

FACTORS ASSOCIATED WITH WOMEN'S DECISION TO LEAVE A MALE-DOMINATED MAJOR AND ENTER A FEMALE-DOMINATED MAJOR

by


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Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of
Master of Arts

in

College Student Personnel Services

APPROVED:



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May, 1993

Blacksburg, Virginia

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(ABSTRACT)

This exploratory study investigated the crucial role society and individual college cultures played in selecting and channeling women from male-dominated to female-dominated majors. Since academic major is linked to the kind of vocation a person pursues, scarcity of women in certain majors constitutes an obstacle to opportunity in the work force. Literature was used to develop questions for interview protocol to identify reasons for college women's decision to leave a male-dominated major and enter a female-dominated major. The interviews provided self-report information from college women transfers from the College of Engineering, College of Business, and College of Architecture to the College of Human Resources and revealed six factors that explained their decisions. These factors were classroom environment, faculty behaviors, peer relations, curriculum content, performance pressures, and role expectations. These factors were interdependent though each played a significant role in explaining the women's decisions. Additionally, women's decision to leave a male-

dominated major and enter a female-dominated major was a function of affirmation of self and was derived from the six environmental factors. The degree of interaction congruence between the student and each of these factors affected affirmation of self and how women evaluated and responded to their environment. Lastly, applications for educational practitioners were offered and recommendations for further research were suggested.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Dr. Don Creamer and committee members, Dr. Donna Cassell and Dr. Elizabeth Creamer for their time and guidance. Their advice, insights, and criticisms were extremely helpful in creating this research paper. Special appreciation is extended to Dr. Don Creamer for his time and patience with the recommendations and analyses conducted in this study.

I am especially grateful for the support and encouragement offered by Ken Markwalter, Judi Lynch, and my parents. Their reassurance and confidence in my ability to carry out this study were particularly helpful during times of panic and frustration. Additionally, their understanding and love were essential to the completion of this study.

Lastly, I would like to express a special thanks to Michelle Grosse for her help and for use of her computer in designing the tables and figures.

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CHAPTER 1
INTRODUCTION

Statement of the Problem

College has an important impact on the type of occupation one enters. The career choice made in college tends to be the single best predictor of career or occupation actually entered (Pascarella & Terenzini, 1991). The major department appears to be one of the most significant college level influence on students' vocation-related attitudes, values, and aspirations (Hearn, 1980). As college student's attitudes, values, and life goals change, their major area of emphasis will often change several times. The literature revealed that gender has an important effect on the choice of major (Jacobs, 1986). College women are more likely to lower their educational aspirations and leave majors that are traditionally sought by men (Holland & Eisenhart, 1981; Jacobs, 1986; Vollmer, 1983). By graduation, women college students are more segregated by specialty from their male peers than they were in their freshmen year. Women are underrepresented in the science and engineering fields, because they continue to abandon their interest in the scientific fields at a greater

rate than men (Ware, Streckler & Leserman, 1985). Despite gains in women choosing careers traditionally dominated by men, sex differences in career choice persist. In some specializations being a woman reduces the chance of persistence resulting in male student predominance. The majors selected by women are traditionally dominated by women (Hearn & Olzak, 1981) and are targeted toward occupations of lower prestige, income, authority, and are less marketable than those of men (Pascarella & Terenzini, 1991). Since academic major is linked to the kind of vocation a person pursues, scarcity of women in certain majors constitutes an obstacle to opportunity and may be an important determinant of gender equality in the work force.

Question

What factors in the college environment influence undergraduate women in business, architecture, and engineering male-dominated majors to leave and enter female-dominated majors in human resources?

Purpose

As women continue to leave male-dominated majors, the recruitment and retention of women in male-dominated

programs remains a challenge for colleges and universities. This study was designed to identify and examine factors that may contribute to undergraduate women leaving male-dominated majors in the College of Business, College of Architecture, and College of Engineering to pursue a female-dominated major in the College of Human Resources. In particular this study examined the influence of sex-typing majors, societal norms, double choice, performance demands, faculty and peers, and individual college cultures on women's decision to leave a male-dominated major in business, architecture, and engineering to enter the female-dominated College of Human Resources.

Definitions

Male-dominated Major

For purposes of this study, a male-dominated major was a curriculum where the majority of the student population were males. Total student enrollment of both males and females, in a given college, was derived from the on-campus headcount enrollment by curriculum.

Female-dominated Major

A female-dominated major, for purposes of this study, was a curriculum where the majority of the student population were females. Total student enrollment of both

male and females, per college, was derived from the on-campus headcount enrollment by curriculum.

Social Norms

Bloom (1990) defined social norms as shared expectations of what ought to be done by a member in a shared group and how she or he ought to do it. These norms are affective expectations that develop around roles in a given social context and involve a group's awareness of the positive and negative sanctions related to acceptable or unacceptable ranges of behaviors. Sanctions reinforce conformity to the norms by punishing deviations from them.

Sex-Typing

Sex-typing reinforces the link between sex roles and occupational roles by typing certain occupations as male or female (Epstein, 1970b). Occupations have their own consequences for entry, and those persons seeking entry who possess the wrong gender are regarded as deviators and are subject to social sanctions.

Double-Choice

Double-choice is the dilemma of conflicting achievement orientations and feminine role expectations that female college students must resolve. Women must make a decision to choose between a family, a career, or both. Women have the common need to combine the demands of the work place

with marital and family responsibilities, a choice many men do not have to make.

Performance Demands

Performance demands are pressures placed on college women to out-perform others and demonstrate superior competence in order to be accepted or considered equal (Kanter, 1987).

Culture

Culture consists of learned ways of behaving and adapting that often determines how problems are solved (Bennett, 1992). A culture can further be viewed as a characteristic way of doing things in a particular society. A great deal of confusion and hostility may result when a culture confronts differences. Additionally, force may be used to exclude some people from sharing in certain elements of a culture.

College of Human Resources

The Virginia Tech College of Human Resources, through five departments, comprised a broad range of subject areas which enhanced the quality of life for individuals and families. These five departments included Family and Child Development; Hotel, Restaurant and Institutional Management; Clothing and Textiles; Housing, Interior Design and Resource Management; and Human Nutrition and Foods. In the fall of 1992 there were approximately 1,166 students enrolled in the

College of Human Resources. Of those students enrolled, 203 were male and 963 were female.

College of Business

The Virginia Tech R.B Pamplin College of Business consisted of five departments: Accounting, Finance, Management, Management Science, and Marketing. In the fall of 1992, there were approximately 2,761 students enrolled in business majors. Of those students enrolled, 1,587 were male and 1,174 were female. In 1986, the proportion of bachelor's degrees awarded to women in business and management on a national basis were 45.0 percent (Sapiro, 1986).

College of Engineering

The Virginia Tech College of Engineering offered programs in Aerospace; Agricultural; Chemical; Civil and Electrical Engineering; Engineering Mechanics; Environmental Engineering; Environmental Sciences and Engineering; Industrial Engineering and Operations Research; Materials, Mechanical, and Mining Engineering; and Systems Engineering. In the fall of 1992, there were approximately 4,333 students enrolled in engineering majors. Of those students enrolled, 3,614 were male and 719 were female. In 1986, the proportion of bachelor's degrees in engineering awarded to women on a national basis were 13.1 percent (Sapiro, 1986).

College of Architecture

The curriculum in architecture required a five year plan of study to receive a Bachelor of Architecture. The curriculum was composed of three levels of study: foundation studies and the professional levels of architecture 1 and architecture 2. The curriculum is intended to provide a comprehensive environmental design overview associated with experimental design exploration questions which concern builders of artificial environments. Additionally, general education was provided in the sciences, humanities, and structuring of concepts. In the fall of 1992, there were approximately 926 students enrolled in architecture majors. Of those students enrolled, 663 were male and 263 were female. In 1986, the proportion of bachelor's degrees awarded in architecture to women on a national basis were 24.0 percent (Sapiro, 1986).

Organization of the Study

The study is divided into five chapters that correspond to the structure of the study. Chapter 2 is composed of the literature that is currently known about the problem under consideration and was reviewed to formulate the interview questions. Chapter 3 provides the methodology that describes how the study was designed to answer the research

question. All the steps that were undertaken to investigate the question under consideration and method of handling and presenting data were included. Chapter 4 presents the findings through conceptual categories then reports category relationships. The chapter concludes with a generalized theory about women's departure from male-dominated majors to female-dominated majors. Lastly, Chapter 5 summarizes the study, offers applications for educational practitioners, and suggests recommendations for further research.

CHAPTER 2

REVIEW OF RELATED RESEARCH

Trends

Beginning in the 1930s, the representation of women in college began to increase. Women were often sent to college by their middle class families as a means of meeting their future husbands or for training in case of possible employment. However, the depression marked a decline in the enrollment of women as families invested more in their sons education. The post second World War years marked a decrease in the enrollment of women. To accommodate veterans returning to school, national educational policies such as the G.I Education Bill caused institutions to set quotas limiting the admission of women.

Between 1970-1971 and 1978-1979 the representation of women at all degree levels in higher education increased both absolutely and proportionately (Roemer, 1983). Stockard (1980) noted that by 1968 and continuing to 1978, the proportional representation of women in universities and colleges rose much faster than men. The increase in representation of women in higher education, increased women's presence across fields of study and was found at the undergraduate, graduate, and professional levels. In the

majority of fields, more women were earning degrees at the end of the decade than at the beginning as a greater proportion of society accepted the idea that women should have a college education. Any movement of women into male-dominated fields may be considered part of the overall equalization of the representation of women in higher education relative to that of men.

Since 1966, the number of women in college interested in engineering careers increased more than ten-fold (Dey, Astin & Korn, 1991). Despite this increase, women's propensity to earn degrees in science and engineering fields continue to be substantially lower than that of men. Engineering continues to be ranked one of the lowest among the sciences for attracting and employing women even though it is one of the largest professions in the United States (Daniels & LeBold, 1982). In 1985 almost 322,000 science and engineering bachelor's degrees were granted by U.S. institutions (National Science Foundation, 1988). At the baccalaureate level, women accounted for about one-half of the overall number of degrees awarded but only 15 percent of the engineering degrees conferred. Fewer women than men undertake a scientific career and a higher proportion of women continue to drop out of science majors in college (Bar-Haim & Wilkes, 1989, Ware, et al., 1985). Epstein (1970a) noted that in Rose's study of Michigan women, by

graduation women who originally chose the sciences had switched to those fields considered extensions of the female role - social work, nursing, teaching, and home economics. Women majoring in these female-oriented fields increased from 60 percent to 83 percent. This is in contrast to the low withdrawal rate among men in science.

Reasons Women Leave Male-dominated Majors

Images and Ideals of Women's Roles

Pressures of social norms. In college, the confirming, shifting, and testing of career choices are influenced by a background of beliefs that students share about the attributes of various occupations and professions (Beardslee, & O'Dowd, 1967). These ideas about the occupational world influence college students deliberations about the future. Women confront strong normative pressures and internalize sex role socialization when selecting a major. Women's vocational role expectations are shaped by societal norms that result in the human capital of able women being ignored or used selectively (O'Donnell & Anderson, 1978). Women often respond to the restrictive customs and imposed values by choosing the traditional career that are perceived as socially acceptable and most available to them (Thomas, 1980). Bernard (1981) indicated

that the educational attainment of women was on the average lower than equally competent men. Women are often reluctant to pursue higher degrees in male-dominated fields, because they are punished socially instead of being rewarded like men for their achievement. Thus, women are likely to express achievement in areas that are defined as part of the traditional women's role and represent culturally defined sex-appropriate activities (Stein & Bailey, 1973).

Likewise, college women may adjust their behavior to feminine stereotypes because they may consider achievement or competition with men unfeminine (Rose, 1975). This contributes to women and men viewing occupations as sex-defined, and deviators from the norm are penalized. By choosing a female-oriented major, a woman may reduce some of the conflict associated with cultural sex role demands and satisfy achievement needs.

Sex-typing majors. Women are a product of social learning experiences where others help mold the women's existence. Socialization inhibits the development of many women, because occupational sex-role norms are acquired early in life (Guttek & Nieva, 1979). Societies discriminatory attitudes and values of women have been accepted and integrated into women's self-concept and behavior. From the very moment of birth female infants are subject to the influence of the environment (Klaf, 1973).

Parents', peers', and teachers' expectations influence women's characteristics and define appropriate sex-role behavior. Socialization contributes to individuals acquiring a commitment to the norms of society and internalizing the norm (Goode, 1960). Girls are reared in American culture with an emphasis on qualities such as sociability, charm, domesticity, and popularity that adversely affect success in many masculine occupations (Almquist & Angrist, 1970). As young women reach adulthood they are pressured to adhere to feminine role definitions that encourage women to internalize the low expectations of the culture (Dickerson & Hinkle, 1978). These role stereotypes often inhibit women from aspiring to scientific careers, because they are drawn to majors that are more acceptable for women (Bar-Haim & Wilkes, 1989). Women's negative attitudes about their roles and behaviors in society deter the most intelligent, academically able, and creative women (Rose, 1975). Despite the higher grades women students receive in all institutions, they have less confidence in their abilities and less desire to achieve in competitive situations than men (Stockard, 1980). For example, women tend to rank themselves lower than males in academics, leadership, and mathematical ability (Klaf, 1973). Those women who defy role stereotypes and attempt to enter male-dominated academic majors are often blocked from

the opportunity (Epstein, 1970b). Individuals may feel that the women in the male-dominated major did not apply the appropriate norm for the particular role context (Goode, 1960). As indicated by Pascarella and Terenzini (1991), women tend to be over represented in fields of study in education and social science while under represented in mathematics, natural science, and engineering. Even though students' interests in careers change during the college years, women generally maintain their original family-centered aspirations (Bernard, 1981). This indicates that stereotypes are strongly agreed upon among students and provide information on appropriate type of person per occupation (Beardslee, & O'Dowd, 1967). Given the strong cultural stereotypes involving sex roles, unusual amounts of field switching and career changing are to be expected of women throughout their careers.

Women's double choice. Female college students confront the dilemma of conflicting achievement orientations that are learned sex role definitions and feminine role expectations. For example, women feel they must choose between a career and a family, a choice many men do not have to make. In an overwhelming number of instances, women still perform the childrearing work. Women are concentrated in typically female jobs (Roos, 1985) because they are encouraged to place family first (Boris, 1986). Women's

double choice often delays their career decisions, making it difficult to enter challenging, time-consuming careers. Traditionally male career lines are also perceived by many women as incompatible with social and marital needs (Bernard, 1964; Cooper & Robinson, 1987; Lyson & Brown, 1982; Rossi, 1965). Women have a common need to combine the demands of the work place with marital and family responsibilities. Female dominated curriculums and careers are often viewed as extensions of traditional family roles of caring and nurturing (Lyson & Brown, 1982). Male-dominated fields such as engineering place greater strain on women because they experience greater conflict between career and family than their male counterparts (Cooper & Robinson, 1985). Thus, college women, when choosing a major, must resolve the conflicting role expectations set by our society and struggle to meet the incompatible demands associated with involvement in both the home and labor market.

Performance demands. Kanter (1987) noted that particular performance pressures are placed on women who break ground in traditionally male territory. Women often feel they must out-perform their male counterparts and demonstrate superior competence in order to be accepted, or considered equal. Any mistakes and inadequacies made by a women are considered characteristics of a women in general.

Parson and her colleagues (1983) indicated that students are less likely to pursue academic programs in which they expect to do poorly. The pressure of maintaining a superior level of performance may result in a woman's decision to pursue a different course of study. Likewise, since women may share society's limited view of women's abilities, women students will doubt their abilities and attribute their success to hard work or luck rather than to skill (Hall & Sandler, 1982).

Institutional Environment Characteristics

Sorting practices. Bielby and Baron (1986) noted that certain features of an organization and environment foster and sustain sexual division of labor. Organizational procedures and individual attitudes play a role in generating gender segregation. College students participate in an organizational structure of higher education that may actively reinforce sex-typical major and occupational choice (Hearn & Olzak, 1981). The organizational structure of higher education is one in which college students are considered to be in training for adult roles and subject to strong normative pressures regarding course selection. Hearn (1980) noted that major departments are structurally defined to provide the student with information regarding his or her desire and capability to perform a particular occupational role after graduation. The intense

socialization process of students within a major creates a strong network system centered around common backgrounds and interests (Epstein, 1970b). In male-dominated majors, women may not be involved in the collegial networks to the extent of men's participation because they may be excluded from the social control system and learning situations. For example male clubs within a major may exclude women from the informal contacts. Likewise, college curriculums use channeling and sorting practices to structure the career opportunities and outcomes of men and women (Thomas, 1980). The channeling and sorting practices are explained further in the study and include conformist dimensions, impersonal and inaccessible faculty (Pascarella, 1984), and colleagues control over one another's behavior through mutual expectations backed by normatively based sanctions (Goode, 1960; 1957). This may be partly associated with sex differences in career aspirations and attainment.

Individual college culture. As college departments vary along organizational and social dimensions, undergraduate outcomes related to occupational preferences are influenced (Hearn & Olzak, 1981). College departments are characterized by shared norms and attitudes (Epstein, 1970b). The dominant group in the department will maintain the culture and enforce conformity through day-to-day interactions, style, dress, and form of talk that are only

partially understood by outsiders (Goode, 1957). These common standards of behavior permit the dominant group control over entrance and professional behavior. Men may exclude women by sharing a strong male identity and respond to subordinate challenges by citing group differences that warrant different treatment (Reskin, 1988). The highest prestige and rewards are more likely granted to those who live up to the professional role obligations accepted by the college culture and larger society (Goode, 1957). As men view women in traditional roles rather than as professional achievers (Dickerson & Hinkle, 1978), men will fall back on the traditional norms governing male-female interaction by emphasizing differences that create a self-serving occupational culture that excludes women. Holland and Nichols (1972) noted that students will sort themselves with reference to other students and will assess whether they fit in the environment by developing an idea of the typical student in the field. Women entering male-dominated majors lack the appropriate status making it difficult to participate in the casual interactions and understand the unstated norms.

Students also characterize themselves in terms of the qualities they perceive of people in the fields they seek to enter. An individual will apply a stereotype to others and mold his or her own behavior to conform with common

expectations (Beardslee, & O'Dowd, 1967). A person is recognized as suited for a field when he or she demonstrates characteristics that qualify for membership in that field. This affects how students react to one another. Students lacking the appropriate qualities and statuses may not be accepted and thus guided into other majors. For example, the prevailing masculine image of an engineer often acts as a deterrent to women considering a scientific career. Women may feel self-conscious about being a women in a male-dominated major causing them to overconform or overproduce in an attempt to make up for their situational downgraded status (Epstein, 1970b). These conformist dimensions have a direct, negative influence on women's aspiration level (Pascarella, 1984). Alternatively, women's aspiration levels are nurtured in a nonconformist collegiate environment that provides women with opportunities for academic roles and behaviors not determined by societal norms. In a nonconformist environment, more examples of female peers who aspire to traditionally male-dominated majors might occur. Tidball (1986) noted the relationship between the number of women faculty and the number of women students who achieved their own accomplishments because of the presence of women faculty. The presence of women in male-dominated fields is important to women student outcomes because more women present in the environment shapes the

decisions and directions taken by other women students.

Role of faculty and peers. The role of university faculty and the attitudes of peers influence a woman's choice of academic major (Tangri, 1972). Women pursuing male-dominated careers are often subject to faculty and peers who are not accustomed to having women students in their classes (Hall & Sandler, 1982). Some faculty may inadvertently or overtly treat men and women students differently in the classroom. Faculty and peers often create a "chilly climate" for women by singling out, overlooking, ignoring, or discounting them on the basis of the unchangeable characteristic of gender (Hall & Sandler, 1982). For example, a climate becomes "chilly" for women when stereotypical words, not applied to men, are used to describe behavior, women's appearance rather than accomplishments are focused upon, or women's accomplishments are downgraded. When women are singled out or ignored because of their gender, they may feel less confident about their abilities and place in the college community. McNamara and Scherei (1982) noted women were treated differently than men at the technical institute, because some professors did not know how to deal with women. Many of the women interviewed were actively discouraged by teachers and counselors who felt their goals were unrealistic or inappropriate given their gender. College

faculty members, who are in a strategic position to affect occupational stereotypes, are often in basic agreement with the students (Beardslee, & O'Dowd, 1967). Likewise, several studies have indicated that men faculty tend to affirm students of their own sex more than students of other gender (Hall & Sandler, 1982). For example, faculty may make more eye contact with male students, call on male students more often, ask women less critical questions, or use sexist comments, and/or inappropriate personal or sexual references. An environment that communicates different expectations for women and men may interfere with the educational process, put women at a significant educational disadvantage, and reinforce men students' own negative views about women. Likewise, male students that intentionally disrupt women's work and abilities create a "chilly climate" that wastes women's resources (Hall & Sandler, 1982). Alternatively, Parsons (1983) noted that students with teachers and parents who had high expectations for them, had high expectations for themselves, and did better in their course work. As women are more sensitive to social aspects of their experiences than men (Hearn & Olzak, 1981), they often choose majors with more favorable internal departmental characteristics. These internal characteristics include a supportive environment with high level faculty concern (Hearn, 1980). Women, in contrast to

men, are more affected by primary social relationships with professors and may require more non-routinized, personalized feedback from faculty in order to assess how well they are satisfying organizational expectations. Cooper and Robinson (1985) indicated that women need more support than their male peers to choose and stay in the field of engineering. Women's achievement efforts are also motivated by need for affiliation and external rewards such as praise (Stein & Bailey, 1973). As women are influenced by professors and college friends (Lyson, 1980; Thistlethwaite, 1959), a sizable number of women in the field provides the social and academic support needed by women and attracts more women to the male-dominated professions.

CHAPTER 3
METHODOLOGY

Description of Research Requirements

The chosen methodology was based on the exploratory nature of the study. Upon initiation of the study, the reasons women leave male-dominated college majors to enter female-dominated majors could not be operationalized and definitions of independent variables could not be predetermined because the factors and outcomes associated with women's withdrawal from male-dominated to female-dominated majors were relatively unknown. Flexible boundaries were required to allow for emerging variables in understanding and explaining the relationships among variables and the problem (Katz, 1953). The nature of the study required a methodology that was qualitative in nature with in-depth description to allow for inquiry that began with the researcher's general understanding of certain aspects of the topic under study.

Sample

The sample consisted of undergraduate female students attending Virginia Polytechnic Institute and State University at the time of the study who changed from a male-dominated major to a female-dominated major. The students

were selectively chosen according to their qualifications. The participants sampled were majoring in a female-dominated field in the College of Human Resources after pursuing and transferring out of a male-dominated major in the College of Business, College of Engineering, or College of Architecture.

Instrument

To assist participants in recalling significant influences in their decision to transfer out of a male-dominated program, a structured interview format was developed and administered. The framework of the interview questions were based on the general theory of person-environment interaction and are shown in Appendix A. Person-environment interaction implies that personological characteristics interact with environmental conditions and in combination influence how the individual evaluates and responds to the environment (Strange & King, 1990). The best outcomes for individuals and for environments will occur when there is an "optimal mismatch" between certain noticeable characteristics of the person and proportional or related characteristics of the environment (Huebner & Lawson, 1990). To explain college students' behaviors, the participants' behaviors were viewed as a function of the

persons interacting with their college environments. The participants were questioned to recall and describe relevant experiences in both their male-dominated field and the new program of study. Additionally, the participants were asked to describe the reasons for their initial choice of major, and the reasons for their decision to leave their initial choice to enter their final choice of major. The interviews were not identical because unique probing questions, based on students' responses, were used to elicit additional information and to avoid ambiguities. Additionally, an interview guide was used to ensure a systematic inquiry about the issues pertinent to the study including faculty behavior, classroom environment, performance pressures, peer relationships, rewards, and expectations as illustrated in Appendix A. The interviews were terminated when the participants offered no new information.

Procedures

Data were collected in stages. Participants were contacted by phone, given advance notice of the interview topic, and scheduled interview appointments. The study began with a single pilot study and used Appendix A. Focus group interviews where general questions were asked of the participants were conducted and used Appendix B. In the

exploratory interview, a broad open-ended question related to the central interest of the researcher followed by a series of probes were used to obtain additional information. The open-ended question approach was used to discover unanticipated responses and the participant's own perception of the facts (Gorden, 1969). The topic was not controlled because the participant was allowed to follow her own frame of reference. Lead questions directly relevant to the objectives of the interview were used to lead the respondent to relevant question areas. Results from the first interview were analyzed to determine if the prior questions were sufficient or needed modification. The interview questions were then modified according to advice given by the participant and committee chair, Dr. Don Creamer.

The first exploratory one-on-one interview provided the foundation for the questions used in the later interviews and was conducted in the presence of committee chair, Dr. Don Creamer, to obtain information relevant to the researcher. Interview questions and guide were then modified from the initial one-on-one interview to help remind the researcher of areas to be covered in the investigation and direct the investigator toward the topics under study. The remaining interviews were comprised of less than five individuals per focus group, used the

interview questions outlined in Appendix B, and were tape recorded to aid in interpretation of the findings.

Reliability

The pilot study was conducted by trying out the proposed procedures on a subject, who was included in the final study, through a one-on-one interview. The pilot study enabled the researcher to assess the appropriateness and practicality of the data collection approach by obtaining a more detailed account of the events and cross-checking the accuracy of the informant's observations (Gorden, 1969). The pilot study was conducted in the presence of committee chair, Dr. Don Creamer, to aid in the interpretation of findings and the formation of interview questions and interview guides outlined in Appendix B. Katz (1953) noted that pilot studies are essential in developing procedures for applying the research instrument, testing the wording of the questions for understanding, and ensuring questions or observations are measuring the objective under study. Unanticipated problems that appeared could be resolved at this stage and specific questions could then be formulated to obtain relevant information. An interview guide was prepared to help direct the researcher toward the objectives under study (Gorden, 1969). The interview guides

represented an outline of the topics and sub-topics to be covered during the focus group interviews and are presented in Appendix B.

To obtain more complete detail and increase the participants' conscious willingness to give the relevant information, participants' were informed of the interview topic prior to the interview and were asked to select a time where the fewest time demands were present (Gorden, 1969).

Analysis of Data

All interviews were recorded electronically and extensive field notes reflecting the content and impressions of the interview were taken during and immediately following each interview. Data collection and data interpretation took place simultaneously where the researcher developed an understanding of what was heard and sought to confirm or disconfirm that understanding in subsequent interviews. All recorded and written information served as data for analysis. The data were analyzed using comparative analysis that called for the researcher to critically review each interview and form initial ideas about conceptual categories based on the data. Similarities and differences in students' responses were examined in terms of reasons for departure from the initial choice to final choice of major.

This process enabled the researcher to pursue ideas in subsequent interviews and analyze detailed field notes of each interview to identify categories and properties of each category. As categories were identified, field notes were coded by assigning a number corresponding to each category in the margins. Categories were continually redefined as data were coded. Some data fit into two or more categories so were coded according to all the categories. The data were then sorted into coded categories that were based on subjective analysis and developed from the data. Category content that developed represented emerging themes or patterns of conversation and related to factors that influence undergraduate women in male-dominated majors to leave and enter female-dominated majors. Categories were formulated to develop an understanding of the setting and people under study.

Chapter 4

RESULTS OF THE STUDY

The intent of this chapter is to examine the sample, the interview process, and the findings. The sample is described to enhance the readers' knowledge and understanding of the participants. An in-depth explanation of the interview process is offered to provide enough information about how the research was conducted to enable readers to understand the findings in context. Additionally, the findings are presented as candidly as possible to enable readers to understand and to interpret the findings. The findings are presented by conceptual categories that captured recurring themes and offered a perspective on the participants' lives, experiences, and situations as expressed in their own words. Additionally, the findings are discussed simultaneously to determine the influence of combinations of categories on women's decision to leave male-dominated majors and enter female-dominated majors. A dominant category is then presented to help explain women's decision to leave male-dominated majors and enter female-dominated majors.

Description of Sample

The participants in the study were drawn from a pool of thirty six women students who transferred to the College of Human Resources. The main selection criteria consisted of the women's initial choice of major in the male-dominated College of Business, College of Engineering, or College of Architecture, and their final choice of major in the female-dominated College of Human Resources. The male-dominated majors were distinguished from the female-dominated majors by the percentage of men and women enrolled in particular majors at Virginia Polytechnic Institute and State University. In a given college, if the majority of students enrolled were females, it was defined as a female-dominated field of study. Conversely, if the majority of students enrolled were males, it was defined as a male-dominated field of study. All thirty six women were contacted by telephone and given the option to be interviewed. A total of twenty college women from various academic levels agreed to be interviewed. Of the twenty, fifteen women had transferred from the College of Business to the College of Human Resources. The remaining five consisted of four women transfers from the College of Engineering and one woman transfer from the College of Architecture. The woman from the College of Architecture was included in the study for

the meaningful contributions and relevant comments she added by describing her experiences in a significantly male-dominated major. The comments presented by the woman in the College of Architecture were also included because her remarks reinforced the observations made by the women in the College of Engineering. These five women had left their initial choice of major to pursue a major in the College of Human Resources. All the participants were between the ages of 18 to 22.

Interviewing Process

The college women were interviewed in focus groups defined according to their initial choice of major. Focus group interviews were selected over individual interviews because group dynamics would produce more information. Women transfers from the College of Business were interviewed separately from the women who transferred from the College of Engineering and College of Architecture. Women were interviewed in focus groups defined by their initial choice of major to ensure that comparisons between the women's responses could be made. Comparison of the women's responses were of importance because the College of Architecture and College of Engineering were both significantly more male-dominated than the College of

Business. The woman in the College of Architecture was included in the focus group comprised of women from the College of Engineering, because the College of Architecture and the College of Engineering were significantly male-dominated and might afford female students similar experiences. On the average, each taped interview lasted approximately one hour and was conducted by the primary researcher and occasionally one to two colleagues. Colleagues were present during the interviews to conduct their own independent research. The interviews were conducted in the student center meeting rooms. The interviewers were female graduate students and had college student personnel training. The primary researcher was trained to conduct the research project during one pilot study. One month was required to collect all the interview data.

Caveats

Considerations need to be taken into account when reading and drawing conclusions from the findings. First, one should not be surprised by the harsh tone used by the women to describe their experiences in their initial choice of major. The women's harsh views may serve as a rationalization that their decision to leave their initial

choice of major was correct. Secondly, perceptions of a better fit in the women's final choice of major may be related to their added experiences. The women are now older and have tackled important career development tasks that were unresolved when they made their initial choice of major. Lastly, in examining the relationship between categories, the findings should be viewed tentatively based on the limited number of subjects and difficulties in drawing sharp distinctions because of the overlap of categories.

Findings

The findings are presented by conceptual categories. Based on the exploratory nature of the study, categories were not defined at the outset. However, interview questions were designed to elicit information related to specific research findings. An assumption was that data related to specific research findings would emerge as categories. Conceptual categories were defined by analyses of students' responses to interview questions and consisted of similar properties related to factors that influenced women in male-dominated majors to leave and enter female-dominated majors. A category unites underlying similarities and recurring themes as captured by the words and phrases of

the participants. In other words, the categories derive their meaning from the participants' responses and not the researcher's definition (Taylor & Bogdan, 1984). While the categories help explain the question under study, the categories are not exclusive. Students' feelings about themselves, the environment, and involvement in college life may be assessed by other categories because the categories are dependant upon the individual characteristics of a college and any group of students (Shaw, 1981). Discussion of the categories include definitions of the categories and descriptions as explained by the participants. Each category description was separated by college to present the data objectively and to enable the reader to make comparisons of the women's responses. A chart is located in Appendix C that includes each category and full category descriptions separated by college. Table 1 displays the categories and their principal properties. These categories include classroom environment, curriculum content, faculty behaviors, peer relations, performance pressures, and role expectations.

Classroom Environment

This category emerged from the students' responses to interview questions one and three. These questions asked the women to describe their experience of being a female in their first and current choice of major, and to describe

Table 1

Properties of the Categories Associated with Women's Decision to Leave a Male-Dominated Major and Enter a Female - Dominated Major

CONCEPTUAL CATEGORIES	CATEGORY PROPERTIES
CLASSROOM ENVIRONMENT	<ul style="list-style-type: none"> • Class size • Teaching styles • Climate • Patterns of behavior
CURRICULUM CONTENT	<ul style="list-style-type: none"> • Perceptions of topics • Reactions to course subjects
FACULTY BEHAVIORS	<ul style="list-style-type: none"> • Teachers' mannerisms • Teachers' conduct
PEER RELATIONS	<ul style="list-style-type: none"> • Description of individuals in classroom • Peer interactions
PERFORMANCE PRESSURES	<ul style="list-style-type: none"> • Grades • Rewards • Time constraints • Classroom interactions
ROLE EXPECTATIONS	<ul style="list-style-type: none"> • Career and future goals • Responsibilities • Admiration • Support influences

their reasons for leaving their initial choice of major and for entering their current major. This category referred to the surroundings where a group of students met and were taught together. Description of this category reflected the students' perceptions of their classroom surroundings and subjective interpretation of properties that impacted their participation in the classroom. The properties discussed included class size, teaching styles, and climate referring to the respondents subjective impressions of the patterns of behavior that occurred in the environment.

College of Business. The majority of women described their classes as very large and impersonal. Interaction was not encouraged as a lecture format was the primary mode of instruction, question asking was not deemed important, and deviation from the day's agenda rarely occurred. A few women mentioned that if interaction did occur, more men than women answered the questions because some women were reluctant to talk. As described by one woman, men commonly "yelled out the answers without raising their hand." Men were encouraged to offer in depth explanations while women answered questions with yes or no responses with little explanation. Additionally, the environment was described as competitive, structured, and impersonal because women were encouraged to fend for themselves and rarely rewarded by faculty or peers for their efforts. Descriptions of the

environment included, "you scratch my back and I'll scratch yours," "every man for himself," and "cut throat."

Likewise, the environment was described as unfriendly and uncaring because students were "on their own," treated like a number, and names were not known.. Several women also described feeling like they were expected to leave or a "weeding out" process. This process contributed to feelings of tension and stress. One woman stated that she sat in the back of the room while others dreaded going to classes or skipped because of feeling lost and/or no connection with the College of Business. Another woman described that she did not fit the business stereotype because she could not relate to the business image.

College of Engineering and College of Architecture.

The classroom was described as a competitive environment where "weeding out" occurred. The women described the male domination in the classroom as they were one of few women in the room. One woman mentioned she would look for other women to sit next to in class because the men noticed her presence and made her feel uncomfortable. Many women felt uncomfortable in the classroom because asking questions was difficult with the male domination, causing one woman to hesitate before asking questions. Additionally, interaction occurred primarily between the faculty and male students as input from the female students was not sought. Lastly, the

women also talked about how they were made to feel like a statistic and often reminded of the common myth that "women cannot handle engineering things."

College of Human Resources. The classes were described by almost all the women as small, friendly, comfortable, and personable. The environment was further described by one woman as a "home." As mentioned by another woman, a feeling of belonging was promoted. The women commonly described feeling "welcome" as all individuals were encouraged to interact and hold open discussions. As one woman mentioned, a lot of students met one another because interaction was encouraged. Debating and question asking were permitted and input was continually sought. Lectures were not common as "hands on" experiences through group projects were encouraged. Several women described the classroom environment as cooperative and relaxing because the discussions were well paced and creativity encouraged. Likewise, the engineering and architecture transfers described the environment as comfortable, interactive, and relaxing. However, many women thought they lacked a male perspective because of the few men attending the classes.

Curriculum Content

This category was derived from students' responses to questions one and three. This category reflected the students' perceptions of the topics and themes that were

discussed in class. Additionally, the students' reactions to the subjects addressed in the courses were provided.

College of Business. The curriculum content was described by many women as highly structured and math oriented where numbers, facts, formulas, and figures were emphasized. One woman mentioned that the subject matter was not what she had expected. The examples used in class were perceived as not applicable or relevant to the women students. A common assumption was that the students should understand the subject matter and only right or wrong answers exist. As described by one woman, "you either know the subject matter or you don't." Explanations were not needed because students were encouraged to only do what they were told. Many women thought the material boring and dry. Additionally, the material was described as overwhelming, very demanding, and difficult to understand. Many women mentioned being unhappy with the time-consuming, uninteresting, and repetitive work that lacked "spark." Exam questions were commonly presented in multiple choice fashion causing many women to perceive the thought process as a "guessing game."

College of Engineering and College of Architecture. The curriculum content was math and science oriented with emphasis on equations. The math problems were assigned and collected often. The material was taught at a fast-pace

using a lecture format. Additionally, the material was described as dry, boring, and unapplicable. Many of the women were unhappy with the academic work because the material was difficult to understand and too technical. Tests were further described as difficult and discouraging.

College of Human Resources. The curriculum content was commonly described by the women as people-oriented, provoking thoughts and feelings. Additionally, individuality and solving people's problems was encouraged. Tests were fill-in-the-blank because many of the women believed opinions and understanding thought processes were viewed as important. The subject matter was further described as important, common sense, interesting, enjoyable, and relevant because the women thought the subject matter reflective of themselves and based on their realities. As mentioned by one woman, the subject matter reflects "who I am" and "what I want to do." This was a common belief because all the women wanted to work with people. The business transfers further perceived the academic work to be applicable and related to what they liked because of the common belief that they were learning things that could be used all their lives. For example, many of the business transfers described the academic work as accurate reflections of themselves. Several women mentioned that as they began to know more about themselves, they realized

helping and working with others was what they enjoyed. Likewise, many of the women realized they wanted to teach because they enjoyed watching others learn, interacting with children, and influencing children's lives. As mentioned by one engineering transfer, "teaching children and watching them learn is interesting."

The engineering transfers further described the subject matter as relevant, practical, and applicable because the course curriculums were perceived as useful in every day life. One engineering transfer felt the subject matter encouraged her to analyze and identify who she is as a person. In addition, many of the women felt they related to the subject matter because the female examples used were reflective of their experiences as a female caretaker. Many women thought they brought to the classroom "hands on" experience that enhanced their understanding, comfort, and interest in the subject matter. The women also mentioned that through group projects ideas could be shared and individual work achievement could be viewed and rewarded by others.

Faculty Behaviors

This category emerged from students' responses to interview questions one and three. Description of this category, as described by the participants, referred to the

teachers' mannerisms and conduct in reaction to the environment.

College of Business. Several women described the faculty as uncaring and unsupportive because of their concern for only a select group of students. Very few faculty members were described as knowing the students' or their names. Additionally, certain faculty were described as unapproachable, impatient, and intimidating. One woman felt she did not really know the faculty and felt isolated from them. Certain faculty were perceived as having no time for students because they were difficult to contact. One woman described certain faculty as "brushing students off." Another woman had not met one of her professors because the class was taught by a television monitor. A common perception was you only go to professors with problems and you may get the run around. Many women felt they received no guidance and walked through their business program blindly. Several women did not know why they had taken certain classes because explanations were not offered. As mentioned by one woman, "what the professor says goes" and your reasoning does not matter. Another woman mentioned that to get help one needs to know a high up administrator or meet with a teaching assistant during his or her office hours. Teaching assistants were often utilized in the classroom and were described as only concerned about

themselves and not their students. Several women thought certain faculty to be ineffective teachers as they would come unprepared to class.

College of Engineering and College of Architecture.

Certain faculty were described as impersonal and unapproachable because of the lack of concern for students. The women also described being treated differently than the men. For example, several women described that certain faculty members held the belief that women do not belong in engineering, nor will they survive the course work. The women were often told they were not welcome and were expected to drop out. Certain faculty assumed that women needed additional help in understanding the course work so would occasionally go out of their way to offer explanations at a slower pace. One woman described the faculty at times being overly ready to help women, because they were viewed as not liking math or told that women are not "scientifically inclined." Additionally, one woman was told by a professor not to go out socially in order to study while another was "hit on" by her professor. Likewise, derogatory comments were made by certain faculty about the "softer sciences."

College of Human Resources. The faculty were commonly described as personable, supportive, caring, approachable, and friendly. The women thought they received personal

attention from the faculty and were treated like a person rather than a number. The willingness of faculty members to help students was described through examples of displayed concern for the students' personal welfare, liberal office hours, an "open door" policy, and distribution of home phone numbers. One woman mentioned that faculty members can be counted on to return phone calls and are willing to help students find the desired information. A common belief was the faculty go out of their way for the students as displayed by their involvement with student concerns and interests. The engineering transfers also elaborated on the willingness of faculty members to help with transitional issues and offer support. The faculty were described as encouraging and enthusiastic because of their willingness to make time to talk to students. Likewise, the faculty were described as open, understanding, and promoters of positive learning because of their willingness to look at all sides of an argument and listen to differences. As further described by engineering transfers, the faculty know how to teach because they are responsive, understanding, and sensitive to issues. Additionally, the women liked working with the faculty because many had their doctorates, were supportive, asked for student opinions, and made students feel important.

Peer Relations

This category was derived from students' responses to questions one and three. Peer relations referred to the mutual exchange between individuals having the same status, ability, and dealings with one another. Properties of this category included participants subjective description of those individuals they interacted with in the classroom.

College of Business. Many of the women described their classmates as confident, ambitious, and stuffy. Additionally, the students were described as competitive and would compare test scores and future jobs with one another. The students were perceived as independent, having very little free time, and career-oriented. As mentioned by one woman, business students are continually on the go and strive to get ahead. These explanations were closely related to the common description shared by the women of a typical business person with a suit and brief case. Additionally, the men in the classroom were perceived as always taking the credit for projects jointly completed by women. Conversely, one woman, described the women as not expressive and doubting of their own abilities. Another woman viewed the women as bitchy and stopping at nothing to get ahead.

College of Engineering and College of Architecture.

The women often stated that the men in the classroom would treat the women differently. Men did not view the women as equals and often made negative remarks to women who academically stood out in class. Many of the women thought the men believed women did not understand the subject matter or would eventually drop out. Additionally, the women held the common perception that they were viewed by men as "nuts" and were enrolled in engineering to "pick up men."

College of Human Resources. Students in the classroom worked together often, paid attention to the professors, and cared about their classes. Likewise, the students offered each other encouragement, support, and help. The women felt that they knew most of their classmates and established good relationships. Students were described as team players and formed friendships and camaraderie. The students were further described as cooperative, laid back, less competitive, and enthusiastic. Additionally, the women were described by the engineering transfers as sure of themselves while the males in the class room were described as easy to get to know and willing to offer help.

Performance Pressures

This category emerged from students' responses to interview questions one and three. As the women strived to

meet their own standards, the quality or manner of accomplishment interfered with their freedom to make decisions. Properties of this category, as described by the participants, included grades, rewards, time constraints, and classroom interactions.

College of Business. Many women entered the College of Business because they were strong in math or enjoyed business classes such as marketing or math in high school. Work experiences in the business field were also mentioned frequently because many women had summer jobs in the business community. Working for parents and office manager work were just a few examples of working experiences described by women. Lastly, the belief that one had the abilities to succeed in the College of Business was a strong motivator to pursue a business major.

Many women described the pressure to learn and to get good grades. However, the women continually mentioned the struggle to understand the subject matter and difficulty in "grasping the information." The women would study hard but receive low grades or were left behind by the fast pace. One woman mentioned she was not satisfied with the Cs she was receiving. Stress was often mentioned because some women felt they could never catch up or understand the material. Feelings of frustration and isolation were described by many women who were reluctant to ask questions.

Questions were not asked because the women did not know the subject matter but thought that other classmates understood the material. One woman thought that she was an outcast because of her poor grades. Several women mentioned the "cut throat" environment that pressured students to get better grades than the next person. One woman mentioned that the men in the classroom did not want to see the women do better. However, few students were rewarded for their efforts because "doing good was expected." The women further described feeling discouraged about their poor grades and QCA. Poor performance contributed to feelings of stress, lack of personal time, and in one case contributed to a father requiring his daughter to leave the College of Business.

College of Engineering and College of Architecture.

Mathematical abilities played a part in many of the women's decision to enter engineering. The women often described themselves as strong or good in math. However, engineering required the women's total commitment. Eighteen credits and self-instruction were often expected. Many of the women felt pressured to be a great student and receive good grades. The women further described working hard but the males received faculty praise. One woman mentioned she was always staying home, studying, and felt pressured to perform well because she was a women. The pressure to be a great

student and receive good grades was described by many of the women. Additionally, one woman felt she was under scrutiny because she was paid a lot of attention by the males and needed to "prove herself" by knowing all the right answers. The nonstop pressure made many of the women unhappy. The women commonly mentioned that the grades they were receiving in engineering classes were not what they knew they could make. For example, one woman mentioned, she was an "A student making B grades." Not performing up to ones' abilities was difficult to handle, caused low self-esteem, and raised doubts about ones' abilities for many of the women.

College of Human Resources. Many of the women felt rewarded by the faculty who offered praise, help, and encouragement. Likewise, the women were positively reinforced as the faculty offered incentives and feedback. Many women were satisfied and pleased with their performances because their grades made noticeable improvements. One woman mentioned performing better in difficult math courses while others described the increase in their QCA. Improvements in grades encouraged many of the women to work harder and increased their confidence. As mentioned by one woman, her efforts were revealed by her better performance. Additionally, the women were informed about the grades that they would be receiving and understood

why they were getting certain grades. This knowledge was known because the women would evaluate their own performance, discuss test answers, and often check or compare their performance with others. Additionally, the engineering transfers explained that there was less pressure to perform, individual achievement was focused upon, wrong answers were acceptable, less studying was required, and opportunities were available to explain oneself.

Role Expectations

This category emerged from students' responses to interview questions two and three. The description of the category referred to the anticipated and probable part an individual played in a specific situation. This part was regarded as almost certain and was looked upon by individuals with hope and pleasure. Properties of this category, as described by the women, included future goals, responsibilities, admiration, support, and influences.

College of Business. The ability to find a job and make money were common reasons women pursued a business major. Many women felt it was easy to find a job with a business degree and expected to earn a lot of money. A common expectation was that a business degree would always be useful and was an important ingredient to being a career woman. As mentioned by one woman, the business field is up and coming for women. Likewise, women often mentioned their

ambitions of being heads of IBM, leaders, bosses of their own businesses, or lawyers. Alternatively, many of the women thought the business field offered little flexibility in their lives and did not afford opportunities to raise their own families.

The women often mentioned admiring or looking up to individuals in the field of business. Fathers, brothers, and mothers were often mentioned as those individuals admired in the business field. Likewise, parents' expectations played a part in decision making as fathers or mothers pushed their daughters to pursue a business major. One woman mentioned both her father and brother did well in business so she felt a business major was suited for her. Likewise, women commonly described at least one person in business that supported their decision to pursue or succeed in business. For example, mothers were commonly described as corporate women in suits, and fathers were often described as bread winners, or big business men.

College of Engineering and College of Architecture.

Significant others played a large role in women's decision to enter engineering. Parents, grandparents, and friends were often described as supportive and enthusiastic about their decision to choose an engineering major. One woman mentioned knowing a lot of engineers while another mentioned the influence of a female engineer. Parental support was a

common element that played a part in women's decision to choose an engineering major. One woman mentioned that individuals assumed she was smart and should enter a field that was challenging and difficult to enter. Her parents thought "engineering would be perfect for her." Another woman mentioned she entered an engineering major to make others proud of her accomplishments. Others would be proud if she could "beat the odds." Money was also a persuasive factor because as one woman mentioned she did not want to be dependant on a man and felt the engineering field had good job prospects.

Several women described the move to the College of Human Resources from the College of Engineering and College of Architecture difficult. Women were afraid that the move to the College of Human Resources would effect their reputation because majors in the College of Human Resources were often viewed by others as a female designed major consisting of easier courses. While some were supportive of the transition to the College of Human Resources, some women described the lack of encouragement and resistance that occurred from the decision. Additionally, one woman felt she had the option to leave an engineering major because she did not need an engineering degree to make a living.

College of Human Resources. Many of the women mentioned that money became less important as they began to make decisions for themselves. As one woman mentioned, "money is not that important if your not enjoying what your doing." Likewise, another woman stated that "not making a lot of money is okay." Working with children and doing something enjoyable became a priority. As mentioned by a woman, "I wanted to pursue what I wanted to do". One woman perceived herself working with other women and could accomplish this goal in a human resources major. Other women did not want to sit behind desks all day in a business career. In addition, parents, family, and friends encouraged several women to transfer to the College of Human Resources and pursue people-oriented majors. Many women mentioned that their parents expected them to someday work with children or become teachers. Additionally, the women often mentioned that they could not handle failing the business courses and the competitive business environment.

Several business transfers believed the field of human resources was a perfect career to raise a family because of the flexibility needed to raise children at home. Family obligations and the role of a homemaker were deemed important by almost all the business transfers. As mentioned by one business transfer, "family first then a

job." Many former business students mentioned they needed to be in a field that afforded flexibility because they wanted to raise their children at home or take them to work.

The commitment to raising ones' own family and children contributed to some of the women leaving engineering and architecture majors. Many of the women wanted flexibility to raise a family and children that they could not receive in an engineering major because of the time pressures. The women described engineering as a tradeoff, one can not raise a family and have a career. Engineering does not afford the opportunity to take time off because of the continual changing technologies. Alternatively, several of the women believed a degree in human resources would enable them to take time off or do work at home. As mentioned by one woman, I was looking for a "balance in my life" where I could raise a family, be there for my children, and have a career. In other words as described by another woman, "I want a career that is compatible with my family demands."

Discussion of Findings

Decision Rules

The categories were considered simultaneously to determine if combinations of categories were related to factors that influenced women in male-dominated majors to

leave and enter female-dominated majors. Categories were compared one at a time to determine if and how they jointly affected one another and influenced women's decision to leave a male-dominated major and enter a female-dominated major. Each of the categories explained why women left male-dominated majors to enter female-dominated majors but few of the categories taken alone explained the decisions fully. All the categories were interdependent and when combined had a greater influence on women's decision. In other words, there was an apparent relationship between categories and each category had greater explanatory power when combined. The categories' comparative influence on women's decision to leave a male-dominated major and enter a female-dominated major were first examined by focusing on classroom environment and faculty behaviors. The next category added to the comparison group was peer relations and was followed by role expectations. Curriculum content followed by performance pressures were the last categories added to the comparison group. The order of category comparison was not significant because one category did not have a greater influence on women's decision to leave a male-dominated major and enter a female-dominated major. In other words, each category equally contributed to women's decision making. The following describes the affect each category had on one other and how that impact influenced

women's decision to leave a male-dominated major and enter a female-dominated major. Additionally, some of the results were explained in terms of the literature.

Discussion

Once in male-dominated classroom environments, occurrences happened that encouraged women to doubt their initial choice of major, leave, and enter a female-dominated major. Classroom environments and faculty behaviors were factors that influenced one another and women's decision to leave. The largeness of the male-dominated classroom environment may have influenced faculty behaviors by creating time demands that caused many of the faculty to be difficult to contact and impatient. Faculty were viewed as unapproachable and isolated because large classes called for television monitors and teaching assistants to aid in classroom instruction. Because the faculty were viewed as inaccessible, women often spoke of the lack of guidance and explanations that caused them to fend for themselves. Hall and Sandler (1982) noted that faculty in male-dominated majors create a "chilly climate" because they are often less willing to work with the women students. This contributed to women's lack of connection with the faculty and the classroom environment, creating an unfriendly and uncaring atmosphere.

Additionally, both faculty behaviors and classroom

environment impacted the mens' view of women and the development of peer relations in the classroom. In the male-dominated majors, the faculty were difficult to contact and had little free time. Likewise, the students were on the go, independent, and lacked free time. This offered little opportunity for friendship development.

Additionally, the faculties' limited views about women may have further reinforced any negative views the male students held about women. This was evident by the male students and the faculty who told the women they did not belong, were not scientifically inclined, and would eventually drop out.

Likewise, men were encouraged by faculty to offer in depth question explanations while women were addressed for yes or no responses. Hall and Sandler (1982) noted that differential behaviors and disparaging remarks may cause women to think themselves as not quite on a par with men. Women may begin to believe that their presence in a given class is an unwelcome intrusion, and their participation in class discussions is not important. Likewise, features of the classroom setting that create competitive discussions may put some women students at a disadvantage by enabling men to talk more and for longer periods of time than women. Epstein (1970b) noted that the male dominant group may exclude women and create a self-serving occupational culture by citing group differences and by sharing a strong identity

(Reskin, 1988). Students that lack the appropriate qualities may not be accepted and, thus, guided into other majors. Since men were not encouraged to view women as equals in the male-dominated classrooms, women had to fend for themselves and, thus, felt uncomfortable and unsupported. In a "chilly climate" male students may be less likely to collaborate with women, more likely to question or ignore women's abilities, use masculine language, and expect women to represent women's views (Hall & Sandler, 1982).

Alternatively, the women participants were attracted to the female-dominated majors that offered student-oriented faculty and friendly environments because women, more than men, are attuned to the personal supportiveness of their environment (Hall & Sandler, 1982). Supportive faculty behaviors may be crucial to enhance women's chance of success in male-dominated majors, because faculty can influence women's choice of academic major (Tangri, 1972). In the male-dominated majors, women's goals were actively discouraged by faculty and peers who deemed them inappropriate or unrealistic given their gender. Conversely, the women in the female-dominated majors were motivated to achieve by the faculty's display of praise, positive reinforcement, and feedback. In an environment where the women were encouraged and supported by classmates

and faculty, the women perceived a perfect fit.

Role expectations were further influenced by and impacted faculty behaviors, classroom environments, and peer relations. Women entered the male-dominated majors with common objectives in mind. Make money, obtain a respected job, and make others proud. However, the impersonal, competitive, and unsupportive male-dominated classroom environments made the women reexamine their decisions. The classroom environments, comprised of faculty and peers, were sending signals that women were not wanted, nor would survive in the male-dominated environment. The faculty and peers' lack of time and guidance lead women to doubt that a career in a male-dominated field would afford the flexibility needed to have a career and family. Time pressures and keeping up with the latest technology did not afford the flexibility women viewed as necessary for raising children. As noted in the literature review, male-dominated fields place greater strain on women as they may experience conflict between career and family (Cooper & Robinson, 1985), illustrating the double choice many college women encounter. Likewise, as women reach adulthood they are pressured to adhere to feminine role definitions (Dickerson & Hinkle, 1978). Being a recipient of support, treated equally, and rewarded for contributions in the female-dominated classrooms encouraged women to conform to a new

role expectation and forego achieving one's initial career expectation. Upon entering the female-dominated majors, the women were immediately rewarded. Faculty and peers paid attention to the women and were concerned about their futures. This positive reinforcement, offered by faculty and peers in the female-dominated majors, confirmed the women's decision. Likewise, the female-dominated majors were viewed by the women as compatible with role expectations and extensions of family roles such as working with children and with family demands. The women were encouraged to combine the demand of the work place with marital and family responsibilities by major departments that emphasized domesticity and encouraged women to commit to that norm.

Curriculum content was influenced by and impacted faculty behaviors, classroom environment, peer relations, and role expectations. The curriculum content in the male-dominated majors was described by the women as boring, dry, and unapplicable. The faculty contributed to this belief through impersonal teaching methods, impatience, and little guidance. Classroom exams and discussions became a guessing game where only right answers were rewarded. Likewise, the lack of faculty guidance caused peers to have little free time to help one another with assignments and develop friendships. Additionally, the nature of the curriculum of

mathematical numbers, facts, and figures went against those expectations or characteristics viewed as feminine and encouraged faculty and peers to view women differently. A curriculum that was once of interest to women became difficult to understand, time consuming, and uninteresting.

In the male-dominated majors, the lecture format further hindered women because the lack of feedback was a problem, women were not motivated, and the material was difficult. In the male-dominated majors, discussions may have been more efficient in bringing the source of intellectual or emotional resistance to light so that it could be treated (McKeachie, 1962). Discussion techniques allow for the student to develop criticalness by evaluating one's thinking against others. Likewise, active learning encourages immediate feedback that enables students to test their ideas in situations in which the results are immediate. Acquiring knowledge for women, in the male-dominated majors, was difficult as the lectures provided few opportunities for feedback and created an impersonal classroom environment. Alternatively, in the female-dominated majors, the faculty maximized the success of the learning process by depending upon the optimal combination of teaching and student need. In the female-dominated majors, curriculums were taught through group projects and open discussions that encouraged interaction with faculty

and peers because the nature of the curriculum content in human resources was more conducive to projects and discussions than the curriculum content in the male-dominated majors. Active learning in the female-dominated majors created a personable classroom environment that characterized the way the women perceived themselves and reinforced the student's sense of being recognized as an individual. Likewise, these teaching modes and personable faculty behaviors accurately reflected the people-oriented curriculum that characterized the feminine characteristics that the women valued. Plas and Wallston (1983) noted that women value and identify with those characteristics they stereotypically associate with females rather than males. Thus, students will learn what information is of interest to them (McKeachie, 1962) and will work most effectively in situations that conform to their preferences and feminine role definitions.

Lastly, performance pressures influenced and were affected by classroom environment, faculty behaviors, peer relations, role expectations, and curriculum content that were not conducive to achievement in the male-dominated majors. Negative attitudes and unsupportive behaviors had a negative impact on women's performance. The women felt they should demonstrate superior competence because they were under scrutiny and wanted to be considered equal or accepted

by their male counterparts. As noted in the literature review, performance pressures to out-perform male counterparts are often placed on women who break ground in traditionally male territory (Kanter, 1987). Likewise, women may feel pressured to overproduce in a male-dominated major to make up for a situational down graded status (Epstein, 1970b). The pressure to perform well in the male-dominated majors was difficult as there was little faculty guidance, discriminatory classroom atmosphere, and nonapplicable curriculum content. Not performing up to potential made the women feel isolated, stressed, frustrated, overwhelmed, left behind, and question their initial role expectation. Poor performance further reinforced to the women that they could not succeed in breaking ground in male-dominated territory. Alternatively, in the female-dominated majors, the women experienced less pressures and improved their performance. A curriculum that was viewed as interesting, applicable, and reflective improved achievement. Likewise, support and guidance offered by the faculty and peers encouraged women to work harder and increased confidence. A classroom environment that treated women equally and was reflective of female characteristics naturally impacted performance positively. In culturally defined sex-appropriate activities, female achievement orientations are likely to be manifested (Stein

& Bailey, 1973). The women's abilities to excel in the female-dominated majors, reinforced the women's decision that they should pursue a major that was deemed culturally acceptable for women.

Dominant Category

Another way to describe women's decision to leave a male-dominated major to enter a female-dominated major is by external conditions that influence women's connection to relationships. Miller and Winston (1990) noted Gilligan's perspective that women's development of identity is viewed in a context of relationships and judged by a standard of responsibility. As women develop identity, they define themselves within the attachments and connections made with others (Brabeck, 1983). Women, more often than men, feel threatened by competitive success and its consequence of isolation. This implies that women's decision to leave a male-dominated major may be partially understood in a context of relationships. Women may decide on a major based partially on in class relationships or on others' reassurance and approval because of the need for attachments with others or the need to conform to others' values. Likewise, women's choice of major may change as women begin to see that "morality of care" must include care of self and others. Women may not feel comfortable striving for their own happiness if it means sacrificing the course of action

that others have planned. However, women's decision to leave a male-dominated major to enter a female-dominated major went beyond the existing theory of relationships because external conditions such as good grades affect women's decisions.

The dominant category of affirmation of self was identified as a single category. The dominant category was located by capturing the meaning of the informant's words and phrases that ran through all the categories and had sufficient strength to explain by itself women's decision to leave a male-dominated major and enter a female-dominated major. The relationship between affirmation of self and the six conditions is displayed in Figure 1. Figure 1 reveals that women's decisions to leave a male-dominated major and enter a female-dominated major is a function of affirmation of self derived from the six environmental conditions, classroom environment, faculty behaviors, peer relations, performance pressures, role expectations, and curriculum content. Affirmation of self is a function of these six conditions because students' behaviors can be viewed as a function of the person interacting with their college environment. In other words, the degree of interaction congruence between the student and each of these conditions affects affirmation of self and how women evaluate and

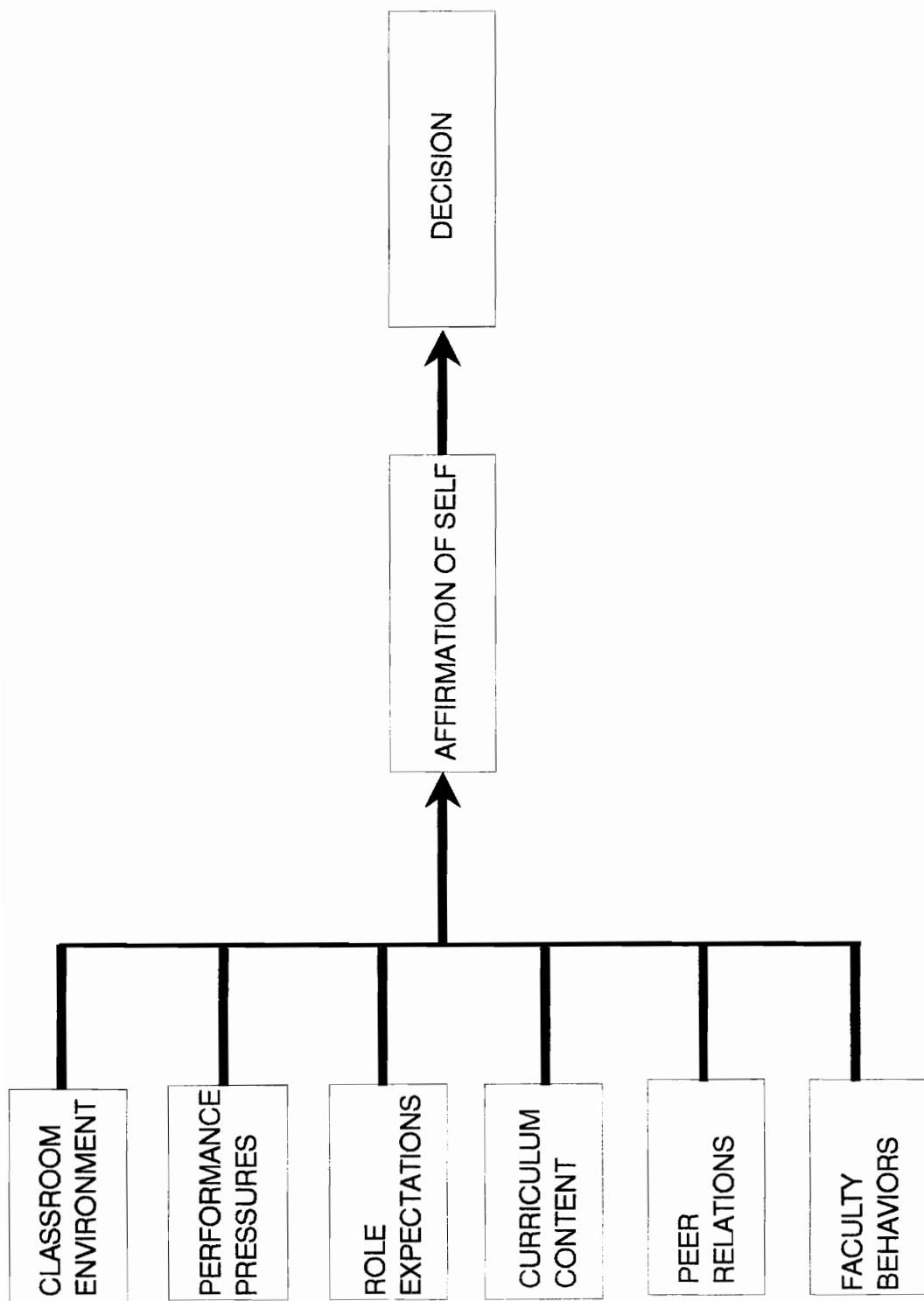


Figure 1. Major Components of a Generalized Theory of Women's Decision to Leave a Male - Dominated Major and Enter a Female - Dominated Major

respond to their environment. The absence of affirmation of self within the six conditions contributes to dissatisfaction, greater stress, and leads to withdrawal of the students to another academic major. This implies that retention effectiveness is largely influenced by the characteristics of the person and the environment. When the six conditions contribute to the presence of affirmation of self, the result is contentment, achievement, better performance, increased satisfaction, successful coping behavior, and persistence. Additionally, the presence of affirmation of self influences a positive self-image in relation to the six conditions that in large measure affects the decision making of women students. The more positive the women feel about themselves in relation to the six conditions, the greater their satisfaction with their choice of major. Through a highly supportive environment with few constraints and meaningful feedback, women become committed to and satisfied with their choice of major. In settings with strong external support, women feel free from tensions and conflict that inhibit career satisfaction. Freedom from internal conflict enables women to trust their judgement and develop their abilities that lead to choices that are right for each individual. A positive self-image was promoted through interaction with the six conditions that enabled women to take responsibility for their own actions, use

their abilities toward desired tasks, and understand their own tastes, values, and goals that defined their lives. Incongruence between women and the six conditions diminished women's positive self-image by operating against their own judgements and goal setting. The more negatively the women felt about themselves in relation to the six conditions, the greater the likelihood of their withdrawal from an academic major.

CHAPTER 5

SUMMARY, APPLICATIONS, AND RECOMMENDATIONS

Summary

This exploratory study was conducted because college women tend to lower their educational aspirations and leave majors that are traditionally sought by men (Jacobs, 1986; Vollmer, 1983; Holland & Eisenhart, 1981). The purpose was to identify the influence of traditional expectations and socialization in the college environment that prevent women from continuing in nontraditional directions. To gain knowledge about the factors that impinge upon women's pursuit of a male-dominated major, twenty college women from the College of Human Resources were interviewed and asked about significant influences that contributed to their decision to transfer from a male-dominated major to a female-dominated major. The data were analyzed using comparative analysis that called for the researcher to form conceptual categories based on students' responses to interview questions. The categories consisted of recurring themes and derived their meaning from the women's responses. To determine the influence of combinations of categories on women's decision making, findings were examined

simultaneously. The categories were found to be interdependent and equally influenced women's decision to leave a male-dominated major and enter a female-dominated major.

This exploratory study attempted to identify factors in the college environment that influenced undergraduate women in business, architecture, and engineering male-dominated majors to leave and enter female-dominated majors in the College of Human Resources. Six influential conceptual categories were identified by using an in-depth interview approach and comparative analysis. These categories encompassed: (a) classroom environment; (b) faculty behaviors; (c) peer relations; (d) performance pressures; (e) role expectations; and (f) curriculum content. Additionally, categories were considered simultaneously to examine the joint influence on women's decision to leave a male-dominated major and enter a female-dominated major. Results of this study appeared to support the basic premise that women's decision to leave a male-dominated major and enter a female-dominated major went beyond the existing theory of relationships and is a function of affirmation of self derived from the six conditions. Departmental cultures and women's concerns over the appropriateness of a nontraditional major preserved rather than reduced stereotyped differences between women and men, decreased

affirmation of self, reinforced a negative self-image, and contributed to women foregoing their initial choice of major for a traditionally female-dominated field of study.

Features of the male-dominated major seemed to put many of the women at a disadvantage because they were forced to adjust to a male-oriented system that did not account sufficiently for women's experiences and differences.

Faculty behaviors and attitudes appeared to be a crucial element in causing women students' departure. The women students in the male-dominated fields faced many professors and peers who were not accustomed to having women students in their classes. Disparaging remarks from faculty, discouraging classroom participation, and minimizing individual relationships with faculty had a negative impact on women's retention in the male-dominated major and created pressure to adhere to feminine role definitions. This type of hostile departmental culture discouraged the women that tried to pursue interests and develop abilities that did not coincide with current cultural norms. Conversely, the female-dominated majors, centered around the women's common interests, enabled them to be a part of the social and learning situations. The women's ability to excel in the female-dominated majors reinforced their decision to pursue a major that was socially acceptable for women.

Application

Since women are attuned to the personal supportiveness of their environments, college environments have an impact on women students. The literature review in Chapter 2 revealed that women will choose majors with more favorable internal characteristics that include high level faculty concern (Hearn, 1980), personalized feedback from faculty, and praise (Stein & Bailey, 1973). While the female-dominated majors encouraged immediate faculty feedback and supportive environments, the male-dominated majors appeared to foster a competitive environment with impersonal and unsupportive faculty. This may occur because few are aware of the environmental characteristics that block women from pursuing male-dominated majors. Understanding the environmental characteristics that contribute to women's departures should improve the environment necessary to retain women.

The findings revealed the importance of self-affirming environments with supportive and personable faculty and peers that contribute to a positive self-image. These findings are supported by previous research that found women often choose majors with more favorable internal departmental characteristics including a supportive environment with high level faculty and peer concern (Cooper

& Robinson, 1985; Hall & Sandler, 1982; Hearn & Olzak, 1981; Hearn, 1980). In male-dominated majors, faculty and peers need to offer positive reinforcement and feedback to reinforce women's sense of being recognized as individuals. Likewise, disparaging remarks and differential treatment in the classroom should be avoided to create a welcoming environment where women students' participation in discussions is important. Viewing women as equals will encourage the male students to accept women in male-dominated classrooms and will send signals that the curriculum contents of mathematical numbers, figures, and facts are not inappropriate for women. Additionally, a classroom environment that treats women equally will improve women's performance as women will not feel pressured to demonstrate superior competence in order to be considered equal by their male counterparts.

Lastly, women in male-dominated majors need help in overcoming past career identities that channel their interests toward female-oriented majors. Faculty and peer guidance is needed by women in male-dominated majors who reexamine their family and work roles. Women need to be encouraged by faculty and peers that they can combine the demands of marital and family responsibilities in male-dominated territory. Women's ability to excel in male-

dominated majors will reinforce a positive self-image and women's decision to pursue majors that defy feminine role definitions.

Recommendations

Based on the exploratory nature of the study, additional research is necessary to more fully understand the phenomena central to this research. Further study could involve defining the conceptual categories operationally or discovering additional categories that explain women's decision to leave a male-dominated major and enter a female-dominated major. Discovery of additional conceptual categories are needed because this study only begins to explain factors that contribute to women's decision to leave a male-dominated major and enter a female-dominated major. However, the conceptual categories discovered in this study can contribute to the retention of women in male-dominated majors.

Additionally, the conceptual categories revealed in this study were identified by women transfers from the College of Business, College of Engineering, and College of Architecture. Gathering data from only three male-dominated colleges may not be representative of other male-dominated colleges such as the College of Agriculture. Likewise, the

limited sample may not have accurately represented the total population of women who transferred from male-dominated majors to female-dominated majors. Individuals will experience the same environment differently because of their different genetic heritages and histories of development. Since students are different, experiences can have different outcomes and are dependant upon the subjective interpretation of the individual. A larger sample may provide more precise data and reduce error by accurately accounting for a broader representation of women transfers from male-dominated to female-dominated majors.

Based on the method of data analysis and the small number of subjects, only impressions could be formulated about the factors that are associated with women's decision to leave a male-dominated major and enter a female-dominated major. These impressions can be used for further experimental study by examining how to effectively define male and female domination, by including men in the sample, and by creating protocol focused on central factors.

Several items deserve further research. The first item is that perceptions of a better fit in the women's final choice of major may be related to women's modest aging that occurs between one to three years. Women's decisions about the specific occupation they plan to pursue is influenced as women mature and begin to prioritize involvement in both the

occupational world and more traditional homemaking world (Richardson, 1974). As women get older, they can tackle the important developmental tasks of integrating role development in both the occupational world and homemaking world. Greater satisfaction and success occurs as women begin to interpret meaning in their lives. The older a woman becomes, the more information she has concerning preferred fields of study, and the more ready she is to act on an occupational choice. Young individuals will show greater instability of career preferences than older individuals who have a greater self-understanding (Super, Crites, Hummel, Moser, Overstreet, and Warnath, 1957). Older women are aware of the resources available to them and have assessed the relationship between their interests, abilities, and preferences. Thus, age may have contributed to the women's perception of a better fit in their final choice of major, because they made their first decision when they were younger and would be expected to show greater instability of preference.

Lastly, these items deserve further research because the data were potentially important to this study and were not collected. These items include the different influence of the proportion of female and male faculty to students and the influence of class size on students. Additionally, the discovery of why women only mentioned primarily in class

instead of out of class interactions deserves further study because other research has emphasized out of class interactions (Pascarella & Terenzini, 1991) and the researcher can not be sure if the effect of the interview protocol or students' beliefs contributed to the lack of out of class discussion. Comparing women who transferred from a male-dominated major with those women who stayed, identifying factors that influence women to leave a male-dominated major to enter another male-dominated major, and the most effective ways to teach and learn based on the nature of the curriculum, class size, and teaching style also deserves further research.

In summary, this study revealed that factors in the classroom environment had a strong influence on women's choice of major and suggested a possible connection to the "chilly climate" concerns expressed by other researchers. As there continues to be a low enrollment of women in male-dominated fields (Hall & Sandler, 1982), the many avenues for future research discovered by this study are important in creating equitable conditions that foster the intellectual growth of both women and men in higher education.

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APPENDIX A

FIRST INTERVIEW SCHEDULE AND GUIDE

1. Please describe the experience of being a female in your first choice of major.

*support

*affiliations

*faculty

*demands

*treatment

*peers

2. Please describe your reasons for your initial choice of major.

*expectations

*admiration

3. Please describe your educational experiences in your first choice of major.

*demands

*faculty

*peers

4. Please describe your reasons for leaving your initial choice of major and entering your present choice of major.

*expectations

*role

*presence of women

*support

5. Please describe your educational experiences in your present choice of major.

*faculty

*rewards

6. Please describe your level of satisfaction with your current major.

7. Are there any regrets about your decision relative to choosing a field of study?

APPENDIX B

REVISED INTERVIEW SCHEDULE AND GUIDE

1. Please describe the experience of being a female in your first choice of major and in your current major.

*support

*affiliations

*faculty

*demands

*treatment

*peers

2. Please describe your reasons for your initial choice of major.

*expectations

*admiration

*roles

3. Please describe your reasons for leaving your initial choice of major and for entering your current major.

*expectations

*roles

*presence of women

*support

*acceptable

APPENDIX C

Dimensions of the Categories Associated with Women's Decision to Leave a Male - Dominated Major and Enter a Female - Dominated Major

CATEGORY DIMENSIONS		
CONCEPTUAL CATEGORIES	COLLEGE OF ENGINEERING & COLLEGE OF ARCHITECTURE	
CONCEPTUAL CATEGORIES	COLLEGE OF BUSINESS	
CONCEPTUAL CATEGORIES	COLLEGE OF HUMAN RESOURCES	
CLASSROOM ENVIRONMENT	<ul style="list-style-type: none"> • Weeding out • Competitive • Male - domination • Uncomfortable • Interaction (male domination) • Hesitant • Statistic • Can not handle (assumptions) 	<ul style="list-style-type: none"> • Friendly; comfortable; personable • Home; welcome; belong • Encourage interaction • Open discussions • Debate and question asking • Input sought • "Hands on " experiences • Group projects • Cooperative; relaxing • Well-paced; comfortable • Interactive; creative
CURRICULUM CONTENT	<ul style="list-style-type: none"> • Math / Science oriented; equations • Fast pace; lecture • Dry; boring; unapplicable • Difficult to understand • Technical • Discouraging 	<ul style="list-style-type: none"> • People - oriented; ideas shared • Provoking thoughts / feelings • Individuality; people problems • Opinions; hands on; comfort • Thought process emphasized • Important; interest; enjoy • Relevant; reflective; children • Applicable; useful • Helping; working with others • Teach; learn; influence • Practical
FACULTY BEHAVIORS	<ul style="list-style-type: none"> • Impersonal • Unapproachable • Lack of concern • Told what to do • Hit on • Treated different from males • Women do not belong; derogatory comments • Not welcome • Expected to drop out 	<ul style="list-style-type: none"> • Personable; supportive; caring • Approachable; friendly; encourage • Personal attention; support • Treated like a person; understand • Willing; help; involved; open • Displayed concern; positive learning; responsive • Liberal office hours; enthusiastic • Open door; sensitive; go out of way

Dimensions of the Categories Associated with Women's Decision to Leave a Male - Dominated Major and Enter a Female - Dominated Major , Continued

CATEGORY DIMENSIONS

CONCEPTUAL

CATEGORIES COLLEGE OF BUSINESS

COLLEGE OF ENGINEERING &
COLLEGE OF ARCHITECTURE

COLLEGE OF HUMAN RESOURCES

Peer Relations

- Confident; lack of free time
- Ambitious; career - oriented
- Stuffy; on the go
- Competitive; males (take credit)
- Compare; women=doubting
- Independent

- Treated differently
- Not equals
- Negative remarks
- Assumed did not understand; eventually dropout
- Nuts; pick-up

- Pay attention; laid back; easy to know
- Care; encourage; support; help
- Good relationship; friends
- Comrades; cooperative; sure of self
- Less competitive; enthusiastic

Performance Pressures

- Good at math (enjoyed) = abilities
- Work experience; out cast
- Pressure to learn / good grades
- Struggle (difficulty grasping)
- Left behind; not satisfied
- Stress; never catch up; lack of time
- Frustration; isolation; cut throat
- Not know subject matter

- Abilities (good at math); unhappy
- Total commitment; not reaching potential
- Self instruction; low self - esteem
- Work hard; doubts
- Males received rewards
- Stay home; study
- Pressured
- Underscrutiny; prove herself

- Rewarded; praise; help; less study
- Encouragement; reinforced; mistakes accepted
- Incentives; satisfied; pleased
- Noticeable improvement
- Individual achievement
- Performing better; evaluative
- Improvements; discuss
- Work harder
- Increased confidence; compare
- Efforts revealed; less pressure

Role Expectations

- Job; admired; looked up
- Make money; expected (parents)
- Useful; pushed
- Career women; supported
- Ambitious
- Little flexibility
- No opportunities (for family)

- Significant others; beat the odds
- Supportive; good job prospects
- Enthusiastic; reputation
- Parental; resistance to change
- Assumed; good reputation
- Make others proud
- Money; time pressures
- Changing technology

- Balance in life
- Work at home
- Work with women and children
- Enjoyable; family obligations
- Compatible (family)
- Parents / family / friends encouraged
- People - oriented; family first
- Teach; raise family
- Not handle failure
- Flexibility (own family)
- Take time off

VITA

Barbara Schnabel was born on September 17, 1968 in Pennsylvania. In 1987 she graduated from Upper Perkiomen High School in Pennsburg, Pennsylvania.

In 1991, she graduated with a bachelor's degree in Economics with a Business concentration from Hollins College in Roanoke, Virginia.

She entered the master's degree program in College Student Personnel Services at Virginia Polytechnic Institute and State University in August, 1991. The master's degree was completed in June, 1993.



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