

The Pennsylvania State University

The Graduate School

College of Education

**DEVELOPING A CHOICE OF MAJOR MODEL  
FOR THE SMEAL COLLEGE OF BUSINESS**

A Dissertation in

Higher Education

by

Augustus B. Colangelo

© 2009 Augustus B. Colangelo

Submitted in Partial Fulfillment  
of the Requirements  
for the Degree of

Doctor of Education

December 2009

The dissertation of Augustus B. Colangelo was reviewed and approved\* by the following:

Robert D. Reason  
Assistant Professor, Education  
Thesis Advisor  
Chair of Committee

Lisa R. Lattuca  
Associate Professor, Education

Susan Rankin  
Associate Professor, Education

Ingrid Blood  
Professor, Communication Sciences and Disorders

Dorothy Evensen  
Professor, Education  
In Charge of Graduate Programs in Education

\*Signatures are on file in the Graduate School

## ABSTRACT

The purpose of this dissertation was to develop a dynamic model and survey instruments to study the presence, strength, and susceptibility to change of the factors that influence the ‘choice of major’ decision in an undergraduate population of business school students, and to determine if the factors are the same for male and female students. Preliminary focus group studies revealed several thematic areas which supported the conceptual model under review, and which informed the development of an initial survey questionnaire. Following bench tests and refinement, the survey was administered to 953 undergraduate students in the Smeal College of Business at Penn State. Results show that the conceptual model is appropriate for future studies, that the survey questionnaires provide strong factors to be used in those future studies, and that the factors are the same for male and female students. In addition, the focus group studies pointed out the anxiety and stress for students in the midst of this ‘choice of major’ process, and recommendations for amelioration of this stress are provided.

## TABLE OF CONTENTS

List of Figures.....	vi
----------------------	----

List of Tables.....	vii
---------------------	-----

### CHAPTER I. Introduction

Introduction.....	1
Background and Preliminary Studies.....	2
Statement of the Problem.....	7

### CHAPTER II. Literature Review

Review of the Literature.....	9
Demographics related to career and major.....	10
Perception of Self.....	11
Role Models.....	12
Interests and Abilities.....	14
Self-Efficacy.....	15
Perceptions of Career.....	18
Vocational personality – Work Environment Congruence.....	18
Salary Expectations and Labor Market Opportunities.....	19
Conceptual Framework.....	20
Choice of Major Model.....	23

### CHAPTER III. Methodology

Methodology: Refining The Model / Focus Group Study.....	26
Process for Developing The Survey Questionnaire.....	30
Evaluation of the Model.....	31
Focus Group Sessions.....	32
Data Collection and Analysis.....	34

Rapport vs. Objectivity.....	36
Results of the Focus Group Study.....	39
Composite Picture of the Focus Group Participants.....	39
Focus Groups Data Analysis.....	40
Themes Derived from the Focus Groups.....	41
Additional Findings.....	45
Summary and Overview of the Focus Group Study.....	47
Implications for the Model and Survey Construction.....	49
Developing and Bench Testing the Subscales.....	50
Developing Preliminary Survey Items.....	50
Bench Test.....	53
Administration of the Pilot Test of Both Survey Instruments.....	56
<b>CHAPTER IV. Results</b>	
Results I: Analysis of the Pre-Major Survey.....	57
Representativeness of the Sample.....	58
Factor Analysis: Pre-Major Survey.....	58
Internal Consistency of the Factors.....	61
Summary of Results I: The Pre-Major Survey.....	62
Results II: Analysis of the Major Survey.....	63
Representativeness of the Sample.....	64
Factor Analysis: Major Survey.....	64
Internal Consistency of the Factors.....	66
Summary of Results II: The Major Survey.....	67
<b>CHAPTER V. Discussion Conclusion and Implications</b>	
Discussion.....	69
Implications for Future Research.....	72
References.....	74
Appendix A: Focus Group Facilitators Script.....	81
Appendix B: Request for Participation, Verbal Communication Script.....	85
Appendix C: Revised Instrument: Pre-Major Survey.....	94
Appendix D: Revised Instrument: Major Survey.....	92

## FIGURES

1. Smeal College Graduation Rate by Controlled Major- Females.....	6
2. Choice of Major Model.....	24
3. Process for Developing the Survey Questionnaire.....	30
4. Scree Plot for Pre-Major Survey Factor Analysis.....	60
5. Scree Plot for Major Survey Factor Analysis.....	65

## **TABLES**

1. Focus Group Participants.....	33
2. Demographics, Pre-Major Survey sample.....	57
3. Representativeness of the Pre-Major Survey sample.....	58
4. Demographics, Major Survey sample.....	63
5. Representativeness of the Major Survey sample.....	64

## **Chapter I**

### **Introduction**

Professional women in business are underpaid relative to their male colleagues, and women are consistently underrepresented in corporate board rooms and executive office suites: while women make up 46.5% of the workforce, and despite decades of inquiry and concern for remediation, female managers' salaries average 72% of their male counterparts (The Economist, 2005). This pay difference exists in professional as well as managerial and para-professional positions (Fairfield, 2009). In addition to the salary disparity, a recent report in The Wall Street Journal (2009) shows that women make up only 15.7% of Fortune 500 corporate officer positions. The problem of inequity is pervasive from entry-level professional positions to the top level of corporate hierarchies, both in terms of salary and representation (Fairfield, 2009). One of the factors contributing to this seemingly intractable inequity may be the overrepresentation of women in business college majors that lead to lower status and lower paying careers, and the underrepresentation of women in business college majors offering higher career salaries and potential for career advancement. Pascarella and Terenzini (2005) note the importance of undergraduate major in their review of the research and state that "undergraduate major field has a substantial and statistically significant impact on earnings that cannot be accounted for by other influences" (p. 507), and furthermore, that "men tend to be overly represented in fields of study that are closely linked to the highest-paying occupations ... women, in contrast, tend to be overrepresented in fields of study that are linked to lower-paying occupations" (p.509). The process of choosing a major, and the factors contributing to choice of major are therefore of significance in a larger social justice context.



The current project is designed to study the process and factors affecting choice of major for male and female students in an undergraduate business school, specifically the Smeal College of Business, at Penn State University, and to develop a dynamic model for studying the choice of major process. At Smeal, students matriculate with initial, tentative ideas on what they might choose as a major field of study, and the preliminary designation which guides academic advising and course selection for the first year. In their fourth semester, students are required to specify a clear and binding commitment, which dictates the coursework for their third and fourth years in the college. Once a student begins the upper division coursework, change of major is difficult and rare. Thus the initial choice of major, and the 'lock in' process, are quite important to students; the number of students by major is also an important administrative, planning, and staffing consideration. The questions of interest are: What are the factors that influence business students' choice of major in the Smeal College of Business, and are those factors different for female and male students? In addition, how do early college experiences (e.g., the First Year Experience, including the First Year Seminar, exposure to relevant coursework, exposure to university faculty and professional guests, and peer influence) affect students' choice of major, and are there different effects between men and women.

### **Background and Preliminary Studies.**

Sax (2007) stated that the proportion of undergraduate women in college in the United States may be as high as 58%. However, the enrollment of female students in Masters of Business Administration (MBA) programs has plateaued at roughly 30% of the MBA student body over the past decade, while the percentage of women in medical school and law school has

been approximately 44% over this same period (The Princeton Review, 2007). The dearth of women in MBA programs may be contributing to women's underrepresentation in higher management levels and higher management salaries, and a lack of women in undergraduate business programs may contribute to fewer women in MBA programs. A 2000 study by the University of Michigan Center for the Education of Women proposed that there are specific barriers to female participation in (graduate) business school, including a lack of female role models, perceived work/life balance issues, and the perception among female professionals that the climate in business schools is not inclusive (The University Record, 2000).

Most of the related literature focuses on MBA programs, comparing women's MBA representation with representation in other professional training programs (Medical School and Law School), with little mention of undergraduate business programs. An earlier study (Vollmer, 1983), of undergraduate women in business found that female students received encouragement from family and friends, but cited a lack of female role models and ineffective career advising as barriers to success. On the one hand, this mirrors the claims from the MBA articles, but the study also brings up a disturbing point: the title of the 1983 Vollmer study "*Educational factors that encourage women to pursue pioneer careers*" is telling, in that business careers for women should hardly be considered "pioneering" in the late 20<sup>th</sup> Century.

Initially, I conducted a study of the climate in the Smeal College, undergraduate business programs; I hypothesized that a chilly climate may cause female students to drop out at a rate greater than male students, which would thus affect graduation rates of female students. This concern was fueled by a study by the University of Michigan (The University Record, 2000) that

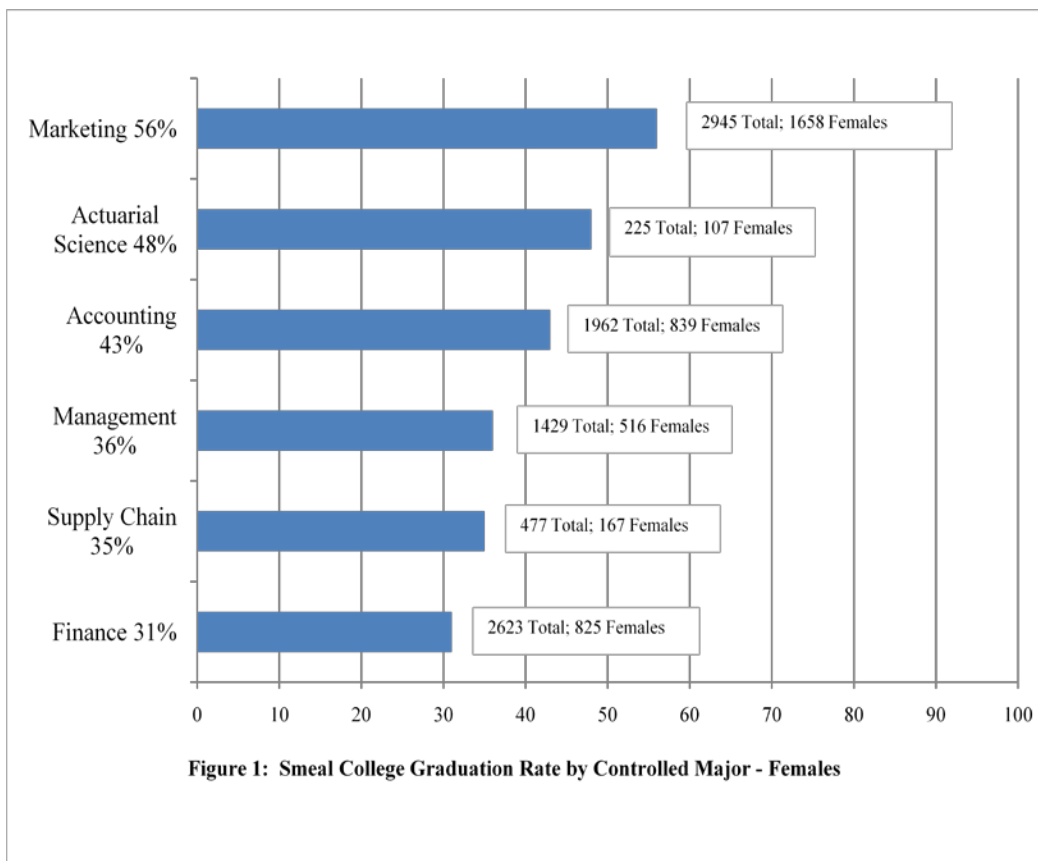
found that female MBA students reported business school culture to be overly aggressive and competitive. The study found that “more than one-half of the women cannot relate to people in case studies and nearly 40 percent say they do not have an adequate opportunity to work with female faculty” (p. 2). As noted, these findings related to MBA programs, where most of the earlier research was undertaken. However, the threat of a non-inclusive culture and unwelcoming climate in undergraduate business schools is of serious import prior to undertaking other studies in women’s business school retention and subsequent success in majors and careers.

To determine if the Smeal College of Business suffered from similar climate problems, I have been engaged in an ongoing study of first-year students in the college since 2003, measuring several aspects of climate in the college. Surveys administered at the end of semester one and at the end of year one from Fall, 2003 to Fall, 2004 indicated that there are no significant differences between male and female students on climate indices. Over the four semesters (Fall 2003, Spring 2004, Summer, 2004, and Fall, 2004) of this initial study, I measured climate perceptions for 1,542 students (824 men and 718 women). Although there were some fluctuations across the semesters, the survey results suggested no meaningful differences between male and female students with regard to ten different climate index subscales: Social Integration, Personal Growth, Social Growth, Classroom Climate, Academic Experiences, Faculty Contact, Feedback from Faculty & Peers, Academic Growth, Preparation for Lifelong Learning, and Collaborative Learning. This provided some assurance that first-year experiences in the Smeal College of Business provide a hospitable learning environment for male and female students alike, and allowed me to proceed with additional studies regarding choice of major,

without the threat of 'chilly climate' confounding the study, and, more importantly, deterring female students from pursuing their educational and career goals in business.

In addition to the climate surveys, an analysis of graduation statistics in the Smeal College of Business indicated no differential negative effect for female students. Matriculation and graduation rates from 2000 through 2007 at the Smeal College of Business at Penn State University were analyzed to determine if women dropped out prior to graduation at a rate greater than men. Over this eight-year period, female students comprised approximately 40% of the first-year population and approximately 40% of the senior class population. While there are certainly students who do not graduate, there appear to be no differences in rates of the attrition of female or male students. Recent studies within the college also attest to the successful progression of male and female first-year students to sophomore status and beyond: data collected by a team of graduate assistants from the period 2003 to 2005 confirm that 95% of first-year female students progressed to sophomore status, and 94.5% of male first-year students also progressed to sophomore status, with similar advantageous comparisons through the junior year and on to graduation. These retention rates are quite high and favorable, and thus attest to the efficacy of the transition support systems in place at the Smeal College of Business. These analyses also addressed my first set of concerns: it appears from the earlier studies that the climate perceptions of female students are positive and compare favorably to the climate perceptions of male students, that female students do not drop out of the Smeal College of Business at a greater rate than male students, and that female students graduate at the same rate as male students.

An additional preliminary investigation centered on the majors chosen by male and female students. Data for the Smeal College graduating class from the period 2000 through 2007 indicate the widest preference difference was between Finance and Marketing, specifically that male students prefer the Finance major, while female students prefer the Marketing major. Of the 2,623 Finance graduates in the eight-year period, 69% were men; of the 2,945 Marketing graduates, 56% were women, shown in Figure 1 below. The reasons for these preferences are not known at this time and are part of the general question that will be examined in this project.



The salary consequences and long-term career implications of choosing a Marketing major as opposed to a Finance major are also of great interest. Smeal Finance majors graduating in 2006-2007 starting salary was \$53,011, while the Smeal Marketing major starting salary for the same graduating class was \$41,587 (The Pennsylvania State University, 2008.) This is consistent with Pascarella and Terenzini's (2005) observation that "men tend to be overly represented in fields of study that are closely related to the highest paying occupations... women, in contrast, tend to be overrepresented in fields that are linked to lower-paying occupations" (p. 509). Pascarella and Terenzini were observing results from studies of general occupational field (e.g., education, nursing, engineering, business) but it may be possible that similar conclusions could be drawn within a college (business) where some positions (Finance) provide substantially higher salary and prestige than other positions (Marketing).

### **Statement of the problem**

While the climate at the Smeal College of Business appears to be supportive, or at least neutral, and no difference in persistence to graduation was detected, women and men differ in which majors they choose within the college. This has important implications for career placement and career earnings, as well as progression to the top ranks within business, industry, and the non-profit sector. Pascarella and Terenzini (2005) highlight the critical importance of early, first-year leanings in regard to choice of major: "In all four career choices (Law, Medicine, Business, and college teaching) *initial interest in a career as a freshman was, by far, the strongest predictor of senior career choice*" (p.467-468, emphasis added). The general research question deals with factors contributing to choice of major and the subsequent professional employment ramifications of the choice of major / career. The theoretical questions of interest

are: What are the factors that influence students' choice of major in the Smeal College of Business; and, do female students differ from male students in their choice of major based on these factors? The first order of business and purpose of this dissertation is to develop a survey instrument to measure those factors; the survey instrument will be based on a conceptual model informed by a review of the literature and also informed by consultations with students who are in various stages of the "choice of major" process.

## **Chapter II**

### **Review of the Literature.**

A review of the literature indicates that many factors are involved in the choice of major decision for undergraduate students. Constructs of interest in the choice of major inquiry which have been studied by others include family effects (Leppel, Williams, & Waldauer, 2001); personality traits (Noel, Michaels, & Levas, 2003); abilities, interests, fit, and personality type (Holland, 1997); perception biases (Schlee, Curren, Harich, & Keisler, 2007) ; peer effects (Pritchard, Potter, & Saccucci, 2004); sex role socialization (Corcoran and Courant, 1985); and anticipatory factors (Malgwi, Howe, & Burnaby, 2005; Kim, Markham, & Cangelosi, 2002; Sumner & Brown, 1996). The ‘abilities, interests, and fit’ model of Holland (1997) has been widely investigated in terms of person-environment congruence, and seems to present one theoretical approach to the question of career choice. In contrast, the interaction of self-efficacy beliefs and outcome expectations (Gore & Leuwerke, 2000) has shown interesting and meaningful relationships to career choice and represents another approach to the question of ‘choice of major’. Gore and Leuwerke claimed self-efficacy and outcomes expectations to be better predictors than Holland’s Fit hypothesis, a claim that is supported by specific comparative research discussed in a later section.

Given the volume and variety of extant literature regarding vocational preferences, I have chosen to focus the literature search and limit the inquiry (to the degree possible) to ‘choice of major’ and business students in three distinct areas: 1. Demographics; 2. Perceptions of Self (including sex-role socialization, interests and abilities, and self-efficacy); and 3. Perceptions of career (including person – environment fit, salary expectations, and labor market conditions).



## 1. Demographics related to career and major – Pre-college characteristics

Studies of the effects of socio-economic status and parental occupation on student choices early in their college career have shown interesting differences between male and female students. In a study specifically designed to assess the effects of parental socioeconomic status and parental occupation on students' choice of major, with particular attention to male and female differences, Leppel, Williams, and Waldauer (2001) found that women from families of high SES were less likely to choose business as a major than were women from lower SES families, while men from high SES families were more likely to choose business majors than were men from low SES families. Although this study did not differentiate among the various professional choices within business (Marketing versus Finance, for instance) it showed that in choosing 'business' (as opposed to education, humanities, science, engineering), women from more affluent families were less interested in business than were women from less affluent families and than men in general. In contrast, men from more affluent families were more likely to pursue business as a major. Using multinomial logit analysis, Leppel et al (2001) offered that the probability of a female student choosing to major in business decreases as SES rises, while "men are more likely to major in business as socio-economic status increases" (p. 388).

Some studies cover variables in more than one area of interest: Trusty, Robinson, Plata, and Ng (2000) studied the effects of gender, socioeconomic status, and early academic performance on postsecondary choice, under the rubric of Holland's Theory of Careers (1997). In this case, the strongest relationship was found between gender and educational choice, where

the interaction between gender and socioeconomic status was found to be stronger for women than for men.

Ellis (1993) presented an interesting demographic finding in relation to female students: in a qualitative study of female students, Ellis found a trend toward traditional roles in female students from two-parent families, but that female undergraduates from single-mom homes were much more oriented toward achieving independence through pay and professional career. This demographic influence will be tracked in the present study as an additional question of interest; i.e., even though they are all in the business school, do female students from single-mother homes tend toward more lucrative majors while female students from two-parent homes prefer stability? These differences will be tracked by using more precise demographics in relation to choice of major.

## 2. Perceptions of self

In examining the continuing pay disparity between men and women more than 20 years after the Equal Pay Act became law, Corcoran and Courant (1985) posited that one contributing factor is sex role socialization, where some children “internalize traditional notions of sex roles, accept these cultural sex stereotypes as fact, and eventually choose occupations that conform to these stereotypes” (p. 275). The role of parents in socializing students regarding career choices has shed some light on this issue. Hackett, Esposito, and O’Halloran (1989) found that female students’ choice of major was affected by an interaction of parental influences. The Hackett et al study was conducted with 107 graduating seniors at an all-women’s college, and the authors were particularly focused on non-traditional career choices. An interesting dynamic in the

Hackett et al findings was that while mothers were supportive of daughters' non-traditional career choices, fathers were not. (The distressing side note is that even in the 1980's, fathers were apparently discouraging daughters in pursuit of "non-traditional careers"). Hackett et al concluded that "these findings suggest that parental influences are complex and interactive; after father's negative influence is accounted for, mother's influence becomes significant and positive" (p. 174) with regard to non-traditional career choice.

Role models. Role models occupy an important position in the career choice discussion as related to sex-role stereotyping. Not only do role models affect perceptions of self and self-efficacy ('I can do that'), but Sumner and Brown (1996) showed that role models also provide a strong influence as sources of realistic information about a career: female students gather more information from professional women than do male students, and the female students valued the information they received from women more highly than other sources of information, thus leading to stronger definitions of career possibilities. The difficulty appears to be actually finding a female model to pattern or emulate. Years earlier, Vollmer (1983) cited a lack of female role models as one reason why women did not have a realistic understanding of business opportunities available through the MBA, thus negatively affecting their perceptions of career. Vollmer (1983), in addition to discussing family effects and peer effects, offered that while female college seniors had received encouragement on career options from parents, siblings, friends, and faculty members, the women expressed an absence of target role models in certain career fields, hampering their ability to accurately envision themselves in that career. Twenty years later, in a comprehensive review of the role-model research, Gibson (2004) concluded that "women typically have fewer role models who match them in terms of gender, and thus they face

an arduous cognitive task of translating male role model behavior into behavior that works for them (p. 149)”.

In an intricate study examining choice of major for over 8,000 undergraduates from 1988 through 2000 at a large university, Rask and Bailey (2002) found that same-sex faculty as role models were one of several factors that influenced students’ choices. The strongest effect was found with discipline-specific GPA through the sophomore year, and this may be attributed to entry-to-major requirements for some majors (e.g., a student with a 2.2 at the end of sophomore year would not qualify for the Physics major). More importantly for my study, Rask and Bailey specifically considered the “characteristics of the faculty encountered *before* the major was chosen” (p. 119, emphasis added), finding that “female, minority, and male faculty members *are* role models and do influence students to choose their particular discipline because of race and gender” (p.119).

Faculty role models in college may be one of the more powerful influences as younger students (first and second-year) face the choice of major decision. When asked to rank the five most important influences in choosing accounting as a major, students rated “career opportunities” first, followed by “interest in subject” second, with “teacher” third, followed by “money” and “parents” (Maudlin, Crain, & Mounce, 2000). In an effort to separate out the strength of various influential persons, Maudlin et al also asked the students to rank the various individuals who had influenced their decision. In this case, these students rated faculty first, followed by parents, friends, accounting counselors, and college administration.

Interests and Abilities. Strong support for ‘Interest in the subject matter’, as the driving force for choosing a particular business major, comes from a study by Malgwi, Howe, and Burnaby (2005). In the survey of 772 students, Malgwi et al found that the most influential factor in selecting a major, regardless of gender, was ‘interest in the subject matter’, followed by potential for career advancement, number of job openings, pay, and the college’s reputation in the field. The Malgwi et al finding is quite understandable when looking at students in the upper-levels of a baccalaureate program, where students were already in their major and fully engaged in advanced major courses were asked why they had chosen the particular major. However, male and female first-year students, when asked to specify a potential but non-binding major at the beginning of their first semester, also listed ‘interest in the field’ as their primary reason. Gender differences appeared in the identification of a secondary reason for choosing a major among these new students: “women were significantly more likely than men to be influenced by their perceived aptitude in the subject, which was second in importance for them but only fifth for the men” (p. 277), whereas men were significantly more interested in pay and potential for advancement.

In a recent study, Beggs, Bantham, and Taylor (2008) developed and administered a survey questionnaire, after conducting focus groups with undergraduate students, regarding factors influencing choice of major. The authors were investigating various sources of information that students use in judging potential careers, how students follow up on sources of information, interest in the subject matter, perceptions of personal fit, and external sources of influence. The quantitative survey was completed by 852 college students, and results revealed that ‘interest in’ the subject was the single most influential factor in students’ choice of major,

followed by 'fit' with abilities. The authors did not discuss male / female differences in the choice factors.

Pritchard, Potter, and Saccucci (2004) extended the consideration of factors involved in choosing a major to include ability in mathematics in their study of different majors within business at a large regional university. Pritchard et al were particularly interested in whether ability in quantitative sciences and mathematics had an effect on students choosing between accounting, finance, marketing, or management in the undergraduate program. With data from 87 juniors who had already chosen their major, but still prior to beginning studies in their major (immediately upon returning for their junior year and prior to the start of classes, timing quite similar to the Smeal College of Business), Pritchard et al found that the students enrolled as finance and accounting majors scored significantly higher on the quantitative and algebra tests than did the students slated to begin studying in the marketing and management majors. While it may seem obvious that some business fields are more quantitative than others, the presentation of a realistic preview of the impending major and career is of interest in advising and counseling first and second-year students prior to their choice of major. The present study will also provide guidance for administrators as to how they might structure those previews and when they might be presented.

Self-Efficacy. Bandura (1986) began the consideration of self efficacy by defining it as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (p. 391). In reviewing multiple studies regarding self-efficacy, Pascarella and Terenzini (2005) proposed that “self-efficacy is a product of multiple

personal and comparative factors, including students' conceptions of their intellectual and social abilities and their successes and failures in previous academic settings, all tempered by comparisons with others" (p. 233). Several studies have investigated the relationship between self-efficacy beliefs and career choice and choice of major decisions.

In a study of first-year undergraduate business students, Worthington and Riggs (2004) found that students considered not only their own strengths and weaknesses but compared their own characteristics to perceptions of the requirements in the career field they were about to choose. Worthington and Higgs proposed that the students with an economics major attempt to describe their future position in terms of independence, structure, and precision, which leads to the person-environment fit proposals of Holland. This also indicates that the "Perceptions of Self" indices and the "Perceptions of Career" indices are not an either / or dichotomy, but rather a deliberation issue and decision point for students.

In a study of 368 female undergraduates, Quimby and Desantis (2006) combined several elements in the current discussion. Quimby and DeSantis assessed the relative effectiveness and influence of role models, self-efficacy beliefs, career choice, and the six Holland person-environment congruence types (discussed in the next section). Quimby and DeSantis found that appropriate role models and self-efficacy beliefs accounted for significant variance in career choice for female students across all six of the Holland types. They proposed not only a direct path of role model influence, but also an indirect path of role models influencing self-efficacy beliefs subsequently leading to career choice expectations.

Lent, Brown, and Hackett (1994) maintain that a combination of self-efficacy beliefs and outcome expectations should predict vocational interests better than either self-efficacy or outcome expectations alone. They present a social cognitive framework referred to as Social Cognitive Career Theory (SCCT), and propose that interests and choice actions lead to manifestation of behaviors that reinforce self-efficacy beliefs; that is, pursuing one's interests through to successful outcomes leads to more active involvement in that particular endeavor, and higher expectations of success in future pursuit of that particular activity. Lent et al present multiple experimental questions and a model regarding interests, abilities, self-efficacy, and career choice, and how they might act on each other, which is helpful in designing the conceptual framework in the present study. The additional advantage of the Lent et al proposal of an integrated model is that it includes goal-directed behavior and credits the actor with cognitive choice, in our case that students *act on* their beliefs and options, as opposed to the actor being a passive combination of demographic characteristics which push and pull and 'outcomes happen'.

In support of the Lent, Brown, and Hackett hypotheses, Gore and Leuwerke (2000) studied a group of 97 undergraduates using a variety of surveys in a multiple methods analysis, and found that "self-efficacy beliefs and outcome expectations are more potent predictors of occupational considerations than is person-environment fit as measured by a congruence index" (p. 245). The Gore and Leuwerke study found that self-efficacy beliefs and outcome expectations were more relevant to the prediction and success of career and major choices than were the person-environment fit hypotheses of Holland (1997). Gore and Leuwerke refer specifically to the Lent et al work and propose that the Social Cognitive Career Theory (SCCT) allows for a summation of self-efficacy beliefs considered in relation to outcomes expectations.



### 3. Perceptions of career

Vocational Personality - Work Environment Congruence. Holland (1997) stated that people can be categorized according to one of six personality types (Vocational Personalities), and that each personality type brings with it a set of characteristic skills, talents, and preferences for activities. The work environment can likewise be categorized into six comparable types; a successful person-environment match is the key to career success, longevity, and satisfaction. The Holland theory has come to be referred to as RIASEC Theory for the six personality types proposed by Holland: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Holland's theory and taxonomy provides very specific parameters regarding the types, which have subsequent deterministic implications for traits and careers, as demonstrated by his description of the particular types:

“The special heredity and experiences of the Realistic person lead to a preference for activities that entail the explicit, ordered, or systematic manipulation of objects, tools, machines, and animals and to an aversion to educational or therapeutic activities. These behavioral tendencies lead in turn to the acquisition of manual, mechanical, agricultural, electrical, and technical competencies and to a deficit in social and educational competencies” (p.21)

“The special heredity and experiences of the Conventional person lead to a preference for activities that entail the explicit, ordered, systematic manipulation of data (e.g., making records, filing materials, reproducing materials, organizing business machines and data processing equipment to attain organizational or economic goals) and to an aversion to ambiguous, free, exploratory, or unsystematized activities. These behavioral tendencies lead in turn to an acquisition of clerical, computational, and business system competencies and to a deficit in artistic competencies” (p. 27)

Congruent with Holland's theory, Chacko (1991) surveyed 144 students at a large business school and found that Accounting majors scored highest on *Conventional* traits, while

those in Hospitality major scored highest on *Enterprising* traits. According to Holland's theory, a conventional orientation would include activities requiring attention to detail and accuracy.

Conventional students would consider themselves practical, conscientious, and self-controlled, and would prefer a structured environment which Chacko's subjects associated with the Accounting major.

Salary Expectations and Labor Market Opportunities. This category of influence may, correctly or not, be thought to have more influence on students in a business college, who presumably might be more geared toward jobs and the salaries accompanying those jobs than are liberal arts majors. Kim, Markham, and Cangelosi (2002) studied business students based on promise of starting salary, gainful employment, and monetary rewards of certain majors within business. The authors found that business majors do indeed value these outcomes, but that "student interest in the work related to a major" (p. 31) was the primary reason cited for choosing that major. The students across majors were similar in their ranking of 'interest' as the primary criterion for choosing their major. Finance majors rated projected earnings as very important, while marketing and management majors rated it last among alternatives. Unfortunately, the Kim et al study did not report student gender differences, which is of importance in the present study.

Strasser, Ozgur, and Schroeder (2002) likewise found expected compensation to be the single most important differentiator when choosing between majors within business, followed by availability of positions in the field. Again, the Strasser et al study did not present gender-related findings. In studying the effects of thirteen different criteria related to choice of business major, Lowe and Simons (1997) found that Accounting and Finance majors placed most emphasis on

future earnings and career options, while Marketing majors placed more emphasis on the subject matter itself. An earlier study by Lowe, Lowe, and Simons (1995) did find differences between male and female accounting majors in that male students attributed more importance to financial rewards in choosing accounting, while female accounting majors placed higher value on the subject matter as challenging and interesting.

One difficulty in evaluating the (perception of) future potential earnings and job opportunities on choice of major in dynamic choice models is that the reviewed studies involve students who had already chosen their major, were embedded in upper-level courses, and were being exposed to professionals in the field and internships in the field. They had already chosen their field of study, and were heavily invested in it. More relevant questions for advising, counseling, and planning purposes are: where do students obtain their salary predictions and opportunities predictions? How do students deliberate their options with respect to the majors open to them? Do female students and male students differ in their approach to evaluating their options, even within the salary/opportunities realm?

### **Conceptual Framework**

The majority of studies in the literature survey address influence factors discreetly, and/or in a static, cross-sectional context, rather than in combination and as they might change dynamically over time. I have not found a model which delineates the process involved in how this decision-making might change through the first year of college. Most of the studies deal with one or two variables, and do not propose how the factors might interact or be influenced over time. The choice of major process is also somewhat institution specific, in that universities and

colleges have their own ‘entry-to-major’ prerequisites and ‘declaration of major’ process. One approach to the choice of major procedure is exemplified by the actual / practical procedure at Penn State University’s Smeal College of Business. In this case, students identify a preliminary and non-binding area of interest upon entering the college as first year students, followed by a more meaningful declaration at the end of semester one; this second declaration is necessary in order to facilitate advising and course selection for the remainder of the first year and for the second year, with a focus on fulfilling the several “entrance to major” requirements. Later, in their fourth semester, students must officially commit to a major field of study, which they will pursue in the junior and senior years, with little or no opportunity to change their major.

Students struggle with this ‘choice of major’ decision, especially as the date to officially declare the major, and thus commit, draws closer, and I would like to develop a model to exemplify and study the process and critical factors and elements along the way to this decision. This is a model building approach in which I assess the factors which influence students’ choice of major (Figure 2 on page 24), and then ascertain how these factors change over time. The model would follow the actual process, in that students enter the first year of business school at Time One with demographic indicators and pre-college attitudes regarding perceptions of self and perceptions of career. Students are admitted to the Smeal College of Business having stated an “Initial Preference” for major (this is at Time One and is not binding); this choice is casual and is certainly subject to change before the student is asked to declare an “Intended Field of Study” at Time Two. While the final and binding “Commitment” occurs at Time Three, the announcement / declaration at Time Two affects course selection and advising decisions for the remainder of the first two years of college, and the decision at Time Two usually holds up

through Time Three, in that students choose supporting and “Entrance to Major” courses based on their initial choice and find it very difficult to change direction after the third semester. For example, at Penn State, students intending to pursue Actuarial Science as a major must complete Math 110 and Math140 and Math141 prior to their Junior Year entry to major; such rigorous math preparation precludes students from taking courses which may provide entry into other majors.

The ‘entry to major’ process, deadlines, and specific entrance criteria thus require that very important decisions be made quite early in a student’s residency at the university. The finding is in agreement with results from Dawson-Threat and Huba (1996) which suggested that the initial choice of major is the single best predictor of major at graduation and first professional employment. Initial decisions steer subsequent course selections, and there is very little room for an alternative route if the student wishes to finish in four years.

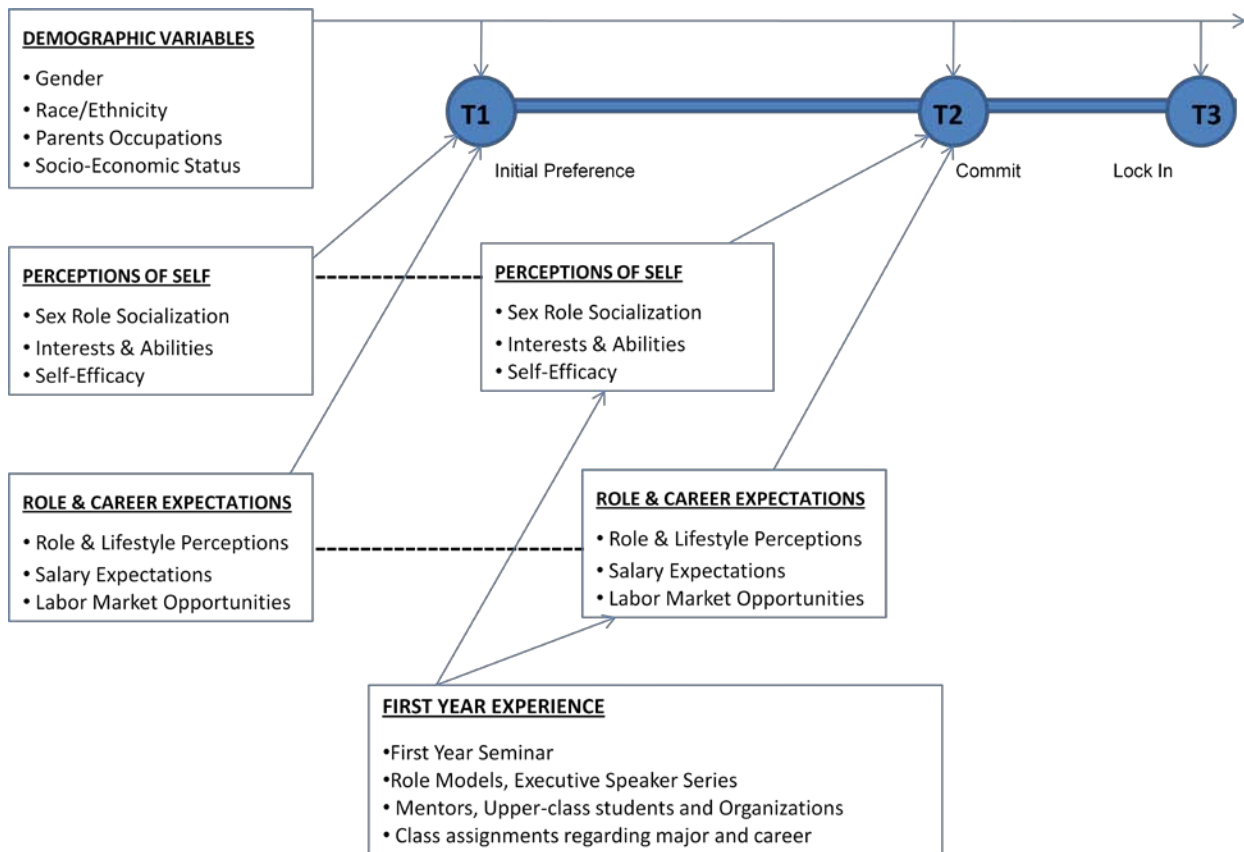
During the period between admission and the end of semester one, students take only one introductory course in business (microeconomics), along with general education courses in math and English, and courses fulfilling other basic university requirements. Students are thus preparing to make important decisions regarding their business major, while having been exposed to minimal business courses *per se*. Elements of the Smeal College of Business “First Year Experience” program are designed to provide the additional exposure to majors and careers.

The most significant component of the First Year Experience is the Smeal College of Business First Year Seminar. This one-credit, required course is designed to provide a small-class environment, interaction with faculty, exposure to successful role models, and participation

in discussions with upper-class students already in majors, and with alumni and corporate associates. The course helps students adjust to the rigors of university study, presents the Smeal Honor Code, leadership models, and discussions of diversity and group problem solving. The most important (and highly weighted) class assignment in the Smeal College of Business First Year Seminar is team delivery of a presentation on the various careers and majors available in the college. In preparing this presentation, students are required to interview professionals in the field, upper-class students in the major, and faculty in the major, as well as research how corporations engage professionals in the career field. The resultant effect of these first year experiences on perceptions, declaration of major, and, ultimately, choice of career, may be an important consideration on students' choice counseling and academic advising context.

### **Choice of Major Model.**

The proposed Choice of Major Model allows an examination of the effect of the generalized early college experience, including First Year Seminar, might have on a student's choice of major over time. This model is aimed at a dynamic representation of the forces and influences acting on the student. The model is proposed as "Choice of Major Model" for purposes of this research, as shown in Figure 2:



**Figure 2**

**Choice of Major Model**

The model proposes that there are pre-college influence factors in the areas of both demographics and perceptions. The demographics of interest include gender, ethnicity, socio-economic status, and other indices such as living arrangements (e.g., single mother v. two-parent household). In addition to the demographics, pre-college perceptions are defined in two categories: Perceptions of Self, and Role and Career Expectations. Perceptions of Self includes the effects of sex role socialization, one’s assessment of abilities and interests, and self-efficacy

beliefs. Role and Career Expectations includes person-environment congruence (including perceptions about future lifestyle associated with particular occupations), the salary expectations associated with particular occupations, and the perceived availability of jobs in those occupations. It is hypothesized that early college experiences (The First-Year Experience, course work, role models, exposure to speakers, exposure to majors and careers, and the specific and unique First-Year Seminar in Business course) combine to provide students with a realistic career preview, thus directly affecting their Role and Career Expectations, and also indirectly affecting the students' evaluation of their own abilities and interests as related to person-environment congruence and thus perceptions of success in majors and careers. This direct and indirect influence, if found to be true, would make early college experiences even more critical in the career choice discussion and decision-making paradigm. Most of the discussion and literature on First-Year Seminars relates to the seminars' value in helping students make the transition to college and the beneficial effect of such seminars on retention and persistence. The proposed model and study may also show additional effects of first-year experience in helping students make major and career choices that have life-long implications.



### **Chapter III**

#### **Methodology : Focus Group Study; Developing and pilot testing survey instruments**

The purpose of this study was to develop a model and survey instruments which can be used to ascertain the presence, strength, and susceptibility to change of the factors that influence the ‘choosing a major’ decision; this is a model building study, rather than a theory testing or theory building study. The end result of the current investigation is a survey instrument that can be used to provide further insight into the choice of major decision at various stages of the process (e.g., assessing first-year students upon matriculation, assessing the same students after year one, etc.). The study unfolded in distinct phases, beginning with (1), an evaluation of the adequacy of the constructs proposed in the model; followed by (2), focus group discussions of the choice of major process; and (3), the development, pilot testing, factor analysis, and refinement of survey questionnaire sub-scales designed to accurately measure the constructs.

I am in the potentially awkward position of being an associate dean trying to do independent and unbiased research at my own institution, and in essence trying to critique my own policies and verify the efficacy of my own procedures. This brings up multiple threats to objectivity not only for me but for other administrators trying to study their own practices and policies. To counter this threat, I referred to the Lincoln and Guba (2000) process of ‘reflexivity’ (p.183) in which the researcher tries to critically assess the potential confounds in just such a situation, and point out threats to reliability and validity. In an attempt to view the ‘choice of major’ issue objectively and also from the student perspective, and in order to provide comprehensive evaluation of the model itself, I developed a method whereby independent student investigators were trained to serve as facilitators of focus group studies. This group of

students also served as the research team later in the development and pilot-testing phases of survey construction. I selected a group of current undergraduate students, recently and personally affected by the ‘choice of major’ process under investigation, but who were otherwise unfamiliar with the literature and research, or my approach to the dynamic model. The students served first as a focus group for me to investigate relevant factors in their individual choice of major decisions. Following this initial data collection, the students were debriefed and asked to engage in their own literature review on the ‘choice of major’ topic. The students were subsequently trained and used to facilitate multiple focus groups themselves. Using the research team in this way was intended to prevent my preferences and bias from entering the process and conclusions, to avoid the possible ‘influence’ my presence would have on student respondents, and to put our collective insights into the evaluation of the model and development of appropriate subscales. I used the eight volunteers first as a (naïve) focus group and panel for me, then as a research team to study and question the model itself, and then as researchers for focus groups of additional students not familiar with the model. Finally, I used the research team to look at this issue through a different prism, and to bring their insights to bear on the development of a survey questionnaire. The questionnaire thus developed was fully informed and shaped by the series of focus group observations regarding choice of major.

Based on this general approach, student researchers were recruited from an upper-level course in the college in the Fall Semester 2008 for an Independent Study course (MGMT496), the purpose of which was to evaluate the tentative Choice of Major Model (Figure 2 on page 24) and then develop questionnaire items to be used in the pilot test. Eight students were selected for the Independent Study from eleven volunteers. All of those selected were female; four were

juniors, three were seniors, and one was a fifth-year senior. The initial line of inquiry in my research dealt with the reasons and processes that female students use to choose a major. Since this group was to be my first focus group, I chose all female volunteers who also met other criteria discussed below. The eight selected were all Smeal College of Business students with grade point averages 3.3 or above, who represented various majors, and who submitted essays outlining their interest in pursuing undergraduate research in order to be selected for the MGMT496 class. The minimum grade point average of 3.3 was chosen for a specific reason unique to the Smeal College of Business and relevant to this research: the College is oversubscribed in certain majors, and thus GPA requirements control access and limit the number of students in those majors. A 3.0 GPA is required for entry in five of the controlled majors, while a 3.3 GPA is required for entry into the sixth controlled major which is Finance. The other two majors require a 2.0 GPA, and are the uncontrolled majors. Because these controls are in place, some students are denied their major based on GPA, and thus do not have the full range of options available when making their decision; grade point average becomes a limiting factor in the choice. I wanted my initial data gathering to be with students who had access to all majors, thus Juniors and Seniors who had at least a 3.3 GPA allowing them the option to choose any of the majors available. The issue of GPA and (thus) limited options and the saliency of options in major selection is covered in the focus group discussions with a larger sample later, and may indeed become a factor in students' choice, but it was not a limiting or restrictive factor in our initial proceedings.

The eight students selected were informed via e-mail and asked to verify that they were still interested in being enrolled in MGMT496. All of the students accepted the offer and met on

the first day of the semester for introductions and the preliminary focus group discussion.

Following this initial meeting, and prior to the next class meeting, the students were asked to write a reflective essay on why and how they had chosen their particular major. This essay would be used again after they had been engaged for the semester. The process for incorporating the student research team and developing the survey questionnaire is shown as Figure 3.

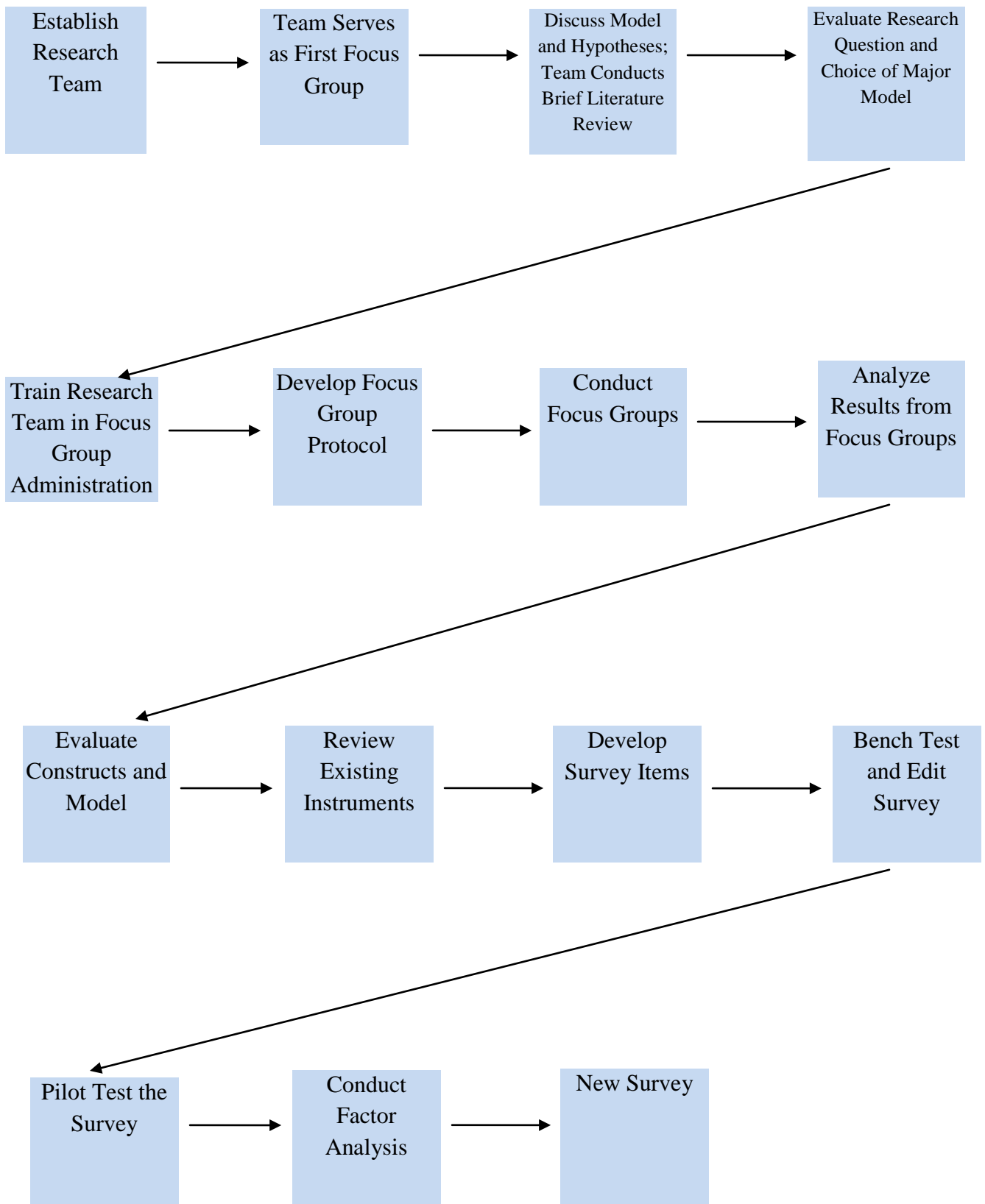


Figure 3

Process for developing the survey questionnaire

Evaluation of the Model. The first class assignment required students to find relevant articles in the literature on “Why business students choose certain majors” and to abstract those articles for use in class. For two weeks, the class discussions were led by the students based on their general readings. Following this overview, the students were assigned as two-person teams to one of four following topic areas from the preliminary model: Sex Role Socialization; Self-Efficacy ; Demographics; and Role and Lifestyle Perceptions. Each team spent four weeks researching and studying its topic area, followed by an in-class presentation and discussion. The Sex Role Socialization team investigated the presence and influence of role models, as well as sex role stereotyping. The Self-Efficacy team included the literature on person-environment congruence, interests, abilities, and self-efficacy. The Demographics team reviewed literature on the effects of parents’ occupations, socio-economic status, income, and family status. The Role and Lifestyle Perceptions team reviewed the effects of salary expectations, the importance of salary, the importance of job security, perceived career lifestyle implications, and the availability of job opportunities. Each class session during the six-week period was used in discussion and analysis of the readings, and relating the readings to the model.

By the end of the six-week study period, the students were familiar with the literature and demonstrated an understanding of the preliminary Choice of Major model being proposed here. There was consensus among the members of the research team that the four topic areas were sufficiently important and relevant and that the four areas contained the constructs of interest. However, in order to hear in other (naïve) students’ own words what they deem important in selecting a major (and thus, subsequently, a career), the research team agreed to conduct multiple focus-group sessions with students currently in the Smeal College of Business, some of whom

had not yet selected a major, and some of whom had chosen their major. Lee (1999) notes that “focus groups generate data that are (a) related to the themes imposed by the researcher and (b) enriched by the group’s interactive discussion” (p. 51). We anticipated that this round of focus group sessions would verify the importance of the constructs identified in the literature and perhaps identify additional factors for further investigation.

The MGMT496 research team, under my guidance and direction, developed a focus group procedure, and team members were trained in the process of leading and conducting focus group discussions. Each facilitator was also trained to use the recording devices and to transcribe focus group discussion content. Coding of transcribed data was discussed briefly prior to the first session, and formalized after the sessions had begun. An Institutional Review Board petition was submitted, and permission was granted to conduct the focus group sessions. Sessions were conducted in October and November of 2008.

### **Focus Group Sessions.**

The eight students on the research team were re-organized into four teams of two students each for the purpose of conducting focus group sessions with first-year students and with juniors. I assigned the focus group facilitators as two-person teams because the MGMT496 students lacked prior experience in conducting focus groups and focus group protocol, and I believed that having a partner would allow each to provide assistance to the other in the actual sessions. In an effort to obtain a comprehensive picture of the items and issues affecting students as they contemplate choosing a major field of study, eight focus groups were recruited, four from Smeal First-Year Seminar sections and four from the Smeal “Junior Core” class in Management (BA304). The Junior Core is a four-course sequence (Management, Finance, Marketing, Supply

Chain) which all business students must complete. The students recruited from the Junior Core had all declared and entered advanced courses in their major, while the First-Year Seminar students had not yet declared their major (nor were they even eligible to declare a major at this point). The volunteer sample of 88 respondents was divided relatively evenly between male and female students, with 41 first-year students and 47 juniors, with the juniors representing each of the majors in the Smeal College of Business, as shown below:

**Table: 1 Focus Group Participants**

\*First-Year Seminar

N= 41	Male: 17
	Female: 24
	Smeal: 33
	DUS: 8

\*Junior Core:

N=47	Male: 21
	Female: 26
Major:	Finance 9
	Marketing 9
	Accounting 8
	Supply Chain 7
	Management 7
	Economics 4
	MIS 2
	Actuarial Science 1



The participants were recruited by e-mail invitation, and volunteers were accepted on a first-come basis. Each respondent was offered extra credit in his or her course, and alternate options for extra credit were available for all other students in those courses. The e-mail invitation included a brief description of the nature of the discussion topic and a tentative schedule of when the focus groups would be conducted. Volunteers were given a choice as to date and time and signed themselves up electronically. A reminder e-mail message was sent three days prior to the scheduled event.

Data Collection and Analysis. The focus group facilitators began with an introduction and brief overview of the purpose of the session (See Appendix A, Focus Group Facilitators' Script), and participants were asked to sign one copy of the informed consent form and return it to the facilitator. Following this brief introduction, attendees were immediately engaged in the discussion of their choice of Major. Guidelines for the group interview were derived from Fontana and Frey (2000), who recommended that the facilitator team should begin with a fairly structured approach and gradually segue into an open discussion format. To achieve this structure, each team began with the same scripted items, and as the responses and discussion progressed, the facilitators allowed the respondents to engage in discussion with each other rather than responding directly to facilitator questions. Fontana and Frey (2000) proposed that "The group interview is essentially a qualitative data gathering technique that relies upon the systematic questioning of several individuals simultaneously" (p. 651). Principles of group interviews have been adapted for focus group purposes to the point that "all group interviews are often generically designated focus group interviews" (p. 651). In the focus group format used here, the facilitators began in a "directive, structured" manner proposed by Fontana and Frey (p.

653), and as themes emerged, the facilitators allowed the groups to progress until the theme was exhausted, at which time the facilitator added new elements to the discussion.

The research team decided on a simple and discussion-provoking first question: “What are you thinking of majoring in?” for first-year students, and “What is your major?” for juniors. This preliminary and direct inquiry had the effect of stimulating immediate buzz, as the attendees all seemed very interested in the topic and had volunteered to discuss the subject. The initial question served to initiate conversation, and the facilitators reported no reluctance or awkward group sessions; this is a topic of high interest to the students involved (Author Note: The ‘choice of major’ issue is of high interest to first-year students, who have reported anecdotally in my first-year seminar that the most common question from relatives and friends is: “What are you going to major in?” I have had to remind students not to put too much pressure on themselves, and to spend time reflecting and looking at options rather than choose too quickly on limited exposure to the various majors).

A second area of interest for the research team in interviewing with the first-year students was whether the first-year students had a full understanding of what the particular majors are in the Smeal College of Business; earlier surveys during orientation weekend had shown that very few incoming first-year students could accurately describe the eight majors in the college. In addition, new students had only a vague notion of the differences between Finance and Economics, or between the separate Economics majors in Liberal Arts (BA) and Business (BS), and very few students could articulate details in the Supply Chain major and career. Students in the earlier study were most familiar with Marketing and Management in only rudimentary terms.

A second line of inquiry, then, with the first-year focus groups was for the students in the group to collectively list the majors in the college. An additional and fruitful line of inquiry dealt with generalized perceptions of each major: “What do you think of when you think of accountants and the major”?, “What comes to mind when you think of Marketing people and the students in the major?”, as well as “Do you know anyone in this career or major?”

The focus group sessions for Junior-year students, on the other hand, were different because the Juniors had already chosen their major, and instead of the ‘what is accounting?’ question, we spent quite a bit of time on the inquiry: “What do you think influenced you in choosing your particular major?” The MGMT496 facilitators reported that all of the focus group sessions were lively, interesting, and often ran beyond the 60 to 75 minutes for which they were scheduled. My initial focus group (now the MGMT496 research team), was likewise lively, interested in the subject, and quite talkative. Students in both the First-year groups and the Juniors groups were quite engaged and offered details, specific examples, and opinions.

Rapport vs. Objectivity. One issue of concern when conducting qualitative research is that investigators establish rapport, in order to elicit honest perceptions. In our case, the student facilitators reported that it was quite easy for them to establish rapport with students in focus groups since the facilitators were themselves essentially peers, having been through this ‘choice of major’ process very recently. The ease with which the research team established rapport validated my decision to use them in lieu of personally collecting the student data. The problem for me as the Principal Investigator is that I also happen to be the students’ Associate Dean for Undergraduate Education. The Juniors who volunteered for focus group participation all know

me because I teach the required Junior Core and they have all thus been “exposed” to me as an “authority figure.” In addition, I approve each student’s entry into a major or deny permission to enter certain majors. In either case, I send the student a personalized letter and, in the case of “denial of first choice,” I redirect students to their second or third choice. My physical presence in the focus groups might have altered student responses or limited free expression in discussion, which is one reason for commissioning the eight students in MGMT496 to carry on detailed investigations.

In addition to the ‘Dean bias’ among the juniors, the first-year students probably know me because I host prospective students and their families at recruiting visits, I greet first-year students when they arrive on campus to schedule classes prior to their first semester, I host students for Welcome Weekend, I hold an ice cream social during which I try to meet as many first- year students as possible, I host and introduce an Involvement Night so that new and returning students can join student organizations, and I authored/edited their First-Year Seminar text book. The serious confound for an academic administrator attempting to conduct local research into his or her own organization is that respondents may be put off by the researcher’s status, or are otherwise responding to the researcher’s title and position; in this case I am their Dean. The option of using qualified, knowledgeable, trained undergraduate peers to examine research questions with implications for policy and administration is quite valuable in this situation.

A second serious consideration is establishing rapport while still maintaining objectivity and distance. One primary point of the focus group team training was to ensure that the student

facilitators would establish rapport but not lead the discussion or add their own comments and opinions or otherwise commiserate with the participants. This ‘professional distance’ was obtained by having the facilitators read an official introduction of the study, and then read aloud the consent form. Then the facilitators introduced themselves and their major field of study, but did not discuss or disclose their own decision-making process leading up to their choice, nor did they discuss their satisfaction with their major or their internship experiences. The point of the introduction was to establish a balance between rapport and objectivity, and to set the attendees at ease and give them opportunity to engage in discussion as the first of several pre-determined questions was posed.

This phase of the research provided access to dozens of students in eight focus groups, and one concern was to insure that the different groups with different facilitators were reliably assessed. Since there were eight sessions run by four teams of facilitators, the problem becomes one of ensuring integrity across the focus group teams, and reliability in transcribing and coding. Merriam (2002) discussed a variety of strategies for promoting validity and reliability in qualitative studies, which were discussed and incorporated by the facilitator team. For the MGMT496 facilitators, reliability and authenticity were maintained through immediate reconstruction and discussion of focus group details when the participants were dismissed, and team review of the recordings before transcription. Merriam’s proposal of triangulation (2002) was achieved by employing multiple investigators using multiple focus groups. The facilitators also engaged in group discussion and debriefings after tape transcription. An additional strategy involved the facilitators themselves discussing ‘researcher reflexivity’ (Merriam, 2002) where they engaged in self-reflection of their own assumptions, biases, and other issues which might

affect their investigation and analysis of the focus group results. The research team agreed that using these methods, as well as having multiple investigators and multiple focus groups, led to adequate and appropriate results, and “rich, thick descriptions” (Merriam, 2002, p. 31), which would serve to favorably inform the development of the survey instrument.

## **RESULTS** (Focus Groups Study)

Composite picture of the focus group participants. The first-year students were from sections of the Smeal College First-Year Seminar, PSU006, who were asked to participate in the focus group exercise as part of their regular course assignments. Their course instructor was not present during the focus group discussion. Of the 41 first-year students, 33 were officially enrolled as Smeal College of Business students, and eight were from the University’s Division of Undergraduate Studies (DUS) (See Table 1, page 33). DUS students are not officially associated with a college until their Junior year, but are usually tracking a particular college and therefore eligible to enroll in that college’s First-Year Seminar. In our case, all eight of the DUS first-year students in the focus groups stated that they had hopes of eventually declaring a Smeal College major in their sophomore year, provided that they met entrance-to-major (ETM) criteria.

The 47 Juniors in attendance at their various focus group sessions represented each of the majors in the Smeal College of Business, recruited from the ongoing Junior Core courses, and were given extra credit for their participation in the focus group discussion. The juniors were proportionately representative of the eight majors with Finance and Marketing students in the majority (See Table 1, page 33). The Juniors were also very engaged in various student organizations, had participated in internships, had visited the University’s career fair and the

Smeal College career fair, and were in general quite involved with their undergraduate experience.

Focus Group Data Analysis. The research team did not begin data coding with pre-determined categories or *a priori* labels; rather, the team proceeded in a grounded theory manner where the themes and model would be “grounded in the data and emergent from the data” (Merriam, 1998, page 190). The team engaged in an iterative process in which the investigator becomes more and more aware of the categories and themes as the transcripts unfold, “developing increasingly richer concepts and models of how the phenomenon being studied really works” (Ryan & Bernard, 2000, p. 783) . To do this, we evaluated verbatim transcripts and allowed the participants statements (data) to determine our categories. As noted by Merriam (1998) in discussion of analytical techniques,

Category construction begins with reading the first interview transcript, the first set of field notes, the first document collected in the study. As you read down through the transcript, for example, you jot down notes, comments, observations, and queries in the margins...After working through the entire transcript in this manner, you go back over your marginal notes and comments and try to group those comments and notes that seem to go together (p. 181).

Unlike quantitative research, which requires coded data in pre-determined categories, our purpose here is to let the data define or comprise the themes and categories. The process of allowing the data to speak for themselves has been described as *in vivo* coding (Strauss & Corbin, 1990); the themes or categories are expressed in the very words and terms used by informants themselves, rather than being imposed by the researcher. In analyzing the transcripts, we used real examples from real informants. The themes discussed in the next section do not

exactly match 'key words' or phrases in the research, but they are the words and phrases used by our informants themselves. Our process was akin to the "open coding" described by various researchers (Bogden & Biklen, 1992; Lincoln & Guba, 1985), and leads to a thematic description of the choice of major process as expressed by the students in the midst of the process itself.

Themes derived from the focus groups: The focus group sessions yielded student data which were analyzed relative to the preliminary categories being considered for the survey questionnaire. One of the early issues that had to be dealt with, and made clear and precise, was the notion of "Interest in..." a major or career. In the initial focus group with the facilitator team, the notion of "Interest..." in a major was brought up by one of the students quite early in the discussion, as in: 'I am interested in Finance', whereupon other students immediately asked if the 'interest' was in the salary, or the perceived lifestyle, or the 'easy courses', or the parents' influence; to the other students' credit, "I am interested in..." was not a sufficiently clear statement. The students wanted the speaker to be specific regarding the NATURE of the interest, or the reason for the interest. This led to the description of methods and alternate/ follow-up inquiries, which could be used to ascertain the reason behind the "interest" when a student would proclaim an interest in a major. This modification proved to be quite helpful in the ensuing focus group discussions. Because we were focusing on a specific question ("What are the factors that led you to choose your major?"), the data and transcriptions from the sessions reached saturation fairly quickly; it became apparent that there was a good deal of redundancy in the discussions, and there did not seem to be a great deal of variety across the several groups. As a result of analysis and discussion among the teams conducting the focus groups, five themes were proposed as appropriate for further quantitative analysis:



## **1. Affinity for and curiosity about the subject matter content of a major and career**

This category proposes that a student finds the academic content inherently interesting, an interest in the subject matter content itself, rather than an ‘interest’ in the salary or lifestyle.

Comments related to this category were recorded in every group, and took the following form:

“I guess I’ve wanted corporate finance ever since I heard about it in high school; it sounds really interesting to be running a large company finances, making financial decisions” (Junior, male)

“The professor made it really interesting (Accounting 211); even though I didn’t think I was a numbers person, our professor made it seem really fun and everything” (Sophomore, female)

“I originally wanted to do management, but it’s too broad and I want to focus more on consumer behavior and the psychology of some trends and products” (Senior, female)

“Supply Chain is broad, and I knew if I didn’t like manufacturing I could go to distribution or procurement or other assignments which are interesting also” (Senior, female)

“I want to run the planning and details of my father’s company (construction), the management, who’s put on which projects, is really where things get done” (First year student, male)

“I really didn’t know what I wanted to do; I thought maybe management. When I found out about Supply Chain, it really interested me, and I discussed the types of jobs they do and now I’m really happy that I am in Supply Chain. I found out about the high salaries and that’s just a bonus, I would have liked Supply Chain anyway”( Junior, female)

## **2. Personal skills seen as congruent**

This category deals with student perceptions that they are ‘good at’ a subject, or have been successful in pursuit of studies in a particular area, and included comments such as:

“After I took Accounting 211, I realized that it was the best fit for me, I was really good at it” (Sophomore, male)

“I started out in engineering but really didn’t like it, switched to business immediately, it is a much better fit for me, I’m a people person, and I want to get in marketing or management” (Sophomore, male)

“I like people, and marketing is more social, you interact with people a lot more and I am good at that, I already like the marketing club” (First year student, female)

“I’m a tech savvy person, so I really like MIS and I knew I would be good at it” (Junior, male)

### **3. Role Models**

This category deals with the student’s identification with a specific influential person in their life, someone to whom they relate or claim to admire:

“My sister is now a controller at Goldman Sachs and I wanted to be like that, she is really happy and successful” (Junior, female)

“When I was in high school I met my dad’s friend who worked for Goldman Sachs and retired at 44, and that was it for me. I wanted Wall Street.” (Senior, male)

“My dad is in marketing and I always like it when he talks about his work, I would go to work with him if I could, he has the perfect job” (First year student, male)

“My mom graduated from Elizabethtown College with a business degree, and she has been really happy and successful and I guess I’d like to follow up on that” (Sophomore, male)

#### **4. Family Influences**

This category relates to direct family pressure and specific advice from parents and relatives. This theme is differentiated from Role Models (above) in that the respondent is referring to ‘pressure to conform’ rather than admiring a role model’s behavior and leaning toward emulating that model, as follows:

“I had to major in business because my dad made me” (Junior, male)

“My parents always wanted me to do business” (Senior, male)

“I have really strict Indian parents, they made me study business, no argument, no choice” (Junior, male)

“My mother is a CPA and she is really good and I want to be that successful too, but they get really busy sometimes, but she says I can handle it and she is really encouraging me to do accounting” (First year student, female)

“I had a business course in high school and my parents were really happy that I liked it, now they are pushing me in that direction and I kind of agree with them” (First year student, male)

#### **5. Pay and externalities**

This category deals with direct comments regarding salary, lifestyle, and external considerations not necessarily related to job content, role models, family pressure, or academic inquiry:

“I changed my mind basically at the last minute to Supply Chain basically for the money” (Junior, male)

“I’ve known for a long time that I wanted Finance and one of the attractions is the high salary” (Junior, female)

“I used to go to work with my dad in the city, take your daughter to work day, and I really loved it, and I knew I wanted that city kind of job and that’s why I chose business” (First year student, female)

“With this economy, I have been hearing that MIS will be safer because they always need information systems” (Junior, male)

“Salary is probably like the biggest factor (for coming to business school in the first place) and now with a major you still have to like it too” (First year student, male)

“I want to start my own company, be a sports agent, and make a lot of money” (First year student, male)

### **Additional Findings**

Two other themes emerged from the focus group discussions. The first related to influences directly limiting a student’s choices (e.g., “can’t pursue major X because of GPA requirements in that major”); therefore, for some students, options are restricted to other majors in the college. The second is an unexpected theme dealing with the stress of this ‘choice of

major” decision in general, which may or may not relate to the major a person chooses, but does relate to undergraduate stress and satisfaction. The two additional themes that emerged were:

### **Saliency; Limited Options**

The Smeal College of Business has instituted minimum grade point average enrollment controls on several majors, and these controls affect the choice of major process by limiting student options, as noted by the following:

“Definitely the GPA is a problem, when I heard the GPA for Finance was 3.2 (*sic*) I started thinking Marketing for sure” (First year student, female)

“I wanted Finance but couldn’t make the GPA so I took MIS and I like it now” (Junior, male)

“I wanted Marketing but I didn’t have the GPA, so I took the MIS” (Junior, male)

Also in this ‘Saliency, Limited Options’ category were comments that indicate that decisions were made based on limited information, perhaps drawing boundaries and limiting one’s choices too early in the process:

“I chose business when I was a sophomore in high school because I wanted to be successful and couldn’t see myself as a teacher” (First year student, female)

“I always thought accountants were boring and so I wouldn’t even consider that major” (First year student, female)

### **The stress associated with ‘choice of major’**

This ‘choice of major’ issue was an important one for the students involved in this study. After the focus group sessions, five participants corresponded with me via e-mail, as my contact information was listed as Principal Investigator. Each student thanked me for the opportunity to discuss the choice of major with other students. The choice of major is a big decision for students, and apparently the focus groups provided an information-gathering opportunity and a release valve for both first-years and juniors. Two first-year students remarked that the ‘choice of major’ was the main topic for their recent telephone conversations with their parents, and three noted that they were making a decision that would affect “the rest of my life.” These comments echoed the following points expressed in the focus group sessions:

“My parents have been asking me about this since I first got here, and I have worried about it for the whole time, and I still don’t have an answer” (First year student, male)

(Before I was notified) “It was just two months of being really nervous” (Junior, male)

“You have to declare by a deadline in the Spring, but you’re not really in (the major) until you finish the semester (and maintain your qualifying GPA) and they notify you. There’s a two month period after you declare where everyone’s just really nervous because if you don’t get in, you have to change majors just like that, very fast” (Junior, male)

### **Summary and overview of the focus group study.**

We entered the focus group discussions with four *a priori* general areas of interest: demographics, sex role socialization, role and lifestyle perceptions, and self-efficacy. One conclusion that I draw from the multiple focus group discussions is that the students in the focus groups placed much more emphasis on practical questions, and the content of courses, majors, and careers, and not much emphasis on sex role socialization. The practical and rational

comments from focus group members fit well within the *a priori* ‘role and lifestyle’ category (e.g., “I would like to work on Wall Street”) and within the ‘self-efficacy’ category (e.g., ‘can I be successful at this’), and also reinforced some of the demographic indicators we had predicted (i.e., in each focus group, the employment status of parents was mentioned by the students). However, the ‘sex role socialization’ theme did not come through in the focus group discussions. Following up on the role model issue, several female students noted that the role model could be of either gender, they just wanted to “observe someone doing this (career they were pursuing) successfully.” It is not simply that the volunteers in the focus groups are liberated or unaware of social science theories in sex role socialization and gender discrimination (we talk in class about glass ceiling and other issues); rather, there was an explicitly stated proposition that “we are not so fixated on gender roles as other generations were.” For these students, the issue of sex role socialization may be a secondary or underlying factor in childhood developmental stages, but respondents were focused on successful, identifiable real persons and, in the focus group discussions, did not relate to ‘traditional female’/ ‘traditional male’ jobs *per se*.

The focus group discussions informed the questionnaire development, helped us to improve the demographics portion of the survey instrument, and served to address whether I have been employing the appropriate constructs, both in the “Choice of Major” Model and in my preliminary leaning toward sub-scales for survey instruments. Following focus group data analysis, I possessed a refined approach to quantitative survey sub-scales, in that I needed to gather information from survey questionnaire respondents in the following five thematic areas, as well as the modified demographic items:

1. Affinity for and curiosity about the subject matter
2. Personal skills seen as congruent with the major and career
3. Role Models
4. Family and Peer influences
5. Pay and externalities

Themes one and two fit within the *Choice of Major Model* (page 24) ‘Perceptions of Self’ category, and theme five (pay and externalities) fits in the ‘Role and Career Expectations’ category. Areas three and four seem to be straddling both categories; e.g., a Role Model supports self-efficacy, and also helps define future lifestyle perceptions.

#### Implications for model and survey construction

The focus group students’ emphasis on the nature of the job itself, on salaries, and on real-world opportunities led to the addition of more precise wording and additional instrument items regarding content knowledge, personal skills, “interest in” the job content, pay, and job location and lifestyle issues (e.g., “want a job in a big city”). In addition, the effect of the focus group students’ lack of emphasis on sex-role stereotypes, and rather on role models in general, resulted in a change to the draft questionnaire items and also additional detail and clarity to “Role Model Influences”.



### **Developing and Bench Testing the Sub-scales**

I decided to use the focus-group themes and details to inform the development of questionnaire items for my survey instrument. The review of the literature of “Choice of Major” studies utilizing a quantitative approach revealed that many of the surveys were self-constructed and locally developed. In addition to the examples mentioned in the literature review, Nelson, Vendryzk, Quirin and Allen (2002) used a self-designed survey in studying why students choose accounting as a major, citing the lack of generally available surveys on the subject. Likewise, Hardin, O’Brian, and Quirin (2000) used a “self-developed” survey based on perceptions of engineering, law, medicine, and accounting careers (accounting was rated lowest of the four career fields) because generic surveys were not available. Geiger and Ogilby (2000) used a self-developed survey to study the relationship between student perceptions of first accounting course/ professor and students’ choice to major in accounting (found an Instructor effect). These three studies are exemplary of the common use of self-developed surveys in the career choice literature.

Developing preliminary survey items. Prior to the Fall Semester 2008 focus group studies, I had developed a tentative set of subscales based on a review of the literature. These subscales were aimed at measuring appropriate factors of interest in studying “Choice of Major”. These *a priori* sub-scales were modified by the information obtained in the focus group analysis and new items were developed in the following areas as proposed by the focus group qualitative study:

1. Affinity for and curiosity about the subject matter
2. Personal skills related to the major and career
3. Influence of Role Models
4. Influence of family and friends
5. Pay and external considerations

Continuing the method of using undergraduate students to apply a student perspective to the ‘choice of major’ investigation, a new team of students was recruited for a Spring Semester 2009 Independent Study. The new MGMT496 research team consisted of three members from the Fall semester 2008 team and nine new members. The Spring 2009 MGMT496 study group included nine women and three men, with three seniors, five juniors, three sophomores, and one first-year student. The students represented each major in the college; although the sophomores and first-year student had not yet entered a major field of study, they had expressed an interest and preference.

The development of the revised sub-scales began with a meeting of this group on January 14, 2009. We began with a discussion of major and their individual reason for choice of major, and sources of influence for choosing the Major. The three returning students spoke about the Fall semester experience, and their areas of interest from their focus groups. We then broke into three teams, each led by one of the returning MGMT496 students. The three teams began with an updated rough draft from the earlier survey, using insight gained from Fall Semester focus group

exercises, to review and critique the wording and appropriateness of the draft items and to generate additional items, if necessary, related to the categories discussed earlier.

In addition, we wanted to specifically include the following key words and phrases, noted in the focus group studies:

Role models; Peer influence; Family influence; Teacher influence

Pay; High salary; Job Security; Lifestyle; Big City; Status; Prestige

The actual work content; What “they” do at work; The challenge

The interesting nature of “X” major or career

The career is a good match for my abilities; I’m good at it

It seems like an interesting major; It’s fun

I liked previous courses in this subject; I had a great Internship in this field

I had intended to use a single survey questionnaire with both first year students and juniors. However, the items for each group, after initial commonality, soon separated into different issues and concerns: perceptions of a major and career (for first-year students) versus actual exposure to the career and internships (for the Juniors) led to different types of questions and different subscales for each group. In addition, the initial multi-purpose survey was six pages long, and not amenable to automatic scanning. For clarity and ease of administration, I created two different survey forms: a Pre-Major form for first year students and sophomores , and a Major form for juniors and seniors who were enrolled in and taking upper-level courses in their major. The two forms were developed to study “Pre-Major” issues for the first year students and

others who had not yet declared a major, and “Major” considerations for the upper-class students who were firmly entrenched in their major field of study.

### **BENCH TEST**

Two different versions of the draft survey questionnaire were presented to the MGMT496 students, and six invited guests who were not enrolled in MGMT496, giving 18 respondents for the bench test. The ‘six invited guests’ were added to increase the number of students taking the bench test for review, and also to include some students who were naïve to the entire process (The MGMT496 students had been discussing the model, process, and factors). The new students were all from the Smeal College of Business, four juniors, two female and two male, from different majors, and two sophomores, both female, without a major at the time of the bench test.

Students in the bench test filled out the survey based on their class standing (Pre-Major or Major). The students completed the survey, under realistic conditions, and then we proceeded as a group to discuss survey items for clarity and answerability, and “where” the students thought the item mapped to in the preconceived categories. The team also discussed the demographics portion of the survey, and changes were made to items as appropriate. The Demographics sections as modified by the focus groups now had questions and items in the following areas A through H for both the upper class students (juniors and seniors) and the pre-major students (first-year students and sophomores):

- A. Gender
- B. Ethnicity
- C. Family / parental living arrangements while in high school

- D. Parents'/Guardians' education level
  - Parents'/Guardians' college major
- E. Parents'/Guardians' field of employment
- F. Estimated total family income
- G. Primary reason for choosing business school
- H. Current number of credits earned

Additionally, Item I on the Major Survey asked “What is your current major ?” and Item I on the Pre-Major Survey asked “What is your intended major ?” with an option to choose ‘non-business’.

The next three categories (Items J, K, and L) on the surveys were similar for both respondent groups, and dealt with the various influence factors in the decision-making process derived from the focus-group discussions and bench test. Again, items were worded slightly differently to account for the fact that juniors and seniors are in a major, while first year students are contemplating a major. They were presented as four-point Likert-type scales, two (Items J and L) asking the respondents to indicate their level of agreement (from Strongly Disagree through Strongly Agree) with certain statements. The eleven statements in Item J referred to potential sources of influence (e.g., “There are attractive job opportunities with this major”), while the twelve Item K statements referred to job knowledge (e.g., “I know what accounting majors do in their career”) or personal skills (e.g., “I have the interpersonal skills to do well in the career I have chosen”). In Item L, respondents were presented with a list of potentially influential persons (e.g., “high school teacher”) or sources of influence (e.g., “salaries”), and were asked to indicate the level of influence from these sources from a four-point Likert-type

scale (from No Influence through Major Influence). Following this, Item M asked respondents to identify the source of “greatest influence” on their choice of major. The final item on the Pre-Major Survey dealt with perceptions of the different majors (e.g., did the respondent find a specified major to be Interesting, Difficult, Boring, etc), while the final item on the Major Survey asked if students would change their major if given the opportunity, and if so, the reason for a change (e.g., “My current major is too difficult”).

Note that the groups of items J, K, L, and M on the surveys were presented to respondents in differing formats; i.e., in set J, the scale of responses ranged from ‘Strongly Disagree to Strongly Agree’, while in set K the choices ranged from ‘No Influence to Major Influence’. This “Mode Specific Questionnaire Design” (Dillman, 2008) was implemented because it is proposed (and as discussion following the bench test verified) that questions should be written in the manner that best accommodates the area of inquiry (mode). Dillman (2008) proposes that “The questionnaire is optimized for each mode separately in an effort to improve the performance of individual survey modes, even if that results in different question formats across modes” (p. 175). In our case, the questionnaire was optimized for each area, which did indeed result in different formats across modes. The revised questionnaires for pilot testing were completed for pre-major students and for the students in their major. Final drafts of the two surveys were sent to Penn State University’s Survey Research Center and 800 copies of the Major Survey and 200 copies of the Pre-Major Survey were printed and delivered.

### **Administration of the pilot test of both survey instruments**

The Pilot Test was administered on February 23, 24, 25, 2009 in several Smeal classes: forms were returned by 167 students in pre-major status and 786 students who had committed to a major and were solidly entrenched in their second semester in their major field of study. The response rate for the Pre-Major survey was 92.2% (167 returned out of 181), and the response rate for the Major survey was 98.2% (786 returned out of 800). The high response rate is attributed to the fact that completion of the survey earned the student extra credit in his or her course (First-Year Seminar or Junior Core), was administered during class time, and was fairly easy to complete. See Appendix B for the “Request for Participation, Verbal Communication Script” which was read to the classes prior to their participation in the survey. This survey administration and pilot test provided an opportunity to engage in a factor analytic study to ascertain if the themes held together as sub-scales and could thus be used in future studies. The demographics of the group of students involved in the pilot test were representative of future groups who would be engaging in this decision-making process, as discussed below. The Pilot test, therefore, allowed me to assess the preliminary questionnaire using a group that resembles the actual students who would be of interest in future investigations with a revised instrument.

## **CHAPTER IV.**

### **Results**

The purpose of this dissertation was to develop survey instruments that can be used to study the Choice of Major process in undergraduate business students. This chapter presents results of pilot tests of the surveys. In order to increase understanding and readability, I present first the results of the Pre-Major Survey, followed by results of the Major Survey.

### **Results I: Analysis of the Pre-Major Survey**

The **Pre-Major** instrument was completed by students from the Spring 2009 Smeal College of Business First-Year Seminar. In the sample, there were 110 men and 57 women, including 143 white, 11 Asian-American, 6 International, 5 Latino/Hispanic Americans, and 2 African-American students.

**Table 2: Demographics, Pre-Major Survey Sample**

<b>Gender</b>	Frequency	Percent
Male	110	65.9
Female	57	34.1
Total	167	100

<b>Ethnicity</b>	Frequency	Percent
African American	2	1.2
Native American	0	0
Asian American	11	6.6
Latino/Hispanic American	5	3.0
White American	143	85.6
International Student	6	3.6
Total	167	100.00



Representativeness of the Sample: To determine if this first-year sample is representative of all Smeal College of Business first-year students, Chi-Square tests were used in the Gender and Ethnicity categories. Both tests showed that the sample from this administration represents the target population of all First-Year Students in the Smeal College of Business, with  $\chi^2 = .940$ ,  $p > .05$  for gender and  $\chi^2 = 3.819$ ,  $p > .05$  for Ethnicity

**Table 3: Representativeness of the Pre-Major sample**

	Male	Female	Total
Sample N	110	57	167
%	65.9	34.1	
Populations N	663	407	10%
%	62	38	

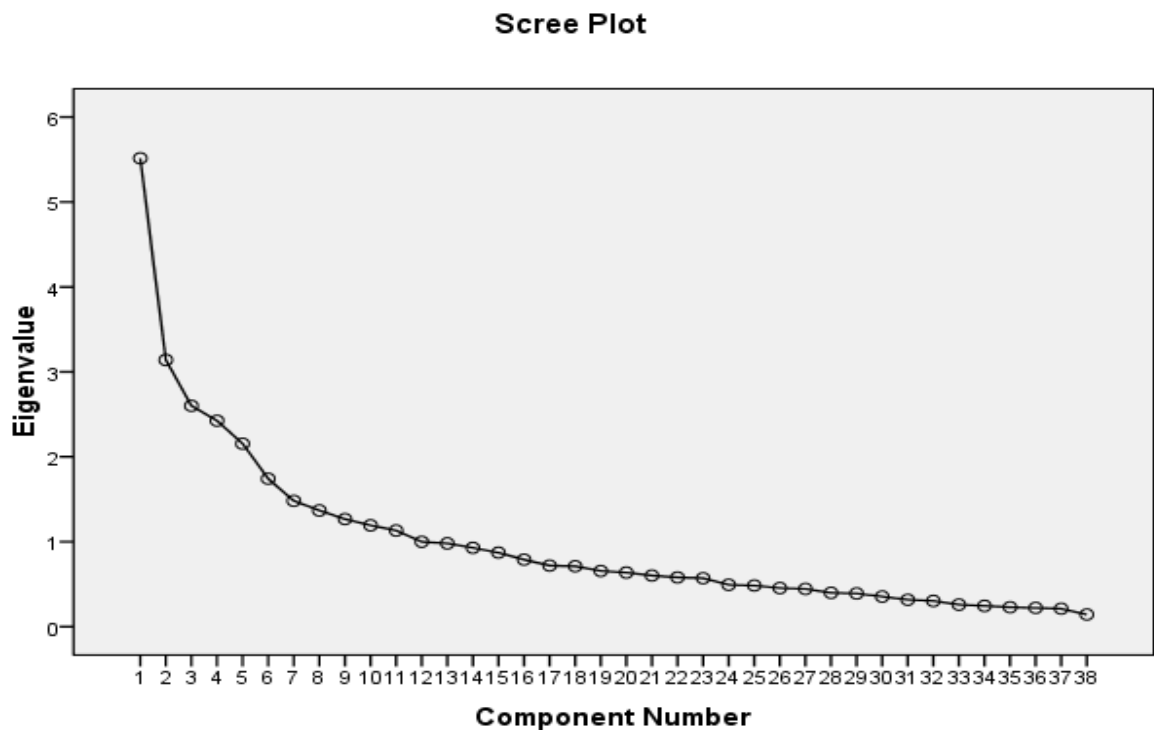
$$\chi^2 = .940 \quad p > .05$$

**Factor Analysis: Pre-Major Survey.**

Factor analysis was conducted separately for each of the two groups (Pre-Major and Major) using SPSS 17.0, employing the same procedures for each group. I proceeded with a Principal Components correlation matrix, unrotated factor solution first. The adequacy of a factor analysis is partially determined by two tests: the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of sphericity (Field, 2005). The KMO varies from 0 to 1, with higher values denoting stronger correlations and the indication of the probability of distinct factors. The KMO statistic for this factor analysis was .676, which indicates a strong likelihood

of distinct and reliable factors (Field, 2005). In addition, according to Field (2005), Bartlett's Test proposes that there are meaningful relationships among the variables (worthy of factor analysis) if the test is significant. In this case, Bartlett's Test reveals meaningful and strong relationships ( $X = 1828.48$ ;  $p < .000$ ). Both results indicate that I may proceed with the analysis.

The scree plot emerging from a factor analysis allows visual examination and determination of the number of significant factors (William & Goldstein, 1984). The scree plot shows factor eigenvalues, which represent estimates of variance accounted for by different factors in descending order. I stipulated an eigenvalue  $> 1.0$  with a maximum of 25 iterations, and chose Varimax rotation to develop a Rotated Component Matrix because I assume and propose that the factors are independent. According to William and Goldstein (1984), Varimax factor rotation is an orthogonal rotation that maximizes the loading of each item onto the rotated / extracted factor, and minimizes loading on other potential factors, allowing for greater interpretability. William and Goldstein (1984) recommended that factors are differentiated by the point at which the slope of the scree plot flattens out, to more insignificant eigenvalues. For my Pre-Major survey administration, six factors emerged as seen in the scree plot below:



**Figure 4: Scree Plot for Pre-Major Survey Factor Analysis**

The Rotated Component Matrix defining this scree plot allows us to ascertain the survey items which contributed to each of the factors: the questions and actual wording of the questions that load onto the same factor helps us identify a common theme and therefore a meaningful label / name for the factor. Following this identification, results of the factor analysis leads to re-configuration of the survey questionnaire and presentation of new subscales, which capture the internal strength of the items identified initially in focus groups and verified by factor analysis. The decision rule used in the determination of items comprising a factor from the full rotated component matrix included two criteria: the factor loading of the particular item had to be greater than .4; and the item could have no loading  $>.4$  on any other factor.

### Internal Consistency of the factors

Cronbach's alpha is a statistic used to ascertain how well a set of items measures a single unidimensional latent construct (Allen & Yen, 2002). Analysis of the items which loaded on to the five surviving factors shows the following items as constituting the factor, with Cronbach's alpha coefficients ranging from .764 to .690:

#### Factor 1: Confidence and self-efficacy

Cronbach's alpha = .764

I have the interpersonal skills to do well in the career I have chosen	.803
I have the English skills to do well in the career I have chosen	.785
I know that I can be successful in my major and career	.779
The content of this major and career is important to me	.620
I have the math skills required to do well in the major I have chosen	.475

#### Factor 2: Influence of parents and potential salary

Cronbach's alpha = .733

The projected high salary for this major is important to me	.721
Parents (influence)	.715
Salaries earned by people in this career field	.674
My parents/guardians are encouraging me in this direction	.639

#### Factor 3: Job Knowledge; Realistic preview of the field

Cronbach's alpha = .679

I know what Accounting majors do in their career	.773
I know what Finance majors do in their career	.685
I know what Management majors do in their career	.609
I know what Marketing majors do in their career	.522
I know what Economics majors do in their career	.499

#### Factor 4: Pre-college experience / exposure

Cronbach's alpha = .689

High School related subject (influence)	.772
High School guidance counselor or teacher (influence)	.713

I was good at previous course work in this subject	.600
Personal experience with this kind of work	.538
Skill or talent in this major	.472

Factor 5: Future employment potential

Cronbach's alpha = .640

There is high demand for people in this field	.837
Availability of steady jobs	.622
There are attractive job opportunities with this major	.495

Summary of Results I. The Pre-Major Survey

The result of the Pre-Major Survey pilot test and factor analysis is a new survey intended for future studies, based on reliable factors and associated sub-scales. The demographics items from the pilot test will all be retained. The Pre-Major survey will be re-configured with reliable sub-scales from the factor analysis as identified here:

**Factor 1: Confidence and self-efficacy:** This factor contains items that speak to the student's confidence (Interpersonal, English and Math skills) while relating that confidence to the personal importance of the career and the prospect of doing well in the career

**Factor 2: Influence of parents and potential salary:** This factor combines elements of parental influence with the salaries expected with certain careers.

**Factor 3: Job Knowledge; realistic preview of the field:** Students expressed an understanding of the professional career and its requirements.

**Factor 4: Pre-college experience and exposure:** Elements contributing to this factor refer directly to high school coursework and previous success.

**Factor 5: Future employment potential:** With these items, respondents were indicating the importance of finding a job upon graduation (with pay not included in this factor but rather included as part of factor 2)

The revised instrument is shown as Appendix C.

## **RESULTS II: ANALYSIS OF THE MAJOR SURVEY**

The “Major Survey” was completed by students from the Spring 2009 Smeal College Junior Core courses: 502 men, 271 women, and 13 gender-not-specified. This sample included 627 white students, 66 Asian/pacific islanders, 26 African American students, 3 Native Americans, 23 Latino/Hispanic American students, and 32 International students.

**Table 4: Demographics: Major Survey sample**

<b>Gender</b>	Frequency	Percent
Male	502	64.9
Female	271	35.1
Total	773	100

<b>Ethnicity</b>	Frequency	Percent
African American	26	3.3
Native American	3	0.4
Asian American	66	8.5
Latino/Hispanic American	23	3.0
White American	627	80.7
International Student	32	4.1
Total	777	100

### Representativeness of the Sample.

The gender demographics from the sample were compared to the larger population (Smeal College of Business Junior class) using Chi-Square tests with respect to Gender. The tests show that the sample is representative of the junior class population with  $\chi^2 = .167, p > .05$  as shown below:

**Table 5: Representativeness of the Major Survey sample**

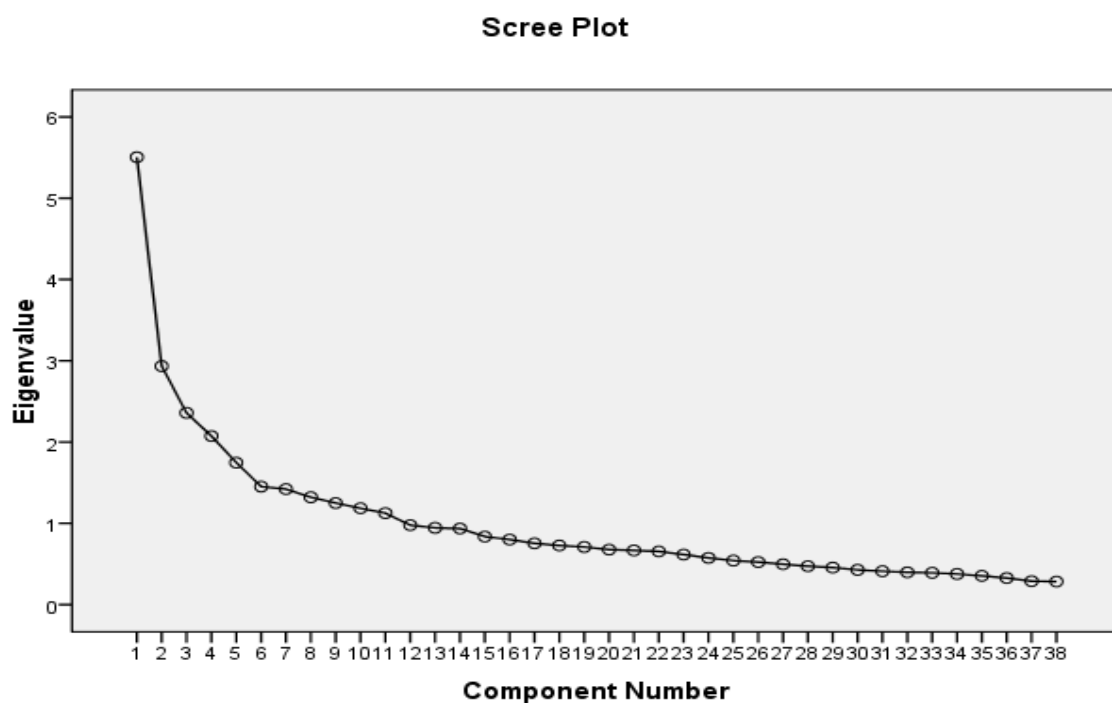
	Male	Female	Total
Sample N	502	271	773
%	64.9	35.1	
Populations N	1631	912	2543%
%	64.1	35.9	

$$\chi^2 = .167 \quad p > .05$$

### Factor Analysis: Major Survey.

The Major Survey pilot test Factor Analysis was conducted in the same manner as the Pre-Major analysis discussed previously. I used SPSS 17.0 and conducted a principal components extraction from the correlation matrix, specified an eigenvalue > 1.0, and proceeded with a varimax rotation with a maximum of 25 iterations.

For the Major Survey, the results of the KMO & Bartlett's tests were quite strong (.774 for the KMO and 7037.57 for the Bartlett's) and thus indicated that it is appropriate to proceed with the factor analysis. The scree plot from this run shows that there may be six factors in the Major Survey:



**Figure 5: Scree Plot for Major Survey Factor Analysis**

A review of the Rotated Component Matrix allows us to ascertain the items which make up those factors. As was the case with the Pre-Major factor analysis, the decision rule for





I know what Finance majors do in their career	.520
<u>Factor 3. Fit; congruence with abilities</u>	Cronbach's alpha = .689
I have skill or talent in this major	.762
I was good at previous course work in this subject	.671
The major was a good fit with my abilities	.616
I have personal experience with this kind of work	.611
<u>Factor 4. Interpersonal Self-Efficacy</u>	Cronbach's alpha = .715
I have the interpersonal skills to do well in the career I have chosen	.857
I know that I can be successful in my major and career	.708
I have the English skills to do well in the career I have chosen	.705
<u>Factor 5. Specific college faculty / course on subject matter</u>	Cronbach's alpha = .675
Penn State Professor	.791
A faculty person in this major	.706
The introductory course in the major	.663

### **Summary of Results II: The Major Survey**

As with the Pre-Major Survey, all of the Major Survey pilot test questionnaire's demographic items will be retained in the next generation instrument, to allow for analysis of the effects on 'choice of major' of the respondent's gender, ethnicity, parental occupation and education, and other factors as proposed by the literature and focus groups qualitative study. As a result of the pilot test and factor analysis, we move forward with a strong, coherent survey instrument comprised of the following factor sub-scales:

**1. Pay and external considerations:** This factor included items related to the availability of high paying jobs associated with a major.

**2. Job knowledge; realistic preview of the field:** Items in this factor assessed understanding of the professional career and its requirements.

**3. Fit; perceptions of congruence with abilities:** This factor measures the perceived fit between major / career choice and abilities.

**4. Skills; personal competence; self-efficacy:** Items in this factor assess the respondents' belief that they have the necessary skills to succeed in this major and career.

**5. Specific college faculty & courses on subject matter:** This factor identifies specific sources of influence within the college experience.

#### Factor Analysis Comparison between Male and Female Students.

It was anticipated that the influence factors in the Choice of Major Model would be the same for both male and female students. A set of follow-up factor analyses with the same criteria and parameters as the original runs (Varimax, eigenvalue > 1.0) were conducted to compare male respondents to female respondents. The results of these separate factor analyses showed that the same five factors, discussed above, are in play regardless of gender.

The new **Major Survey** is found in Appendix D.

## **Chapter V.**

### **Discussion**

The purpose of this dissertation was to develop survey instruments that can be used to study the “choice of major” process in an undergraduate population of business school students. Preliminary focus group discussions showed several thematic areas which supported the conceptual model under review and which informed the development of an initial survey questionnaire. Following the administration of the pilot survey and factor analysis of the results, we have arrived at a set of factors which hold together quite well and which can be used for further studies.

The initial model (page 24) proposed three main categories of influence: Demographics, Perceptions of Self, and Role and Career Expectations. The initial focus group study, and the subsequent factor analytic studies, show that the “Pay and Externalities” theme for both pre-major and major students remained as a strong influence after factor analyses, and supports the Role and Career Expectations category which was proposed in the model and supported in the literature. In addition, congruence (or fit with abilities) and self-efficacy perceptions also remain in good standing through the focus group study and after factor analysis. The Major Survey sample showed no factor loading for parental influence, or the *a priori* categories “Influence of family and friends” and “Influence of role models”, where these items did affect the Pre-Major sample (first year students and sophomores who had not yet chosen a major).

In addition to the disappearance of parental influence in the Major Survey, it is also interesting to note that certain other items from focus group discussions did not survive the

factor analytic study for students in the major (influence of friends, high school teachers, significant others). This is due in part to the fact that the focus groups were designed to generate many options and a variety of survey items, while the factor analysis is designed to then narrow those items into tighter and stronger sets of meaningful factors. In addition, it could be that in focus group conversation, students provide a supportive environment for each other to explore, discuss, expand on topics, and share more esoteric influences, while in the context of a paper-and-pencil survey questionnaire, administered in a quiet classroom, students become more objective and clinical as a result of the instrumentation itself.

With regard to the model, I would propose that the findings from both the focus groups study and the factor analyses serve to validate the conceptual framework, and serious modifications are not necessary at this time. The categorical topics “Perceptions of Self” and “Role and Career Expectations” come through strongly in both studies; for example, self-efficacy, pay and externalities, abilities, and fit are significant in both the Pre-Major and Major results. Although sex role socialization did not find support in the studies, it may be that the affect occurs much earlier in a person’s development, and the students arrive with certain decisions already made or it may be that we did not ask the right questions in the focus groups study and therefore did not develop appropriate items for the survey questionnaires. Given the strong evidence in the literature to support sex role socialization, and given the fact that our female and male students do gravitate to different majors, I would leave the sex role socialization inference in the model and would propose that future studies may reveal support and explanation when demographics are included or when better sub-scale items are derived to assess this issue.

After the pilot test and both Pre-Major and Major factor analysis, we now have two appropriate survey instruments. There is also additional interesting information here as seen in a comparison between the two samples and the two new surveys. Students in Pre-Major status, and those in Major status, show similarities in many items and categories, but are also different in telling ways. Certainly both groups show that they are influenced by pay and external considerations, and the relationship and preference for majors that seem to ‘fit’ with prior successes and those for which the student perceives future potential. On the other hand, students in their major did not reference parental influence, and did not reference family / friends / peers / high school, while the Pre- Major students did. The next generation of studies, with good instruments, can shed light on the reasons behind choice of major for both female and male students. It may also be possible that there is a pattern of demographic keys and sub-scale scores that differentiate, for example, female accounting majors from female finance majors, and this kind of information would be very helpful in advising and programs administration.

One final point of discussion centers around the stress associated with the choice of major, as expressed by many students in the focus group study. It may be that the stress associated with the decision and the process affects students’ objectivity or quality of decision making, and the student may in some cases be making a decision under pressure that would not match a decision made under other circumstances. The stress also certainly affects students adjustment and contributes to anxiety related to what should be a thoughtful and meaningful process. I believe that we have uncovered an additional practical / administrative opportunity here; starting with the Fall Semester 2009, I will convene groups of first year students to discuss majors and careers in a structured and informative context, and also to meet with professionals

and students already in the majors throughout the first three semesters, before they have to make the fateful decision and enter into the fray ‘permanently’. The students in the focus groups seemed to appreciate a chance to talk about this decision with their peers and upperclass-students, and these sessions were not designed to facilitate the decision process, but rather to ascertain the themes and issues involved. A new format for student-facilitated discussions will be of benefit to first-year and sophomore students, and will provide valuable information and support to students as they make the choice of major decision. Additional studies with the pre-major population may point to policy changes, in the timing of the decision process, in the deadlines and “point of no return” format, or in the composition of the majors themselves. At the conclusion of the focus groups and factor analysis studies: we now have two reliable and valid instruments made up of relevant sub-scales which can be used in future studies.

### **IMPLICATIONS FOR FUTURE RESEARCH**

The new survey instruments are valuable in both a cross-sectional and longitudinal sense. The instruments enable us to look at the reasons for choosing their major cited by students in different majors in a cross-sectional sense, and we can conduct longitudinal studies to assess the development and change over time of a first-year population as they move through the years of college experience.

Longitudinal: This study will utilize the demographics sections and the sub scales of the survey questionnaire, administered to first year students at T1 and again at T2 of the Model on page 24, which could be used in relation to the research question regarding isolating the effect of First Year Seminar on how it influences and informs students’ choice of major. The effect of the First

Year Seminar, within the first year experience, can be isolated by testing students who have completed the seminar and comparing them with similar students who have not completed the seminar. The Smeal College of Business First Year Seminar is an eight- week course, taught in two discrete sessions due to a lack of space and faculty. Half of the incoming class is assigned to a First Year Seminar section for weeks one through eight of the semester; the other half of the incoming class is scheduled for this seminar in the second half of the semester, weeks eight through fifteen. This staggered implementation of the seminar content to the incoming class provides us with an opportunity to implement an interesting experimental design. Thus, with proper timing in week eight, we can survey several hundred students who have experienced the first-year seminar and compare them with several hundred students who have not experienced the seminar, in order to isolate the seminar effects. The students will have had the same transition issues and classes and advising opportunities, but will differ only in the participation in the first-year seminar course.

Cross-Sectional: We can compare students in Major status against each other with respect to demographics and scores on the various factors. It will be informative to see the differences, for example, between female accounting majors versus female finance majors, as well as differences between female and male students in different majors. The survey for majors would be administered to all first semester seniors, a population that is well immersed in the major studies, has completed an internship where appropriate, and have started thinking about the job search and career transition.



## References

Allen, M.J., and Yen, W.M. 2002. *Introduction to Measurement Theory*. Long Grove, IL: Waveland Press.

Bandura, Albert. 1986. *Social Foundations of Thought and Action*. Englewood Cliffs, NJ: Prentice – Hall.

Beggs, Jeri M., Bantham, John H., and Taylor, Steven. 2008. Distinguishing the factors influencing college students' choice of major. *College Student Journal*, 42(2), 381-394.

Bogdan, R. and Biklen, S. 1992. *Qualitative research for education: An introduction to theory and methods (2<sup>nd</sup> Ed.)*. Boston: Allyn and Bacon.

Chacko, H.E. 1991. Can you pick out the Accountant? Students' interests and career choices. *Journal of Education for Business*, 66(3), 151-155.

Corcoran, Mary E., and Courant, Paul N. 1985. Sex role socialization and labor market outcomes. *AEA papers and proceedings*, 75 (2), 275-278.

Dawson-Threat, Janice, and Huba, Mary E. 1996. Choice of major and clarity of purpose among college seniors as a function of gender, type of major, and sex-role identification. *Journal of College Student Development*, 37(3), 297-308.

Dillman, Don A. 2008 The logic and psychology of constructing questionnaires. In Edith D. de Leeuw, Joop J. Hox, and Don A. Dillman (Eds.) *International Handbook of Survey Methodology*. New York: Psychology Press. pp.161-175

Ellis, Marilyn K. 1993. A study of factors beyond ability and interest that shape undergraduate women's choices of majors. *UMI Dissertation Services*, Ann Arbor, MI.

Fairfield, Hannah. 2009. Why is her paycheck smaller? *The New York Times*. March 1, 2009, page 304.

Field, A.P. 2005. Research methods II: Factor analysis on SPSS. In A.P. Field *Discovering Statistics using SPSS* (2<sup>nd</sup> Edition). London: Sage Publications.

Fontana, Andrea, and Frey, James H. 2000. The Interview: From structured questions to negotiated text. In Norman K. Denzin and Yvonna S. Lincoln (Eds.) *Handbook of Qualitative Research*, (2<sup>nd</sup> Ed.) London, Sage Publications, pp. 645-672.

Geiger, M.A., and Ogilby, S.M. 2000. The first course in accounting: students' perceptions and their effect on the decision to major in accounting. *Journal of Accounting Education*, 18, 63-78.

Gibson, Donald E. 2004. Role models in career development: New directions for theory and research. *Journal of Vocational Behavior*, 65, 135-156.

Gore, Paul A., and Leuwerke, Wade C. 2000. Predicting occupational considerations: A comparison of self-efficacy beliefs, outcome expectations, and person-environment congruence. *Journal of Career Assessment*, 8 (3), 237-250.

Hackett, Gail, Esposito, Donna, and O'Halloran, M. Sean. 1989. The relationship of role model influences to the career salience of educational and career plans of college women. *Journal of Vocational Behavior*, 35.

Hardin, J.R., O'Bryan, D., and Quirin, J.J. 2000. Accounting versus engineering, law, and medicine: Perceptions of influential high school teachers. *Advances in Accounting*, 17, 205-220.

Holland, John L. 1997. *Making vocational choices: A theory of vocational personalities and work environments*. (3<sup>rd</sup> Ed.) Odessa, FL: Psychological Assessment Resources.

Kim, D., Markham, F.S., & Cangelosi, J.D. 2002. Why students pursue the business degree: A comparison of business majors across universities. *Journal of Education for Business*, 78(1), 28-32.

Lee, Thomas W. 1999. *Using qualitative methods in organizational research*. Thousand Oaks, CA: Sage Publications.

Lent, Robert W., Brown, Steven D, and Hackett, Gail. 1994. Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45, 79-122.

Leppel, K, Williams, M.L., & Waldauer, C. 2001. The impact of parental occupation and socioeconomic status on choice of college major. *Journal of Family and Economic Issues*, 22(4), 373-394.

Lincoln, Yvonne S. and Guba, Eagon G. 1985. *Naturalistic Inquiry*. Beverly Hills, CA : Sage Publishing.

Lincoln, Yvonne S., and Guba, Eagon G. 2000. Paradigmatic controversies, contradictions, and emerging confluences. In N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*. (2<sup>nd</sup> Ed.) (pp. 163-188). Thousand Oaks, CA: Sage Publications.

Lowe, Dana R., Lowe, L.S., and Simons, Kathleen A. 1995. Look who's coming to the profession: A stereotype partially shattered. *New Accountant*, 22, 8-10.

Lowe, Dana R., and Simons, Kathleen A. 1997. Factors influencing choice of business majors-some additional evidence: A research note. *Accounting Education: An International Journal*, 6, 39-45.

Malgwi, C.A., Howe, M.A., & Burnaby, P.A. 2005. Influences on students' choice of college major. *Journal of Education for Business*, 80(3), 272-282.

Mauldin, Shawn, Crain, John L., and Mounce, Patricia H. 2000. The accounting principles instructor's influence on students' decision to major in accounting. *Journal of Education for Business*, 76 (1), 142-148.

Merriam, Sharan B. 1998. *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Nelson, I.T., Vandrzyk, V.P., Quirin, J.J., and Allen, R.D. 2002. No, the sky is not falling: Evidence of accounting student characteristics at FSA schools. *Issues in Accounting Education*, 17, 269-287.

Noel, N.M., Michaels, C., & Levas, M.G. 2003. The relationship of personality traits and self-monitoring behavior to choice of business major. *Journal of Education for Business*, 78(1), 153-157.

Pascarella, Ernest T., and Terenzini, Patrick T. 2005. *How College Affects Students, Volume 2: A Third Decade of Research*. San Francisco: Jossey Bass.

Pritchard, R.E., Potter, G.C., & Saccucci, M.S. 2004. The selection of a business major: Elements influencing student choice and implications for outcomes assessment. *Journal of Education for Business*, 79(1), 152-156.

Quimby, Julie L., and DeSantis, Angela M. 2006. The influence of role models on women's career choices. *Career Development Quarterly*, June, 1-8.

Rask, Kevin N., and Bailey, Elizabeth M. 2002. Are faculty role models? Evidence from major choice in an undergraduate institution. 2002. *Journal of Economic Education*, 33(1), 99-124.

Ryan, Gary W., and Bernard, H. Russell. 2000. Data management and analysis methods. In N.K. Denzin and Y.S. Lincoln (Eds.) *Handbook of Qualitative Research (2<sup>nd</sup> Ed.)* Thousand Oaks, CA: Sage Publications. pp 769-802

Sax, Linda. 2007. College Women still face many obstacles in reaching their full potential. *The Chronicle of Higher Education*, September 28, 2007.

Schlee, R.P., Curren, M.T., Harich, K.R., & Kiesler, T. 2007. Perception bias among undergraduate business students by major. *Journal of Education for Business*, 82(1), 169-177.

Strasser, S.E., Ozgur, C., and Schroeder, D.L. 2002. Selecting a business major: An analysis of criteria and choice using the analytical hierarchy process. *Mid-American Journal of Business*, 17, 47-56.

Strauss, Anselm L., & Corbin, Juliet M. 2008. *Basics of Qualitative Research: Techniques and procedures for developing grounded theory*. (3<sup>rd</sup> Ed.) Los Angeles: Sage Publications.

Sumner, K.E., & Brown, T.J. 1996. Men, women, and money: Exploring the role of gender, gender-linkage of college major and career-information sources in salary expectations. *Sex Roles*, 34(11), 823-839.

The Economist. 2005. Women In Business. July, 2005, 76-80.

The Pennsylvania State University. 2008. *Post Graduation Activities: Class of December 2006 – August 2007*. University Park, PA.

The Princeton Review. 2007. Greatest Opportunity for Women: Ranking Top MBA Programs. [http://www.princetonreview.com/mba/research/rankings/ranking\\_details](http://www.princetonreview.com/mba/research/rankings/ranking_details)

The Princeton Review. 2007. Study of Women MBA's. <http://www.princetonreview.com/mba/research/articles/decide/women>

The University Record. 2000. Study finds opportunity gap for women in business schools. Center for the Education of Women and Catalyst, The University of Michigan, May 22, 2000.

The Wall Street Journal, 2009. A female face on executive MBA's. Wednesday, January 21, 2009, page B11.

Trusty, Jerry, Robinson, Chester R., Plata, Maximino, and Ng, Kok-Mun. 2000. Effects of gender, socio-economic status, and early academic performance on postsecondary educational choice. *Journal of Counseling and Development*, 78 (3), 463-472.

Vollmer, Barbara M. 1983. Educational factors that encourage women to pursue pioneer careers. ERIC, report ED214871, August, 1983.

William, R., and Goldstein, M. 1984. *Multivariate analysis: Methods and applications*. New York: Wiley and Sons.

Worthington, Andrew, and Higgs, Helen. 2004. Factors explaining the choice of an economics major: The role of student characteristics, personality and perceptions of the profession. *International Journal of Social Economics*, 31(5,6), 593-613.

# **APPENDIX A**

## Focus Group Facilitators' Script

## *Focus Group Facilitators' Script*

### *Introduction*

**Hi, Everyone! Thank you very much for coming tonight and agreeing to participate in our focus group. My name is\_\_and I am a \_\_ (year) here at Penn State. And I am \_\_\_\_ and I'm a \_\_\_\_\_. We are conducting tonight's meeting as part of a research project that observes students' decision making process related to their choice of major. The principal investigator on the project is Gus Colangelo. We will use your answers in tonight's discussion to better understand the choice of major process, and to provide useful information to advisor and researches interested in similar topics.**

**Participation is completely anonymous and voluntary. We will be recording this discussion, but only for the purposes of helping us document the conversation. Extra Credit is provided to all those who participate. Please read the consent form and let me know if you have any concerns; if you sign the consent form please keep a copy for yourself.**

**We'd like tonight's discussion to be very informal and laid back. Please feel free to chime in when you have an opinion on the topic. Be honest in sharing your true reasons as it will be much more helpful in our study.**

**To get started, if everyone could go around and say their name, major or intended major, and year as a way of introducing themselves.**

*Questions below should be modified, expanded, depending on response.*

- **Thanks, now could you all share why you chose to come to Penn State? Did you happen to chose to study in business first which led you here? Or did you love Penn State and from there decided on business? Also was Penn state your first choice? Does someone care to share? (At this point, do not go around in the circle because you could tend to have people repeat answers just because they don't have anything to say. Simply have volunteers chime in when they feel comfortable)**
- **Great, can anyone now speak to your main influence for choosing business?**

*(Once everyone who cared to share has done so)*



- **If you chose business as an area first, what then led you to choose your current major?**

*Be sure to clarify what a participant is conveying (i.e. if they say my parents influenced me, ask how; ig, Did they influence you towards something because that's their career or because they said you'd excel at it?) Make sure they are being as detailed as possible.*

*As soon as someone mentions "parents; try to get at education and employment.*

- **If you don't mind, could we all go around and share your parents education level and what they do for a living?**

*At this point share the info about your own parents first, as it will make them feel more comfortable*

- **Now we'd like to talk a little bit about where you hope your major will bring you in the future. What types of lifestyle do you envision for yourself?**

*This conversation will most likely lead into a discussion about salary, job security etc. From there be sure to ask...*

- **Are you more motivated to pursue a career in this field because of the projected salary or the certain lifestyle it brings?**
- **Did the idea of job security, lifestyle perception or high salary draw you to the major more so than the actual subject matter?**

*Now on the dry erase board write down the eight majors at Smeal.*

- **What adjectives, stereotypes or descriptions typically come to mind when you think of each major?**
- **Do you think you could guess our majors?**

*Have the students guess and ask why they came up with their conclusion (remind them that any answer is helpful)*

- **Can you all speak to Smeal's GPA requirements and the influence it had or didn't have on your major choice? Did you get a sense a major was better or worse because of these restrictions?**
- **Would any of you want to change your major and if so why and to which major.**

*Because we want to stay away from the question-answer format and yes/no responses we do not want to be asking questions such as "did global opportunities have an influence?" Rather, we'd like them to bring these things up on their own. If not much conversation has been facilitated and not many influences discussed, you may want to consider bringing up influences (such as high school courses, parents, professors, Smeal advisor, First Year Seminar, global opportunities, geographic preferences etc...) on your own to spark more conversation. It may be the case that since some of these students are juniors, they might have forgotten some of their influences; first-year students will have different influences.*

- **Thank you very much for sharing your thoughts. We've discussed many different influences that impacted the major you chose such as (name influences that were discussed deeply). To conclude we ask that you think of the primary influence you had that led you to your current major.**

*Have every person decide on the single most important influence and share as they see fit. To end:*

- **Is there anything you think is important which was not discussed yet?**
- **Thank you again for your participation**

# **APPENDIX B**

## Request for Participation Verbal Communication Script



*Choice of Major  
Request for Participation  
Verbal Communication Script*

Communication to assembled class:

I am part of a research project looking at students' decision-making processes related to choice of major, and the Principal Investigator on the project is Gus Colangelo. We will use the findings of this study to better understand the choice of major process, and to provide useful information to advisors and researchers interested in similar topics. Participation includes completing one survey, which should take about 15 minutes.

Participation in this study is anonymous and voluntary. You may end your participation at any time, and you may choose not to answer any of the questions on the survey. There are no risks associated with participation, and extra credit is provided. If you choose not to participate, other means of obtaining extra credit will be available.

If you are at least 18 years of age and are willing to participate, please read and sign the attached consent form. Also please complete the scantron form so that the extra credit can be processed.

Please contact Gus Colangelo at [axc31@psu.edu](mailto:axc31@psu.edu) or call 863-1947 for additional information.

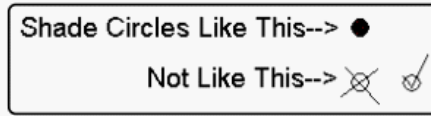
Thank you for your willingness to participate in this research.

# **APPENDIX C**

## **Revised Instrument: Pre-Major Survey**

## Pre-Major Survey

**Direction:** The information you supply on this questionnaire will be kept completely confidential. However, please feel free to omit any information you do not wish to provide.



### Demographic Information

**A. Gender:**     Male         Female

**B. Racial/Ethnic Group (mark all that apply)**

- African American
- Native American/Alaskan Native
- Asian American/Pacific Islander
- Latino/Hispanic American
- White (Non Hispanic or Latino) American
- International Student
- Other (please specify) \_\_\_\_\_

**C. How would you describe your family/parental living arrangements while in high school:**

- Lived with both parents/guardians
- Divorced parents; I lived with biological mom and step dad
- Divorced parents; I lived with biological dad and step mom
- Lived with single Mom
- Lived with single Dad
- Other (Please describe): \_\_\_\_\_

**D. Parents'/Guardians' Educational Level (select one for each)**

	Female Guardian	Male Guardian
High School	<input type="checkbox"/>	<input type="checkbox"/>
Some College and/or trade, vocational school	<input type="checkbox"/>	<input type="checkbox"/>
Completed BS,BA degree	<input type="checkbox"/>	<input type="checkbox"/>
Some Graduate School	<input type="checkbox"/>	<input type="checkbox"/>
Completed MS, MA degree	<input type="checkbox"/>	<input type="checkbox"/>
Completed JD, PhD, MD	<input type="checkbox"/>	<input type="checkbox"/>

**a. If your parents attended college, what was their major?**

	Female Guardian	Male Guardian
Accounting	<input type="checkbox"/>	<input type="checkbox"/>
Actuarial Science	<input type="checkbox"/>	<input type="checkbox"/>
Economics	<input type="checkbox"/>	<input type="checkbox"/>
Finance	<input type="checkbox"/>	<input type="checkbox"/>
Management	<input type="checkbox"/>	<input type="checkbox"/>
Marketing	<input type="checkbox"/>	<input type="checkbox"/>
MIS	<input type="checkbox"/>	<input type="checkbox"/>
Supply Chain	<input type="checkbox"/>	<input type="checkbox"/>
Business / general major	<input type="checkbox"/>	<input type="checkbox"/>
Non-Business major (Please, specify the major on line provided)	<input type="checkbox"/>	<input type="checkbox"/>

**E. Parents'/Guardians' Field of Employment (may choose more than one for each)**

	Female Guardian	Male Guardian
Manager	<input type="checkbox"/>	<input type="checkbox"/>
Sales	<input type="checkbox"/>	<input type="checkbox"/>
Office Assistant	<input type="checkbox"/>	<input type="checkbox"/>
Owns Family Business	<input type="checkbox"/>	<input type="checkbox"/>
Blue Collar Worker	<input type="checkbox"/>	<input type="checkbox"/>
Teacher, Professor	<input type="checkbox"/>	<input type="checkbox"/>
Corporate Executive	<input type="checkbox"/>	<input type="checkbox"/>
Engineer, Scientist	<input type="checkbox"/>	<input type="checkbox"/>
Lawyer, Physician	<input type="checkbox"/>	<input type="checkbox"/>
Stay at Home	<input type="checkbox"/>	<input type="checkbox"/>
Self-employed	<input type="checkbox"/>	<input type="checkbox"/>
Part-time Work	<input type="checkbox"/>	<input type="checkbox"/>
Retired	<input type="checkbox"/>	<input type="checkbox"/>

**F. Estimated Total Family Income (choose only one)**

- Less than 30,000
- 30,000 to 50,000
- 50,000 to 75,000
- 75,000 to 100,000
- 100,000 to 150,000
- 150,000 to 200,000
- 200,000 and above

**G. What was your primary reason for choosing Business school? (choose only one)**

- Future job opportunities
- Want to start my own business
- Family influence
- Interest in how business works

- Future pay and compensation level
- Took interesting high school courses
- Friends' influence
- Flexibility of job opportunities
- Other (Business) \_\_\_\_\_
- I am not in the business school

**H. How many credits have you earned? (not including this semester)**

- 0–30       30–60       60–90       90+

**I. What is your intended Major?**

<input type="checkbox"/> Accounting <input type="checkbox"/> Actuarial Science <input type="checkbox"/> Economics <input type="checkbox"/> Finance <input type="checkbox"/> Management	<input type="checkbox"/> Marketing <input type="checkbox"/> MIS <input type="checkbox"/> Supply Chain  <input type="checkbox"/> Non-business major (Please, specify your intended major below) _____
--	--

**J. Please indicate your level of agreement with each of the following, based on your intended major:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
The content of this major and career is meaningful to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are attractive job opportunities with this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is high demand for people in this field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The projected high salary for this major is important to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This major has a good reputation at Penn State.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My parents/guardians are encouraging me in this direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My friends are already studying this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was good at previous course work in this subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The major was a good fit with my abilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was influenced by a faculty person in this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know successful people or role models in this career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**K. Please indicate your level of agreement with each of the following statements.**

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
I know what Accounting majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Actuarial Science majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Finance majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Management majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Economics majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Marketing majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what MIS majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Supply Chain majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the Math skills required to do well in the major I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the English skills to do well in the major that I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the interpersonal skills to do well in the career I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know that I can be successful in my major and career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**L. To what extent is your intended choice of major influenced by the following factors:**

		<b>No Influence</b>	<b>Slight Influence</b>	<b>Moderate Influence</b>	<b>Major Influence</b>
a	High School guidance counselor or teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	High School related subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Penn State friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	Personal experience with this kind of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	Skill or talent in this major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	Joining a club in this major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g	Availability of steady jobs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h	Parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i	Other majors are too difficult or limited by GPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j	Siblings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k	Salaries earned by people in this career field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**M. Referring back to Question L above, which options had the greatest influence on your decision? (choose only one)**

- a   b   c   d   e   f   g   h   i   j   k

N. What is your opinion and perceptions of the following majors? Please consider each major and select all that apply for each.

	Accounting	Actuarial Science	Economics	Finance	Management	Marketing	MIS	Supply Chain
Interesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficult	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High earning potential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glamorous jobs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Powerful positions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Math skills needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication skills needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interpersonal skills needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exciting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# **APPENDIX D**

## **Revised Instrument: Major Survey**

## Major Survey

**Direction:** The information you supply on this questionnaire will be kept completely confidential. However, please feel free to omit any information you do not wish to provide.



### Demographic Information

**E. Gender:**     Male         Female

**F. Racial/Ethnic Group (select all that apply)**

- African American
- Native American/Alaskan Native
- Asian American/Pacific Islander
- Latino/Hispanic American
- White (Non Hispanic or Latino) American
- International Student
- Other (please specify): \_\_\_\_\_

**G. How would you describe your family/parental living arrangements while in high school:**

- Lived with both parents/guardians
- Divorced parents; I lived with biological mom and step dad
- Divorced parents; I lived with biological dad and step mom
- Lived with single Mom
- Lived with single Dad
- Other (please describe): \_\_\_\_\_

**H. Parents'/Guardians' Educational Level (select one for each)**

	Female Guardian	Male Guardian
High School	<input type="checkbox"/>	<input type="checkbox"/>
Some College and/or trade, vocational school	<input type="checkbox"/>	<input type="checkbox"/>
Completed BS,BA degree	<input type="checkbox"/>	<input type="checkbox"/>
Some Grad. School	<input type="checkbox"/>	<input type="checkbox"/>
Completed MS, MA degree	<input type="checkbox"/>	<input type="checkbox"/>
Completed JD, PhD, MD	<input type="checkbox"/>	<input type="checkbox"/>

**a. If your parents attended college, what was their major?**

	Female Guardian	Male Guardian
Accounting	<input type="checkbox"/>	<input type="checkbox"/>
Actuarial Science	<input type="checkbox"/>	<input type="checkbox"/>
Economics	<input type="checkbox"/>	<input type="checkbox"/>
Finance	<input type="checkbox"/>	<input type="checkbox"/>
Management	<input type="checkbox"/>	<input type="checkbox"/>
Marketing	<input type="checkbox"/>	<input type="checkbox"/>
MIS	<input type="checkbox"/>	<input type="checkbox"/>
Supply Chain	<input type="checkbox"/>	<input type="checkbox"/>
Business / general major	<input type="checkbox"/>	<input type="checkbox"/>
Non-Business major (Please, specify the major on line provided)	<input type="checkbox"/>	<input type="checkbox"/>

**I. Parents'/Guardians' Field of Employment (may select more than one for each)**

	Female Guardian	Male Guardian
Manager	<input type="checkbox"/>	<input type="checkbox"/>
Sales	<input type="checkbox"/>	<input type="checkbox"/>
Office Assistant	<input type="checkbox"/>	<input type="checkbox"/>
Owens Family Business	<input type="checkbox"/>	<input type="checkbox"/>
Blue Collar Worker	<input type="checkbox"/>	<input type="checkbox"/>
Teacher, Professor	<input type="checkbox"/>	<input type="checkbox"/>
Corporate Executive	<input type="checkbox"/>	<input type="checkbox"/>
Engineer, Scientist	<input type="checkbox"/>	<input type="checkbox"/>
Lawyer, Physician	<input type="checkbox"/>	<input type="checkbox"/>
Stay at Home	<input type="checkbox"/>	<input type="checkbox"/>
Self-employed	<input type="checkbox"/>	<input type="checkbox"/>
Part-time Work	<input type="checkbox"/>	<input type="checkbox"/>
Retired	<input type="checkbox"/>	<input type="checkbox"/>

**J. Estimated Total Family Income (choose only one)**

- Less than 30,000
- 30,000 to 50,000
- 50,000 to 75,000
- 75,000 to 100,000
- 100,000 to 150,000
- 150,000 to 200,000
- 200,000 and above

**K. What was your primary reason for choosing Business school? (choose only one)**

- Future job opportunities
- Want to start a business
- Family influence

- Interest in how business works
- Future pay and compensation level
- Took interesting high school courses
- Friends' influence
- Flexibility of job opportunities
- Other (Business) \_\_\_\_\_
- I am not in the business school

**L. How many credits have you earned? (not including this semester)**

- 0–30       30–60       60–90       90+

**M. What is your Major?**

<input type="checkbox"/> Accounting <input type="checkbox"/> Actuarial Science <input type="checkbox"/> Economics <input type="checkbox"/> Finance <input type="checkbox"/> Management	<input type="checkbox"/> Marketing <input type="checkbox"/> MIS <input type="checkbox"/> Supply Chain  <input type="checkbox"/> Other (Please, specify your major below) _____
--	---

**N. Please indicate your level of agreement with each of the following, based on your current major:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
The content of this major and career is meaningful to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are attractive job opportunities with this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is high demand for people in this field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The projected high salary for this major is important to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This major has a good reputation at Penn State.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My parents/guardians have encouraged me in this direction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My friends are already studying this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was good at previous course work in this subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The major was a good fit with my abilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was influenced by a faculty person in this major.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know successful people or role models in this career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**O. Please indicate your level of agreement with each of the following statements.**

	Strongly Disagree	Disagree	Agree	Strongly Agree
I know what Accounting majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Actuarial Science majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Finance majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Management majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Economics majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Marketing majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what MIS majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what Supply Chain majors do in their career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the Math skills required to do well in the major I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the English skills to do well in the major that I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have the interpersonal skills to do well in the career I have chosen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know that I can be successful in my major and career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**P. To what extent was your choice of major influenced by the following factors:**

	No Influence	Slight Influence	Moderate Influence	Major Influence
a High School guidance counselor or teacher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b High School related subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c Penn State professor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d The introductory Penn State course in the major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Penn State friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f Penn State Advisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g Personal experience with this kind of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h Skill or talent in this major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i Joining a club in this major	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j Availability of steady jobs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k Parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l Other majors are too difficult or limited by GPA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m Siblings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n Salaries earned by people in this career field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o Freshman Seminar discussions of different majors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q. Referring back to Question L above, which option had the greatest influence on your decision?**

**(Choose only one)**

- a b c d e f g h i j k l m n o

**R. If you could change your major, would you?**

No → If No, stop here

Yes

→ a. What would you change it to?

<input type="checkbox"/> Accounting <input type="checkbox"/> Actuarial Science <input type="checkbox"/> Economics <input type="checkbox"/> Finance <input type="checkbox"/> Management	<input type="checkbox"/> Marketing <input type="checkbox"/> MIS <input type="checkbox"/> Supply Chain  <input type="checkbox"/> Something outside of business (Please specify it below)
--	--

**b. If you could change your major, explain why, by rating the following statements:**

	Strongly Disagree	Disagree	Agree	Strongly Agree
My current major is too difficult.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My current major is boring, not interesting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My current major is lacking job opportunities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My interests have changed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internship / co-op experience in my major was unfavorable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I did not have a clear understanding of the major when I chose it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



# Augustus Colangelo

## **INTRODUCTION**

Gus Colangelo is the Associate Dean for Undergraduate Education and an Assistant Professor of Management in the Smeal College of Business at Penn State University. He is responsible for Undergraduate Education, Student Outcomes, Curriculum, Advising, Student Records, Student Organizations, Corporate Associates, and Internships.

In his most recent industry experience, Gus was Vice President and Senior Associate of the Institute for Research. He was responsible for design and implementation of management consulting programs in the area of organizational analysis and strategy.

## **CURRENT RESEARCH**

Student Adjustment ("Transfer Shock")

Student Choice of Major Processes

## **EXPERTISE**

Organizational Behavior, Group Dynamics

Ethical Decision Making, Corporate Social Responsibility, Public Policy

Organizational Strategy, Structure, and Culture

## **EDUCATION**

M.S. , Industrial/Organizational Psychology, The Pennsylvania State University , 1976

B.A. , Psychology, University of New Hampshire , 1975

## **COURSES**

BA 304, Management and Organization

MGMT 301, Introduction to Management and Organizations

MGMT 451 W, Business, Ethics, and Society