmen withdrew from higher education (ACT, 2000). These reports have provoked local, state and national focus on understanding the impact of college on students. To this end, much work has been conducted to help clarify the various conditions related to student persistence toward a college degree. Nevertheless, much of this research has been descriptive relative to who withdraws versus those who matriculate in higher education. Tinto (1975), Bean (1982) and others (e.g., Mallette & Cabrera, 1991; Pascarella & Terenzini, 1983) have argued for a more theoretically driven approach to understanding antecedents predicting student enrollment behaviors.

Tinto's (1975) theoretical model of student persistence/withdrawal provides a longitudinal framework in which new students arrive at an institution bringing a variety of background characteristics (i.e., ability, social economic status, parent education, etc.). These new student background characteristics influence the "initial commitments" toward the institution and toward their educational goal. Tinto described these commitments as a willingness to work toward goal attainment (goal commitment) and the willingness to work toward a goal at a particular institution (institutional commitment). According to Tinto's model, it is the combination of student background characteristics and initial commitments that influence their ability to integrate academically, as well as socially,

into the college or university institution. Academic and social integration influences subsequent commitments students develop toward attaining a college degree and the particular institution they choose to attend. Ultimately, these developed commitments influence student matriculation. It is widely recognized that the primary focus of Tinto's model lies in the importance of the academic and social integration of students (Pascarella & Chapman, 1983).

Academic integration refers to the formal academic education of students and is more likely to take place when there is a clear congruence between the academic values presented by the institution and the initial commitments held by the student. Referring to academic integration, Tinto (1993) states "Its activities center about the classrooms and laboratories of the institution and involve various faculty and staff whose primary responsibility is the education of students." (p. 106). Social integration is concerned with the daily experiences of peer and faculty interactions outside the formal academic domain (e.g., peer interactions in social gatherings, student interaction with faculty outside the classroom). Tinto's model argues the stronger the student's level of academic and social integration the greater their level of subsequent commitment to the institution and to the goal of obtaining a college degree thus leading towards student matriculation.

While the empirical literature relative to Tinto's model is vast, the influence of commitment is typically measured secondarily to the importance of academic and social integration. Tinto (1982) acknowledges that his model considers college student background characteristics and commitments only as they interface with the academic and social systems of the college or university. To that end, Tinto calls for a much stronger

focus on a theoretically grounded investigation to further our understanding of college student enrollment behavior.

While Tinto defines commitment as a willingness to achieve some goal and the willingness of the student to pursue that goal at a specified college or university, the theoretical operationalization of commitment deserves further study. For example, Pascarella & Terenzini (1983) define goal commitment as the student's report of their highest academic degree they hope to attain. Institutional commitment, according to these authors, is measured as the degree of fit the student perceives with the institution (e.g., ranked choice of institution). These authors have typically measured each of these constructs with two items. Getzlaf, Sedlacek, Kearney and Blackwell (1984) as well as Stoekcer, Pascarella and Wolfle (1988) have also used Pascarella and Terenzini's (1983) operationalization of commitment when investigating the predictive validity of Tinto's model.

Munro (1981) utilized a similar operationalization for goal commitment when investigating the validity of Tinto's (1975) model among a national sample of new freshmen. However, the author operationalized institutional commitment in terms of the students' level of satisfaction with the abilities of the faculty. Although the results of the overall study of Munro (1981) provided general support to Tinto's model, satisfaction levels do not appropriately measure institutional commitment. More specifically, satisfaction reflects an emotional appraisal students develop relative to their experiences (Mortimer, & Lorence, 1989). As will be shown in Chapter 2, commitment represents a psychological bond one develops toward a given social organization (e.g., college or university). Moreover, numerous empirical studies have shown that satisfaction is a

positively related, yet separate construct that is often considered an antecedent to commitment (cf. Farkas & Tetrick, 1989).

In terms of developing a greater understanding toward student enrollment behavior in higher education, Tinto's model is generally supported in the empirical literature (Pascarella & Chapman, 1983). That is to say, the academic and social integration of students appears to be important predictors of student persistence toward a college degree. Tinto's (1975) model specifies that initial commitments held by new students influence their academic and social integration toward the college or university. Subsequently, this level of integration leads towards the development of long-term goals and institutional commitment held by college students and ultimately influences their decision to persist toward a college degree. Nevertheless, inconsistencies do exist with respect to the theoretical development and subsequent measurement of commitment. Pascarella and Chapman (1983) imply that until a consistent operationalization of the constructs presented by Tinto is available, the consideration of moderating effects (e.g., institution type) may not be appropriate. These authors argue that academic and social integration is well received in both theoretical and empirical conversations relative to student matriculation. However, the domains of commitment deserve further attention.

Purpose of the Study

The primary purpose of this study is to develop a theoretically derived instrument that measures the psychological bonds (e.g. commitment) college students hold toward their education. The development of this instrument will follow a strong theoretical basis arguing that commitment reflects a multidimensional construct developing from three distinctive foundations. Namely, the development of educational commitment is bound

in affective (e.g., emotional), continuance (e.g., investments), and normative (e.g., obligations) psychological bonds.

Significance of the Study

The importance of providing a theoretical framework for the construct of educational commitment will primarily serve to align educational researchers with a valid and reliable instrument. Moreover, this instrument could provide an opportunity for an additional measure of a well-defined construct and thus allow for further development of Tinto's (1975) theory of student enrollment behaviors.

Important in the advancement of Tinto's theory (1975), the literature suggests that commitment reflects a psychological link between the student and college or university. Indeed, as will be presented in the literature review, the psychological bond between the student and college or university is likely to reflect a multidimensional construct. More specifically, it will be argued that these psychological bonds (e.g., commitments) develop from emotional, investment, and obligatory perspectives. The review and development of these psychological bonds could allow educational researchers and policy makers to better understand the antecedents to important student enrollment behaviors. Tinto (1993) states, "Knowledge of students'...commitment enables one to further distinguish between those who stay and those who leave...". (p. 43). Indeed, commitment can be seen as paramount to our understanding of human motivation toward a particular goal (Kanter, 1968).

Tinto's model of student persistence in higher education has provided researchers and practitioners a theoretical base from which empirical research and intervention is guided. It is clear that academic and social integration of students promotes a sense of

attachment the student has to their faculty, peers and ultimately their career. The empirical literature has supported the theoretical links between integration and persistence among college students. However, more work is needed to improve our understanding of educational commitment. Previous work on commitment within the educational literature has not clearly defined the construct. Additionally, few studies have acknowledged the multidimensional nature of commitment. The focus of this study is to evaluate the psychometric properties of a new multidimensional educational commitment scale.

Arguably, there is a growing interest in retention among policy makers and researchers alike. At the time of this study, an electronic search using retention as the keyword produced over 2,600 reports on ERIC. A valid and reliable educational commitment instrument would extend the work of Tinto (1975, 1993) and others (e.g., Pascarella & Terenzini, 1983) in the development of theoretically driven perspectives toward understanding student enrollment behavior.

CHAPTER 2
LITERATURE REVIEW

As the following discussion will reveal, one could argue that empirical investigations of commitment have been varied perhaps due to its use in our society's language. When one thinks of commitment, many meanings come to mind. For example, attachment, loyalty, and identification are commonly considered a part of the meaning of commitment (cf. Becker, 1960). Regardless of these semantic variations, commitment usually refers to some psychological bond linking an individual to a given social organization (Allen & Meyer, 2000). Further, the stronger the level of commitment held by the individual renders it less likely the individual will depart from the social organization (Allen & Meyer, 1996).

The following sections will highlight three important areas relevant to the development of an educational commitment scale. First, a theoretical framework will be reviewed concerning three theoretical components predicting the psychological link to a given social organization. Within this section, an argument will be presented that commitment reflects a multidimensional construct with three components. In the second section, a review of the educational literature will focus on the various operationalizations of commitment and their impact on student enrollment behaviors will be presented. Related to this, the final section will highlight the difficulties inherent in constructs that are not consistently operationalized with respect to the cumulation of knowledge and advancement of clarity in understanding student behavior.

The Nature of Commitment

Commitment represents a psychological bond the individual holds toward some social organization. The following will provide an argument for the development of a three-component conceptualization of commitment within an academic setting. Specifically, commitment is argued to develop as a function of continuance (e.g., investments), affective (emotional identification) and normative (obligation) psychological bonds. The following represents an overview of each of the three components of commitment.

Continuance Commitment.

Becker (1960) was among the first theorist to highlight the lack of conceptual integration of commitment to known social phenomenon. Instead, many researchers have used the construct to represent a variety of meanings resulting in inconsistent findings. Becker (1960) argued that commitment as a construct is used when researchers attempt to understand why individuals typically behave in a consistent manner. This implies that commitment to some social institution persists over time. However, one could easily argue that individuals sometimes behave in seemingly diametrically opposed ways. For example, a politician may vote inconsistently over time on controversial issues (e.g., abortion). This highlights the complexity of commitment and begs the question of committed to what? For the politician, the diversity in behaviors may in fact represent behaviors consistent with a party line or the views of their constituents rather than to a particular issue. That is, the voting behavior serves a commitment to the changing needs of the party or constituents; thus the individual politician is in fact acting consistently.

The above example highlights Becker's (1960) contribution to our understanding of commitment. He suggested that individuals accumulate "side bets" or investments and when presented with alternative lines of action will consider the cost and benefits of their actions. Becker suggested that side bets reflect prior interests we hold when engaging in a particular behavior. In the previous example, the side bet is to support the party's political interest. This side bet will then serve to represent one's investment in the social organization and thus constrain future behavior. Staying with our example, the individual politician may have a personal view of the particular issue, but has invested him or herself to support the larger goal of the party. To that end, the commitment to the party establishes the investments that constrain the future activity. The politician, in effect, has made a side bet on the good of the party; voting against the party would therefore violate a cultural expectation.

Within an educational environment, when students perceive the cost associated with withdrawing from college exceeds the reward of maintaining membership the student is more likely to remain a member of the institution. A more specific behavioral example involving a student who has developed an investment in obtaining good grades and is presented the option of studying for an important exam or watching a favorite television program. Theoretical perspectives from continuance commitment suggest the rewards associated with watching the television program would result in a great cost to obtaining a good grade. Therefore, the student high in continuance commitment to good grades would likely study for the exam.

Following Becker's conceptualization of side bets, Allen, Meyer and associates (Allen & Meyer, 1990; Meyer & Allen, 1984; Meyer, Allen & Gellatly, 1990) have

termed continuance commitment as one component manifesting from a series of side bets or investments directing the individual to consider the cost and benefits to engaging in a particular behavior. That is, if the individual will perceive a large cost then they are less likely to engage in a particular behavior. Likewise, if the activity will result in a particular reward then they would likely engage in the behavior.

Affective Commitment.

Affective commitment refers to the emotional link between the individual and social organization often characterized within the framework of social identity theory (Allen & Meyer, 1996; Burke & Reitzes, 1991; Foote, 1951; Serpe, 1987). Serpe (1987) argued that affective commitment reflects the emotional reaction attached to the loss or threat of loss of a social relationship associated to a particular identity. Foote (1951) postulated that individuals develop a commitment to an identity (e.g., college student, politician) or a set of identities (i.e., student, psychology major, member of Greek organization, republican, etc.) that serve to define their social role. This commitment to an identity or set of identities links the individual to the social organization emotionally and establishes the social values and morays shared by the individual and organization. Indeed, identity theory is a social psychology phenomenon primarily interested in the relationships between the individual, social organization and the expected role performance to support this identity (Serpe, 1987).

Students who develop a high level of affective commitment are likely to give energy and loyalty to the institution they identify with (Burke & Reitzes, 1991). In return for this commitment, the student receives rewards (e.g., grades, continued membership, degree attainment) that further strengthen the emotional bond. Indeed, affective

commitment is postulated to exist within a reciprocal relationship that binds the individual to the institution and the institution to the individual (Kanter, 1968; Stryker, 1968).

Burke and Reitzes (1991) argue that "identities are the shared social meanings that persons attribute to themselves in a role." (p. 242). This definition suggests that identities are socially constructed categories that define a person's role within a given setting. Furthermore, these identities provide shared meaning in which members who share a particular identity can interact and confirm the salience of their identity and possibly strengthen group cohesion toward some shared goal. To the extent that the identity and therefore one's role is valued and confirmed for the individual, they will be motivated to protect that identity and experience emotional reactions to these outcomes (Foote, 1951).

Inherent in social identity theory in general and affective commitment specifically is that the emotional attachments are based upon the individual's choice (Serpe, 1987). It is argued that students choose to become committed to particular identities that help define the self and therefore guide action toward the protection and success of that commitment. Students high in affective educational commitment will feel elation when their salient identities succeed (i.e., receiving a good grade, school receiving positive recognition, etc.). When faced with alternatives, such as staying in school or accepting employment, those with high affective educational commitment would consider the emotional outcome and be more likely to look at options that support their ability to remain a member of the university that holds their identity. That is, commitment to a salient identity serves to constrain choices and subsequent behavior (Stryker & Serpe, 1982).

Normative Commitment.

Normative commitment refers to a psychological bond between the individual and the social organization based upon a sense of obligation and conformity to what is valued by one's referent group (Allen & Meyer, 1996; Heshizer, Martin & Wiener, 1991). Central to this definition of commitment is the conceptual work in role theory. Biddle (1986) explains role theory in terms of the individual's social position that develops and maintains expectations for their behaviors and those of others. It is these expectations that are shared by the social system that define one's role and serve to constrain behavior. For example, a child whose parents both completed graduate level degrees may have grown up with the expectation that they would not only attend college, but excel academically. Role theory posits that this second-generation student will develop a sense of obligation to fulfill the expectation and persist toward matriculation.

Bank, Slavings and Biddle (1990) argued that the student's referent groups include peers, faculty and parents. It is through interacting with these referent groups that students come to understand the social norms leading to the expectation of behavior. What is important to this conception is that the individual student, at some level, chooses to accept and conform to a frame of reference and set of expectations from the groups with whom they identify. Bank, et. al. (1990) argues that the referent groups provide the normative influence that establishes and enforces the standards for behavior. Further, peers, faculty and parents are likely to serve as the primary referent group for college students by prescribing a set of educational expectations (Bank, et al., 1990). It is these expectations that define the individual's role as a student. To the extent that the

individual identifies with the referent group then he or she will conform to the valued behavior of that group (e.g., degree attainment).

Summary.

As mentioned previously, continuance commitment is the psychological link between the individual and the social organization based upon perceived investments and costs associated with discontinuing membership with the organization. Affective commitment is the emotional link between the individual and a given social identity. Normative commitment is the sense of obligation to accept a given role (e.g., college student) one senses from important referent groups.

The review of the nature of commitment provides several important conceptual distinctions. Namely, that commitment is clearly a multidimensional construct. The literature presented suggests at least three components to commitment that are conceptually distinguishable. Finally, this conceptualization of commitment suggests that each component may have important implications for enrollment behavior among college students. One could develop a large investment associated with continued membership, develop an emotional link to the identity as well as a sense of obligation to continuing membership in a given role. Nevertheless, the model presented in this study argues that continuance commitment, affective commitment and normative commitment need not be strongly related.

Within the framework of Tinto's (1975) model of student persistence, this conceptualization of commitment offers an important extension. Specifically, it is clear that commitment reflects a multidimensional construct that develops from affective, continuance and normative foundations. A new measure of educational commitment

grounded from this theoretical perspective will allow researchers a better understanding of the relationship of commitment to student persistence and ultimately advance theoretical understandings of student enrollment behavior.

Law, Wong and Mobley (1998) provide a taxonomy of multidimensional constructs urging researchers to clarify the relationships between the dimensions and the overall construct. As argued earlier, educational commitment is viewed here as reflecting the three dimensions of affective, normative and continuance commitment. These components are conceptually distinguishable with varying degrees of relationship among the dimensions possible. To that end, it is theoretically inappropriate to algebraically combine scores on each component for an overall construct of educational commitment. Individual students will have scores specific to their level of affective, normative and continuance commitment.

Commitment in Educational Research

As implied in the introduction of this study, Tinto's (1975, 1993) student integration model of college persistence has received much empirical attention in higher education research. More specifically, empirical evidence suggests that student integration (academic and social), institutional and goal commitment tend to have relatively consistent hypothesized effects on student persistence. Pascarella and Terenzini (1980) developed a 29-item five-factor instrument designed to assess Tinto's constructs of academic integration, social integration, and institutional and goal commitment. Using this instrument, Pascarella and Terenzini (1980) were able to discriminate between those first-time full-time freshmen who persisted and those who did not persist. This instrument was replicated by Terenzini, Lorang, and Pascarella (1981)

and was later used to build a path analytic model of freshmen student persistence (Pascarella & Terenzini, 1983). Similarly, Getzlaf, et al. (1984) found that student integration, goal commitment and institutional commitment discriminated between persisters and non-persisters by tracking undergraduates from entry to completion of a degree at a large Pacific Northwest university. It is important to note that these studies tend to utilize traditional-aged students living on campus at a residential four-year university. Empirical investigations of Tinto's model using non-traditional students are not well represented in the literature. Indeed, this has contributed to some criticism of the existing literature (cf. Bers & Smith, 1991; Mallette & Cabrera, 1991) and the subsequent inconsistencies found for non-traditional students (Bean & Metzner, 1985).

Pascarella, Duby, and Iverson (1983) recognized the need to test Tinto's model with a non-residential sample. Conducting a longitudinal design, Pascarella et al., (1983) followed a final sample of 269 freshmen measuring the constructs of Tinto's model and tracking student persistence to the second year of enrollment. Path-analytic procedures suggested that social integration and institutional commitment may have less of an impact on nontraditional student persistence compared to those studies conducted at residential institutions using traditional student samples. Tinto (1982) offers that his model was not necessarily one that would remain consistent across institutions. Rather, he argues that his model was designed to provide a conceptual framework that individual institutions could utilize when considering intervention strategies for student matriculation. To that end, Tinto, and others (e.g., Bers & Smith, 1991; Getzlaf, et al., 1984) have called for continued examination of the model across various institutional characteristics (i.e., size,

location, funding sources, ethnic composition, etc.) with continued theoretical development of hypothesized predictions.

Stoecker, Pascarella and Wolfle (1988) followed 5,240-college students enrolled at four-year institutions for nine-years in a national sample. Using causal modeling techniques, these authors found general support for Tinto's model. Specifically, initial commitments to the institution and the goal of attaining a college degree had significant relationships with academic and social integration. Further, academic and social integration had significant effects with persistence. Cabrera, Nora and Castaneda (1993) using a longitudinal design of 466 college first-time freshmen found that academic and social integration had direct effects (albeit small) on institutional and goal commitment. Further the significant effects of institutional and goal commitment on persistence was mediated by student intentions.

With specific regard to commitment and persistence in higher education, Hatcher, Kryter, Prus, and Fitzgerald (1992) conceptualized commitment from an investment model perspective (Rusbult, 1980). The investment model is reflective of the continuance commitment perspective presented earlier. Hatcher, et al. (1992) correlated this measure of commitment to subsequent enrollment in the following semester showing a positive and moderate correlation for a sample of 174 undergraduate students.

Nora and Cabrera (1993), and Allen and Nora (1995) provided encouraging insight into a more theoretically driven measure of commitment among college students. Following the work from the organizational commitment literature, Nora and Cabrera (1993) consider the possibility that the measurement may reflect a multidimensional characteristic. Results from their study (N =466) of college freshmen responding to a

survey instrument designed to assess institutional commitment yielded a two-factor structure they termed "certainty of choice/fit/prestige" measured by two items and "affinity of values" also measured by two items. While this multidimensional view of commitment is encouraging, it does not adequately represent the theoretical perspectives of commitment presented earlier in this chapter (e.g., affective, normative, continuance).

Using a similar rationale, Allen and Nora (1995) investigated the dimensionality of goal commitment as the importance of completing a college degree. As an aside, Allen and Nora (1995) quote Tinto's (1975) argument that upon controlling for ability, commitment to the goal of attaining a college degree becomes the strongest determinant of persistence. Interestingly enough, this has not held consistently in the literature. Nevertheless, Allen and Nora (1995) argue for a multidimensional conceptualization of goal commitment suggesting it is comprised of "goal importance" measured by two items, "certainty of purpose" measured by two items, and "generalized goals" also measured by two items. Using this definition of goal commitment, the authors designed a questionnaire to survey and track 349 freshmen students. Results of their confirmatory factor analysis yielded goal commitment as a multidimensional construct. Furthermore, they found significant correlation between their measurement of goal commitment and persistence among their sample of freshmen students.

While these multidimensional conceptualizations of commitment by Nora and Cabrera (1993), and Allen and Nora (1995) are encouraging, it is clear that methodological and theoretical issues remain. Specifically, defining underlying constructs with fewer than three items has been challenged. For example, Tabachnick and Fidell (1996) contend that interpreting and defining factors with only two variables is

subject to concern (e.g., few patterns of correlations). The measurement of goal commitment forwarded by Nora and Cabrera (1993) and Allen and Nora (1995) was based upon two items per hypothesized construct. From a theoretical perspective, many authors acknowledge that commitment is a multidimensional phenomenon. However, this operationalization has not been adequately developed in the educational literature. It is clear that additional work on defining and measuring educational commitment is warranted.

The Problem

Much of the concern addressed in this study argues that earlier work on educational commitment has relied on various unidimensional views when commitment is now widely recognized as a multidimensional construct. Additionally, much of the empirical literature reviewed inadequately operationalized commitment as highest degree aspirations (e.g., goal commitment) and the student ranking of institutional choice (e.g., institutional commitment). Nevertheless, these conceptualizations of commitment show important relationships with student persistence.

According to the multidimensional view of commitment hypothesized in this study, the psychological bond or link between the student and the college or university can take at least three forms (e.g., affective, continuance and normative) with each developing from conceptually different perspectives (e.g., identities, investment, and obligations). What is of interest in this study is the measurement of these theoretical psychological bonds between the student and the university.

Continuance commitment argues that the psychological link is based upon investments and side bets that the student develops over time. The result of this link

suggests that leaving the university would result in a large cost to the student. Affective commitment suggests that the link is based upon a commitment to an identity or set of identities resulting in an emotional tie to the university. To the extent that affective commitment is high, leaving the university would create emotional turmoil for the student. Finally, normative commitment suggests that students develop a sense of obligation to a particular role resulting from family, peer or self-influence. Students high in normative influence would be less likely to leave the university, as it would be seen as not fulfilling a perceived obligation.

Kanter, (1968) argued for the multidimensional view of commitment suggesting that high levels on one component are not necessary for high levels on another component. Given that much of the empirical work on commitment has relied on various unidimensional operationalizations, it is felt that a more theoretically sound measurement would allow researchers and theorists to better understand the conditions and outcomes of this important construct. To that end, the purpose of this study was to develop a three component measure of educational commitment whereby individuals will have three separate (albeit possibly related) levels of commitment. Further, this study sought to investigate differences between first- and second-generation students on each of the three dimensions of educational commitment.

A growing body of empirical literature suggests that first-generation students tend to withdraw from higher education at a rate greater than their second-generation counterparts (Billson & Terry, 1982). The operationalization of first- and second-generation students is based upon parent education level (York-Anderson & Bowman, 1991). A student who has at least one parent who has attended college regardless

whether they attained a college degree is defined as a second-generation student. Conversely, a student whose parents did not attend college is defined as a first-generation student.

It is argued that first-generation students frequently must resolve conflicting roles with family members who have no first hand experiences with the stresses associated with higher education (London, 1992). Moreover, research suggests that second-generation students tend to perceive more parental support than first-generation students (Billson & Terry, 1982; York-Anderson & Bowman, 1991). Once the educational commitment measures have been subjected to the Principal Components Analysis to estimate each domain's structure, score comparisons were computed between first and second-generation students. Based upon the literature for both commitment and first generation students and the items generated to measure affective, normative and continuance commitment, the following three hypotheses were tested.

H_1: First and second generation students will not differ on affective commitment.

H_2: First generation students will score significantly lower on normative commitment compared to their second-generation counterparts.

H_3: First generation students will have significantly higher scores on continuance commitment compared to their second-generation counterparts.

CHAPTER 3
METHOD

Participants

Two hundred and ninety-two college students enrolled in a college orientation course at rural regional university located in the southern plains were the target population for this study. New Freshmen at this university are required to complete this one-credit hour course. Attending students were informed of the purpose of the study, its voluntary nature and that their responses would have no impact on their grade for the orientation course. Further, these students were provided an informed consent form and treated in accordance with the ethical guidelines provided by the American Psychological Association (1992), and the Oklahoma State University's Institutional Review Board (www.vpr.okstate.edu/irb/).

Two hundred and one students signed the consent form and responded to the survey. This 68.84% participation rate may be due to absenteeism or class withdrawals. Table one below provides a demographic description of the participating students.

TABLE 1.

DEMOGRAPHIC INFORMATION OF PARTICIPATING STUDENTS (N = 201)

Category	Percent	Category	Percent
Gender		Class:	
Female	61.2%	Freshmen	83.1%
Male	32.3%	Sophomore	5.0%
Ethnicity		Junior	2.5%
Caucasian	63.7%	Senior	1.5%
American Indian	25.4%	Admission Code:	
Asian	0.5%	First Term Entering	44.8%
Hispanic	1.0%	Returning	26.9%
African American	3.0%	Transfer	12.4%

Note: Percents may not equal 100 due to missing data.

As can be seen in Table 1 above, the demographic patterns suggest that a participating student is most likely First Term Entering (44.8%) classified as Freshmen (83.1%). Although the orientation course is designed for new freshmen, one educational program uses this course as a requirement prior to graduation. Therefore, it is not surprising to see the other classes represented. Additionally, almost two-thirds are female (61.2%) and a majority are Caucasian (63.7%). The average age of the participating students is 24.80 years. Finally, these students report an average ACT Composite score of 19.75. The demographic characteristics presented reflected in this study is reflective of the university student population.

Additional demographic information obtained from the survey indicates that among the participating students, 38.3% are first-generation students (e.g., neither parent attended college). Moreover, 32.8% report they work full-time and 34.8% report they work part-time. Finally, it should be noted that the university where these data were collected is both an Associates' and Bachelors' degree granting public institution.

Development of Commitment Scale

Four principles forwarded by Messick (1995) were used to guide the development or inclusion of items purported to estimate educational commitment. These principles include, (1) content relevance and representativeness, (2) theoretical rationale, (3) expected relationships among and between items, and (4) the number of items needed to represent a defined domain. With regard to the number of items, Gorsuch (1988), argues at least four and generally six items should be considered to adequately represent a given domain. Fewer than four items warrants concern over the adequacy of the correlation

structure necessary to describe a factor; whereas, more than six items may capitalize on domain density.

Items for each hypothesized component of educational commitment were developed by the researcher to reflect their respective domains. Additionally, items used in other studies of commitment were considered to determine if they could be adapted to fit each component of educational commitment described in this study. Items were written for each of the three domains of commitment. More specifically, a marker item was written based upon each domain definition. Following, recommendations from Messick, (1995) regarding content relevance and representativeness, the development of other items in each domain were written to closely reflect (e.g., parallel forms) each marker item. Additionally, the goal of simple structure (Gorsuch, 1983) guided item development.

An initial pool of items was generated (seven for each domain) based upon the theoretical and empirical studies of commitment (e.g., Allen & Meyer, 1996; Becker, 1960; Biddle, 1986; Serpe, 1987). This procedure produced the 21 items presented in Table 2.

Masters (1974) investigated the effect of the number of response categories on reliability estimates for Likert-type scales. He found a linear relationship in the number of response categories and coefficient alpha. However, the increase in alpha was substantial from two, three and five categories with little gain beyond five categories. Further, Masters recommended that an agree-disagree scaling is adequate in differentiating respondents. As a result, responses to each item developed for this study were presented as a five-point Likert-type scale with the following categories to reflect

the participant's level of agreement to the item: "strongly disagree," "disagree," "undecided," "agree," and "strongly agree" (values ranging from +1 to +5, respectively).

Table 2

INITIAL 21-ITEM MEASURE OF EDUCATIONAL COMMITMENT

Item
Affective Commitment:
1. I am proud to be a college student.
2. Being a college student has a great deal of personal meaning for me.
3. I really enjoy talking to other people about my college experiences.
4. Being enrolled in college has made me happy.
5. I would be emotionally upset if I could not go to college.
6. I have always dreamed of going to college.
7. I do not feel emotionally attached to remaining a college student.
Normative Commitment:
1. In my family, going to college is highly valued.
2. My family would be disappointed if I did not go to college.
3. Most people who are important to me think I should earn a college degree.
4. For the most part, it was expected that I would go to college.
5. It would really disappoint people who are close to me if I decided to drop out of school.
6. Those close to me have made sacrifices so that I could go to college.
7. I do not feel any obligation to remain a college student.
Continuance Commitment:
1. I am going to college because I don't have any practical options to do anything else.
2. If I did not go to college, I'm not sure what else I would do.
3. If I could make a decent income doing something else, I would not have enrolled in college.
4. If I could find another way to achieve my goals, I would not go to college.
5. I have invested too much to consider not going to college.
6. If I had a better alternative, I probably would not have enrolled in college.
7. I have made many sacrifices so that I could go to college.

For the affective commitment domain, items one and two are derived from Meyer, Allen and Smith (1993) and reworded to reflect the educational setting. The researcher

developed all other items. From the 21 items, high scores reflect high levels of each commitment dimension.

Research Design

This study is primarily concerned with the psychometric properties of a scale designed to assess a hypothesized three-factor model of educational commitment. To this end, this study is primarily grounded in reliability and validity estimates regarding a self-report measure.

Reliability.

Educational commitment is hypothesized to reflect a theoretical three-factor model comprised of affective, normative and continuance perspectives. As such, this construct is being measured by three composites of items with multi-category response options. When measuring composites of this type, Cronbach's alpha is the appropriate estimate of reliability (Crocker & Algina, 1986; Nunnally & Bernstein, 1994). Cronbach's alpha provides an estimate of the internal consistency of item variances and covariances among each component. Further, coefficient alpha reflects a lower bound estimate of reliability and is therefore a conservative estimate of item consistency. Item and scale reliabilities (e.g., Cronbach's alpha) were used to estimate the level of measurement error within each component of the construct. Within classical test theory, all psychological measurements contain some level of measurement error (cf. Nunnally & Bernstein, 1994). Cronbach's alpha estimates the degree of consistency or homogeneity among responses to a set of items purported to measure a particular concept. One source of measurement error can be systematic (e.g., non-chance) and is often a function of the participant, data collection method or the measurement itself. Another source of

measurement error is random and thus occurs by chance (e.g., marking incorrect response, data entry error).

Evidence of Validity.

The coefficient alpha provides an indication that items reflect some internal consistency among a composite (e.g., reliability). However, reliability estimates are necessary yet insufficient index for estimating measurement validity. Kaplan (1998) described a valid measure as "...one which measures what it purports to measure." (p. 198). Two validity indices are examined in the current study. Specifically, content and construct validity estimates were investigated to provide empirical evidence that the items developed do, in fact, appear to measure the three educational commitment dimensions.

Content validity refers to the adequacy in which a specific domain of content is sampled (Nunnally & Bernstein, 1994). Within the parameters of this study, content validity refers to the extent the items developed for this study adequately represent the domains of affective, normative and continuance commitment. To assess the content validity of the measurement of educational commitment, four judges who are active researchers studying retention in higher education matched the items presented in Table 2 above to each defined domain of educational commitment (e.g., continuance, affective, normative). These raters were presented with specific definitions based upon the theoretical literature presented in Chapter 2 of this study for the three domains and then provided all items developed to represent the domains.

The degree of match was based upon a five-point scale and range from 1 "poor fit" to 5 "excellent fit." A mean rating for each item from the judges was then computed to provide an index of content validity. The result of this content validity analysis is

presented in Table 3. The average scores from the four raters show high levels of agreement that each item adequately reflects its specific domain.

TABLE 3.

INDEX OF CONTENT VALIDITY FOR EACH COMMITMENT DOMAIN

Affective Commitment		Normative Commitment		Continuance Commitment	
Item	Mean Rating	Item	Mean Rating	Item	Mean Rating
A1	5.00	N1	5.00	C1	5.00
A2	5.00	N2	5.00	C2	5.00
A3	5.00	N3	5.00	C3	5.00
A4	5.00	N4	5.00	C4	5.00
A5	5.00	N5	5.00	C5	5.00
A6	5.00	N6	4.75	C6	5.00
A7	4.75	N7	5.00	C7	5.00

Note: Mean rating is based upon a 1 (not at all) to 5 scale (to a very great extent) Likert-type scale.

Describing construct validity, Messick, (1995) states, "validity ... is the meaningfulness or trustworthy interpretability of the ... scores and their action implications." (p. 744). Construct validity will be empirically estimated to determine if the theoretically derived constructs do in fact exhibit three constructs based upon subject responses. Upon completion of the content validity study, the hypothesized three-factor educational commitment scale was presented to the student participants for a self-report of their level of affective, normative and continuance commitment to higher education.

Construct validity was investigated using inter-item correlations (e.g., Barlett's sphericity test) and principal component analysis (PCA) with both varimax and oblique rotation. This procedure quantitatively examines the interrelationships among items and groups them according to some underlying component. Results of the principal component analysis will allow estimates to the degree the instrument measures the

intended hypothetical constructs. The theoretically derived components of commitment for this study reflect a multidimensional profile perspective.

Once the structure of the developed measure of educational commitment was empirically defined, mean comparisons were computed to test the three hypotheses reflecting differences between first- and second-generation students. A MANOVA was used to test the hypothesis that first-generation students would have lower levels of normative commitment and higher levels of continuance commitment for several reasons. First, although it is argued that each of the three dimensions of the educational commitment construct are conceptually distinct, the evaluation of the measure developed for this study is clearly in its developmental stages. To that end, no empirical evidence exists to justify the use of three univariate ANOVAs. This is related to the second reason in that the use of multiple ANOVAs has been shown to increase the capitalization of chance findings due to the additive nature of the Type I error (albeit, adjustments could be made). Finally, it is unclear if linear combinations of the three dependent variables might produce some important findings that would not be available through the use of the univarite tests.

Procedure

Participants were asked to sign an informed consent form (a copy was provided to the participants) describing the purpose of the study as well as their voluntary participation. Participants were presented a copy of the questionnaire at his/her desk during class and asked to respond to the items using either pencil or pen. Completion of the questionnaire took an estimated 20 minutes per student. Upon completion, participants were instructed, on the survey, to return the questionnaire in a sealed

interoffice mail envelope and return it to the researcher. As mentioned in the beginning of this chapter, this procedure produced 201 usable surveys resulting in a 68.84% response rate.

CHAPTER 4
RESULTS

Preliminary Considerations

Assumptions were assessed for normality, linearity, homogeneity of variance and covariance. Although these assumptions are related, normality and linearity are primary assumptions necessary for the principal component analysis that will be used to test the structure of the multidimensional educational commitment scale. However, testing for homogeneity of variance and covariance are issues directly concerned with the group comparisons previously hypothesized between first- and second-generation students.

Each item from the developed scale of educational commitment was converted to standardized scores to search for possible outliers. The operationalization of an outlier consisted of z-scores greater than or equal to (+ or -) 4.00. This criterion was set based upon recommendations of Tabachnick and Fidell (1996) relative to the number of items and subjects. However, it should be noted that the largest possible z value given the sample size and number of variables was 14.107 (Shiffler, 1988 as cited in Stevens, 1996). The result of the outlier search did not produce any scores that met the criterion. Thus, all scores were included in the analyses.

Normality

Multivariate normality assumes that each item and any linear combination of items are normally distributed (cf. Stevens, 1996). Normality was examined by estimating each item's skewness and kurtosis as well as computing the Kolmogorov-Smirnov significance test. For a variable to be considered normally distributed, skewness and kurtosis should be equal to zero. Evaluation of these statistics showed that six items

had skewness greater than or equal to (+ or -) 1.0. The range for skewness was –2.82 to +0.81. Additionally, two items had kurtosis greater than or equal to (+ or -) 2.0. The range for kurtosis was -1.37 to 8.26. Moreover, the Kolmogorov-Smirnov significance test resulted in each variable being statistically significant. That is, the null hypothesis that the variable was normally distributed was rejected. While this is cause for some concern, continuing research shows that both univariate and multivariate tests are somewhat robust to the violation of normality. For example, Stevens (1996) reports that these violations produce only a slight effect on the Type I error and power due to the Central Limit Theorem. Given that 201 subjects participated in this study, the violations to normality are likely only of minor concern. Therefore, items were not removed or transformed.

Linearity

The test for linearity refers to the extent that the relationship between any two variables approximates a straight ascending or descending line (Stevens, 1996). Typically, one assesses the assumption of linearity through the evaluation of a scatter plot in which scores on one variable are plotted in conjunction with another variable to determine the extent they are related (e.g., co-vary). Within the confines of this study, each item within a given dimension was plotted against all other items within that particular domain.

Statistically, the correlation matrices are also an indication of the extent two items co-vary (Stevens, 1996). The correlation matrices are provided in Tables 4, 5 and 6 to provide an indication of linearity among the items.

TABLE 4.

ZERO-ORDER CORRELATION MATRIX FOR AFFECTIVE COMMITMENT

Item	A1	A2	A3	A4	A5	A6	A7
A1	--						
A2	.82	--					
A3	.68	.72	--				
A4	.67	.76	.77	--			
A5	.31	.31	.27	.37	--		
A6	.46	.54	.45	.56	.42	--	
A7	.13	.16	.11	.21	.22	.10	--

Note: Correlations greater than .14 are significant at $p \leq .05$

TABLE 5.

ZERO-ORDER CORRELATION MATRIX FOR NORMATIVE COMMITMENT

Item	N1	N2	N3	N4	N5	N6	N7
N1	--						
N2	.46	--					
N3	.46	.47	--				
N4	.43	.46	.31	--			
N5	.33	.44	.52	.27	--		
N6	.13	.18	.26	.15	.39	--	
N7	.08	.16	.26	.03	.37	.20	--

Note: Correlations greater than .14 are significant at $p \leq .05$

TABLE 6.

ZERO-ORDER CORRELATION MATRIX FOR CONTINUANCE COMMITMENT

Item	C1	C2	C3	C4	C5	C6	C7
C1	--						
C2	.38	--					
C3	.37	.20	--				
C4	.42	.10	.70	--			
C5	.08	.04	.22	.16	--		
C6	.35	.05	.57	.69	.20	--	
C7	.11	.04	.25	.23	.48	.16	--

Note: Correlations greater than .14 are significant at $p \leq .05$

For affective commitment, all inter-item correlations indicate moderate to strong positive relationships with the exception of the A7 to A1, A7 to A3, and A7 to A6

relationships. This was also revealed during a review of scatterplots. Normative commitment shows similar signs of the presence of linearity. However, the inter-item correlations are mostly moderate with the exception of the N6 to N1, N6 to N2, N6 to N4, N7 to N1, N7 to N2, and N7 to N4 relationships. Again, these issues of linearity were consistent with the review of the scatterplots. Finally, the inter-item correlation matrix for continuance commitment suggests the presence of linearity similar to affective and normative commitment. Item C2, C5 and C7 reflect small correlations with the others in the set suggesting some limitations to linearity. Given the review of the scatterplots and the three tables presenting the inter-item correlations, it is concluded that the assumption of linearity is met with some concern for those items just described.

Homogeneity of Variance and Covariance

Homogeneity of variance was tested on each of the three scales based upon the two groups indicating first- and second-generation students. Moreover, given that group samples are unequal (n = 77 and n = 119 respectively) violation of this assumption can affect the Type I error rate. However, the group sample size ratio is 1.55 therefore, F is likely to be robust (Stevens, 1996). Empirically, the homogeneity of variance assumption was tested using Cochran's C and Bartlett' Box. These results are presented in Table 7.

TABLE 7.

TEST FOR HOMOGENEITY OF VARIANCE BETWEEN FIRST- AND SECOND-GENERATION STUDENTS

Homogeneity of Variance:	Test Result	p-Value
Affective Commitment		
Cochran's C (96,2)	0.54905	.337
Bartlett-Box F(1,98334)	0.89533	.344
Continuance Commitment		
Cochran's C (96,2)	0.54937	.333
Bartlett-Box F(1,98334)	0.88270	.348
Normative Commitment		
Cochran's C (96,2)	0.55540	.277
Bartlett-Box F(1,98334)	1.14598	.285

The tests presented in Table 7 assess the null hypothesis that the group variances are equal. More specifically, the null hypotheses that homogeneity of variance exists for each of the three dimensions of commitment across first- and second-generation students was not rejected.

Homogeneity of covariance examines the extent the covariance matrices for all dependent variables across the levels of the independent variable differ. Relative to this study, the covariance matrices for the three dimensions of educational commitment were not significantly different relative to first- and second-generation students. Table 8 below presents the multivariate test for homogeneity of covariance using the Box M test.

TABLE 8.

MULTIVARIATE TEST FOR HOMOGENEITY OF COVARIANCE MATRICES

Homogeneity of Covariance:	Test Result	p-Value
Boxes M	7.02655	
F with (6,177946) DF	1.15003	.330
Chi-Square with 6 DF	6.90041	.330

Considering that the assumptions of linearity, homogeneity of variance and homogeneity of covariance held and that the possible violation of normality results in only a minor impact on Type I error and power, a priori adjustments to alpha (Type I error) were not necessary. Subsequently, the criterion for statistical significance was set at .05.

The next section presents the results of the Principal Components Analysis and the final hypotheses tests using MANOVA to compare first- and second-generation students on each of the three dimensions of educational commitment.

Principal Components Analysis

Principal Components Analysis (PCA) empirically examines linear combinations (e.g., factors) of items from a correlation matrix to maximize the amount of variance that can be accounted for given the set of items (Gorsuch, 1983). Factors are therefore linear combinations of items that are correlated with that factor. With PCA, the first factor extracted accounts for the most variance with subsequent extracted factors based upon the residual matrix of correlations between items with the preceding factor(s) removed. Once the factors have been extracted, the solution is typically rotated such that interpretation of the factors (e.g., factor loading) is most parsimonious (Gorsuch, 1983). For this study,

both orthogonal (e.g., varimax) and correlated (e.g., oblimin) rotation was selected to establish the simple structure for each dimension.

Ultimately, the goal of the analyses presented in this section was that of simple structure. Presented by Thurstone (1935), simple structure exists when an item loads (e.g., correlates) high on only one factor with zero or near zero loading on all subsequent factors making the solution parsimonious in interpretation. Thus, each dimension was subjected to the Principal Component Analysis (PCA) separately. Once the structure of the final three measures was established, a PCA was computed with all meaningful items representing the three dimensions included to illustrate their structure and overall level of relationship.

Similarly, each dimension was subjected to an item-analysis to investigate the item to composite correlation. Items with meaningless correlations to the composite were deleted based upon an improvement in coefficient alpha. This procedure was conducted in conjunction with the PCA and provided empirical support for the retained items within each dimension as established below.

Affective Commitment.

The correlation matrix for the items representing affective commitment was presented in Table 4 above. To that end it was argued that the inter-item correlations were moderate to strong with the exception of item A7. Additionally, the item-analysis for this dimension found that when items A5 and A7 were removed, coefficient alpha improved from .82 to .89.

Principal Component Analysis (PCA) assumes meaningful and significant correlations exist among a set of items. Several tests are available to assess this

requirement (e.g., Bartlett's Test of Sphericity, Kaiser-Meyer-Olkin measure of sampling adequacy). Bartlett's Test of Sphericity provides a chi-square test for the significance of a correlation matrix based upon the determinant (e.g., generalized variance of the correlation matrix) from the set of items. The determinant of the correlation matrix was 0.0224385. Bartlett's Test of Sphericity indicates that the level of relationship among these items warrants the PCA [X^2 (21) = 7.24.590, p = .000]. Additionally, the Kaiser-Meyer-Olkin measure of sampling adequacy (hereafter referred to as KMO) was .836. KMO is a ratio of the sum of squared correlations to the sum of squared correlations plus the sum of squared partial correlations. If the partial correlations are small, the KMO approaches 1.0. Tabachnick and Fidell (1996) suggest that a KMO of 0.6 and higher is required for the use of PCA.

Table 9 below provides the communalities (h^2) for the seven items, and the component matrix (e.g., factor loadings) using varimax rotation. The criteria for determining the number of factors to retain is that based upon an eigenvalue of 1.0 or higher. The criteria for using a factor loading to interpret a component was set at + or - .35 (e.g., Gorsuch, 1983; Stevens, 1996; Tabachnick & Fidell, 1996).

TABLE 9.

INITIAL PRINCIPAL COMPONENT ANALYSIS FOR AFFECTIVE COMMITMENT

Item	h^2	Factor 1	Factor 2
1. I am proud to be a college student.	.756	.851	
2. Being a college student has a great deal of personal meaning for me.	.833	.899	
3. I really enjoy talking to other people about my college experiences.	.754	.841	
4. Being enrolled in college has made me happy.	.800	.892	
5. I would be emotional upset if I could not go to college.	.538	.502	.535
6. I have always dreamed of going to college.	.500	.701	
7. I do not feel emotionally attached to remaining a college student.	.704		.802
Sum of Squared Loading		3.57	1.33

Note: Item 7 was reverse scored.

As shown in Table 9 above, the initial PCA with varimax rotation produced a two-factor structure that accounted for 69.73% of the total variance. However, Factor 2 is comprised of only two items (5 and 7 respectively). Additionally, as indicated through the examination of the correlation matrix for this set of items suggest some linearity concern for item 7. Given the goal of simple structure, subsequent PCAs were computed eliminating item 7. When item 7 was removed, only one factor was extracted. However, item 5's commonality for this extracted factor was low (.24) therefore it was subsequently removed. With both item 7 and item 5 removed, simple structure was achieved. Table 10 below provides the final PCA with items 5 and 7 ultimately removed.

TABLE 10.

FINAL PRINCIPAL COMPONENT ANALYSIS FOR AFFECTIVE COMMITMENT

	Item	h^2	Factor 1
1.	I am proud to be a college student.	.750	.866
2.	Being a college student has a great deal of personal meaning for me.	.836	.914
3.	I really enjoy talking to other people about my college experiences.	.743	.862
4.	Being enrolled in college has made me happy.	.803	.896
6.	I have always dreamed of going to college.	.486	.684
	Sum of Squared Loading		3.62

The determinant of the final correlation matrix with item 7 and item 5 removed was 0.0304846. Bartlett's Test of Sphericity indicates that the level of relations among these items continue to support the use of PCA [X^2 (10) = 671.928, p = .000]. Additionally, the KMO was .835. The final five-item scale indicates a single factor with high loadings accounting for 72.013% of the variance for affective commitment. This is a slight improvement of 2.28%. Item six has a notably lower commonality (.486) and factor loading (.684) relative to the other items. However, the correlation matrix indicated a moderate relationship with the other items, and was therefore not deleted. Evaluation of the final model reflects a five-item measure of affective commitment. Calculation of Cronbach's alpha indicated a high level of inter-item reliability of .89 (standardized alpha = .90).

Normative Commitment.

The correlation matrix for the items representing normative commitment was presented in Table 5 above. To that end it was argued that the inter-item correlations were moderate with the possible exception of items N6 and N7. The determinant of the

correlation matrix was 0.1902796. Bartlett's Test of Sphericity indicates that the level of relations among these items warrants the use of PCA [X^2 (21) = 321.620, p = .000]. Additionally, the KMO was .792. Table 11 below provides the communalities (h^2) for the seven variables, and the component matrix (e.g., factor loadings) using varimax rotation.

TABLE 11.

INITIAL PRINCIPAL COMPONENT ANALYSIS
FOR NORMATIVE COMMITMENT

	Item	h^2	Factor 1	Factor 2
1.	In my family, going to college is high valued.	.607	.773	
2.	My family would be disappointed if I did not go to college.	.620	.748	
3.	Most people who are important to me think I should earn a college degree.	.592	.585	.499
4.	For the most part, it was expected that I would go to college.	.629	.790	
5.	It would really disappoint people who are close to me if I decided to drop out of school.	.678	.419	.708
6.	Those close to me have made sacrifices so that I could go to college.	.403		.625
7.	I do not feel any obligation to remain a college student.	.617		.779
	Sum of Squared Loading		2.33	1.84

Note: Item 7 was reverse scored.

As shown in Table 11 above, the initial PCA with varimax rotation produced a two-factor structure that accounted for 59.23% of the total variance. However, as discussed previously, examination of the correlation matrix for this set of items suggest some linearity concern for items 6 and 7 with the other items in the set. Table 12 below provides the final PCA with items 6 and 7 ultimately removed. The strategy for removal of items followed the considerations presented in the section on affective commitment.

The item-analysis for this dimension found that when items N6 and N7 were removed, coefficient alpha improved from .74 to .78.

TABLE 12.

FNAL PRINCIPAL COMPONENT ANALYSIS FOR NORMATIVE COMMITMENT

	Item	h^2	Factor 1
1.	In my family, going to college is high valued.	.542	.737
2.	My family would be disappointed if I did not go to college.	.617	.786
3.	Most people who are important to me think I should earn a college degree.	.581	.762
4.	For the most part, it was expected that I would go to college.	.437	.661
5.	It would really disappoint people who are close to me if I decided to drop out of school.	.490	.700
	Sum of Squared Loading		2.54

The determinant of the final correlation matrix with items 5, 6 and 7 removed was 0.273342. Bartlett's Test of Sphericity indicates that the level of relations among these items continue to support the use of PCA [X^2 (6) = 176.521, p = .000]. Additionally, the KMO was .789. The final five-item scale provides for a single factor with high loadings accounting for 53.30% of the variance. Calculation of Cronbach's alpha indicated a good inter-item reliability index of .78 (standardized alpha = .78).

Continuance Commitment.

The correlation matrix for the items representing continuance commitment was presented in Table 6 above. To that end it was argued that the inter-item correlations were moderate with some linearity concern indicated on items C2, C5 and C7 with the other items in the set. The determinant of the correlation matrix was 0.1065068. Bartlett's Test of Sphericity indicated that the level of relationship among these items

warranted the use PCA [X^2 (21) = 425.141, p = .000]. Additionally, the KMO was .713. Table 13 below provides the communalities (h^2) for the seven items, and the component matrix (e.g., factor loadings) using varimax rotation.

TABLE 13.

INITIAL PRINCIPAL COMPONENT ANALYSIS
FOR CONTINUANCE COMMITMENT

Item	h^2	Factor 1	Factor 2	Factor 3
1. I am going to college because I don't have any practical options to do anything else.	.639	.433		.671
2. If I did not go to college, I'm not sure what else I would do.	.842			.917
3. If I could make a decent income doing something else, I would not have enrolled in college.	.716	.802		
4. If I could find another way to achieve my goals, I would not go to college.	.844	.909		
5. I have invested too much to consider not going to college.	.742		.852	
6. If I had a better alternative, I probably would not have enrolled in college.	.785	.883		
7. I have made many sacrifices so that I could go to college.	.743		.852	
Sum of Squared Loading		2.46	1.50	1.35

Note: Items 5 and 7 were reverse scored.

As shown in Table 13 above, the initial PCA with varimax rotation produced a three-factor structure that accounted for 75.88% of the total variance. However, as indicated through the examination of the correlation matrix for this set of items suggest some concern existed for items 2, 5 and 7. Table 14 below provides the final PCA with items 2, 5, and 7 ultimately removed. The removal strategy for items 5, 7 and 2 was the same as that used for affective and normative commitment.

Initially, items 5 and 7 were removed due to low correlations with the other items. This resulted in a two-factor solution with item 2 representing a singlet loading for factor two and subsequently removed from the model. The item-analysis for this dimension found that when items 5, 7 and 2 were removed, coefficient alpha improved from .72 to .81.

TABLE 14.

FINAL PRINCIPAL COMPONENT ANALYSIS
FOR CONTINUANCE COMMITMENT

	Item	h^2	Factor 1
1.	I am going to college because I don't have any practical options to do anything else.	.376	.613
3.	If I could make a decent income doing something else, I would not have enrolled in college.	.703	.839
4.	If I could find another way to achieve my goals, I would not go to college.	.804	.897
6.	If I had a better alternative, I probably would not have enrolled in college.	.690	.830
	Sum of Squared Loading		2.58

The determinant of the final correlation matrix with items 5, 7 and 2 removed was 0.2123331. Bartlett's Test of Sphericity indicated that the level of relations among these items continue to support the use of PCA [X^2 (6) = 298.814, p = .000]. Additionally, the KMO was .760 an improvement from the initial model (.713). The final four-item scale provides for a single factor with high loadings accounting for 64.337% of the variance. Calculation of Cronbach's alpha indicates a very good inter-item reliability of .81 (standardized alpha = .81).

Final Three-Factor Model

The section of the Principal Components Analysis presents the retained 14-item measure of educational commitment representing the three theoretical dimensions of affective, normative and continuance commitment. The same extraction (eigenvalues greater than one) and interpretation criteria (loading larger than + or - .35) were used. Table 15 below provides inter-item correlation matrix for these 14 items.

TABLE 15

ZERO-ORDER CORRELATION MATRIX OF 13-ITEM MEASURE OF EDUCATIONAL COMMITMENT

	A1	A2	A3	A4	A6	N1	N2	N3	N4	N5	C1	C3	C4	C5
A1	--													
A2	.82	--												
A3	.68	.72	--											
A4	.67	.76	.77	--										
A6	.46	.54	.45	.56	--									
N1	.31	.27	.35	.31	.21	--								
N2	.11	.06	.12	.10	.16	.46	--							
N3	.45	.38	.35	.37	.24	.46	.47	--						
N4	.03	-.02	.06	.05	.14	.43	.46	.31	--					
N5	.31	.30	.28	.29	.15	.33	.44	.52	.27	--				
C1	-.20	-.21	-.23	-.26	-.28	.05	.12	-.08	.07	-.05	--			
C3	-.24	-.27	-.21	-.31	-.23	-.08	.06	-.15	.14	-.12	.37	--		
C4	-.37	-.42	-.34	-.44	-.37	-.05	.09	-.10	.14	-.07	.42	.70	--	
C6	-.28	-.38	-.29	-.31	-.29	-.08	.02	-.11	.10	-.09	.35	.57	.69	--

Note $r \geq$ (+ or -) .15 statistically significant below .05.

As illustrated in Table 15 above, the pattern of correlations provides some support for a three-factor model. That is, items that are argued to reflect a specific dimension tend to correlate together. It also appears that items representing normative and continuance commitment tend to show some relationship to items representing affective commitment. Finally, there appears to be relatively no meaningful correlation between

the normative commitment items and continuance commitment items. The determinant of this matrix was 0.0008811. Bartlett's Test of Sphericity indicated that the level of relations among these items continue to support the use of PCA [X^2 (78) = 13189464, p = .000]. Additionally, the KMO was .834. Table 16 below provides the results of the principal components analysis with oblimin rotation (delta = 0) for these items.

TABLE 16.

PRINCIPAL COMPONENT ANALYSIS FOR MULTIDIMENSIONAL MESAURE OF EDUCATIONAL COMMITMENT

		Pattern			Structure		
Item	h^2	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
A1	.760	.88			.87		
A2	.840	.93			.92		
A3	.741	.88			.86		-.39
A4	.782	.87			.88		
A6	.418	.54			.63		-.38
N1	.565		.71			.74	-.38
N2	.672		.84			.81	
N3	.589		.66			.72	
N4	.532		.74			.7	
N5	.485		.63		.36	.67	
C1	.397			.62			.62
C3	.717			.89			.84
C4	.894			.85	-.42		.88
C6	.670			.81	-.35		.82
Sum of Squared Loading		4.59	2.62	2.60			

As can be seen in Table 16, the 14 items of a multidimensional measure of educational commitment developed for this study reflect a three component structure accounting for 64.00% of the total variance. Furthermore, it is argued both theoretically and empirically (i.e., correlation matrix and rotated factor matrix) that factor 1 reflects the

dimension of affective commitment, factor 2 reflects the dimension of normative commitment and factor 3 reflects the dimension of continuance commitment. The correlations (see Table 17) between these constructs, although statistically significant are small in size. Further, these correlations tend to make intuitive sense as will be described in chapter five.

TABLE 17

MEANS, STANDARD DEVIATIONS AND ZERO-ORDER CORRELATIONS BETWEEN AFFECTIVE, NORMATIVE AND CONTINUANCE COMMITMENT

Construct	M	SD	1	2	3
1. Affective Commitment	21.32	3.97	---		
2. Normative Commitment	17.97	4.43	.33	---	
3. Continuance Commitment	9.04	3.61	-.43	.01	---

Note: Correlations greater than or equal .30 in absolute value are statistically significant with $p \leq .01$.

The correlations presented in Table 17 suggest that a small positive relationship exists between affective commitment and normative commitment ($r^2 = .11$). Further, the relationship between affective commitment and continuance commitment is modest and negative ($r^2 = .19$). Finally, normative commitment and continuance commitment appears to have no meaningful relationship with each other ($r^2 = .00$).

The results of this study presented thus far, provide empirical evidence in support of the theoretical model argued throughout these chapters. Educational commitment may be developed along three dimensions of affective, normative and continuance experiences. The final section of this chapter provides additional (albeit preliminary) support for the usefulness of this measure. More specifically, a MANOVA was computed to test the hypothesis that first-generation students would have lower scores on

normative commitment and higher scores on continuance commitment compared to their second-generation counterparts.

Multivariate Analysis of Variance

A two-group multivariate analysis of variance (MANOVA) was computed with affective commitment, normative commitment and continuance commitment as the dependent variables. One independent variable with two-levels, first- and second-generation student, was used as the independent variable for this analysis. The correlations between the three dimensions presented in Table 17 above indicate that some relationship does exist between the commitment dimensions to empirically support the use of MANOVA. The three hypotheses presented in Chapter 2 are repeated for reader convenience.

H_1: First and second generation students will not differ on affective commitment.

H_2: First generation students will score significantly lower on normative commitment compared to their second-generation counterparts.

H_3: First generation students will have significantly higher scores on continuance commitment compared to their second-generation counterparts.

Evaluation of the two-group MANOVA output suggests that the model was statistically significant [$T^2 = 0.07954$ ($F=5.03741$), $p = .002$; $\Lambda = 0.92632$; $\eta^2 = .074$]. This finding suggests that group differences do in fact exist. Table 18 below provides the univariate summary table for each dimension of educational commitment.

TABLE 18

UNIVARIATE F TESTS OF THE MULTIDIMENSIONAL MEASURE OF EDUCATIONAL COMMITMENT BETWEEN FIRST- AND SECOND-GENERATION STUDENTS

Variable	Hypoth SS	Error SS	Hypoth MS	Error MS	F	P Value
Aff Commitment	0.424	2482.01	0.424	14.802	0.03	0.866
Norm Commitment	242.969	3569.78	242.969	18.593	13.06	0.000
Cont Commitment	2.697	2462.26	2.697	12.824	0.21	0.647

Note df = 1,192

The results presented in Table 18 suggest that first-generation students (M = 21.46, SD = 4.07) did not differ significantly from second-generation students (M = 21.23, SD = 3.92) on their level of affective commitment supporting hypothesis one. Further, first-generation students (M = 16.58, SD = 4.60) did score significantly lower on normative commitment compared to their second-generation counterparts (M = 18.87, SD = 4.10) supporting hypothesis two. Eta squared for this effect is .064. Finally, first-generation students (M = 8.87, SD = 3.37) did not differ significantly from second-generation students (M = 9.14, SD = 3.77) on their level of continuance commitment. This finding shows that hypothesis three was not supported.

Multivariate significance was found suggesting that the three dependent variables combine to significantly differentiate the groups. Therefore, a descriptive discriminant analysis was conducted to investigate if linear combinations of the three dimensions of educational commitment existed to define differences between first- and second-generation students. It is important to note that the use of discriminant analysis assumes moderate to strong correlations between the dependent variables. Within this study, the relationships approached moderate at best. Nevertheless, a discriminant analysis was

pursued to further explore the significant MANOVA findings. The number of possible discriminant functions was one since there were only two levels of the independent variable being considered. The results of the discriminant function was statistically significant [$\Lambda = 0.926$, X^2 (3) = 14.580, p = .002] with an eigenvalue of 0.0980.

TABLE 19

SUMMARY OF CANONICAL DISCRIMINANT FUNCTIONS

Variable	Structure	Unstandardized	Standardized
Affective Commitment	-0.043	-0.111	-0.427
Normative Commitment	0.925	0.248	1.068
Continuance Commitment	0.117	-0.016	-0.058

Examination of Table 19 further strengthens the argument that the difference between first- and second-generation students is primarily within the normative commitment dimension. More specifically, evaluation of the structure coefficients in Table 19 suggest that normative commitment (0.938) is the primary defining characteristic of the significant function.

Summarizing this chapter, statistical assumptions relative to Principal Components Analysis (PCA) and group comparisons were tested with no serious violations warranting item transformation or adjustment to alpha (Type I error). Subsequently, results of the PCAs provide empirical support for a 14-item multidimensional educational commitment scale comprised of affective, normative and continuance commitment. Although the correlations between these three constructs were statistically significant, it is theoretically argued that each develop distinctly. Finally, it was hypothesized that first-generation college students would score lower on normative

commitment, score higher on continuance commitment, and not differ significantly on affective commitment compared to their second-generation counterparts. Results of the MANOVA partially supported these hypotheses with differences found only for normative commitment. A subsequent descriptive discriminant analysis confirmed that the significant discriminant function was primarily comprised of normative commitment.

CHAPTER 5
DISCUSSION

College student persistence continues to show great interest to researchers and policy makers. The construct of educational commitment can provide additional clarity in understanding student attitudes and behaviors. Therefore, it is critical that the reliability and validity of measures of educational commitment be examined. For the most part, much of the empirical evidence currently available on educational commitment is based upon various operationalizations of a single dimension perspective (e.g., Pascarella & Chapman, 1983). However, prior to cumulating empirical findings on possible antecedents and consequences of educational commitment, important theoretical and psychometric issues must be clarified. A growing body of evidence argues that commitment reflects some psychological bond held by an individual toward a given social organization (Allen & Meyer, 2000). Moreover, this bond is regarded to reflect a multidimensional, rather than unidimensional construct (cf. Becker & Billings, 1993; Meyer & Allen, 1991, Meyer, Allen & Smith, 1993; Reichers, 1985).

Given the growing interest in educational commitment this study attempted to establish a theoretical rationale arguing that educational commitment reflects a multidimensional construct. Specifically, it is argued that a student's commitment to attending college is a function of an emotional attachment (affective), social pressure to conform to a given role expectation (normative), and/or the lack of alternatives (continuance). From this theoretical perspective, a multidimensional scale of educational commitment was developed and psychometrically tested in this study.

The results presented in the previous chapter are exciting for researchers interested in educational commitment and first-generation students. More specifically, this research provides empirical support (albeit preliminary) for a three-dimensional measure of educational commitment. Contributions of this study include (1) the development of a reliable measure of affective, normative and continuance commitment, and (2) evidence that the measure can be used to differentiate groups (e.g., first- and second-generation students). The following sections will reflect on these findings, their implications for practitioners and research, and important limitations.

Statistical Assumptions

One strength of the study presented in this research is the test for statistical assumptions of normality, linearity, and homogeneity of variance and covariance. Violations of these assumptions can have devastating effects on subsequent hypotheses testing (Keselman, Huberty, Lix, Olejnik, Cribbie, Donahue, Kowalchuk, Lowman, Petoskey, Keselman & Levin, 1998; Lix, Keselman & Keselman, 1996; Stevens, 1996).

For example, if homogeneity of variance and/or covariance is violated and dramatically different group sample sizes exist, then Type I error can be either overly conservative or liberal depending upon which group possesses the largest variance/covariance. Additionally, without linearity, principal components analysis would not be possible. Although these statistical assumptions are basic concepts in research methodology, Keselman, et. al. (1998) show that these important issues are not typically addressed in even prominent scholarly journals.

Within the parameters of this study, the assumptions of linearity, homogeneity of variance and covariance were achieved. Normality was likely violated; however it has

been shown to produce minimal effects on Type I error and power (Stevens, 1996). Additionally, the criteria that were used to identify violations to skewness and kurtosis were very rigorous. Monte Carlo simulations conducted by Curran, West and Finch (1996) suggest that significant problems in hypothesis testing became apparent when univariate skewness of 2.0 and kurtoses of 7.0 existed. Among the items developed to measure the multidimensional educational commitment scale, only item A1 (skewness = -.282; kurtosis = 8.26) would have shown some concern for violating normality.

To the extent that future research utilizes the multidimensional educational commitment scale presented in this study, it will be important to continue to investigate these issues to ensure that replication or refutation of these findings is not the result of a methodological artifact.

Multidimensional Measure of Educational Commitment

The primary argument presented in this study was that educational commitment reflects a multidimensional construct. Based upon the theoretical perspectives of Allen and Meyer (1996), Becker (1960) Foote (1951) and Biddle (1986), to name a few, educational commitment was argued to develop from emotional attachments (affective), social pressures to conform to a given role (normative), and/or the lack of alternatives (continuance). Following this argument, a scale was developed and psychometrically evaluated to produce a reliable and valid measure of affective, normative and continuance educational commitment from which future research can be guided.

Results of the psychometric tests applied to the measures of affective, normative and continuance commitment provide empirical support of a reliable and valid measure of educational commitment. Although each dimension will be presented in the following

sections, an overview of the multi-dimensional measure is warranted. Specifically, theoretical arguments have been presented to establish that each of the three dimensions develop from conceptually separate yet possibly related frameworks. The results presented in this study provide initial support for this argument. Structural evaluation of the final 14-item measure of educational commitment through principal components analysis show that the theoretical three-factor solution was achieved.

Communalities among the items within each dimension were sufficiently high as were the factor loading of each retained item. Additionally, the sample size to item ratio was sufficient enough to suggest a stable factor structure. Items loading high on factor one are argued to represent affective commitment, those loading high on factor two representing normative commitment, and those loading high on factor three representing continuance commitment. Finally, internal consistency estimates for each dimension were sufficiently high to suggest reliable measures. These conditions, according to Gorsuch (1983) suggest that factoral invariance (e.g., replication) is worth pursuing in future studies.

Although simple structure was approximated, the significant correlations between the three dimensions warrant consideration relative to the development of divergent and convergent validity estimations. For instance, the results of this study show a moderately positive correlation ($\underline{r} = .33$) between affective commitment and normative commitment. Conceptually, it is possible that as students' experience normative pressures to conform to roles conducive to enrollment in higher education they also develop an emotional attachment to those roles. Indeed, conformity need not be considered a negative term. However, it is important to note, that individuals may experience normative pressures to

attend college yet have no emotional desire to do so. Likewise, they may develop an intense emotional desire to attend college, yet experience little normative pressure to do so (e.g., first-generation students).

Affective commitment showed a moderately negative correlation ($r = -.43$) with continuance commitment. From a theoretical perspective, this finding adds to the validity of the multidimensional measure of educational commitment scale. For instance, if one develops an emotional attachment to the role identity of being a college student then they would likely not consider alternative options to achieving their goal. Indeed, those high in affective commitment likely have a goal of attaining a college degree whereas, those high in continuance commitment have goals (e.g., purchasing power) that may be related to attaining a college degree but can be achieved through other means. For example, automotive mechanics are increasingly able to gain higher salaries as technological advances require additional knowledge and skills. Although some two-year associate degrees exist for this career field, acquiring technological skills is most likely to take place after employment (e.g., automotive industry learning centers) or outside higher education (e.g., vocational technical training).

Affective Commitment.

Within the parameters of this study affective commitment refers to the emotional bond between the student and their role as a college student. More specifically, this construct is argued to develop based upon a set of role identities (i.e., student organizations, major field of study, Greek organizations, etc.) accepted by the students. Students who score high in affective commitment will experience emotional distress if their continued enrollment is somehow threatened. Conversely, as students experience

success in their role identities they will experience positive emotional outcomes that will further strengthen their attachment.

The correlations presented in Table 4 provide evidence that the items developed to measure affective commitment are moderately to strongly related suggesting that the items tend to measure similar phenomenon. Moreover, the Principal Component Analysis presented in Table 10 provide preliminary empirical support that the five-items combine to form a simple structure interpreted as affective commitment. The inter-item reliability index shows a high level of consistency among the items suggesting that measurement error due to poor domain sampling or item difficulty does not impact response bias (Crocker & Algina, 1986). While continued psychometric studies are needed, these preliminary results are promising and provide empirical support for a five-item measure of affective commitment.

It is argued that students scoring high in affective commitment will be more likely to self-regulate their learning in the presence of distractions and enroll in courses that lead to a degree rather than a wide variety of courses that do not count toward matriculation. Moreover, following Tinto's (1975) model, students who are higher in affective commitment should report higher levels of academic and social integration and therefore have reduced levels of withdrawal behaviors (e.g., absences, academic disengagement, withdrawal).

In today's environment, it is not surprising that many college students would develop this emotional bond. From the time they enter the educational system the value of pursuing a college degree is directly and indirectly presented to them. Moreover, it is typically and consistently presented that advanced education levels result in a higher

ability to attain valued resources (e.g., pay and benefits). Additionally, jobs in the past that may have required no college degree (i.e., firefighter, military, etc.) are now becoming more discriminating in their recruitment and selection of new employees. This is not to say however that attaining a college degree is the only way to achieve one's career and economic goals. Nevertheless, US census data continue to show a positive linear relationship between education level and economic attainment.

Normative Commitment.

Throughout this study, it was argued that normative commitment reflects a social pressure that develops to constrain one's behavior within an expected role. More specifically, the dimension of normative commitment reflects a student's perception that they are expected to matriculate through a college degree.

The correlations presented in Table 5 provide evidence that the items developed to measure normative commitment are moderately related suggesting that the items tend to measure aspects of a common phenomenon. Moreover, the Principal Component Analysis presented in Table 11 provides preliminary empirical support that the four-items combine to form a simple structure that is interpreted as normative commitment. The inter-item reliability index shows a high level of consistency among the items suggesting that measurement error due to poor domain sampling or item difficulty does not impact response bias (Crocker & Algina, 1986). While continued psychometric studies are needed, these preliminary results are promising and provide empirical support for a five-item measure of normative commitment.

Normative commitment is bound in theoretical and empirical considerations of role theory (cf. Biddle, 1986). More specifically, normative commitment refers to a set of

expected behaviors induced by referent others and accepted by the individual. Within the framework of higher education, one's referent groups (e.g., family, teachers, and peers) typically establish the expected level of matriculation the student would achieve. Assuming that access to higher education and intellectual ability is present, educational role expectations are learned through experience. Moreover, referent pressures to conform to a given role are established through direct verbal communication, modeling and the maintenance of role boundaries leading to achievement. For example, a student who is high in normative commitment may have had parents actively involved in their educational preparation with communication centered on college matriculation rather than immediate employment. Early signs of academic ability (e.g., standardized test) may create an educational expectation from teachers and peers that support enrollment into college preparation courses (e.g., calculus) rather than career preparation courses (e.g., wood craft). It is this representation of normative commitment that suggests differences may exist based upon parent education level. Indeed, the results of the MANOVA supported the hypothesis showing that second-generation students score higher on normative commitment relative to their first-generation counterparts. This issue will be further developed in a later section.

Relative to research on persistence, students high in normative commitment should be less likely to "drop-out" of higher education, attend classes and engage in self-regulation behaviors leading to the goal of attaining a college degree. Moreover, to the extent that there is referent pressure to attain a degree at a particular college or university, the likelihood of transferring courses between institutions is likely to be low.

Continuance Commitment

Continuance commitment, as examined in this study, refers to a psychological bond to higher education based upon the lack of alternatives or the cost-benefit comparison associated with continuing one's enrollment. From this perspective, the student will remain enrolled in college unless something of higher value is presented (e.g., employment).

The correlations presented in Table 5, the results of the Principal Components Analysis presented in Table 13 and the high level of inter-item reliability suggest support for a four-item measure of continuance commitment to education. Borrowing from the organizational behavior literature, measures of continuance commitment have been shown to predict satisfaction, citizenship behaviors and turnover (e.g., Meyer, Allen & Smith, 1993; Mathieu & Zajac, 1990). Extrapolating these findings to the educational setting, one could argue that students high in continuance commitment are more likely to seek alternatives and engage in behaviors that marginalize educational potential. They may be more likely to engage in behaviors such as absence from class or minimize their preparation time outside the classroom. Students scoring high on the continuance commitment scale presented in this study will have a higher likelihood of being placed on academic probation. Finally, students high in continuance commitment are "at-risk" of ultimately withdrawal from the institution.

First-Generation Students

Those college students whose parents did not attend higher education (e.g., first-generation students) have been shown to be at risk for college dropout (e.g., Billson &

Terry, 1982), have lower academic self-efficacy (Hellman & Harbeck, 1996) and have difficulty negotiating role expectations between family and school (London, 1992).

Past operationalizations of educational commitment have asked students the highest degree they plan to attain. Considering that the students are already enrolled in college when asked this question, they are likely to mark relatively high levels of planned educational attainment. Although second-generation students might plan for higher levels of educational attainment, this operationalization provides no indication as to what influences their enrollment decisions. The multidimensional educational commitment scale presented in this study provides researchers the opportunity to further clarify factors that influence student enrollment behaviors.

Given the high value society tends to place upon degree attainment there was no justification for hypothesizing differences between first- and second-generation students relative to affective commitment. By being enrolled in college, both groups have obviously placed some emotional value to their education. This hypothesis of no difference was supported by the results of the MANOVA. Specifically, no significant difference was present between first- and second-generation students in their level of affective commitment.

While the MANOVA results are important, the use of the two groups suggests a possible restricted range of individuals already enrolled in college. That is, findings for this study include only those individuals who had negotiated their time and resources to attend higher education rather than the entire range of those who could be classified as either first- or second generation students depending upon the education level of their parents. As a result, correlations are restricted to a sub-population that may or may not be

reflective of the entire group. To obtain a better understanding of the relationship between parent education level and affective commitment, future research might consider administering the affective educational commitment scale to high school students.

Although it is argued that US society places a high economic value on higher education, the 1990 US Census indicates that only a small minority (approximately 25%) of the population attains a college degree. Furthermore, London (1992) provided qualitative evidence that first-generation students must often navigate conflicting cultural roles that occasionally receive hostile psychological pressure from family members when they present themselves as college students. Conversely, second-generation students have been continuously exposed to the high value their family has placed on higher education (Fallon, 1997). These students were expected to engage in behaviors consistent with their matriculation to higher education (i.e., early placement testing, touring colleges, visitations with school councilors, etc.).

From these perspectives normative pressures were expected to be higher for second-generation students compared to first-generation students. The results of the MANOVA and subsequent discriminant analysis provide empirical support for this phenomenon. Moreover, these findings provide empirical support to London's (1992) qualitative findings regarding the influence and support of referent others relative to enrollment in higher education among first-generation students.

Following the discussion on affective and normative commitment among first-generation students, it was hypothesized that this group would score higher on continuance commitment compared to their second-generation counterparts. However, the MANOVA results did not support this hypothesis. Reflecting on this finding with

regard to the demographic characteristics of the sample used in this study, most are considered non-traditional "adults" who are likely employed and have already negotiated job and family schedules to attend college. To the extent that this is true, future studies may need to consider alternative methodological designs to clarify the relationship between continuance commitment and first-generation students.

Implications for Researchers

The results presented throughout Chapter 4 provide empirical support for a multidimensional measure of education commitment. Specifically, the results presented in this study provide preliminary evidence that the multidimensional educational commitment scale has acceptable levels of inter-item reliability. Additionally, evaluation of the items developed to measure this multidimensional construct by experts suggest a high level of content validity. The simple structure that was achieved for the retained 14-item measure and subsequent group comparisons present preliminary evidence of a valid internal structure. These preliminary estimates of reliability and validity provide a promising measure of educational commitment that can aid researchers in their studies of student attitudes and behaviors.

While these preliminary psychometric properties are promising additional studies are needed to either replicate their structure (e.g., factoral invariance) or offer refinements. Specifically, a longitudinal design is needed to explore the test-retest reliability of the multidimensional educational commitment scale. Further, this type of study could provide a path analytic test of Tinto's (1975) model of student persistence that use of the multidimensional nature of commitment to better clarify important predictors of specific enrollment behaviors among college students. Tinto's (1975)

model of student persistence relies on commitment as the immediate precurser to persistence. Clearly most of the empirical interest in Tinto's model has been on social and academic integration. Currently there is little empirical agreement on how these constructs impact commitment.

It might be easily argued, however, that as students become integrated their affective level of commitment would increase as role identities are developed and strengthened. Additionally, it seems reasonable that as integration takes place over time, normative commitment might also increase as referent groups begin to shift to college related cohorts. Finally, it is argued that continuance commitment, as measured in this study, should decrease. It is possible that a positive link could be established but the researcher must be careful that their interpretations are not a result of the cost associated with leaving rather than integration. For example, a Junior in Psychology may have marginal levels of academic integration but choose to persist through introductory statistics, research methods and experimental design because they have invested a great deal of time; thus changing majors would have too high a cost (e.g., additional time to degree completion).

If future studies replicate the psychometric properties of the multidimensional structure of educational commitment presented in this study, the ability to add clarity to student enrollment behaviors will be greatly improved. It is important to begin a series of construct validity studies to further establish antecedents and consequences (e.g., nomological net) of educational commitment and further our understanding of college student matriculation.

A final note on future research needs acknowledges the importance of a multidimensional measure of educational commitment, yet suggests that researchers begin to examine the question, "committed to what?" For example, enrollment management specialists are typically concerned with recruitment and retention issues. However, the current measure focuses on the student's commitment to attending college regardless of institution or location. Therefore, researchers would provide additional clarity to theory and practice by estimating the commitment to attaining a degree among college students as well as foci of that commitment (Mathieu & Zajac, 1990).

Implications to Practitioners

To the extent that the results presented in this study support the argument that educational commitment is a function of three distinct, yet possibly related dimensions; and that the items developed reflect a reliable and valid measure of these dimensions, then several implications to practitioners deserve consideration. First, Tinto's (1975) model is specifically concerned with student retention. To the extent that policy makers agree that retention of students is important for citizenship, economic development, and personal growth, then improvements in our ability to predict student enrollment behaviors deserves attention. The psychometric results presented in this study provide empirical support for an educational commitment scale that could clarify our understanding of why students attend higher education and eventually matriculate to a degree.

Limitations

Several limitations should be considered. First, the methodological design for this study reflects a cross-sectional pencil and paper type survey design that did not employ longitudinal comparisons let alone randomization or treatment manipulation. Indeed, this

was a psychometric study primarily concerned with evaluating preliminary estimates of the reliability and validity of a multidimensional measure of educational commitment. Additionally, the subjects sampled for this study represent a single institution located in a rural community in a southern plains state. Therefore the findings presented may not generalize to other geographical locations or other institutional Carnegie classifications. While the assumptions of linearity, homogeneity of variance and homogeneity of covariance were met, multivariate normality is an issue that deserves continued evaluation. Finally, the goal of the Principal Component Analyses presented in Chapter 4 was that of simple structure in presenting a three dimensional profile of educational commitment. It is possible that refinement and the inclusion of additional items may yield important new factors for normative and continuance commitment. Ultimately, replication and refinement of the multidimensional education commitment is needed to establish this construct as an important contribution to our understanding of student behavior.

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APPENDIX A

IRB APPROVAL FORM

Oklahoma State University
Institutional Review Board

Protocol Expires: 2/5/03

Date: Wednesday, February 06, 2002 IRB Application No ED0268

Proposal Title: DEVELOPMENT OF A MULTI-DIMENSIONAL EDUCATIONAL COMMITMENT SCALE

Principal Investigator(s):

Chan Hellman
4925 S. Narcissus
Broken Arrow, OK 74011

Janicie Miller
313 Willard
Stillwater, OK 74078

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

Dear PI :

Your IRB application referenced above has been approved for one calendar year. Please make note of the expiration date indicated above. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved projects are subject to monitoring by the IRB. If you have questions about the IRB procedures or need any assistance from the Board, please contact Sharon Bacher, the Executive Secretary to the IRB, in 203 Whitehurst (phone: 405-744-5700, sbacher@okstate.edu).

Sincerely,

Carol Olson

Carol Olson, Chair
Institutional Review Board

VITA

Chan M. Hellman

Candidate for the Degree of

Doctor of Philosophy

Thesis: DEVELOPMENT OF A MULTI-DIMENSIONAL EDUCATIONAL COMMITMENT SCALE

Major Field: Educational Psychology

Biographical:

Education: Graduated from Helena-Goltry High School, Helena, Oklahoma in May 1983; received Bachelor of Science degree in Psychology from Northwestern Oklahoma State University, Alva, Oklahoma in December 1988. Received Master of Arts degree in Experimental Psychology from the University of Central Oklahoma, Edmond, Oklahoma in May 1994. Completed the requirements for the Doctor of Philosophy degree with a major in Educational Psychology at Oklahoma State University in May 2002.

Experience: Currently employed by Rogers State University as Director of Institutional Research. Previously served as Division Chair of Liberal Arts and Community Services at Tulsa Community College. Beginning in Fall 2002 will serve as Assistant Professor for the Department of Human Relations for the University of Oklahoma.

Professional Membership: Oklahoma Association for Institutional Research and Planning.