

A DESCRIPTIVE ANALYSIS OF DIFFERENTIATED
PATTERNS OF DECISION-MAKING IN CHOICE OF
EDUCATIONAL MAJOR

by

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Dissertation Submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF EDUCATION

in

Community College Education

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May 28, 1986

Blacksburg, Virginia

9-9-86 10-30-86
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(ABSTRACT)

Undecidedness of choice of major field of study for undergraduates is a prevalent condition in higher education and represents a problem for academic advisors who may be unable to offer the best assistance to students uncertain of their educational plans. Little is known of the consequences for academic advising programs of such student undecidedness. This study employed an exploratory method designed to obtain information on students' patterns of decision-making regarding major field choice with a sample of university students who initially enrolled in a medium-sized, public university in Southwest Virginia in the Fall 1981 and a sample of community college students who transferred to the university in the Fall 1983 by (a) using student records to identify the major fields selected by undecided students, (b) analyzing differences between "undecided" students and two other groups of students: those who changed majors several times (multiple changers) and those who declared a

major and never changed (decided), and (c) measuring the extent to which students perceived certain factors to be influential in the selection of a major field of study by using a researcher-constructed Senior Perception of Major Field Questionnaire. The Internal-External Locus of Control Instrument was used to assess the relationship between certain patterns of decision-making with regard to major field and locus of control.

Major findings of this study include:

1. Undecided students do not appear to differ in any important way from decided or multiple change students. Their lack of initial commitment to a major does not distinguish them, especially in any way associated with negative consequences in higher education, from students who were committed to a decision.

2. Interest in major field was the most important influence in choice of major field.

3. No conclusions were possible regarding differences between the student types in the community college transfer sample because of the small number of subjects classified as undecided.

ACKNOWLEDGEMENTS

I wish to acknowledge my sincere gratitude to those faculty members at Virginia Tech who provided support and guidance throughout my academic career at Virginia Tech.

My deepest respect and admiration is expressed to Dr. Don G. Creamer and Dr. Lawrence H. Cross who served as co-chairmen for my committee. I wish to thank Dr. Don G. Creamer for his interest in my academic and professional development, encouraging me to strive for nothing but the best, and being supportive of my study. I wish to thank Dr. Lawrence H. Cross for his patience, his genuine interest in me, his support and time, and his guidance during the research phase of the study.

I wish to recognize the special efforts and support of my committee members who contributed immensely through their guidance, their understanding of the research problem, and their scholarly recommendations. This recognition is extended to Dr. Thomas C. Hunt for his continued support, guidance, and encouragement at each stage encountered during my pursuit; Dr. Ronald J. Nurse for his empathetic understanding and support of the study; Dr. W. Robert Sullins for his support and faith in both me and the study; and Dr. Charles A. Atwell for his advice, support, and encouragement throughout my academic career at Virginia Tech.

I wish to extend special recognition to my Vice President for Academic Affairs, Dr. David Moore, who supported the completion of my program and who recognized the special problems which I encountered in my dual role as administrator and student. Dr. Moore's patience and understanding were immeasurably valuable during my doctoral program.

Recognition is also given to Dr. James Hartman for his relentless support and encouragement throughout the study, Dr. Fletcher Carter who offered his support, advice, and assistance in preparing the data files for this study, and Dr. Michael Aamodt who assisted me in writing and debugging computer programs. Their assistance has proven to be invaluable.

Tribute is extended to my parents, _____ and _____ for their prayers, patience, understanding, and encouragement. I am also grateful to my sisters, _____ and to my brothers, _____ and _____, for their understanding, encouragement, and patience during my many absences while completing my study. Tribute is also extended to my grandmother, _____ who has waited a long time for this moment.

A final tribute recognizes the willing sacrifice of time and patience from my husband, _____, who encouraged my doctoral pursuit without question, who understood the

problems and obstacles I encountered; who was available when I needed a friend; and who assisted in typing and proofreading throughout the duration of the project. His support and assistance has been invaluable to me during the pursuit of this degree.

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CHAPTER I
INTRODUCTION

Faculty and administrators are increasingly concerned about declining enrollments and having to compete with other institutions for students in American higher education. This concern over changing enrollment patterns has been responsible, in part, for the resurgence in academic advising activities on college campuses. The purposes of higher education cannot be met without serving students and meeting their educational needs. Some of these needs are addressed through academic advising, which include efforts to assist students to develop educational plans, select appropriate courses, evaluate progress toward established goals, and utilize support services (Crockett, 1984). But it is often difficult for institutional support services, such as academic advising, to help students meet academic goals if students express uncertainty of educational goals.

The number of students entering institutions of higher education undecided about their major field of study varies from 22% to 50% and the percentage of students changing their majors at least once after entering institutions of higher education varies from 50 to 70 (Gordon, 1984; Titley & Titley, 1980). Undecidedness is associated with many factors including fear of displeasing parents and friends,

lack of vocational identity, informational deficits, and lack of developmental skills (Baird, 1967; Gordon, 1984). Parental desires often conflict with the decision-making process of students who are unable to separate their own needs and wishes from the "shoulds" and "oughts" of others (Gordon, 1984; Grites, 1981). Undecided students may feel inadequate or unprepared for the college experience if they have friends who know exactly what they want to do with the rest of their lives (Grites, 1981). Students may lack vocational identity if they desire well paying jobs but have interests or abilities that would tend to place them in low paying jobs. Undecided students may have informational deficits regarding their own personal characteristics, such as values, goals, interests, abilities, and needs, or about the academic areas that are available for study on a given campus, or about occupational areas. Other students may have sufficient information upon which to base a decision, but they lack appropriate decision-making skills and are therefore unable to formulate a choice (Gordon, 1984).

At what point, if at all, in the undergraduate experience does lack of decision hinder a student? What are the implications of student undecidedness for academic or career advising programs? These questions have not been addressed adequately by the literature because not enough is known

about undecided students beyond the freshman year to determine whether lack of decision constitutes a problem for the student. The problem is that too little is known about the educational consequences of undecidedness with regard to choice of major field to enable academic advising program leaders to ensure proper guidance to students. The available information on academic advising does indicate that lack of decision constitutes a problem for advisors and for individuals involved in student programming (Chase & Keene, 1981; Foote, 1980; Gordon, 1982; Grites, 1981; Titley & Titley, 1980). Various research studies have concluded that undecidedness is a problem for the student, but the consequences of undecidedness are vague (Ashby, Wall, & Osipow, 1966; Baird, 1967; Foote, 1980).

Whether or not undecidedness is a problem depends on the orientation of the observer. If the observer is career oriented, then undecidedness with regard to career represents an educational problem. Individuals involved in career education find it difficult to provide services for students undecided about a career. Career education emphasizes planning and early decision-making. Students are urged to develop skills and to find a relationship between the academic major and the world of work (Harren, Daniels, & Buck, 1981). However, if the observer holds a more classical liberal arts view that honors general education princi-

ples such as liberalizing the human spirit by emphasizing broad abstractions and basic principles rather than preparation for work, then undecidedness may not be seen as a problem, but rather as a virtue.

Most educators who work directly with academic advising view undecidedness to be something of a problem, although the severity of the problem has not yet been determined. This study examined student decidedness beyond the freshman year to determine the consequences of varied patterns of decision-making about selection of a major field of study.

STATEMENT OF THE PROBLEM

Too little is known about important educational consequences of student undecidedness about choice of major field of study to enable academic advising program leaders to ensure proper guidance to all students.

PURPOSE

This study is a descriptive study designed to provide information for academic advising program leaders on the possible consequences of undecidedness. This study was designed to: (a) synthesize the extant literature with special emphasis on the research literature related to undecidedness and academic advising; (b) identify major fields

of study selected by undecided students; and (c) analyze differences between "undecided" students and two other groups of students: those who changed majors several times (multiple changers) and those who declared a major and never changed (decided). For ease of reference, these three groups (decided, undecided, and multiple changers) will be referred to hereafter as classification types. The extent to which students perceived certain factors to be influential in the selection of a major field was also investigated.

RESEARCH QUESTIONS

The following questions guided the research:

1. What major fields are selected initially by all three classification types?
2. What major fields are entered by those who change their major fields?
3. What major fields are left by those who change major fields?
4. How frequently do the undecided and multiple change students change major fields of study?
5. Are there mean differences between the three classification types with regard to high school rank, SAT verbal scores, SAT quantitative scores, hours attempted and hours passed?

6. Are there significant differences between the three classification types with regard to proportional representation on the following variables: gender, race, number of terms enrolled, number of terms employed, enrollment/residence status?
7. Are there mean differences between the three classification types with regard to locus of control and perceptions about what factors influenced choice of major field?

DELIMITATIONS

This study was conducted using data obtained in a medium-sized, public university in Southwest Virginia and was limited to native students who entered initially in the Fall 1981 and community college transfers who entered in the Fall 1983.

ORGANIZATION OF THE STUDY

Chapter One includes an introduction to the study, the statement of the problem, purpose, research questions, delimitations, and organization of the study. Chapter Two contains the extant literature with special emphasis on the research literature which pertains to undecidedness and academic advising. Chapter Three is used to describe the research method. Chapter Four is composed of the findings

from the study and some discussion of their implications. The summary, conclusions, and recommendations are presented in Chapter Five.

CHAPTER II

REVIEW OF LITERATURE

Undecidedness about choice of major field is a prevalent condition on college campuses today. Undecided students need assistance in planning academic programs, but academic advising or career program leaders are unable to offer the best assistance to students uncertain of their educational plans. An analysis of the literature on academic advising and undecidedness reveals two distinct conclusions. The first is that there is little doubt that student undecidedness constitutes a problem for advisors and for other individuals involved in academic advising or career programming. The second conclusion is that not enough is known about undecided students beyond the freshman year to determine whether lack of decision hinders the educational experience.

In this chapter, a review of the relevant literature is presented. The first section is concerned with the process of academic advising and the second with the condition of undecidedness. The third section is devoted to the extent to which locus of control may contribute to undecidedness.

Academic Advising

Although academic advising is considered to be a top

priority in institutions of higher education today, the concept of academic advising is not new to the field of higher education. Faculty performed academic advising informally in early colonial colleges and officially in 1876 at Johns Hopkins University (Grites, 1979). Today, the process of advising is performed by a wide range of personnel, requires access to a great deal of information, involves comprehensive academic and career planning, and influences almost every other institutional function (Grites, 1979).

The advising literature is replete with definitions and descriptions that focus on the interaction between the student and the educational program. Crockett (1978, p. 10) defined academic advising as "assisting students to realize the maximum educational benefits available to them by helping them to better understand themselves and to learn to use the resources of an educational institution to meet their special educational needs." Grites (1979, p.1) defined it as "a decision-making process during which students realize their maximum educational potential through communication and information exchanges with an advisor." These definitions and others in the literature support the contention of Habley (1984) that the advising process should be characterized by learning, growth, sharing, decision-making, and maximizing the higher education experience.

Educational planning is critical to a student's acade-

mic success. It is a process in which each college student is involved in self-assessment, exploring and integrating academic and career alternatives, and making decisions that are personally relevant to the present and the future (Gordon, 1984). From an institutional perspective, academic advising coordinates educational planning by assisting students to develop realistic goals, to accurately perceive needs and to match needs with appropriate institutional resources (Crockett, 1978).

Academic advising is performed by faculty on most college and university campuses yet, the complexities of college curricula and the world of work today have forced the adoption of specialized advising models. O'Banion's comprehensive model of academic advising pioneered formalized advising models (Polson & Cashin, 1981). O'Banion suggested that academic advising was a logical sequence of events which included the exploration of life goals, exploration of vocational goals, program choice, course choice, and course scheduling (1972). Dameron and Wolf's (1974) model extended the O'Banion model by suggesting that academic advising should be incorporated into the overall student services program by utilizing professional counselors to assist in exploring goals and faculty and student advisors to assist in scheduling courses and selecting courses and programs. Grites (1979) made an important contribution to the O'Banion

model by adding four additional dimensions, including providing an accurate description of the institution to prospective students, planning through orientations, monitoring student progress toward educational goals and initiating follow-up contacts with students after graduation. Crookston's (1972) and Titley's (1978) models offer creative thoughts regarding the advising process and may be considered legitimate extensions of these models. In Crookston's model, advising is described as a teaching function and the teacher as advisor stimulates a positive, shared, active approach to both intellectual and interpersonal learning activities (Grites, 1979). Titley's model is organized according to levels of decision-making and types of student needs. Titley examined the characteristics of each of the emergentive, innovative, inventive, productive, and expressive levels of decision-making as they affect each of the intellectual, emotional, social, physical, and spiritual needs of the student (Polson & Cashin, 1981).

These models were designed to enhance the advising process for students, because academic advising involves more than signing a course schedule.

Undecidedness

The term undecided is an administrative term used to classify students who lack a major field of study. Students

who lack a major field of study are called undecided, undeclared, exploratory, and open option (Baird, 1967; Gordon, 1984). Students are undecided in varying degrees. Some students are completely undecided and have absolutely no academic plans or career goals; some are tentatively undecided and are considering several choices; still others are committed but are not personally ready to formalize a choice (Grites, 1979, p. 36). Undecided students need a great deal of academic and career advising. Good academic advising is based on the premise that advisors can never know too much about the students they are advising (McLaughlin & Starr, 1982). Program leaders could assist undecided students better in the advising process if additional information existed in the literature on the undecided student. The literature on undecidedness regarding major field is inadequate and the studies which are in existence are specific to certain institutions. This makes it difficult to generalize about undecided students since they are such a diverse group (Gordon, 1984).

A great deal of confusion exists in the literature on whether undecided students have characteristics which distinguish them from the student who enters initially decided about a major field of study (Harman, 1973). Many authors state that there is no difference between the decided and undecided student and have conducted studies on entering

freshmen to prove this point. Ashby, Wall, and Osipow (1966) and Baird (1967) observed no differences between decided and undecided freshmen on college achievement or background variables such as family income or parental education. Sheppard (1971) concluded that there is very little difference between decided and undecided freshmen on measures of academic achievement during the year. Sharf (1967) stated that undecided students are no different from decided students on the amount of information needed to make a decision, on the time taken to make a decision, nor on the certainty of their choices in the task. Rye (1972) conducted a study of entering freshmen at Oregon State University and suggested that there are few characteristics which readily identify entering freshmen with regard to certainty or uncertainty about choices of academic majors. The primary difference according to Rye, appears to be the degree about certainty of choice. An analysis of the available literature on undecidedness leads one to suspect that any real differences between decided and undecided students are difficult to find during the freshman year, but may appear as students progress through their academic careers (Foote, 1980).

Researchers who have observed differences between decided and undecided students have conducted studies for over a period of at least eighteen months. Chase and Keene

(1981) conducted a two year study and concluded that undecided students produce significantly lower levels of grade achievement and that grades get lower with each semester of undecidedness. Chase and Keene (1981) concluded that undecided students take fewer hours of course work than decided students. Elton & Rose (1971) noted that undecided students have a higher attrition rate than those committed to a major field, achieve lower grades, and accumulate fewer credit hours over a number of semesters. Foote (1980) concluded in a two year study, that undecided students do not persist in college at the same rate as decided students and are less successful in coursework. Peterson and McDonough (1985) noted that undecided students have more identity concerns, tend to leave college at a faster rate than decided students, are more anxious, more dependent, and have a greater need for career information. Additional studies by Titley and Titley (1980) and Gordon (1981) indicate that undecided students are less willing to take risks, lack knowledge of self, decision-making skills, work experience, and knowledge about occupations. Appel, Haak, and Witzke (1970) identified several factors which affect the decision-making process such as lack of information, goals, and values. In a seven year study of entering undecided freshmen, Gordon (1982) stated that undecided students selected a wide range of occupational areas such as business, health professions,

social services, education and law. These occupational areas remained constant over a seven year period and consistent with the occupations reported in Astin's (1979) national survey of freshmen students.

The research studies discussed previously indicate that there are no noted differences between undecided and decided students during the freshman year. However, the research studies which have important consequences in higher education suggest that differences possibly exist between the undecided and decided student beyond the freshman year. The literature on academic advising has failed to reveal variables which predict undecidedness, but it has been useful in suggesting factors which inhibit the decision-making process such as pressure from parents and friends, lack of information, lack of decision-making skills and lack of vocational identity. Often, these factors make it difficult for academic or career advising program leaders to advise or implement programming for undecided students.

Undecidedness appears to be a problem for academic advising and career program leaders, but it may not be a problem for those individuals involved in liberal arts education. This study recognizes that other perspectives should be considered when discussing the state of undecidedness with regard to major field.

Career education is used synonymously with the term

preparation for work. Education as preparation for work is one of the goals of higher education. The United States Office of Education's definition of work is "conscious effort whose primary purpose is either coping or relation, aimed at producing benefits for oneself and others" (Hoyt, 1979, p.4). Three words in this definition are crucial to the concept of career education: conscious which means the individual chose to engage in the activity rather than being forced to do so; effort which means some difficulty was involved in carrying out the task; and producing which means some clear outcome was sought (Hoyt, 1979, p. 5). Students need to be assisted by personnel in institutions of higher education to find work as a meaningful part of their lifestyle. This can be accomplished by advising or counseling students to select a major field as soon as possible (Figler, 1979; Hofman & Grande, 1979; Hoyt, 1979). Selecting and completing a major field has a great impact on a student's chances for employment, potential earning power, and the level of occupational prestige that can be obtained as a result of that occupation (Smith, 1979).

The approaches to career education described in the literature include self-exploration, assessment, exploration of the world of work, decision-making, and formation of tentative career plans and goals (Osipow, 1983; Seligman, 1980). The concept of career education is similar to acade-

mic advising. Both place emphasis on early decisions, assist students to plan academic or career programs and both are concerned with the process which affect choice and the eventual outcome. Students who are undecided present a problem for individuals involved in career planning because career education emphasizes the factors which undecided students lack such as declaration of a major field and decision-making skills.

Undecidedness may not be a problem for either the student or individuals involved in liberal arts education, because the goals of liberal education are different from career education and academic advising. Liberal arts education is best described as that education which liberates a person to be truly human (Hesburgh, 1981). In other words, a student who receives a liberal education should be able to think critically, formulate abstract concepts, learn how to learn, think independently, exercise self-control, demonstrate mature, social, and emotional judgement, participate in and enjoy cultural experience and hold equalitarian, liberal, pro-science, anti-authoritarian, values and beliefs (Winter, McClelland, & Stewart, 1981; Weber, 1983). These skills enable a person to become a nonspecialist with the requirements necessary for lifelong learning.

Advocates of liberal arts education believe that learning to think critically is not a feature of career educa-

tion or specialized fields of study. Most how-to-do-it courses restrict thinking by teaching students to do a specific task (Hesburgh, 1981). A student's major or career is concerned only with means and techniques rather than ends and purposes. According to Zingg (1983), "a liberal arts education represents more than technique and the sharpening of various "marketable" proficiencies" (p. 213). "It must strive to develop within students, intellectual adaptability, an informed sense of values, and historical perspective. A liberal arts education represents the essence of preprofessional education. It is through the liberal arts that one can learn the distinction between a career, that is, the work in which one chooses to invest one's life, and basic employment and wage earning" (Zingg, 1983, p. 213). Students should be encouraged to have many different alternatives which need not be related to the major. Advocates of liberal education believe that the skills students receive from a liberal arts education such as communication, problem solving, critical analysis, and human relations can be applied to a variety of careers (Figler, 1979; Powell, 1973; Weber, 1983). Whereas, the skills learned through vocational training pertain only to a single future occupation. Undecidedness is not considered a problem from the liberal arts perspective because students develop skills which can be utilized for a lifetime.

Undecidedness is a prevalent condition which exists on most college campuses. Research studies indicate that undecidedness exists in four year institutions, both public and private, and comprehensive and research-oriented (Crockett, 1978). Nothing exists in the literature on undecidedness in community colleges, although a number of community college students transfer to four-year institutions undecided about major fields of study. The literature does not address whether undecidedness differs across institutional types based on enrollment, programs, or geographical location.

Locus of Control

Undecidedness may be caused by a number of factors such as lack of vocational identity, fear of displeasing parents and friends, informational deficits, and fear of success. Locus of control is an example of a variable which may influence the decision-making process. This section includes a review of research on locus of control and decision-making related to selection of major field.

Locus of control is a personality construct based on social learning theory (Rotter, 1954). Locus of control describes the extent to which an individual possesses or lacks power over what happens to him or her (Lefcourt, 1966). The locus of control construct has two dimensions: internal and external. Lefcourt (1966) defined internal

control as the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control. External control, on the other hand, is the perception of positive and/or negative events as being unrelated to one's own behavior in certain situations and beyond personal control (Lefcourt, 1966).

A number of studies have investigated locus of control of undergraduate students and observed that undecided students tend to score higher on the Internal-External Scale than decided students, thus making them more external (Cellini, 1978; Kazin, 1977; Taylor, 1979). Undecided students who are externals believe that they have no control over their own destiny and that luck, fate, or powerful others are the principal determinants of their behavior. Kazin (1977) noted that undecided students who are external lack knowledge about their own abilities and interests, and lack occupational information on which to make a decision. Research studies have investigated locus of control of undergraduate students and concluded that undecided students tend to be external, need more guidance, academic advising, and vocational information before deciding upon a major field (Hartman & Fuqua, 1983; Prociuk & Breen, 1977; Wheeler & Davis, 1979). The literature on locus of control does not consider externality to be the preferred method of functioning for individuals. Lefcourt (1966) reported internality

to be the most effective method of functioning and subsequent research studies support this contention. Does locus of control differ for groups of graduating seniors with different patterns of major fields?

Research on locus of control relevant to this study suggest that internals as opposed to externals are more confident in their own judgment, make greater use of available information in decision-making, and require longer decision times when the difficulty of decision-making increases (Davis & Phares, 1967; Lefcourt, 1976). Wheeler and Davis (1979) investigated external and internal locus of control in the selection of academic majors and concluded that students holding internal expectancies are most cautious in their choice. Internals seek and apply more information, tend to be more considerate in their decisions (Davis & Phares, 1967; Procuik & Breen, 1977), have achieved a more healthy psychological adjustment than externals (Lefcourt, 1966; Rotter, 1966), are less likely to seek counseling (McDonald, 1971), and are more likely to cope with situational problems when they occur (Lefcourt, 1966; Rotter, 1966).

Other studies have noted that internal students are better prepared to improve their situation through active striving, demonstrate better personality and emotional adjustment, use information more productively to make a

decision, and are less manipulated, or coerced into a decision (Feldman, Saletsky, Sullivan, & Theiss, 1983; Husa, 1982; Lefcourt, 1966; Procuik & Breen, 1977). Behuniak and Gable (1981) researched locus of control and selection of major field over a period of four years and concluded that as students approach graduation, their perception of control becomes more internal, thus affecting their decision. Andrisoni and Nestel (1976) noticed a similar tendency among individuals in various occupations. The perception of increased competencies with approaching graduation can significantly affect locus of control (Behuniak & Gable, 1981). The kind of choice and firmness of the decision may be a function of locus of control. If locus of control is a function of decision-making, advisors and counselors should seek to increase internality by implementing decision-making programs (Bartsch & Hackett, 1979), information forums (Procuik & Breen, 1977), and self-counseling workshops (Husa, 1982). The results of each study indicated that an increase in internality was successfully achieved when students were exposed to decision-making techniques. Increasing internality in students may assist academic advising program leaders to effectively advise undecided students, if locus of control is a function of decision-making.

Summary

This chapter contains a review of related literature on academic advising which includes the process of advising and the theoretical advising models; student undecidedness during the freshman year and beyond; perspectives on the condition of undecidedness from the career education and liberal arts education viewpoint; and locus of control as a correlate of decision-making.

CHAPTER III

METHOD

This chapter is an explanation of the research design, population, instrumentation, and statistical procedures used to analyze the data. This study was designed to obtain information on student undecidedness about choice of major field by describing, analyzing, and interpreting data collected from student records and from questionnaires and was conducted in three phases.

In Phase I, student records were used to classify the students as either "decided," "multiple changer," or "undecided." A decided student was one who listed a major field decision upon initial enrollment and never changed the decision. A multiple change student was identified as one who initially listed a major field but changed the decision one or more times. An undecided student was one who listed no major field upon initial enrollment. These students constituted the group of primary interest in this study. It should be noted that undecided students in this study ultimately declared a major field, and some changed major fields one or more times. The latter students differed from the multiple change students because they initially entered the university uncommitted to a major field of study. Student records also were used in Phase I to identify the major

fields entered and left by undecided and multiple change students. Collectively, these three groups will be referred to hereafter as classification types.

Phase II focused upon a comparison of these three classification types with regard to the demographic information contained on the student record files. These data included such variables as race, gender, grade-point-average, enrollment status, high school rank, SAT quantitative scores and SAT verbal scores.

Phase III consisted of administering a questionnaire to representative samples of each of the three types in order to measure the extent to which students perceived certain factors to be influential in the selection of a major field. The questionnaire incorporated Rotter's Internal-External Locus of Control Instrument (Rotter, 1966).

Phase I: Establishment of Classification of Types and An Analysis of Major Fields

The primary purpose of this study was to provide a descriptive profile of the "undecided" student and compare these students to the "decided" and "multiple change" students. The data for this study were obtained at a medium sized, public comprehensive university in Southwest Virginia. Access was granted to the computerized students' records.

The sample consisted of 1,384 students who initially entered the university as freshmen in the Fall 1981 and 115 community college students who transferred to the university in the Fall 1983. The first step was to assign each of these students to one of the classification types with regard to choice of major fields. Once each person was so classified, his/her records were checked over time to identify the major fields each student entered and left during his or her attendance at the university. These major fields were then tabulated in several different ways for each of the three classification types. It was of interest in this phase to determine whether certain fields were entered (left) more (or less) frequently than other fields by the three classification types.

The research questions associated with this phase are listed below:

1. What major fields are selected initially by all three classification types?
2. What major fields are entered by those who change their major field?
3. What major fields are left by those who change their major fields?
4. How frequently do the undecided and multiple change students change major fields of study?

Phase II: Demographic Comparisons Across Classification Types

The files used to establish classification type also included designations of sex, race, grade-point-average, SAT verbal scores, SAT quantitative scores, and enrollment status. Additional variables such as high school rank, number of terms enrolled, employment, hours attempted, hours passed, and enrollment/residence status, were also available for each of the students. In the Fall 1984, the university changed from a quarter system to a semester system. While this is of no major concern to this study, it should be noted that for those variables averaged across terms such as enrollment/residence status, no distinction was made between quarters and semesters.

The above variables were compared across the three classification types in an effort to discern whether "undecided" students could be distinguished from their classmates on these variables. The research questions associated with this phase are listed below:

1. Are there mean differences among the three classification types with regard to high school rank, SAT verbal scores, SAT quantitative scores, hours attempted, and hours passed? One way analysis of variance was the statistical procedure used to determine whether significant differences

existed between the group means for each type with regard to the above mentioned variables. A post hoc comparison procedure (Scheffe) was used to identify significant differences among pairs of means when significant F ratios were observed for the ANOVAs.

2. Are there significant differences across the three classification types with regard to proportional representation on the following variables: gender, race, number of terms enrolled, number of terms employed, enrollment/residence status? A chi square test was used to determine whether differences in the proportions among the types were significant.

Phase III: A Survey of Student Perceptions

The personal perceptions held by students regarding choice of major field and the relationship of "decidedness" to locus of control were investigated in this phase. Specifically, an attempt was made to determine what factors students considered to be most influential in the selection of a major field and whether they would select the same major field if they had the choice to make again. To this end, a questionnaire was developed by the researcher. A

copy of the questionnaire is included in Appendix A along with the cover and follow-up letters mailed to the participants.

The first four questions on the questionnaire were used to cross-check the responses provided by the participants with data contained in the student record files. The questions concerned major field upon graduation, length of time in major, additional fields designated as major, and whether the student was ever classified as "undecided." The next eight questions consisted of items which assessed the extent to which selected factors influenced a student's choice of academic major. The factors were the influence of parental wishes, friends, work, interest in major field, reputation of department or faculty members, advice from high school counselors, and advice from personnel in the counseling and career planning center. Students were asked to indicate the extent to which they were influenced by each factor in choosing their major field using response options of: (1) none, (2) very little, (3) little, (4) much, and (5) very much. Students were asked to indicate the strength of their personal commitment to their major field. A one to five response scale was used with one indicating very weak commitment and five indicating very strong commitment. Finally, students were asked whether they would major in the same field if they were to do it over again. A one to five

response scale was used in this instance with one indicating very unlikely to experience regret and five indicating very likely to experience regret.

The Locus of Control Scale (Rotter, 1966) was appended to the Senior Perception of Major Field Questionnaire. This instrument was designed to assess the extent to which an individual perceives he or she lacks power over what happens to him or her (Lefcourt, 1966). The Locus of Control Scale (I-E Scale) was included in this study to determine whether "decidedness" was related to locus of control. The Internal-External Locus of Control Scale (I-E Scale) consists of 29 forced choice items of which six are filler items and are not scored. The I-E Scale was scored by counting the number of external responses. The possible score range therefore, was from 0 to 23. High scores indicate greater externality or reflect greater reliance on luck or fate, or some other agent of control lying outside the individual (Lefcourt, 1976). Low scores indicate greater internality or suggest belief in personal control.

Rotter's comprehensive review of the development, reliability, and validity of the I-E Scale revealed reasonably high internal consistency, and satisfactory test/re-test reliability (Rotter, 1966, p. 25). The Kuder Richardson (KR-20) procedure was used to compute the reliability of responses from this study sample. The

estimated reliability coefficient for this sample was .76, suggesting reasonable assurance of consistency of measurement. Reliability coefficients for the I-E Scale tend to vary from .65 to .79 (Harrow & Ferrante, 1969; Hersch & Scheibe, 1967; Joe, 1971; and Rotter, 1966) and the coefficient for this sample falls within this range.

Before the questionnaire could be mailed to the sample, the Human Subjects Committee at the university where the students were enrolled reviewed the instrument and agreed that the information was not threatening to the subjects, but that if questionnaire data were linked to student record information, consent from the subject was to be gained. This procedure was incorporated into the study design.

The questionnaire was mailed to the sample of students representing each of the three types on April 10, 1985. Each questionnaire contained an identification code to identify the nonrespondents to facilitate follow-up procedures. The first mailing was sent out fourteen days (April 24, 1985) after the initial mailing. A letter encouraging nonrespondents to complete the questionnaires was mailed with duplicate questionnaires containing the same identification code. On April 25, 1985, all of the nonrespondents were telephoned. On May 1, 1985, a final follow-up was conducted by mail.

The research question associated with this phase is

listed below:

1. Are there mean differences between the three classification types with regard to locus of control and perceptions about what factors influenced choice of major field?

CHAPTER IV
RESEARCH FINDINGS

Included in this chapter are analyses and findings based upon data collected from student record files and questionnaires. The results are presented in three parts corresponding to the three research phases of the study.

Phase I: An Establishment of Classification Types and An Analysis of Major Fields

A breakdown of the students by classification type at three points in time is provided in Table 1. It should be noted that the classification of students according to types was based upon information contained in student records across four years. Although "undecided" students could be distinguished from the other two types upon initial enrollment, it was not possible to distinguish between "decided" and "multiple change" students without tracing each student's record across the four years and noting any changes in major fields. Moreover, some of the "undecided" students changed their majors after they made their initial declaration, and thus might be considered "multiple changers" as well. However, the entries for the "undecided" type in Table 1 are limited to those who had not declared a major upon entrance to the university, regardless of whether

Table 1
 Breakdown of Classification Types at
 Three Points in Time

	Fall 1981 N	Fall 1983 N	Spring 1985 N (%)	Graduates 1985 N (%)
Four-Year Students				
Decided (Type I)	617	--	205 (33%)	143 (23%)
Multiple Changer (Type II)	569	--	408 (71%)	305 (54%)
Undecided (Type III)	198	--	92 (47%)	59 (30%)
Total	1,384	--	705 (51%)	507 (37%)
Transfer Students				
Decided (Type I)	--	79	52 (66%)	22 (28%)
Multiple Changer (Type II)	--	34	28 (82%)	14 (41%)
Undecided (Type III)	--	2	2 (100%)	1 (50%)
Total	--	115	82 (71%)	37 (33%)

they subsequently changed their major field. It is the student who has not declared a major that poses the special advising problem addressed by this research. Perhaps the most interesting aspect of Table 1 is the differences in persistence and graduation rates across the three classification types. Among the four-year students, the multiple changers not only have the highest percentage of students still enrolled at the end of four years (71%), but also have the highest graduation rates (54%), whereas, the "decided" students have the lowest persistence (33%) and graduation rates (23%). The same pattern is evident for the community college transfer students if the two undecided students are discounted. Although there is no basis for drawing a causal inference from archival data, it certainly is remarkable that higher graduation rates are observed among those who changed major fields of study.

The principal activity of Phase I was to trace the major fields enrolled in by each of the students across the years they were enrolled at the university. The purpose of this activity was to determine whether certain major fields were entered or left with distinctly different rates across the three classification types. Table 2 shows a count of the number of each type of student selecting each major field. It should be noted that the initial major field choices are listed for all three classification types, and

Table 2
 Count of Major Fields Selected by All Students According to
 Classification Types^a

Major Field Areas	Initial Choice		Second Major		Third Major		Fourth Major		
	Classification Types								
	D	UD	MC	UD	MC	UD	MC	UD	MC
Arts and Sciences									
Computer Science	37	6	25		19		9		1
Liberal Studies	5		16				6		
Library Science	2		4		1				
Humanities									
English	9		2	2	5	1	1		1
Journalism	26	5	15	1	11		6		
Speech	20	2	29	1	13		4		
Foreign Languages	8		1						
Philosophy	1						1		
Science									
Biology	32	4	32	1	10		2		
Chemistry	4	1	2		5		4		1
Geology	6	3	2	1	5				
Medical Technology	10	4	8		5		3		
Social Science									
Criminal Justice	17	10	9		19		2		
Geography	1	1		1	4		2	1	
History	5		7	1	11				
Political Science	20	2	13		12		1		
Psychology	25	16	28		9		5		1
Sociology	2	1	3	1	1		2	1	
Business									
General Business	36	14	51		9		1		
Business Finance	5		6	3	22		6		1
Business Marketing	17	13	14	1	47		9		2
Business Education	12	1	19		2				
Business Accounting	58	9	50	1	19		8		
Business Office Adm.	9	2	17	1	5		1		1
Business Management	62	5	29	2	45	2	18		
Economics	1		4	1	7		1		
Small Business Adm.	5		13		6				

(Table Continued)

^aD=Decided; UD=Undecided; MC=Multiple Changer

Table 2
 Count of Major Fields Selected by All Students According to
 Classification Types^a

Major Field Areas	Initial Choice			Second Major		Third Major		Fourth Major	
	D	UD	MC	UD	MC	UD	MC	UD	MC
Education									
Elementary Ed.	19	2	18	1	7		1		1
Early Childhood	26	6	23		13		2		2
Child Development	2	1							
Health & P.Ed.	15	2	10		11		1		
Home Economics	3		30		26		12		8
Social Work	17	1	16	1	11	1	10		1
Special Education	6		6		17		2		
Fine Arts									
Art	32	1	16		1				
Dance	5	3	5						
Design	18	3	13	1	3		7		3
Music	14	1	18		5		2		
Theatre	9	2	5		1				
Health Services									
Communication									
Disorders	11	2	5	1	8	1			
Community Health		1							
Nursing	77	6	33	1	12		3		
Recreation	7	4	6		6		7		
Undecided		66 ^b			27		1		
Totals	696	200	603	23	440	5	140	2	23

^aD=Decided; UD=Undecided; MC=Multiple Changer

^bStudents classified as undecided who never declared a major field.

subsequent choices are noted for both "multiple change" and for "undecided" students who subsequently changed their major fields. Inspection of Table 2 reveals that the popularity of initially selected majors is comparable across the three classification types with the exception of business management which is more popular than general business. The popularity shifts for multiple changers who selected a second major field. It appears that within the social sciences, criminal justice is more popular than psychology, and business marketing and business management are the favorites within the field of business. The totals of each column in Table 2 represent the number of undecided and multiple change students who selected major fields one or more times.

Table 3 contains a count of the number of each type of student leaving a major field after changing major fields one or more times. Inspection of Table 3 reveals that the major fields that the students left were not comparable across the three types. Although general business had the largest number of multiple change students leaving after changing for the first time, other major fields such as business accounting, home economics, and nursing had large numbers of multiple change students leaving. Table 3 shows a count of the number of each type of student leaving each major field. The totals for each column in Table 3 repre-

Table 3
 Count of Major Fields Left by Students According to
 Classification Types^a

Major Field Areas	First Change		Second Change		Third Change	
	Classification Types					
	UD	MC	UD	MC	UD	MC
Arts and Sciences						
Computer Science		21		10		
Liberal Studies		8		1		
Library Science		3				
Humanities						
English		2		2		
Journalism		12		5		
Speech		16				
Foreign Languages				1		
Philosophy					1	
Science						
Biology	1	22		3		1
Chemistry		2		3		
Geology	2	2		1		
Medical Technology	1	6		4		
Social Science						
Criminal Justice	1	9		3	1	3
Geography	1			1		
History		5		1		
Political Science		10				
Psychology	1	20		5		
Sociology		3		1		1
Business						
General Business	6	48	1	19		1
Business Finance		4		4		2
Business Marketing	3	13				2
Business Education		17				
Business Accounting	2	38		8		1
Business Office Adm.	1	14		3		
Business Management	1	21				1
Economics		2				
Small Business Adm.		4				

(Table Continued)

^aD=Decided; UD=Undecided; MC=Multiple Changer

Table 3
 Count of Major Fields Left by Students According to
 Classification Types^u

Major Field Areas	First Change		Second Change		Third Change	
	UD	MC	UD	MC	UD	MC
Education						
Elementary Ed.	1	13	1			
Early Childhood		17				1
Child Development						
Health & P.Ed.		6		1		
Home Economics		18		9		6
Social Work		13	1	1		
Special Education		6		4		2
Fine Arts						
Art		8				
Dance		3		1		
Design		11	1	6		1
Music		12		3		
Theatre	1	2				
Health Services						
Communication						
Disorders		1		1		1
Community Health						
Nursing	1	25	1	1		
Recreation		3		1		
Undecided				37		
Totals	23	440	5	140	2	23

^uD=Decided; UD=Undecided; MC=Multiple Changer

sent the number of undecided students and multiple change students who changed major fields one or more times.

Phase II: Comparing Classification Types in Terms of Student Records

Phase II was devoted to a comparison of the three classification types regarding variables contained in student records that were thought to be related possibly to membership in the three classification types. Before presenting the results of these comparisons, it is worth noting that the entire sample was predominantly white, with only 51 blacks represented among the 1,384 four-year students and only 1 black among the 115 community college transfer students. The sample was predominantly female with 79 percent female in the four-year and 51 percent female in the community college samples. There were no significant differences in race or gender across the three classification types.

A. Comparison of Student Status Variables

Number of Terms Enrolled

The undecided students in the sample were compared with decided and multiple change students to determine whether

differences existed in the number of terms enrolled. These data are presented in Table 4. A chi square test of independence revealed a significant relationship between type of student and number of terms enrolled among the students in the four-year sample. The multiple changers in the four-year sample had the highest percentage (66.4) of students enrolled for 9 terms in contrast to 33.9% of the decided and 44.9% of the undecided. The two undecided students in the community college transfer sample attended every term. It should be noted that nine terms was the maximum number of terms that the four-year students could be enrolled. The data support the finding reported in Table 1 to the effect that more of the multiple change students persist over the four years than the other two classification types.

Number of Terms Employed

The undecided students in the sample were compared with the decided and multiple change students to determine whether differences existed in the number of terms employed. A chi square test of independence revealed a significant relationship between type of student and number of terms employed. The undecided and decided groups were very

Table 4
 Number of Terms Enrolled for Four-Year and
 Community College Transfer Students by Type

Four-Year									
Number of Terms Enrolled	Type								
	Decided		Multiple Changer		Undecided		Total		
	N	%	N	%	N	%	N	%	
9 Terms	209	33.9	378	66.4	89	44.9	676	48.8	
8 Terms	392	63.5	163	28.6	99	50.0	654	47.3	
7 Terms	16	2.6	28	4.9	5	2.5	49	3.5	
6 Terms	0		0		5	2.5	5	.4	
Total	617	100.0	569	100.0	198	100.0	1,384	100.0	

Chi-Square = 176.72, $p < .05$

Community College Transfers									
Number of Terms Enrolled	Type								
	Decided		Multiple Changer		Undecided		Total		
	N	%	N	%	N	%	N	%	
3 Terms or More	56	70.9	30	88.2	2	100.0	88	76.5	
2 Terms	21	26.6	4	11.8	0		25	21.7	
1 Term	2	2.5	0		0		2	1.7	
Total	79	100.0	34	100.0	2	100.0	115	100.0	

similar in number of terms employed with approximately 50% in each group not working at all. In contrast, the multiple changers had only 40% not employed. The two undecided students in the community college transfer sample were not employed any terms. The number of terms employed and the percentage of students in each type for four-year and community college transfer students are shown in Table 5.

Enrollment/Residence Status

Enrollment (full- or part-time) and residence (commuter or resident) statuses were used in this study to classify students as full-time resident, full-time commuter, or part-time commuter. Students enrolled in at least 12 hours while living in the residence halls were classified as full-time residents. Students enrolled in at least 12 hours while living off-campus were classified as full-time commuter and students enrolled in less than 12 hours while living off-campus were classified as part-time commuter. The undecided students in the sample were compared with the decided and multiple change students to determine whether differences existed in the number of terms classified as full-time resident, full-time commuter, or part-time commuter.

Table 5

Number of Terms Employed for Four-Year and Community
College Transfer Students by Type

Number of Terms Employed	Four-Year							
	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0 Term	303	49.1	223	39.2	102	51.5	628	45.4
3 Terms or Less	205	33.2	147	25.8	56	28.3	408	29.5
4, 5, or 6 Terms	66	10.7	120	21.1	29	14.6	215	15.5
6 Terms or More	43	7.0	79	13.9	11	5.6	133	9.6
Totals	617	100.0	569	100.0	198	100.0	1,384	100.0

Chi-Square = 53.31, $p < .05$

Number of Terms Employed	Community College Transfers							
	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0 Term	49	62.0	24	70.6	2	100.0	75	65.2
1, 2, or 3 Terms	30	38.0	10	29.4	0		40	34.8
Totals	79	100.0	34	100.0	2	100.0	115	100.0

Inspection of Table 6 reveals that across the three types, multiple changers tended to be full-time resident students more often than either the "decided" or "undecided" groups in the four-year sample. Roughly 21% of the multiple changers were full-time resident students for most of their college career (10-11 terms) in contrast to only 9.7 and 12.1 percent of the decided and undecided groups respectively. Also, it appears that across the three types, the multiple change students tended to be full-time commuter students more often than either the decided or undecided groups. Roughly 25% of the multiple changers were full-time commuters for at least half of their college career (4-6 terms) in contrast to 13% of the decided and 14.1% of the undecided. A chi square test of independence failed to reveal a significant relationship between type of student and part-time commuter status. The majority of undecided students in this sample were full-time residents with a small percentage of full-time commuters. The undecided students in this sample were no different from the decided students. The number of terms classified as full-time resident, full-time commuter, and part-time commuter, and the percentage of students in each type are shown in Table 6.

Inspection of Table 7 reveals that a significant relationship did not exist between enrollment/residence

Table 6
Enrollment/Residence Status of
Four-Year Students by Type

	Type							
	Decided		Multiple Changers		Undecided		Total	
	N	%	N	%	N	%	N	%
Full-Time Resident								
0-3 Terms	319	51.7	83	14.5	66	33.3	468	33.7
4-6 Terms	160	25.9	208	36.6	64	32.3	432	31.2
7-9 Terms	78	12.6	161	28.3	44	22.2	283	20.4
10-11 Terms	60	9.7	117	20.6	24	12.1	201	14.5
Total	617	100.0	569	100.0	198	100.0	1,384	100.0
Chi-Square = 192.08, p<.05								
Full-Time Commuter								
0-3 Terms	518	84.0	390	68.5	157	79.3	1,065	77.0
4-6 Terms	80	13.0	145	25.5	28	14.1	253	18.3
7-9 Terms	13	2.0	23	4.0	11	5.6	47	3.3
10-11 Terms	6	1.0	11	1.9	2	1.0	19	1.4
Total	617	100.0	569	100.0	198	100.0	1,384	100.0
Chi-Square = 45.49, p<.05								
Part-Time Commuter								
0-3 Terms	615	99.6	568	99.8	198	100.0	1,381	99.8
4-6 Terms	1	.2	1	.2	0		2	.1
9-11 Terms	1	.2	0		0		1	.1
Total	617	100.0	569	100.0	198	100.0	1,324	100.0
Chi-Square = 3.62, p>.05								

Table 7
 Enrollment/Residence Status of
 Community College Transfer Students by Type

	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
Full-Time Resident								
0-2 Terms	64	81.0	25	73.5	2	100.0	91	79.1
3-5 Terms	15	19.0	9	26.5	0		24	20.9
Total	79	100.0	34	100.0	2	100.0	115	100.0
Full-Time Commuter								
0-2 Terms	42	53.2	13	38.2	1	50.0	56	48.7
3-5 Terms	37	46.8	21	61.8	1	50.0	59	51.3
Total	79	100.0	34	100.0	2	100.0	115	100.0
Part-Time Commuter								
0-2 Terms	72	91.1	30	88.2	1	50.0	103	89.6
3-5 Terms	7	8.9	4	11.8	1	50.0	12	10.4
Total	79	100.0	34	100.0	2	100.0	115	100.0

status and type of student for the community college transfer sample. The majority of community college transfer students were classified as full-time commuters for at least half of their college career (3-5 terms). One undecided student in the community college transfer sample was classified as full-time commuter and one as part-time commuter for at least half of each student's college career (3-5 terms). Table 7 is used to display enrollment/residence status and the percentage of students in each type for the community college transfer sample.

B. Comparison of Student Performance Indicators

The following performance indicators were compared for the three classification types: SAT verbal, SAT math, high school rank, hours attempted, hours passed, and grade-point-average.

The mean scores for SAT verbal, SAT math, and high school rank were not reported for the community college transfer sample because these scores were not required for admission to either the community college or to the university. The means and standard deviations of the performance indicators for the four-year sample are shown in Table 8. A oneway analysis of variance was conducted for each performance indicator to test for significant differences across the types. There were no significant

Table 8
 Descriptive Statistics and Analysis of Variance (ANOVA) Results
 of Performance Indicators by Type for Four-Year
 Students

Four-Year						
Types						
Performance Indicators	Statistic	Decided	Multiple Changer	Undecided	F	Prob
SAT Verbal	N	617	569	198		
	M	410.0	414.0	413.0		
	SD	110.1	90.5	112.8	.23	p>.05
SAT Math	N	617	569	198		
	M	434.1	444.0	433.1		
	SD	109.5	89.1	103.2	1.72	p>.05
Rank	N	617	569	198		
	M	66.22	66.21	63.77		
	SD	22.24	20.02	21.87	1.17	p>.05
Hours Attempted	N	617	569	198		
	M	11.20 ^a	14.65 ^b	12.62 ^b		
	SD	4.92	2.22	4.21	114.87	p<.05
Hours Passed	N	617	569	198		
	M	10.76 ^a	14.33 ^b	12.12 ^b		
	SD	5.12	2.51	4.05	113.94	p<.05
Grade-Point-Average	N	205	408	92		
	M	2.80 ^a	2.62 ^b	2.65 ^b		
	SD	.50	.46	.51	9.61	p<.05

Note. Means with different superscripts differ significantly at p<.05.

differences at the .05 level between the three types with regard to SAT verbal, SAT math, and high school rank in the four-year sample. However, significant differences were found between the classification types with regard to hours attempted, hours passed, and grade-point-average. The Scheffe Test was used to follow-up on comparisons yielding significant F tests. The results of the Scheffe Test indicated that the multiple changers attempted and passed more hours than the decided and undecided students and the average number of hours attempted and passed was significantly different from the decided group. The hours attempted and passed, however, reflect enrollment status (full-time resident) as well as potential differences in motivation and thus must be interpreted cautiously. The grade-point-average for the decided group was significantly higher than the undecided and multiple change groups. Students who change major fields enroll in additional courses because requirements vary from one major field to another. As evident from the data presented in Table 8, hours attempted, hours passed, and grade-point-average of the undecided student were not significantly different from the multiple changer students. The undecided students in this sample showed no significant differences from the multiple change students with regard to the variables measured.

The means and standard deviations of the performance

indicators for the community college transfer sample are shown in Table 9. Oneway analysis of variance revealed no significant differences at the .05 level between the group means with regard to hours attempted, hours passed, and grade-point-average for the community college transfer sample. Apparently, the undecided students in the community college transfer sample are no different from the decided and multiple change students regarding hours attempted, hours passed, and grade-point-average.

Phase III: A Survey of Student Perceptions

The Senior Perception of Major Field Questionnaire was mailed to 179 four-year students and 37 community college transfer students. A breakdown of the sample surveyed by classification type is shown in Table 10. The overall response rate was 78% with somewhat higher returns among the four-year sample (82%) and somewhat lower rates among transfer students (62%). Table 10 also contains the number of students who consented to having their questionnaire responses linked to information contained on their student records.

A series of eight questions asked the respondents to indicate relative influence eight factors had in their choice of major field. A one to five response scale was used with one indicating no influence and five indicating

Table 9

Descriptive Statistics and Analysis of Variance (ANOVA) Results of Performance Indicators by Type for Community College Transfer Students

Community College Transfers						
Performance Indicators	Statistic	Type			F	Prob
		Decided	Multiple Changer	Undecided		
Hours Attempted	N	79	34	3	2.14	p>.05
	M	7.30	8.91	7.83		
	SD	4.16	2.54	5.42		
Hours Passed	N	79	34	3	1.66	p>.05
	M	7.21	8.63	7.83		
	SD	4.17	2.63	5.42		
Grade-Point-Average	N	52	28	2	2.21	p>.05
	M	2.84	2.82	3.64		
	SD	.55	.51	.32		

Table 10
 A Breakdown of the Sample Surveyed by
 Classification Type

	Sampled	Returns	Consent
Four-Year Students			
Decided (Type I)	60	50	40
Multiple Changer (Type II)	60	53	34
Undecided (Type III)	59	43	24
Subtotal	179	146 (86%)	98
Transfer Students			
Decided (Type I)	22	14	9
Multiple Changer (Type II)	14	8	6
Undecided (Type III)	1	1	1
Subtotal	37	23 (62%)	16
Total	216	169 (78%)	114

very much influence. The mean responses to these eight questions are presented in Table 11. A oneway analysis of variance was conducted for each variable to test for significant differences across the types. The Scheffe Test was used to follow-up on comparisons yielding significant F tests. Ignoring for the moment differences across types, it is apparent from the results that "Interest in Major Field" is by far the greatest source of influence in choice of major field. Work experience and reputation of faculty or department appear to be the next most important influences. It also appears that the students in each type reported little influence from high school counselors and the counseling center. Significant differences arose among these two factors. Specifically, the decided group reported greater influence from high school counselors than either of the other two types, however, the mean for the decided group was only 2.15 on a 5 point scale. In contrast, the decided group reported less influence from the counseling center than the other types, but once again, the highest mean rating was only 1.56 on a 5 point scale.

Table 12 is used to summarize the responses to three other variables. The first variable listed asked the respondents to indicate their level of commitment to their major field of study with a response of one indicating very weak and five indicating very strong. All three groups expressed

Table 11

Comparison of Means, Standard Deviations, and F Ratios Associated
with Perceptions of Factors Influencing Choice of Major

Dependent Variable	Statistic	Type			F	Prob
		Decided (N=64)	Multiple Changer (N=61)	Undecided (N=44)		
Parental Wishes	M	2.32	2.19	2.20	.21	p>.05
	SD	1.19	1.28	1.17		
Peer Pressure	M	2.03	2.03	2.18	.37	p>.05
	SD	1.03	.91	.99		
Work Experience	M	2.68	2.63	2.65	.01	p>.05
	SD	1.37	1.37	1.46		
Interest in Major	M	4.48	4.39	4.45	.17	p>.05
	SD	.90	.86	.87		
Reputation of Department or Faculty	M	2.60	2.60	2.72	.09	p>.05
	SD	1.53	1.51	1.66		
Advice from High School Counselors	M	2.15 ^a	1.70 ^b	1.65 ^b	3.69	p<.05
	SD	1.27	.97	.96		
Advice from Counseling Center	M	1.20 ^a	1.34 ^b	1.56 ^b	3.04	p<.05
	SD	.53	.70	1.04		
Advice from Career Planning Center	M	1.29	1.32	1.40	.25	p>.05
	SD	.84	.67	.92		

Note. Means with different superscripts differ significantly at p<.05.

Table 12
 Comparison of Means, Standard Deviations, and F Ratios
 with Factors Associated with Choice of Major Field

Dependent Variable	Statistic	Type			F	Prob
		Decided (N=64)	Multiple Changer (N=61)	Undecided (N=44)		
Commitment	M	4.35	4.27	4.34	.12	p>.05
	SD	.91	.96	.86		
Regret	M	2.09 ^a	1.96 ^a	1.52 ^b	3.06	p<.05
	SD	1.38	1.18	.92		
Locus	M	10.67	10.22	10.24	.21	p>.05
	SD	4.13	4.17	4.50		

Note. Means with different superscripts differ significantly at p<.05.

very high commitments with very little difference between the groups.

The second variable listed in Table 12 asked whether the respondents had any regrets over their choice of major field. A five point response scale was used here also with one indicating very unlikely to experience regret and five indicating very likely to experience regret. All three groups expressed relatively little regret, but the mean of the undecided group was significantly lower than the other two groups. Although these data might be interpreted to mean that undecidedness at the start of a college career is associated with fewer regrets over choice of major four years later, the differences shown in Table 12 are very small in practical terms, even though the differences are statistically significant.

The third variable in Table 12 are mean scores from the Internal-External Locus of Control Instrument which was appended to the questionnaire. As shown in Table 12, oneway analysis of variance revealed that a significant relationship did not exist between classification type and locus of control. The mean locus of control scores indicate that the students in each type had external perceptions about personal control. This finding is contrary to previous findings, because as students approach graduation, their perception of their control over the environment reportedly be-

comes more internal (Behuniak & Gables, 1981). The undecided students in the sample did not differ from the other types with regard to locus of control.

Linkage of Student Records and Questionnaires

The Senior Perception of Major Field Questionnaire was administered to 216 students. Of the 169 students who returned the questionnaire, 114 gave consent to join their student records with questionnaire responses. Of the 114 participants in the consent sample, 13.2% were male and 4% were black. The undecided students in the consent sample were compared with the decided and multiple change students to determine whether differences existed between the groups with regard to student status variables, performance indicators, and factors influencing choice of major field.

Comparison of Student Status Variables

Number of Terms Enrolled

The undecided students in the consent sample were compared with with decided and multiple change students to determine whether differences existed in the number of terms enrolled. A chi square test of independence failed to reveal a significant relationship between type of student and number of terms enrolled among the students in the consent sample. The majority of students in the consent sample were enrolled 3 terms or more. The number of terms

enrolled and the percentage of students in each type are shown in Table 13.

Number of Terms Employed

The undecided students in the consent sample were compared with the decided and multiple change students to determine whether differences existed in the number of terms employed. A chi square test of independence failed to reveal a significant relationship between type of student and number of terms employed. The majority of students in the consent sample did not work any terms. The number of terms employed and the percentage of students in each type are shown in Table 13. The undecided students in the consent sample were no different from the decided and multiple change students.

Enrollment/Residence Status

The undecided students in the consent sample were compared with the decided and multiple change students to determine whether differences existed in the number of terms classified as full-time resident, full-time commuter, or part-time commuter. A chi square test of independence failed to reveal a significant relationship between type of student and enrollment/residence status. The majority of students in the consent sample were full-time residents for most of their college career (10-11 terms). The undecided

Table 13

Number of Terms Employed and Number of Terms Enrolled
for Consent Sample

Number of Terms Enrolled	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0 Terms or More	49	100.0	39	97.5	25	100.0	113	99.1
2 Terms	0		1	2.5	0		1	.9
Total	49	100.0	40	100.0	25	100.0	114	100.0

Chi-Square=1.86, $p > .05$

Number of Terms Employed	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0 Terms	20	40.8	13	32.5	11	44.0	44	38.6
3 Terms or Less	10	20.4	12	30.0	7	28.0	29	25.4
4, 5, or 6 Terms	7	14.3	9	22.5	3	12.0	19	16.7
6 Terms or More	12	24.5	6	15.0	4	16.0	22	19.3
Total	49	100.0	40	100.0	25	100.0	114	100.0

Chi-Square = 4.03, $p > .05$

students in the consent sample were no different from the undecided and multiple change students. The number of terms classified as full-time resident, full-time commuter, and part-time commuter, and the percentage of students in each type are shown in Table 14.

Comparison of Student Performance Indicators

The performance indicators compared for the consent sample were SAT verbal, SAT math, high school rank, hours attempted, hours passed, and grade-point-average. The means and standard deviations of the performance indicators for the consent sample are shown in Table 15. Oneway analysis of variance was conducted for each variable to test for significant differences across the types, but results of the test revealed no significant differences at the .05 level. Apparently, the undecided students in the consent sample were no different from the other types with regard to SAT verbal scores, SAT quantitative scores, high school rank, hours passed, hours attempted, and grade-point-average.

Perceptions Associated with Choice of Major

The means and standard deviations of the factors perceived by students in each type to influence major field choice are shown in Table 16. Oneway analysis of variance was used to test for significant differences across the

Table 14

Number of Terms as Full-Time Resident, Full-Time Commuter,
and Part-Time Commuter for Consent Sample

Number of Terms as Full-Time Resident	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0-3 Terms	9	18.4	4	10.0	3	12.0	16	14.0
4-6 Terms	13	26.5	12	30.0	5	20.0	30	26.3
7-9 Terms	11	22.4	6	15.0	7	28.0	24	21.0
10-11 Terms	16	32.7	18	45.0	10	40.0	44	38.6
Total	49	100.0	40	100.0	25	100.0	114	100.0

Number of Terms as Full-Time Commuter	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0-3 Terms	31	63.3	28	70.0	17	68.0	76	66.7
4-6 Terms	15	30.6	12	30.0	5	20.0	32	28.1
7-9 Terms	1	2.0	0		2	8.0	3	2.6
10-11 Terms	2	4.1	0		1	4.0	3	2.6
Total	49	100.0	40	100.0	25	100.0	114	100.0

(Table Continued)

Table 14

Number of Terms as Full-Time Resident, Full-Time Commuter,
and Part-Time Commuter for Consent Sample

Number of Terms as Part-Time Commuter	Type							
	Decided		Multiple Changer		Undecided		Total	
	N	%	N	%	N	%	N	%
0 Term	45	91.8	40	100.0	23	92.0	108	94.7
1 Term	4	8.2	0		2	8.0	6	5.3
Total	49	100.0	40	100.0	25	100.0	114	100.0

Table 15

Descriptive Statistics and Analysis of Variance (ANOVA) Results
of Performance Indicators by Type for Consenting Students

Consenting Students						
Performance Indicators	Statistic	Types			F	Prob
		Decided	Multiple Changer	Undecided		
SAT Verbal	N	40	34	24		
	M	435.5	416.1	434.5		
	SD	102.6	99.6	77.5	.43	p>.05
SAT Math	N	40	34	24		
	M	474.2	450.8	471.2		
	SD	82.8	109.0	66.2	.69	p>.05
Rank	N	40	34	24		
	M	65.71	61.95	66.78		
	SD	34.86	30.53	29.11	.22	p>.05
Hours Attempted	N	49	40	25		
	M	15.12	14.97	15.68		
	SD	2.24	2.03	1.25	1.03	p>.05
Hours Passed	N	49	40	25		
	M	15.14	14.89	15.75		
	SD	2.31	1.91	1.31	1.43	p>.05
Grade-Point-Average	N	48	40	25		
	M	3.05	2.87	2.91		
	SD	.40	.47	.46	1.97	p>.05

Table 16

Comparison of Means, Standard Deviations, and F Ratios
Associated with Perceptions of Factors Influencing Choice of
Major for Consenting Students

Dependent Variable	Statistic	Type			F	Prob
		Decided	Multiple Changer	Undecided		
Parental Wishes	N	49	40	25	.22	p>.05
	M	2.32	2.35	2.52		
	SD	1.17	1.23	1.22		
Peer Pressure	N	49	40	25	1.53	p>.05
	M	2.06	2.10	2.48		
	SD	1.02	.87	1.19		
Work Experience	N	49	40	25	1.98	p>.05
	M	2.85	2.62	3.32		
	SD	1.36	1.31	1.46		
Interest in Major	N	49	40	25	.42	p>.05
	M	4.51	4.37	4.32		
	SD	.86	1.00	.90		
Reputation of Department or Faculty	N	49	38	24	.005	p>.05
	M	2.53	2.55	2.54		
	SD	1.40	1.32	1.38		
Advice from High School Counselors	N	49	40	25	2.39	p>.05
	M	2.18	1.70	1.72		
	SD	1.25	1.01	1.13		
Advice from Counseling Center	N	49	40	25	2.42	p>.05
	M	1.24	1.37	1.68		
	SD	.59	.74	1.18		
Advice from Career Plann- ing Center	N	49	40	25	.21	p>.05
	M	1.36	1.30	1.44		
	SD	.95	.68	.86		

types, but the results of the test revealed no significant differences at the .05 level between the group means. Although no significant differences existed across the types, it is apparent from the results that the responses reported by the consent sample are similar to the responses reported by the survey sample. The consent sample reported "Interest in Major Field" as the greatest source of influence in choice of major field and work experience, reputation of department or faculty, and parental wishes were reported as the next important influences. Students in each type reported little influence from the counseling center and career planning center.

Three additional variables associated with choice of major field are discussed in this section. Table 17 contains the means and standard deviations for commitment, regret, and locus of control. The first variable asked respondents to indicate their level of commitment to their major field of study with a response of one indicating very weak and five indicating very strong. All three groups expressed very high commitments with very little difference between the groups. The second variable asked students whether they had regrets over their choice of major field. A five point response scale was used with one indicating very unlikely to experience regret and five indicating very likely to experience regret over major field choice. All

Table 17
 Comparison of Means, Standard Deviations, and F Ratios with
 Factors Associated with Choice of Major Field for
 Consenting Students

Dependent Variable	Statistic	Type			F	Prob
		Decided	Multiple Changer	Undecided		
Commitment	N	49	40	24	.81	p>.05
	M	4.34	4.47	4.16		
	SD	.85	.87	1.16		
Regret	N	49	40	23	2.66	p>.05
	M	2.16	1.72	1.52		
	SD	1.38	1.03	1.08		
Locus	N	49	40	25	.35	p>.05
	M	10.33	9.56	10.14		
	SD	3.93	4.46	5.01		

three groups expressed relatively little regret. The third variable, locus of control was used to determine whether a relationship existed between student "decidedness" and locus of control. One way analysis of variance was used to test for significant differences, but the results of the test revealed no significant differences at the .05 level between the group means listed in Table 17. No relationship was found between type and locus of control. The mean locus scores suggest that students in the consent sample were external about their beliefs concerning personal control. This finding is similar to the finding in the survey sample.

CHAPTER V

SUMMARY AND CONCLUSIONS

The major interest of this study was to determine whether students who were undecided about their major upon initial enrollment differed in important ways from students who either were decided about their major upon initial enrollment and never changed or were decided at first but later changed one or more times. Of course, undecided students eventually made a major field choice, and some of them changed their decision one or more times, but they were distinguished from the other two classification groups used in this study by their initial lack of commitment to a major field.

The literature on undecidedness regarding major field choice presents two major views. One view supports the idea that undecided students are no different from other students (Ashby, Wall, & Osipow, 1966; Baird, 1967), whereas, the second and most common view states that differences do exist between the undecided student and other students (Chase & Keene, 1980; Titley & Titley, 1980). Several studies have suggested that being undecided about major field is associated with undesirable qualities such as lower grade performance (Sheppard, 1971), higher attrition rates (Elton & Rose, 1971), and troublesome personal

qualities like dependency and uncertain identity (Peterson & McDonough, 1985). Evidence from the literature also suggests that little is known about the "undecided" student beyond the freshman year (Foote, 1980), thus engendering further doubts about the utility of findings from research focused only on the early months of enrollment.

This study classified students into three types--undecided, decided, and multiple changers--based on their initial choice of major field (multiple changers were detectable only by longitudinal examination of records), then described the students within the types regarding their migration patterns from certain majors to others, their high school rank, SAT scores, hours attempted and passed, gender, race, number of terms enrolled, number of terms employed, enrollment/residence status, locus of control, and perceptions about factors which influenced choice of major field. An advantage of this study over others similar to it was its ability to study characteristics of the classification types in the four-year sample during their entire enrollment period from Fall 1981 through graduation in the Spring 1985.

Differences between undecided, decided, and multiple change students were evident in this study, but they appeared small or insignificant by the application of either statistical procedures to test for differences or by

researcher judgments regarding practical value. Where differences between the classification types were found, often it was the "multiple change," rather than the "undecided," group which accounted for the differences. For example, multiple changers persisted and graduated at a greater rate than either the undecided or decided students who were more similar than different on these variables. Remembering that these findings were drawn from archival data, with little justification for casual inference, caution is advised in the interpretation of such differences. Still, multiple changer, and not undecided students, produced the most differences in the analyses, such as in comparisons of number of terms worked and hours attempted and passed. Perhaps the most important finding of this study is that undecided students do not appear different in any important way from decided or multiple change students. Their lack of initial commitment to a major does not distinguish them, especially in any way associated with negative consequences in higher education, from students who were committed to a decision.

Another important finding of this study also is related to the fact that undecided students did not differ from other students. When students were asked about influences on their choice of major field, "interest in major" received the highest scores of all influences listed and

there was no difference across the classification types. It is reassuring that students choose their majors because of interest in the field. All other influences listed were external to the student but commonly used in research of this kind. A knowledge that student's intrinsic interests play a dominant role in career choice is logical intuitively and is instructive to educational programmers concerned with career development. It should be especially enlightening that undecided students do not make their decisions differently than other students who may appear to be more "certain" of their major field.

It was disappointing that only two undecided students emerged in the community college sample, thus rendering meaningless the analyses of differences across classification types in this subgroup. Other researchers concerned with this problem may want to ensure sufficient numbers of undecided students in the community college sample as a pre-condition for study.

Implications

It should be of interest to all educators, but especially those who advise students about majors and career planning, that the condition or state of undecidedness about major upon initial enrollment in higher education does not signal "problems ahead!" for these students. There are

some differences between those initially decided and those who are not, and they may warrant special programming, but, in a general sense, it appears more justifiable to treat all students similarly for most programming targeted at career information. Many who first appeared "decided," for example, turned out to be "multiple changers." While this condition seemed not to negatively influence the multiple changers, they may need information just as surely as the undecided students. It may not be unreasonable, in fact, to surmise that information might influence more of the "decided" to be "multiple changers."

It should be remembered by programmers that multiple changing may be associated with several desirable conditions, such as persistence and high likelihood of graduation. Perhaps programmers should encourage, not discourage, exploratory choices for as long as practical during the undergraduate years. This advice is common among "liberal educators," but seems less common among "career-oriented educators." Perhaps the latter group would benefit from the counsel of the former.

The major contribution of this study is to contradict the general impression one receives from the literature that undecidedness represents a problem for the student regarding achievement and the need of the institution to provide special assistance for students lacking a major field of

study. Perhaps the assumption for researchers and programmers should be altered toward the view that undecided students do not differ from other students.

Future Research

This study was a descriptive study designed to provide information for academic advising program leaders on the possible educational consequences of student undecidedness. Several questions have arisen from the research data which were not addressed in this study. This section will focus on additional research which needs to be conducted on student undecidedness.

1. The Senior Perception of Major Field Questionnaire should be administered to freshman, sophomore, and junior students classified as decided, undecided, or multiple changers to determine which factors influenced their choice of major field.

2. A study should be undertaken to determine whether locus of control differs over time for students classified as decided, undecided, or multiple changer. The questionnaire should be administered to the sample during the freshman or sophomore year and again during the senior year.

3. Because of the low percentage of blacks and males in the four-year and community college transfer sample, a study collecting similar data with a representative popula-

tion should be conducted.

4. Because this study had only two undecided community college transfer students, a study designed to capture student undecidedness in the community college should be conducted.

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Appendix A
Questionnaires
Cover Letter
Follow-up Letters

I-E SCALE

DIRECTIONS.

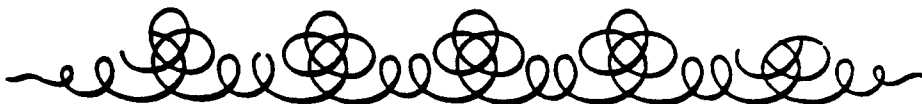
This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you are concerned. For each numbered question place an X on the line either beside a or b.

I more strongly believe that:

1. a. Children get into trouble because their parents punish them too much.
 b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
 b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
 b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
 b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
 b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
 b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
 b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
 b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
 b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
 b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
 b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
 b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
 b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are just no good.
 b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
 b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
 b. Getting people to do the right thing depends on ability; luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
 b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people can't realize the extent to which their lives are controlled by accidental happenings.
 b. There really is no such thing as "luck".

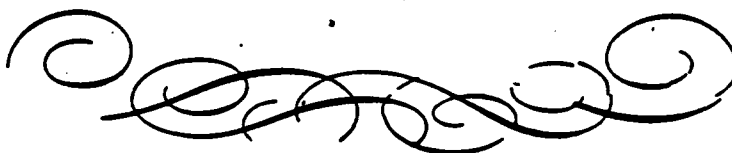


19. a. One should always be willing to admit his mistakes.
 b. It is usually best to cover up one's mistakes.
20. a. It is hard to know whether or not a person really likes you.
 b. How many friends you have depends upon how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
 b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22. a. With enough effort we can wipe out political corruption.
 b. It is difficult for people to have much control over the things politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades they give.
 b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
 b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things that happen to me.
 b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
 b. There's not much use in trying too hard to please people, if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
 b. Team sports are an excellent way to build character.
28. a. What happens to me is my own doing.
 b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
 b. In the long run the people are responsible for bad government on a national as well as on a local level.



I would like to request permission to link your responses to these questionnaires with information contained in your student record files such as high school rank, hours attempted, and resident/commuter status. Your individual identity will not be revealed in any analyses or report. Access to this information will provide a better understanding of why students choose certain majors. If you wish to give your consent for me to link your responses with your student record file, please sign below. Even if you don't sign, please complete the questionnaire and return it at your earliest convenience.

 Signature



Box 5855 Radford University
Radford, VA 24142
Date

Student Name
Address

Dear Student:

One of the most important decisions that a student has to make during his academic career at Radford University is the selection of a major field. Selecting a major field is obvious and easy for some students, and quite difficult for others.

As an academic advisor, and a doctoral candidate at Virginia Tech, I am very interested in studying the factors which influence a student's choice of major field. I am inviting you to participate in a study to find out what factors influence students to select a major field. As a graduating senior, you have been chosen by a random process to represent others like yourself with regard to your choice of academic major.

Enclosed is a brief questionnaire which asks about your choice of major and factors which influenced your choice. While you are under no obligation to complete the questionnaire, I hope that as a graduating senior, you will take a few moments to assist me in my quest to provide quality advising for students yet to graduate. Your response will be treated confidentially and your identity will not be revealed to anyone.

Please take advantage of this opportunity to assist the Office of Academic Advising Services by completing the enclosed questionnaire and returning it at your earliest convenience.

Sincerely yours,

Belinda C. Anderson
Director of Academic Advising Services



Radford University

Radford, Virginia 24142
(703) 731-5220

Office of Academic Advising Services

April 24, 1985

Dear

On April 10, a questionnaire concerning your choice of academic major was mailed to you. If you have already completed and returned it to us please accept our sincere thanks. If not, please return it today in the postage paid envelope provided. It is extremely important that your responses be included in this study if the results are to accurately represent the graduating Class of 1985.

If you did not receive the questionnaire, or you have misplaced it, please call me at 731-5220 and I will get another one in the mail to you today.

Thanks for assisting the Office of Academic Advising.

Sincerely,

Belinda C. Anderson
Director of Academic
Advising



Radford University

Radford, Virginia 24142
(703) 731-5220

Office of Academic Advising Services

April 24, 1985

Dear

On April 10, a questionnaire concerning your choice of academic major was mailed to you.

Since we have not received your questionnaire we are enclosing another one hoping that you will complete it today and drop it off at the Campus Post Office. It is extremely important that your responses be included in this study if the results are to accurately represent the graduating Class of 1985.

Thanks for assisting the Office of Academic Advising.

Sincerely,

Belinda C. Anderson
Director of Academic
Advising



Radford University

Radford, Virginia 24142
(703) 731-5220

Office of Academic Advising Services

May 1, 1985

Dear Graduating Senior:

On April 24, a questionnaire concerning your choice of academic major was mailed to you.

Since we have not received your questionnaire, we are enclosing another one hoping that you will complete it today and drop it off at the Campus Post Office. It is extremely important that your responses be included in this study if the results are to accurately represent the graduating Class of 1985.

Thanks for assisting the Office of Academic Advising.

Sincerely,

Belinda C. Anderson
Director of Academic
Advising

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