# FACTORS INFLUENCING CHOICE OF ACADEMIC MAJOR: A COMPARISON OF AGRICULTURAL AND NON-AGRICULTURAL DEGREE PROGRAMS

by

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## ABSTRACT

The purpose of this study was to examine the factors that influence selection of college major by students entering agricultural and non-agricultural degree programs at Texas Tech University in the fall of 2007. Moreover, this study examined the role psychological type has upon students' selection of an academic major.

According to Washburn, Garton, and Vaughn (2002), colleges of agriculture traditionally spend vast amounts of time, energy, and finances in the recruitment of students and the marketing of programs. Yet efforts such as these are typically not based on empirical research, and consequently research is warranted to identify most effective recruitment strategies. Furthermore, a limited pool of data exists relative to specific recruitment practices which influence students' choice of colleges of agriculture.

Nationally, post-secondary institutions hold an interest to attract the best and brightest students, and colleges of agriculture continually seek new and innovative ways to appeal to audiences such as these (Wildman & Torres, 2001). Recruitment was indicated by Wildman and Torres as beginning with the initial recognition of prospective students followed by the discovery of what factor has the greatest impact on a students' decision to select agriculture majors. Wildman and Torres identified five principle factors considered influential in this decision process. However, from their research, it was determined that although no single variable may influence students' decisions to major in agriculture, more research in this area needs to be conducted.

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# CHAPTER I

# INTRODUCTION

## Background and Setting

From the years 2005 to 2010, it is estimated that in the U.S. there will be 52,000 job openings for college graduates with proficiency in food, agricultural, and natural resources systems (Goecker, Gilmore, Smith, & Smith, 2004). However, despite a strong job market, Goecker et al. estimate that only 49,300 qualified graduates will be available to fill these openings of which only 32,000 will have degrees in agriculture, forestry, and/or veterinary medicine. Remaining graduates, filling these job openings, will come from the collegiate fields of biological sciences, engineering, business, health sciences, communication, and applied technologies.

Of the projected openings in the food, agricultural, and natural resources systems, it is further estimated that the majority of job opportunities will be in the areas of management and business followed by scientific and engineering specialties (Goecker et al., 2004). Further opportunities will be available within agricultural and forestry production along with education, communication, and governmental services. In these last three areas, however, it is estimated there will be an adequate number of graduates, unlike in management and business, and science and engineering.

The overall projections of graduate shortages made by Goecker et al. (2004) for 2005 to 2010 are not new to the job market within agriculturally related fields. In 1995, Goecker, Coulter, & Stanton stated that 48,000 jobs would be available for college graduates from 1995 to 2000 within food and agricultural related fields, but the number

of available graduates qualified for these jobs would fall short by 3.7%. To further support this trend, in 1992, Jackman and Smick-Attisano noted that there would be a lack of agriculture graduates to meet agriculturally related job openings. Russell (1993) stated that although growing job opportunities for college graduates in the food and agricultural sciences exist, enrollments in colleges of agriculture nationally have suffered in recent years.

In 2006, Bobbitt looked at enrollment trends within eight colleges of agriculture located in the central United States. From this review it was revealed during a three year period from the fall of 2001 to the spring of 2004 that six of the eight colleges of agriculture evaluated had experienced a decline in enrollment numbers. This decrease in student enrollment numbers ranged from a minimal drop of -0.4% to a more extreme decline of -11.8% with a close second reported at -10.7%. Of the two colleges of agriculture which did show increased student numbers, their growth was measured at a more modest 3.3% and 2.6% over the three year period.

Cole and Thompson (1999) noted colleges of agriculture have faced enrollment challenges since the 1970's when enrollment numbers were at national highs. However, since the farm crisis of the early 1980's, agricultural enrollments in both higher education and secondary education have suffered and have been an issue of major concern to all stakeholders involved. With this in mind, Dyer, Breja, and Wittler (2000) stated "One of the major problems plaguing college administrators nationwide is the recruitment and retention of quality students who are likely to enter the agricultural industry upon graduation" (p. 490).

With student retention in mind, Fanno and Cole (1999) attempted to identify why students left the College of Agriculture Sciences at Oregon State University before completing a degree within the college. In this study, both students who changed majors to a different college and those who left the institution entirely were analyzed. Of students who did change majors but stayed at the University, 85% of this group indicated a changed career goal. In regard to female students in this study, an attrition factor identified was female students believed they were not properly prepared for the science curriculum required within many agricultural degrees. With males, attrition factors indicated by leavers were related to scholarships or lack of from the College of Agriculture Sciences. Other findings by Fanno and Cole showed that only 22% of the students who left the college had been involved in College of Agriculture Science clubs or organizations. Finally in terms of 4-H and FFA backgrounds, 100% of the male, and 94% of the female leavers of the college had never been in either youth organization.

In a further look at student retention, a study by Dyer, Lacey, and Osborne (1996) compared freshman agriculture majors based upon enrollment in high school agriculture science courses. This evaluation showed 94.9% ($n$=56) of students enrolled in an agriculture major at the University of Illinois who had taken high school agriculture science courses intended to graduate with an agriculture degree. This was in sharp contrast to the college's students without high school agriculture science course backgrounds of which only 52.9% (n=138) intended to persist through a College of Agriculture academic major. However in a separate study by Dyer, Breja, and Andreasen (1999) the role of high school agriculture courses did not appear to be a factor in the college's retention of students. Dyer et al. (1999) showed that of students enrolled in the

College of Agriculture at Iowa State University, 97% (*n*=197) of all respondents intended to graduate from the college. Of freshman without exposure to high school agriculture courses, 90.5% (*n*=152) of the students intended to persist within their particular program.

While, it appears a number of factors may contribute to the retention and attrition of students within colleges of agriculture, continued research in this area is warranted. Equally warranted is continued research regarding recruitment factors influencing students' selection of academic majors in the various areas of the agricultural sciences. One educational model suitable to this particular line of investigation is Chapman's (1981) Model of Student College Choice. In this model, college choice variables of prospective students are identified which include student characteristics, student backgrounds, external influences, and student's general expectations of college life. This model studies the relationships among these variables as to students' choice of a specific college to matriculate. The design of this model aims to further identify the pressures and influences college stakeholders need to consider in the development of recruitment policies and to assist in continued research in the this area. Bobbitt (2006) noted this model has potential to increase effectiveness of college recruitment activities.

## Need for Study

According to Washburn, Garton, and Vaughn (2002), colleges of agriculture traditionally spend vast amounts of time, energy, and finances in the recruitment of students and the marketing of programs. Yet efforts such as these are typically not based on empirical research, and consequently research is warranted to identify most effective

recruitment strategies. Furthermore, a limited pool of data exists relative to specific recruitment practices which influence students' choice of colleges of agriculture.

Nationally, post-secondary institutions hold an interest to attract the best and brightest students, and colleges of agriculture continually seek new and innovative ways to appeal to audiences such as these (Wildman & Torres, 2001). Recruitment was indicated by Wildman and Torres as beginning with the initial recognition of prospective students followed by the discovery of what factor has the greatest impact on a students' decision to select agriculture majors. Wildman and Torres identified five principle factors considered influential in this decision process. However, from their research, it was determined that although no single variable may influence students' decisions to major in agriculture, more research in this area needs to be conducted.

Bobbitt (2006) furthered this idea in stating "Information should be continually gathered to identify current trends and the information students need so that recruitment efforts may continue to be successful" (p. 175). The relevance of this line of inquiry was also noted by Cole and Thompson (1999) who stated the following:

> Determining the information students use to make college and major decisions and the importance they attach to that information as well as determining the level of knowledge students possess about various programs within colleges or majors may assist in future recruitment and retention efforts. (p. 15)

## Statement of the Problem

Since the early 1980's, colleges of agriculture have been challenged to produce enough qualified graduates to enter careers in the areas of agricultural sciences and natural resources systems. The College of Agricultural Sciences and Natural Resources

at Texas Tech University has not been immune to this challenge. While a number of factors, go into college students' initial selection of academic majors such as the majors available within colleges of agriculture across the nation, continued research of these factors is justified.

## Purpose and Objectives

The purpose of this study was to examine the factors that influence selection of college major by students entering agricultural and non-agricultural degree programs at Texas Tech University in the fall of 2007. Moreover, this study examined the role psychological type has upon students' selection of an academic major. In order to guide this study, the following research objectives were developed:

1. Describe demographic characteristics of first year students majoring in agricultural and non-agricultural degree programs.
2. Describe the most frequent MBTI® preferences among agricultural and non-agricultural students.
3. Describe the most frequent MBTI® four letter combinations among agricultural and non-agricultural students.
4. Determine if a difference existed between agricultural and non-agricultural students on student characteristics and backgrounds.
5. Determine if a difference existed between agricultural and non-agricultural students on external influences.

6. Determine if a relationship existed between psychological type measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major.

## Definition of Terms

Agricultural Students – Undergraduate students enrolled in colleges of agriculture who are majoring in agricultural degree programs. For this study, agricultural students include undergraduates entering the College of Agricultural Sciences and Natural Resources at Texas Tech University for the first time in fall 2007.

College of Agriculture – A college of agriculture refers to post-secondary institutions which offer degree programs in the areas of agricultural and life sciences, and natural resources.

College Major – A basic contract between a student and a post-secondary institution in which the student completes a designated set of courses revolving around a subject, theme, or professional field in exchange for a college degree.

IS 1100 Tech Transition – A course designed for students new to Texas Tech University in order to acquaint them with topics, issues, and challenges freshman college students might face.

New Student Orientation – For this study, an orientation for students who are enrolling in Texas Tech University for the first time, and is required for all students to attend prior to enrollment in classes.

Non-Agricultural Students - Undergraduate students enrolled in colleges and degree programs not associated with agricultural or life sciences, or natural resources.

For this study, non-agricultural students include undergraduate students with a variety of majors enrolled in IS 1100 Tech Transition.

Non-Traditional Agricultural Students – Undergraduate students selecting a college of agriculture major who have no ties to production agriculture or agribusiness, and have no previous exposure to agricultural coursework or other agricultural related activities such as FFA or 4-H. Typically, these students are presumed to be from metropolitan areas, and/or are part of an ethnic minority group (Bobbitt, 2006).

Psychological Type - A way of describing and explaining certain consistent differences in the ways that normal people use their minds (Quenk, 2000). For this study operationally defined as the Myers-Briggs Type Indicator.

Traditional Agriculture Students – Undergraduate students selecting a college of agriculture major who have previous ties to production agriculture or agribusiness, and/or have previous exposure to agricultural coursework or other agricultural related activities such as FFA or 4-H.

## Limitations of the Study

This research was restricted to the following limitations:

1. Data from this study were collected from first time college students enrolling at Texas Tech University in fall 2007. Caution should be utilized in interpretation of results and generalizations to other populations of students should not occur.
2. This study was confined to students' initial selection of an academic major and did not account for student retention, or changing of college majors.

## Basic Assumptions

For this study, the following assumptions were regarded to be true:

1. Entering students provided true and accurate responses, to the best of their ability, on instrumentation administered in this study.
2. Settings in which entering students completed the instrumentation were similar in nature.
3. IS 1100: Tech Transition students were representative of students from a variety of academic majors at Texas Tech University.

## Significance of the Problem

For the better part of four decades, colleges across the nation have developed two basic market oriented desires (Paulsen, 1990). These two desires are to plan and predict enrollment trends and to influence the college-going decision process of potential students. According to Paulsen, potential students exist in considerable quantities across all levels of socioeconomic backgrounds and academic abilities. However, despite a large audience of potential college students, colleges must put forth substantial efforts to recognize appropriate matches between the characteristics of the students and the institution. Furthermore, colleges must work especially hard to be a part of the college decision process of students.

A number of factors have been identified which contribute to the ability of colleges of agriculture to produce graduates who will enter careers within food, agricultural, and natural resources systems. In terms of colleges of agriculture enrollments, two trends have traditionally been evaluated which include student

recruitment and retention. According to Fanno and Cole (1999), "Targeted recruitment may help retention numbers" (p. 31). Donnermeyer and Kreps (1994) stated "Effective student recruitment programs must recognize the diverse factors influencing students' decisions to enroll in colleges of agriculture" (p. 48). This particular diversity was identified as differences in students' values, financial incentives, prior agricultural experiences, and family supports which influence individual student's selection of agricultural majors. It was also shown that the level of importance of these factors varied with specific student's background and choice of a specific academic major.

# CHAPTER II

# LITERATURE REVIEW

## Purpose and objectives

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## Selection of College Major

For first year college students, the college years are a time of change that provides both new and exciting opportunities along with many stressful challenges (Hurr, 2003). One specific challenge many college students face deals with selection of an academic major. According to Hurr, choosing an academic major not only means selecting a plan of study, but also means taking on an identity for both college and possibly a future career. Furthermore, it is many times difficult for students to understand what it is they want to do or what their true talents or skills are.

The majority of current literature commonly shows that as a whole, enrollment numbers within colleges of agriculture have been on a decline over the past several years. This trend is in spite of the fact that career projections show more agriculturally related jobs being available, than qualified students to fill these openings. Goecker, Gilmore, Smith, and Smith (2004) further indicated this surplus of jobs would be maintained through at least 2010. Also, identified by Goecker et al. was the fact job openings not filled by graduates with expertise in food, agricultural, and natural resources systems would be filled by students from collegiate fields of biological sciences, engineering, business, health sciences, communication, and applied technologies.

With both the challenges students face in selection of a college major, and the obstacles colleges of agriculture must deal with in producing enough quality graduates to meet demands of the agricultural industry, much research on these factors has been conducted and will need to be continued in the future. In 1993, Russell noted the significance of these primary concerns which have faced agricultural stakeholders within higher education:

> The historic commitment of Colleges of Agriculture to structure their teaching and research around major farm commodities now needs to be redirected to focus on the development of youth as the major human resource required for a viable agricultural industry in coming years. (p.2)

With statements such as Russell's (1993), this review of literature aimed to identify previous research conducted by colleges of agriculture regarding selection of agricultural majors by college students. In order to guide this investigation Chapman's (1981) Model of Student College Choice served as the theoretical framework for this study. Literature supporting this framework looked at audiences colleges of agriculture have targeted in recruitment efforts in the past, along with both internal and external influences which may have influenced college students' selection of various agricultural majors. Also highlighted in this literature review was the Myers-Briggs Type Indicator (MBTI®) which was used as a psychological measure to evaluate student differences as to how students perceive information and make decisions.

## Theoretical Framework

The theoretical framework for this study was based on Chapman's (1981) Model of Student College Choice. This model identifies variables and their relationships associated with students' choice of a specific college to matriculate. Chapman's model was designed with two intentions in mind:

1. Assist college administrators responsible for setting recruitment policy to identify the pressures and influences they need to consider in developing institutional recruiting policy, and

2. Aid continued research in the area of student college choice (Chapman, p. 490).

Variables identified in this framework are related to student characteristics and backgrounds in combination with external influences upon students. With student characteristics and backgrounds, Chapman developed four internal student variables or characteristics which include socioeconomic status, level of educational aspiration, aptitude, and high school performance. Chapman grouped external variables into groupings of significant persons, fixed college characteristics, and college efforts to communicate with students. According to Chapman, external influences and student characteristics contribute to and are shaped by student's generalized expectations of college life sometimes viewed as a "freshman myth" (p. 499). Chapman's (1981) Model of Student College Choice is illustrated in Figure 2.1:

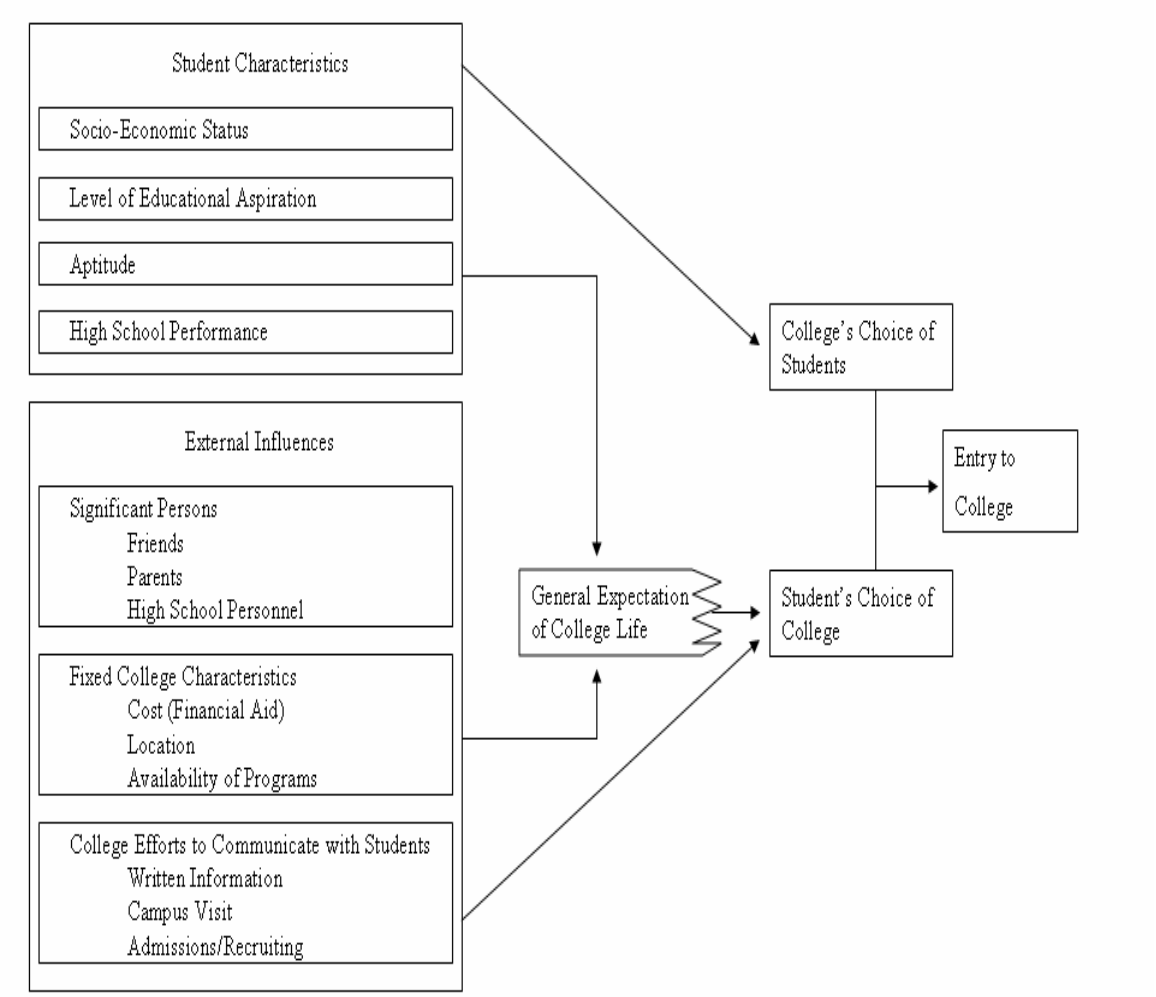


Figure 2.1. Chapman's (1981) model of influences on student college-choice.

In order to address the purpose of this study, the following adaptation of Chapman's (1981) model was developed as seen in Figure 2.2. This model addressed specific factors relative to how agricultural students select their academic major upon first entering college.

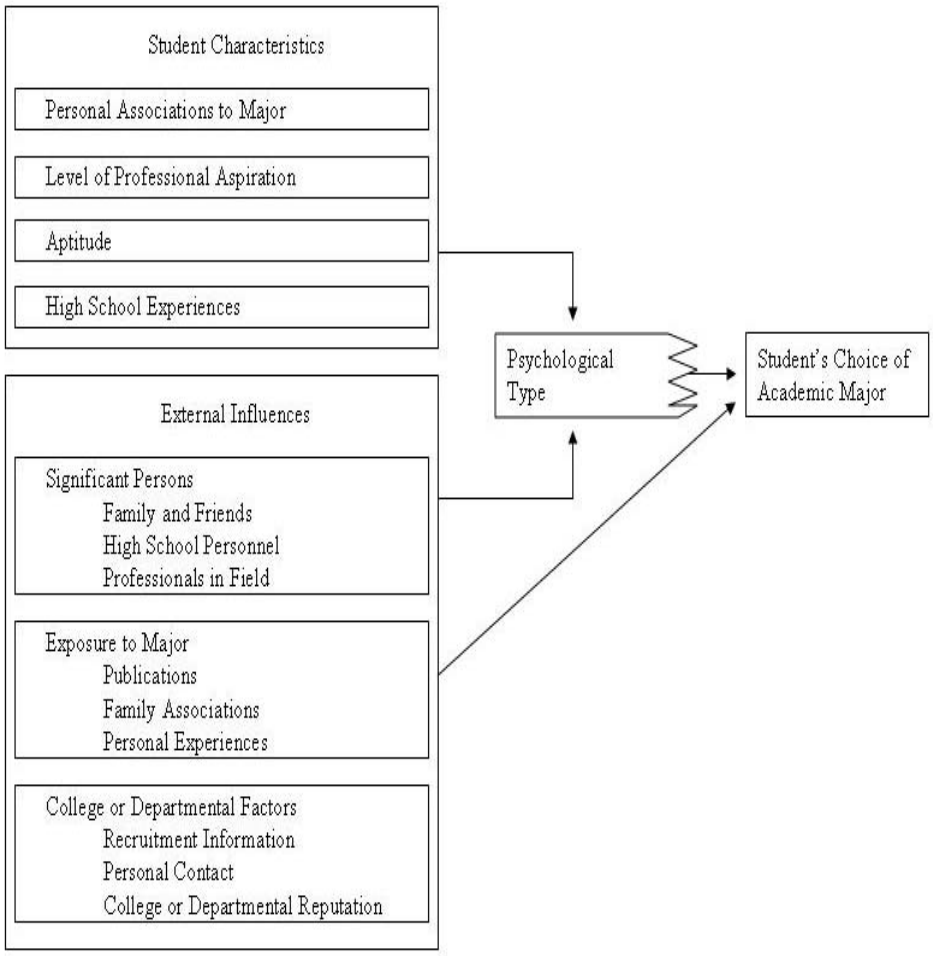


Figure 2.2. Williams' model of influences on agricultural students' selection of an academic major adapted from Chapman (1981).

## Model of Student College Choice Variables

Chapman (1981) provided a model looking at influences affecting potential students' selection of which college to attend. This model identified variables related to student characteristics, student backgrounds, external influences, and student's general expectations of college life.

Student Characteristics and Backgrounds

Variables associated with student characteristics and backgrounds consist of socioeconomic status, level of educational aspiration, aptitude, and high school performance. Further explanation of these variables follows.

### Socioeconomic Status

Chapman (1981) referred to the student characteristic of socioeconomic status as being influential upon both students' choice to first enter higher education and then upon the type of collegiate institution chosen. It was also noted socioeconomic status serves as a backdrop which influences a series of attitudes and behaviors associated with choice of college.

### Level of Educational Aspiration

In evaluation of level of educational aspiration and expectation it is believed both impact students' college plans but in separate ways (Chapman, 1981). Chapman indicated expectations are associated with what students perceive they will be doing in the future, or will have accomplished based on a personal estimate of reality and judgment. Aspiration, however, is more associated with wishes, desires, and hopes toward a student's future and is less grounded in present perspective.

### Aptitude and High School Performance

Aptitude was related to both high school achievement and performance on standard testing utilized by institutions of higher education to screen, place, and describe

students. Chapman (1981) noted "students often self-select the colleges to which they apply to reflect what they believe the college will consider" (p. 493). Furthermore it was also stated that students typically select colleges whose students have similar aptitudes to their own. Nolfie stated, "students do not want to be with others whose aptitude is very different than their own" (as cited in Chapman, p. 493).

With high school performance, Chapman (1981) again showed this as a measure some colleges utilize in acceptance and rejection of students into institutions of higher education. Also, it was determined students apply to various colleges relative to their perceived chances of being accepted based on academic performance. Chapman also believed as students' academic performance increased so did encouragement from family, friends, and high school personnel further influencing students' choice of college. Moreover with increased performance come increased opportunities for scholarships, another source of influence upon college choice.

External Influences

Chapman (1981) cited external variables associated with student's choice of which college to attend as significant persons, fixed college characteristics, and college efforts to communicate with students. The subsequent paragraphs describe these external factors.

Significant Persons

Friends, family, and high school personnel can all be significant external influences in the decision process students utilize to select a specific college. The impact

friends, family, and high school personnel might have, may affect students in three separate ways (Chapman, 1981). Chapman defines these influences as both comments which shape students expectations of what a college is like and advice of where students should go to college. Friend's knowledge gained from attending an institution of higher education is also a factor of influence upon student college choice.

## Fixed College Characteristics

"Location, costs, campus environment, and the availability of desired programs are included in this model as relatively fixed college characteristics" (Chapman, 1981, p. 495). Chapman stated with the exception of location, other fixed college characteristics listed may be modified although significant amounts of time may be required to do so. Additionally Chapman considered fixed college characteristics to be rather stable and a way of defining institutions in the short-term. With this assumption, it should also be realized if colleges choose to redefine themselves, large amounts of time may be required to modify image and reputation as perceived by potential students and their personal influences.

## College Efforts to Communicate with Students

In continuation of Chapman's (1981) work associated with external influences upon college choice, he affirmed one of the initial steps a college can take in addressing enrollment issues is to study the ways it identifies and recruits potential students. Chapman also declared, through efforts to communicate with students, this is one of the most easily influenced variables colleges can modify or adjust. Chapman furthered this

line of thought by advocating colleges can potentially draw in students not normally interested in the institution by applying traditional marketing principles. These marketing principles were divided into three approaches: "research on current and prospective students and on the institution's market position; development of a market plan; and development of new strategies involving both programs and communication process" (p. 498).

## General Expectations of College Life

As cited by Chapman (1981), Stern referred to the idea of "freshman myth" in that students often have unrealistic expectations of the college environment which include highly stereotyped and idealized images of college life. According to Chapman, "While some authors have speculated on the origin of these unrealistic expectations, the research is not at all clear as to their source" (p. 499). It is also shown that even information gained from personal experience, significant people, and communications from colleges might be ignored or distorted by students looking for a particular college to attend. With this in mind, it should be remembered that students' college decisions may be based on misconceptions and not careful evaluation of likely experiences at certain institutions.

## Students Majoring in Agricultural Degree Programs

Washburn et al. (2002) noted the application of Chapman's model of student college choice would allow colleges of agriculture to be more efficient in using recruitment resources through an increased understanding of influential people, best

recruitment practices, and institutional characteristics. Dyer, Breja, and Wittler (2000) stated "One of the major problems plaguing college administrators nationwide is the recruitment and retention of quality students who are likely to enter the agricultural industry upon graduation" (p. 490). One of the key intentions of Chapman's (1981) model is to aid college administrators such as these to identify pressures and influences to be considered in development of institutional recruiting policies.

Student Characteristics and Backgrounds

A 2007 study by Shertzer and Hoover compared enrollment trends of 31 1862 Land Grant universities' colleges of agriculture. From this study, the researchers categorized the universities in the sample as either increasing enrollment or decreasing enrollment. Demographics from this report showed that institutions with increasing enrollments had a majority female population of 58.5% as compared to institutions with decreasing enrollments that had a majority male population of 53%. Also revealed in the study by Shertzer and Hoover were that schools with increasing enrollments had a higher percentage of Asian American and Hispanic/Latino students.

According to The Pennsylvania State University (1980), "In order to maintain and/or increase enrollments, colleges of agriculture need to actively recruit good students from traditional as well as non-traditional groups" (as cited in White, Stewart, & Linhardt, 1991, p. 30). In order to achieve this goal, inner city and minority students are viable populations for recruitment efforts along with students from rural settings and students who were members of the 4-H and/or FFA organizations.

Minority Agriculture Students

Goecker, Gilmore, Smith, & Smith (2004) found in 2001 to 2002, 16% of all college graduates from U.S. Colleges of Agriculture and Life Sciences, Forestry, and Veterinary Medicine were from ethnic minority groups. In 1997, Wiley et al. acknowledged that most colleges of agricultural sciences have initiated minority recruitment efforts, but with limited success in terms of increased student numbers. To go along with this, White et al. (1991) stated that to achieve increased minority enrollments, the challenges and opportunities of careers in agriculture must be brought to the attention of minority students.

Wiley et al. (1997) concluded that students seeking food and agricultural sciences majors must be proficient in the sciences such as in biology, botany, chemistry, physics, and zoology. However, this group of researchers also stated that scientific requirements can be a challenge in minority recruitment as many minority students do not enroll in upper level science courses in high school. To further problems of low minority enrollments in colleges of agriculture and natural resources Wiley, et al. indicated food consumption is the primary contact that many minorities have within this area. Additionally, Wiley et al. state that images of agriculture commonly reflect a career path focusing excessively on vocational skill building, the FFA, and a profession for white males. Furthermore, many minority students relate food and agricultural science careers exclusively with farming and ranching.

As stated by Wiley et. al (1997), "To overcome these situations, more minority students must be exposed to the science dimensions of the food and agricultural sciences" (p. 22). Many colleges of agriculture and natural resources have neglected theories

which suggest "education and substantive experiences must precede positive attitudes and resultant behaviors toward the food and agricultural sciences" (Wiley et al., p. 21). Wiley et al. recommended that colleges of agricultural sciences should create pre-college programs for ethnic minorities to educate students and possibly change attitudes toward the food and agricultural sciences. From their 1997 study, Wiley et al. found minority students who had been through a pre-college agriculture program left with a more positive attitude toward agriculture which was still reflected one year later.

## Urban Agriculture Students

As previously mentioned, high school students classified as inner city or urban are another grouping of students looked at in enrollment studies by colleges of agriculture across the nation. Schuster and Constantino (1986) stated that urban students who are interested in the sciences should be targeted by colleges of agriculture. However, in order to accomplish this, the researchers stated that perceptions of colleges of agriculture as production based must be changed. In a study by White et al. (1991), it was concluded that inner city students in the investigation believed that persons working in agriculture should have agricultural backgrounds, and will work outdoors. Also concluded in this study were that the inner city participants viewed agriculture careers to have opportunity for advancement, and that persons in agriculture could learn skills needed for employment on the job. Additionally, data from White et al. showed that a majority of inner city students have positive perceptions about possible careers in agriculture.

## Community College and Transfer Students

To go along with recruitment efforts toward minority groups and inner city students, community college students must continue to be focused on in recruitment efforts as well. Horn, Peter, and Rooney (2002) reported 42% of all undergraduates nationwide were enrolled in two-year community colleges in the 1999-2000 school year (as cited in Rocca & Washburn, 2007). Johnson, Taylor, Owens, & Butler (1995) found that a high percentage of Mississippi students planning to earn four-year agriculture degrees were first attending community college. In spite of this, the majority of these community college students had this goal without having significant agriculture backgrounds.

## Traditional Agriculture Students

Finally, in evaluation of potential audiences to be recruited into colleges of agriculture and natural resources, more traditional groups of students in 4-H and FFA youth development programs must not be forgotten. Although it is true 4-H and FFA programs do include minority, inner city, and eventual community college transfer students, these programs are typically thought to represent more rural populations with less ethnic diversity. None the less, Russell (1993) noted the importance of this resource:

> The historic commitment of Colleges of Agriculture to structure their teaching and research around major farm commodities now needs to be redirected to focus on the development of youth as the major human resource required for a viable agricultural industry in coming years. (p.2)

Russell went on to add:

> To expand the pool of youth seeking undergraduate and graduate degrees in Colleges of Agriculture, it makes sense to give top priority in reaching youth who have already received positive pre-college experiences in youth programs addressing agricultural and environmental topics. (p.4)

In a related study furthering Russell's views, Thompson and Russell (1993) concluded that previous coursework in agriculture helps lead to student's decisions to study agriculture in college and/or pursue a career in agriculture. They further stated that efforts should be made to expand agricultural literacy and agricultural science instruction to all student groups, not just vocational students. Further, Thompson and Russell's research indicated that students who have completed agricultural coursework in high school express more favorable beliefs about agriculture and are more willing to consider collegiate courses of study within agriculture as opposed to students without this exposure. Dyer, Breja, and Andreasan (1999) made similar conclusions in that graduates of high school agriculture programs are good investments by colleges of agriculture. Rocca and Washburn (2007) drew similar conclusions regarding students coming from FFA backgrounds:

> Without a doubt, FFA members are an easily accessible recruiting population as Career Development Events and other FFA activities tend to readily segregate students into their areas of interest. It is a logical assumption that majors related to those interests would recruit from those pools of students. (p.10)

External Influences

Chapman (1981) cited external variables associated with student's choice of which college to attend as significant persons, fixed college characteristics, and college efforts to communicate with students. Many agricultural studies have evaluated the

impact these sources can have upon students' decisions to enroll in colleges of agriculture with somewhat mixed results.

## Prior Exposure to Agriculture

Wildman (1997) defined prior experiences in agriculture to include students working on a farm, ranch, or wildlife reserve along with various summer agricultural jobs, and also working with domestic and wild animals. Other agricultural experiences included were outdoor activities, hunting and fishing, and the 4-H and FFA. Research on these factors showed over half of agricultural students at New Mexico State University believed them to be very influential upon their selection of an agricultural major. An additional influence Wildman associated with prior exposure was relatives involved in agriculture. Participants showed relatives to be moderately influential although 41.4% classified relatives in agriculture as "very influential."

Dyer et al. (2000), who studied college agriculture students at two Midwestern Land Grant universities, found that students with prior agricultural experiences were more like to complete degree programs within colleges of agriculture. Their research classified students with prior experiences as students who had completed high school agriculture courses, were former members of 4-H and/or FFA, and lived in a rural setting. They believed these prior agricultural experiences were one of the best predictors of student retention within colleges of agriculture. Dyer et al. noted the relevance of such findings as one of the major problems plaguing stakeholders in colleges of agriculture is both the recruitment and retention of quality students likely to join the agricultural industry after earning degrees. With this, Dyer et al. recommended "Colleges should

recruit students who have agricultural experience, whether that experience is gained through personal background or high school agriculture course work" (p. 498).

People of Influence

Chapman (1981) identified friends, family, and high school personnel as all being significant sources of influence in students' selection of a particular college to enroll. Jackman and Smick-Attisano concluded "Students' choice of college is influenced by some significant individual such as a family member (most likely a parent) or someone associated with the students' high school or potential college choice" (p. 49). Other research studies within colleges of agriculture have also assessed the impact of such people upon a student's decision to enroll in a college of agriculture.

According to Bobbitt (2006), the group of people with the most influence on college-choice decision of students entering the College of Agricultural Sciences and Natural Resources at Texas Tech University was a parent or guardian closely followed by a friend in college. At the University of Missouri, Washburn, Garton, and Vaughn (2002) found parents and guardians, along with other relatives and graduates of an institution or department, to be the three greatest groups of influence for students college-wide. Students marked as high-ability at The Ohio State University, cited family as the most common source of information by those in the College of Agriculture (Boone, Newcomb, Reisch, and Warmbrod, 1989). Cole and Thompson (1999) determined that almost half of Oregon State University students within the College of Agriculture viewed parents to be a source of valued information. This was in contrast to Oregon State Universities'

findings in the College of Health and Human Performance, where only 10% of students indicated the value of parents in the college choice process.

To go along with findings from the College of Health and Human Performance at Oregon State, Wildman and Torres (2001) found dissimilar results to the previous agricultural studies. In their findings of New Mexico State students, Wildman and Torres identified parents, friends, and family as "Not Influential" (p. 50). Instead, this research identified professionals in agricultural fields and personal role models as being more influential in the college choice process for students. Yet, participants of the research by Wildman and Torres also classified Extension professionals and high school agriculture teachers, counselors, and other personnel as non-influential.

Just as mixed results were identified regarding the level of influence parents, family, and friends have upon the choice of a student to select an agricultural major; mixed findings have been found regarding high school personnel. As noted, Wildman and Torres (2001) determined agriculture teachers to be a non-influence in the college choice process with similar results being found by Rocca and Washburn in 2005. However, Cole and Thompson (1999) identified high school teachers of agriculture to be valuable in the recruiting process as they appeared to be promoting college programs.

In 2007, a study by Rocca and Washburn supported Cole and Thompson's (1999) findings with agriculture teachers. They determined that agriculture teachers proved especially influential among former FFA members enrolled in college agriculture programs. They highlighted this result with the following: "Agriculture teachers should be made aware that among all high school personnel, they have the greatest potential to

influence their students' college choice. Agriculture teachers should also be the targets of recruitment materials and information from colleges of agriculture" (p. 11).

In evaluation of other significant persons influencing students to enroll agricultural programs, Boone et al. (1989) identified high school guidance counselors as a valuable source of information for Ohio college students. They concluded colleges of agriculture need to be more aware of the guidance counselor's potential role, and should develop activities to educate counselors about the many career opportunities agriculturally related fields can present. Conversely, Rocca and Washburn (2005) found dissimilar results regarding counselors as agriculture students at the University of Florida identified high school counselors as having a low level of influence in the college decision process. Still, Cole and Thompson (1999) determined Extension personnel to have a low level of influence in college selection by students, but recommended in-service for Extension staff on college recruitment information that is available and how it could be used. They believed education toward this group could be beneficial in attracting former 4-H members to colleges of agriculture, especially females.

Finally, in educational efforts toward people of influence, Washburn et al. (2002) indicated that direct contact by colleges of agriculture with college alumni could prove beneficial to students in the college information gathering stage. Rocca and Washburn (2005) indicated that direct contact by colleges and departments with parents and guardians might be beneficial to colleges of agriculture and natural resources. They furthered this idea by stating research should be conducted to determine what college or university features are most important to parents for their children's college choice.

Bobbitt (2006) added “Care should be taken to not only recruit students to the university, but also to recruit their parents or guardians” (p. 174).

College or Departmental Factors

While previous studies have revealed some of the challenges along with potential audiences that colleges of agriculture and natural resources should evaluate in order to sustain increased enrollment numbers, many studies have looked directly at most effective recruitment efforts. In reference to Rocca and Washburn (2007), it was found with former FFA members enrolled within a college of agricultural science that 75% of this group had participated in student activity events on campus while in high school. This was in contrast to the college agricultural students with no FFA background of which only 23% had been on the university’s campus for student activities in high school. To further these results, Rocca and Washburn showed that other campus recruitment programs were used by nearly 50% of the FFA group compared to fewer than 30% of the students who were not former FFA members. It was concluded from these findings that “In working with College of Agriculture administration, the need for support of FFA events on campus is evidenced by these findings” (Rocca & Washburn, p. 11). Bobbitt (2006) found 79% of entering college students considered a campus visit the most influential recruitment tool in their selection of college.

In a comparison of high school students and transfer students entering the College of Agricultural and Life Sciences at the University of Florida, Rocca & Washburn (2005) determined that at least one-half of these students reported gathering college choice information from the Internet. Results showed that for high school students entering the

college, three of the top five sources they utilized dealt with web-based information. This was even more of a factor for college transfer students whose top three items reported were web based information. Bobbitt (2006) found websites also proved beneficial in the recruitment of agriculture students entering the College of Agriculture and Natural Resources at Texas Tech University. In this study it was shown that all entering students in agriculture and natural resources used websites to gather college information. Bobbitt also determined that program information on a college website was the most important source of information for entering minority students and second most important for non-traditional agriculture students from urban areas or who had no prior agricultural experience.

In a look at recruitment materials other than websites, Bobbitt (2006) determined that over 50% of students used printed publications for college choice decision. This was unlike mass media resources of TV, radio, newspaper, or magazine advertisements which proved to be the least utilized sources for students entering a college of agriculture and natural resources. Similar results were identified by Wildman and Torres (2001) who showed that a vast majority of agriculture and natural resource students relied on TV, radio, newspaper, or magazine advertisements very little or not at all when selecting a college major.

In relation to college or departmental people of influence, research also shows that contact by college personnel can be a key influence for students enrolling within colleges of agriculture. Rocca and Washburn's 2005 study of agricultural students rated personal contact with college representatives as highly useful even though only one third of students indicated such contact had been made. Recommendations were made from

this study to make college faculty and staff aware of this finding on the role they can play in student recruitment. Also highlighted was the value in faculty participation in student recruitment activities. Bobbitt's 2006 study supported this recommendation by reporting 77.5% of students considered a personal conversation with a professor a factor in selecting the particular agricultural college. While a variety of factors have been shown to be useful resources in recruiting students into colleges of agriculture, personal contact and individual people may appear more important in selection of a college major.

## Myers-Briggs Type Indicator

Whether right handed or left handed, most people have a preference for which hand they use to perform certain tasks each and every day. However, while most people have a preference for one hand over the other for most daily tasks, this does not mean people do not use the other hand as needed. With this scenario in mind, various psychological functions of the human brain will play a similar role to the preferences of a dominant hand (Martin, 1997). One such assessment tool used to determine psychological preferences such as these were based off of the initial work of C.G. Jung and is called the Myers-Briggs Type Indicator (MBTI®).

### Background of the MBTI®

The Myers-Briggs Type Indicator (MBTI®) personality inventory was developed by Isabel Briggs Myers and her mother Katharine Cook Briggs. This well known instrument was based on the 1923 works of the Swiss psychiatrist, Jung, who authored the book *Psychological Types*. Although neither Briggs nor Myers held credentials in

Jungian analysis or psychological test development, this pair studied Jung's theories for over 20 years and devised the MBTI® questionnaire which has been available in a published form since 1956 (Quenk, 2000). The reason for their work was that they believed typology could determine healthy personality differences and could be put to practical use in people's lives (Quenk).

Today, the MBTI® is internationally known and has been translated into over two dozen languages. Each year between two and three million copies of this instrument are sold (Myers et al., 1998; CPP Catalog, 2001, as cited by Bayne, 2004). Quenk (2004) noted a key reason for the popularity of MBTI® is its relevance to several diverse areas which include: education, career development, organizational behavior, group functioning and team development, psychotherapy with individuals and couples, and in multicultural settings. Bayne listed five strengths that further accounted for its popularity. They are "the positive tone of its descriptions of the personality types; the general nature of its aims and therefore the wide range of its applications; its versatility; the evidence for its validity; and, perhaps most arguably, the term type" (p.2).

Development of the MBTI®

The theory of psychological types as utilized by Myers and Briggs "is a way of describing and explaining certain consistent differences in the ways that normal people use their minds" (Quenk, 2000). The standard MBTI® instrument, Form M, aims to identify these consistent differences through a 93-item questionnaire. Results of this instrumentation identify individual's preferences on each of four pairs of opposite categories called dichotomies. The four basic dichotomy preferences produced by the

MBTI® include the following scales of: Extraversion (E) or Introversion (I); Sensing (S) or Intuition (N); Thinking (T) or Feeling (F); and Judging (J) or Perceiving (P).

Within each dichotomy scale people will have a preference toward which end of a dichotomy feels more natural and will typically utilize this dichotomy preference more regularly. However, while seeming more natural, this does not mean people cannot use the opposite end of a dichotomy when needed although Martin (1997) indicated people do not like to use non-preference dichotomy ends for extended periods of time.

The first type preference pair of Extraversion-Introversion or E-I, was the initial dichotomy Jung used to describe consistent differences among people (Quenk, 2000). Jung believed that Extraversion-Introversion explained two basic attitude types of people. With Extraversion as an attitude, a person both directs toward, and receives energy from the outside world of people, things, and action (Quenk). A person who prefers Extraversion tends to think best when verbalizing with others and takes trial-and-error approaches to acquiring new experiences and skills. On the other end of this dichotomy, Introversion directs psychic energy toward the inner world of ideas, reflection, and internal experiences. According to Quenk, a person who prefers Introversion tends to think internally before expressing personal thoughts to other people.

From Extraversion-Introversion, Jung's observations soon lead to the addition of four mental functions to further refine his work. The two additions were Sensing-Intuition which specifies two mental functions of perception, while Thinking-Feeling indicates two mental functions of judgment. Within the realm of perception, Sensing utilizes "the five senses to become aware of facts and details occurring in the present" (Quenk, 2000, p. 6). A person who prefers the sensing dichotomy focuses on concrete

realities and prefers to make decisions based on verifiable facts. However, with the other perception dichotomy of Intuition, perception looks at patterns, meanings, and future possibilities. "With little conscious effort, Intuitive perceptions moves quickly and easily from what is present in the here and now to what is implied and possible in the future" (Quenk, p.6).

With Sensing or Intuitive information in hand, individuals can utilize judgments to make decisions from what they perceive. In the preference of Thinking a person uses specific criteria and principles in a linear, logical analysis of Sensing or Intuitive information. Thinking preference individuals remove personal biases or feelings from judgments and rely on the facts. This is unlike feeling preferences where what a person cares about creates judgments from Sensing or Intuitive information. Without effort, a person with a preference toward feeling utilizes personal feelings and values along with other's feelings and values in the decision process.

Briggs, who had studied the type preferences of Jung, observed that individuals differed in the way they related to the outside world (Quenk, 2000). Consequently, Briggs's observations led to the addition of a fourth pair of opposites which constitute the dichotomy of Judging-Perceiving. According to Quenk, "Although Jung did not explicitly identify this pair of opposites, Briggs and Myers found it to be implicit in his writings." This preference pair identifies how an individual prefers to live his or her life. Within this dichotomy, a person with a preference toward Judging prefers a planned or orderly lifestyle where decisions are made in advance. With Perceiving, a more flexible and spontaneous lifestyle is preferred which allows a person to stay open to new experiences.

Application of the MBTI®

Today with the four preference scales of the MBTI®, results from this instrument yield a four letter type pattern or psychological type for an individual (Martin, 1997). There are sixteen potential combinations of these preferences that people can be classified into: ISTJ, ISTP, ESTP, ESTJ, ISFJ, ISFP, ESFP, ESFJ, INFJ, INFP, ENFP, ENFJ, INTJ, INTP, ENTP, and ENTJ (Appendix D). Martin stated each combination of the preferences can tell an individual much about who he or she is, and how he or she approaches the outside world.

Martin (1997) stated that type produced by MBTI® "is more than just the combination of your four letters; it is in fact a dynamic and complex interrelated system of personality" (p. 8). Being able to identify how the four preferences relate to each other, and in what order a person prefers them can tell an individual a great deal about his or her self. Examples given by Martin include: how one prefers to communicate, what one considers to be important, and the kinds of activities and careers one finds motivating or even stressful.

From the initial sixteen type preferences identified through the MBTI® there are four types of mental functions that people utilize daily. These four functions include the dichotomies of sensing, intuition, thinking, and feeling of which all people use each and every day. The difference is in the order that individuals prefer to utilize these separate mental functions and MBTI® can assist people in determining what these preferences are so they better know themselves and others. The four mental functions are the basis for much mental activity for each person (Martin, 1997).

Barrett (2007) explored the psychological types of faculty and students in the College of Agriculture at the University of Nebraska in order see in a relationship existed between type and instruction. With MBTI® Form G, it was found the majority of student participants were introverted (54%), sensing (84%), thinking (69%), and judging (57%). The faculty were predominantly introverted (63%), intuitive (52%), thinking (62%), and judging (83%). According to Barrett, these findings for preference were dissimilar to previous research on other populations. Bayne (2004) measured a sample of US adults and determined their preferences were 51% introverted, 74% sensing, 57% thinking, and 54% judging. Bayne also showed that for the dichotomy of thinking and feeling, more males were thinking (57%) and more females were feeling (76%).

Quenk (2000) referred to the four mental functions of sensing, intuition, thinking, and feeling and how they could be ranked for each person as being dominant, auxiliary, tertiary, or inferior. With dominant, this is the function that is most used, capable of development, and under conscious control. In auxiliary this function is second in use, development, and conscious control. The third used mental function is tertiary and is relatively unconscious. Finally, the least used and developed function is inferior, and is considered primarily unconscious.

Regarding the relationship between dominant and auxiliary functions, if a person has Sensing or Intuition, which are perceiving functions, as dominant, then the auxiliary function must be either Thinking or Feeling which are judging functions. On the other hand if the dominant function was a judging function of Thinking or Feeling, then the auxiliary function must be a perceiving function of Sensing or Intuition. According to Quenk (2004), “By conceptualizing the psyche in this way an individual has reasonable

conscious access to one kind of perception and one kind of judgment so that two critical human endeavors can be directed and controlled" (p. 12).

## Summary

Conclusions from this review of literature can be drawn that for colleges of agriculture and natural resources to reverse current trends of declining enrollments, recruitment and educational efforts must be made towards multiple audiences (Shertzer & Hoover, 2007; The Pennsylvania State University, 1980). In terms of students to recruit, colleges of agriculture and natural resources must aim recruitment efforts toward both rural and urban students, white, Hispanic and other minority groups (Wiley et al., 1997; White et al., 1991; Schuster & Constantino, 1986). Also to go along these groups, community college students, and students in 4-H and FFA programs should be recruited as well (Johnson et al., 1995; Russell, 1993; Thompson & Russell, 1993; Dyer et al, 1999; Rocca & Washburn, 2007).

College recruitment materials should be web based and printed alike (Bobbit, 2006). However, mass media delivery methods, such as TV, radio, newspapers, and magazines should be utilized with caution as these resources have been shown to have minimal influence upon college decisions (Bobbitt; Wildman & Torres, 2001). College faculty and staff should also be active in recruitment as research shows college agriculture and natural resources students deem this beneficial in their selection of a college major (Rocca & Washburn, 2005). Also recruitment contacts and materials should be focused to parents, family and friends together with high school agricultural teachers (Bobbitt).

Finally, Wiley et al. (1997) stated that education and experience must come before positive attitudes and behaviors toward food and agricultural sciences. With this in mind, more students must be exposed to the various dimensions of agricultural science and natural resources to grow numbers of students enrolled with in these colleges. Literature shows previous high school course work in agriculture helps lead to this course work in college (Thompson & Russell, 1993). Additionally, Wiley et al. noted that pre-college programs should be created to educate students and possibly change attitudes toward the food and agricultural sciences.

# CHAPTER III

# METHODOLOGY

## Purpose and Objectives

The purpose of this study was to examine the factors that influence selection of college major by students entering agricultural and non-agricultural degree programs at Texas Tech University in the fall of 2007. Moreover, this study examined the role psychological type has upon students' selection of an academic major. In order to guide this study the following research objectives were developed:

1. Describe demographic characteristics of first year students majoring in agricultural and non-agricultural degree programs.
2. Describe the most frequent MBTI® preferences among agricultural and non-agricultural students.
3. Describe the most frequent MBTI® four letter combinations among agricultural and non-agricultural students.
4. Determine if a difference existed between agricultural and non-agricultural students on student characteristics and backgrounds.
5. Determine if a difference existed between agricultural and non-agricultural students on external influences.
6. Determine if a relationship existed between psychological type measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major.

## Research Design

This quantitative study was non-experimental and utilized a descriptive-correlation research design. According to Frankel and Wallen (2006) "A major purpose of correlational research is to clarify our understanding of important phenomena by identifying relationships among variables" (p. 336). The phenomena evaluated in this study were factors associated with how freshman students choose an academic major. The variables explored included student characteristics and backgrounds, external influences, and psychological type. Data pertaining to student characteristics and backgrounds and external influences upon selection of academic major were recorded in a descriptive questionnaire adapted from Wildman (1997). Psychological type was measured by the Myers-Briggs Type Indicator (MBTI®) Form M.

## Population and Sample

The target population for this study was identified as first time college students entering into the College of Agricultural Sciences and Natural Resources at Texas Tech University in fall 2007. The accessible population for this study was all entering freshman who attended a New Student Orientation (NSO) session in the summer of 2007 and selected an academic major in the College of Agricultural Sciences and Natural Resources. At Texas Tech University, NSO is a required activity which all freshman students must attend prior to enrolling in fall classes. Accessing freshman agriculture students at the summer NSO sessions allowed for a census of this particular group.

In order to achieve the purpose of this study, a nonequivalent control group was also established from a convenience sample of freshman students enrolled in IS1100:

Tech Transition. IS 1100 is a one-hour course designed to introduce freshman students to university life at Texas Tech. This course is open and available to all freshman at Texas Tech University and is offered at variety of times and locations. While this group of students was not selected based upon chance, they were considered appropriate to the study due to two key student characteristics. First, these students were freshman enrolled at Texas Tech University for the first time in fall 2007. Second, this group of students represented a variety of academic majors from multiple colleges at Texas Tech University.

## Instrumentation

The participants of this study were asked to complete two data collection instruments. The first instrument, the MBTI® Form M, was used to measure psychological type of student participants. Factors in High School that Influence Choice of Major in College developed by Wildman (1997) served as the basis for the second instrument. This instrument looked to discover what factors in high school influenced the choice of major by agricultural students. For the purpose of this study, this questionnaire was adapted into two forms, one for agricultural students and a second for non-agricultural students. Both instruments contained similar items but were worded appropriately for students in agricultural and non-agricultural degree programs.

### Myers-Briggs Type Indicator Form M

Form M of the MBTI® was completed by subjects of this study and was administered in booklet form. Form M is made up of 93 items in which students are

given an "A" or "B" choice for each question. Part I of Form M was made up of 26 items which aimed to describe how people usually feel or act. Questions in Part I are typically worded as to "would you rather" or "which do you prefer" (Kitchell, 2003). For Part II, students were given 47 word pairs in which students were asked to select the word they considered more appealing. Example pairs included items such as "thinking/feeling," "quiet/outgoing," "objective/passionate," or "theory/fact." Part III, like Part I, asked subjects to describe how they typically feel or act in certain situations. Part III consisted of 20 items.

Students' answers from MBTI® Form M were captured on MBTI® answer sheets suitable to template scoring. Template scoring of Form M is accomplished using one of four scoring templates designed for each set of MBTI® opposites. The procedure for using template scoring is to place the template over the answer sheet and count the answers showing through the template openings. Each of the four templates is split in half for measuring the number of responses which correlate to each preference. For example, student preference for extraversion or introversion was determined by first counting number of extraversion responses followed by counting number of introversion responses. If number of extraversion responses exceeded number of introversion responses the student's preference for attitude was recorded as E. If introversion exceeded extraversion, then the attitude was marked as I. This scoring was done for each set of opposites for each respondent.

After each of the four preferences was identified they were entered into Microsoft Excel by individual dichotomy, MBTI® four letter combinations, and MBTI® learning

style. Recording psychological type in this categorical manor was considered congruent with type theory (Myers et al., 1990).

Survey of Incoming Students

The Survey of Incoming Students instrument was adapted from a study by Wildman (1997) which evaluated factors of influence upon selection of an agricultural major by students at New Mexico State University. This instrument was divided into three sections. Section one evaluated external factors of influence upon selection of academic major, section two recorded student characteristics and background information, and section three captured demographic information.
This instrument was distributed to students in paper booklet form (Appendix A).

Part one of the instrument measured external factors influencing selection of an academic major and was subdivided into the following: prior exposure to college major (11 items), people of influence (13 items), and college or departmental factors (14 items). For each of the three groups students were asked how influential the following factors were when making decisions of which major to choose upon entering college. A ten-point Likert-type scale was utilized to record students' perceptions of each factor. If a student believed a specific factor was "very influential" they marked a number ten or at least a number closer to ten on the Likert-type scale. If a student perceived a factor to be "not influential" they marked a number one or at least a number closer to one on the Likert-type scale.

Part two of the questionnaire pertained to information on situational factors which may reflect influence in choosing an academic major. Initial questions were written in

multiple choice and fill in the blank format. Five questions in section two looked at students' possible associations to agriculture which included agricultural work experiences, family associations, and agricultural coursework in high school. Eight questions sought information about students' knowledge of potential careers and available majors at Texas Tech University, along with information on college credits earned prior to fall 2007, and high school activities. The final question of part two measured considerations (nine items) students valued in selecting an academic major and was measured on a ten-point Likert-type scale with one representing "no consideration" and ten representing "high consideration."

Part three of the questionnaire sought demographic information, again in a multiple choice and fill in the blank type of manor. Ten total questions were asked which were related to gender, age, class rank, ACT or SAT scores, home state, permanent residence, home state, ethnicity, and selected academic major. Age was collected as a precautionary measure as Chapman's (1981) Model of Student College Choice is limited to describing the pattern of influences affecting traditional age (18-21) prospective students. This survey of incoming students was also administered in booklet form and participants recorded their responses on directly on the instrument. Results were also entered in Microsoft Excel prior to being moved to Statistical Package for Social Sciences (SPSS) Version 14.0.

## Validity and Reliability

Fraenkel and Wallen (2006) define validity as "the appropriateness, meaningfulness, correctness, and usefulness of the inferences a researcher makes" (p.

150). Reliability is relative to the consistency of answers or scores that instrumentation can produce from one administration to another. For this study, validity and reliability are discussed regarding both MBTI® Form M and the Survey of Incoming Students utilized in this study.

Myers-Briggs Type Indicator Form M

The validity of MBTI® has traditionally been evaluated for both the four preference scales and for whole type (Myers et al., 1990). Multiple methods have been utilized in this process. A large number of exploratory factor analyses of the MBTI® scales have shown close correspondence with the hypothesized four factor structure (1990). From the MBTI® manual, correlations of the four dichotomy scales with an extensive list of scales from other instruments support type theories relative to the meaning of the behaviors associated with the four sets of opposites (Myers et al.). For whole type, according to the MBTI® a wealth of descriptive, anecdotal, and research information is available which describes these sixteen combinations of psychological type furthering validity.

According to Myers et al. (1990) "The concept of reliability deals not only with estimating internal consistency and replicability over time but also with that part of the variance in reliability estimates that is attributable to the characteristics of the respondents" (p. 159). Reliability estimates for MBTI® are assumed to vary with characteristics of respondents along with statistical procedures used. Individual reliabilities of MBTI® are reported for groups of participants according to both gender and age. With assumptions of MBTI®, Myers et al. estimate respondents with a

command of perception or judgment are more than likely clear regarding their personal preferences. With this in mind it can be hypothesized these people will report their preferences more consistently. To further these assumptions it is also estimated samples of older persons should have higher reliability estimates than groups of younger persons (Myers et al.). From this, the internal consistency of the four MBTI® dichotomies was estimated using coefficient alpha for multiple age groups. For respondents ages 18-21, which represented participants of this study, alpha levels of 0.91, 0.92, 0.89, and 0.94 were reported for the opposites E-I, S-N, T-F, and J-P respectively.

Survey of Incoming Students

Wildman (1997) established content and face validity of this instrument by a panel of experts which included New Mexico State University faculty and graduate students along with the College of Agriculture and Home Economics' Survey Review Committee. This panel evaluated the questionnaire for clarity of instructions and directions, ease of flow, clarity of sentences, ambiguous wording, and general appearance and format of the instrument (Wildman). Recommendations from this process were used for improvements to both content and appearance of the instrument.

To establish reliability, Wildman (1997) performed a test-retest procedure on sections one and two of the questionnaire which were external factors of influence, and student characteristics and background information of students. Demographics, the third section, was not tested as this information was assumed to be constant over time.

The test-retest method involves administering the same instrument twice to the same group within a specified time interval (Fraenkel and Wallen, 2006). From this

procedure, reliability coefficients are calculated to indicate the relationship between the two scores. Wildman (1997) performed this reliability analysis utilizing a selected group of junior, senior, and graduate level students (*n*=25) enrolled in two separate courses within the College of Agriculture and Home Economics at New Mexico State University. Wildman identified this pilot group as resembling the target population. The test-retest was performed with a one week lapse between administrations with participation being voluntary. Following test administrations, paired questions were analyzed to produce percent agreement calculations. The acceptable percent agreement was determined *a priori* at a minimum level of 75% (Wildman). The percent agreements ranged from 75% to 100% for the first two sections of the instrument.

## Data Collection Procedures

Data collection for this study occurred in two parts for the two groups of students participating in this study. The two groups were entering freshman agricultural students and first time non-agricultural students enrolled in IS1100: Tech Transition.

Collection of data from entering freshman agricultural students occurred during New Student Orientation (NSO) in the months of June, July, and August. These students enrolling in agricultural majors were solicited at the conclusion of the College of Agricultural Sciences and Natural Resources portion of the NSO. Students were verbally told the purpose of this study and were asked to participate. Also, the students were notified the study was voluntary. An incentive was offered by the researchers who agreed to share students' MBTI® results with those who were interested. Solicitation of participants was followed by instructions for both MBTI® Form M and the Survey of

Incoming Students. MBTI® Form M was administered by the researchers first. As students completed this instrument they would raise their hand to receive the Survey of Incoming Students. However students were asked to keep both instruments until completion of the second so the instruments could be coded for correlation of MBTI® Form M and the Survey of Incoming Students.

In order to recruit non-agricultural students enrolled in IS1100: Tech Transition, instructors of the IS1100 course sections were contacted via email. This email asked instructors for an opportunity for the researchers to attend a class session to possibly seek participants who were enrolled in non-agricultural degree programs. It was specified in this email that the researchers would only attend one class session which would be approved by the instructor on the date determined by the instructor. Enticement of a separate class session covering MBTI® results and implications was also offered to these teachers. Ultimately, seventeen instructors approved the researchers' access to their classes. This allowed the researchers access to a similar number of non-agricultural students in order to try and match the number of agricultural students who had already attended NSO and participated in the study. However, only three instructors requested a follow-up session over MBTI®. Data collection of non-agriculture students in this study occurred in the months of August, September, and October. Solicitation, instructions, and administration of instruments in the IS1100 courses occurred in the same format as described for NSO.

## Data Analysis

The objectives of this study guided the data analysis procedures utilized in this research study. Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 15.0. Data were imported into SPSS from Microsoft Excel from which data were initially entered.

For the first five objectives of this study, frequencies, percentages, means, and standard deviations were used for description and comparison of factors which influenced entering students' initial selection of academic majors. The sixth objective sought to determine if relationships existed between psychological type and external influences upon selection of an academic major. In order to measure this objective Pearson product-moment correlation coefficients were calculated.

# CHAPTER IV

# FINDINGS

## Purpose and Objectives

The purpose of this study was to examine the factors that influence selection of college major by both students entering agricultural and non-agricultural degree programs at Texas Tech University in the fall 2007. Moreover, this study examined the role psychological type has upon students' selection of an academic major. In order to guide this study the following research objectives were developed:

1. Describe demographic characteristics of first year students majoring in agricultural and non-agricultural degree programs.
2. Describe the most frequent MBTI® preferences among agricultural and non-agricultural students.
3. Describe the most frequent MBTI® four letter combinations among agricultural and non-agricultural students.
4. Determine if a difference existed between agricultural and non-agricultural students on student characteristics and backgrounds.
5. Determine if a difference existed between agricultural and non-agricultural students on external influences.
6. Determine if a relationship existed between psychological type measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major.

## Population and Sample

The target population for this study was identified as first time college students entering into the College of Agricultural Sciences and Natural Resources at Texas Tech University in fall 2007. The accessible population for this study was all entering freshman who attended a New Student Orientation (NSO) session in the summer of 2007 and selected an academic major in the College of Agricultural Sciences and Natural Resources (*n*=207).

In order to achieve the purpose of this study, a nonequivalent control group was established from a convenience sample of freshman students enrolled in IS1100: Tech Transition (*n*=187). While this group of students was not selected based upon chance, they were considered appropriate to the study due to two key student characteristics. First, these students were freshman enrolled at Texas Tech University for the first time in fall 2007. Second, this group of students represented a variety of non-agricultural majors from multiple colleges at Texas Tech University.

## Objective One

Objective one sought to describe demographic characteristics of first year students majoring in agricultural and non-agricultural degree programs. Table 4.1 shows the percentages of students by gender. Overall 52.9% of the students participating in this study were male (*n* = 208) and 47.1% were female (*n* = 185). However, a gender difference did appear between agricultural and non-agricultural participants. Of agricultural students, 61.2% were male (*n* = 126) and 38.8% were female (*n* = 80). With non-agricultural students, 43.9% were male (*n* = 82) and 56.1% were female (*n* = 105).

Table 4.1
*Students by Gender*

| | Agriculture (*n* = 206) | | Non-Agriculture (*n* = 187) | | Total (*n* = 393) | |
|---|---|---|---|---|---|---|
| Gender | *F* | (%) | *f* | (%) | *f* | (%) |
| Male | 126 | 61.2 | 82 | 43.9 | 208 | 52.9 |
| Female | 80 | 38.8 | 105 | 56.1 | 185 | 47.1 |

The ethnicity of subjects is described in Table 4.2. The majority of the sample indicated their ethnicity was White/Non-Hispanic (84.6%, *n* = 329). The other reported ethnicities were Hispanic (7.5%, *n* = 29), Black/African American (3.6%, *n* = 14), other ethnicities (1.8%, *n* = 7), Asian/Pacific Islander (1.5%, *n* = 6), and Native American (1.0%, *n* = 4). For students majoring in agriculture, White/Non-Hispanic (87.6%, *n* = 177) was also the largest reported ethnic group. This was followed by Hispanic (6.4%, *n* = 13), Native American (2.0%, *n* = 4), other ethnicities (2.0%, *n* = 4), Black/African American (1.0%, *n* = 2), and Asian/Pacific Islander (1.0%, *n* = 2). From the non-agricultural students, 84.6% indicated ethnicity as White/Non-Hispanic (*n* = 152). Other ethnicities reported in this group were Hispanic (8.6%, *n* = 16), Black/African American (6.4%, *n* = 12), Asian/Pacific Islander (2.1%, *n* = 4), and other ethnicities (1.6%, *n* = 3). No students from the non-agriculture majors reported ethnicity as Native American (0.0%, *n* = 0).

Table 4.2
*Students by Ethnicity*

| | Agriculture (*n* = 202) | | Non-Agriculture (*n* = 187) | | Total (*n* = 389) | |
|---|---|---|---|---|---|---|
| Ethnicity | *F* | (%) | *f* | (%) | *f* | (%) |
| Asian/Pacific Islander | 2 | 1.0 | 4 | 2.1 | 6 | 1.5 |
| Black/African American | 2 | 1.0 | 12 | 6.4 | 14 | 3.6 |
| Hispanic | 13 | 6.4 | 16 | 8.6 | 29 | 7.5 |
| Native American | 4 | 2.0 | 0 | 0.0 | 4 | 1.0 |
| White/ Non-Hispanic | 177 | 87.6 | 152 | 81.3 | 329 | 84.6 |
| Other | 4 | 2.0 | 3 | 1.6 | 7 | 1.8 |

State residence of students is highlighted in Table 4.3. The vast majority of students in this study listed state residence as Texas (93.1%, *n* = 362). Similar findings were also shown in groupings of agricultural students (92.6%, *n* = 188) and non-agricultural students (93.5%, *n* = 174). For out-of-state agricultural students (7.4%, *n* = 15) they wrote in state residences which included Alabama, California, Colorado, Iowa, New Mexico, Pennsylvania, and Virginia. With non-agricultural students (6.5%, *n* = 12) from out-of-state, the states reported they reported as being from were Hawaii, Idaho, Illinois, Missouri, New Mexico, Oklahoma, and South Dakota. Also of note, two students indicated country of origin being outside the United States with one agricultural student from Mexico, and one non-agricultural student from England.

Table 4.3
*Students by State Residence*

| | Agriculture (*n* = 203) | | Non-Agriculture (*n* = 186) | | Total (*n* = 389) | |
|---|---|---|---|---|---|---|
| State Residence | *F* | (%) | *f* | (%) | *f* | (%) |
| In-State | 188 | 92.6 | 174 | 93.5 | 362 | 93.1 |
| Out-of-State | 15 | 7.4 | 12 | 6.5 | 27 | 6.9 |

Table 4.4 shows permanent residence for incoming students in this research study. Overall, the largest representation of students (52.4%, *n* = 204) came from metropolitan areas. This was followed by small city/town (21.3%, *n* = 83), rural-farm (20.6%, *n* = 80), and rural-non farm (5.7%, *n* = 22). The group of agriculture students indicated permanent residence as 37.6% (*n* = 76) coming from metropolitan areas. Rural-farm had the second highest representation for agricultural students at 30.2% (*n* = 61) and was followed by small city/town at 24.3% (*n* = 49) and rural non-farm at 7.9% (*n* = 16). Non-agricultural students also indicated metropolitan area (68.4%, *n* = 128) as the most represented home residence. Small city/town (18.2%, *n* = 34) was represented next and was followed by rural-farm at 10.2% (*n* = 19) and rural-non farm at 3.2% (*n* = 6).

Table 4.4
*Students by Home Residence*

| | Agriculture (*n* = 202) | | Non-Agriculture (*n* = 187) | | Total (*n* = 389) | |
|---|---|---|---|---|---|---|
| Home Residence | *f* | (%) | *f* | (%) | *f* | (%) |
| Rural-Farm | 61 | 30.2 | 19 | 10.2 | 80 | 20.6 |
| Rural-Non Farm | 16 | 7.9 | 6 | 3.2 | 22 | 5.7 |
| Small City/Town (< 10,000 people) | 49 | 24.3 | 34 | 18.2 | 83 | 21.3 |
| Metropolitan Area (> 10,000 people) | 76 | 37.6 | 128 | 68.4 | 204 | 52.4 |

Other demographic information recorded in this study included age and class rank. Age was recorded as a precautionary measure as the Chapman's (1981) Model of Student College Choice is only designed for traditionally aged college students (18-21 years old). For this study all student age ranged from 18 years up to twenty years. In terms of class rank the mean percentage included students being in the top 23.4% (*n* = 393) of their high school graduating class. Agricultural students came in at an average of being in the top 22.6% (*n* = 206) of their class and non-agricultural students came in the top 24.2% (*n* = 187) of their particular group of graduates.

## Objective Two

The second objective of this research was to describe the most frequent MBTI® preferences among agricultural and non-agricultural students. Table 4.5 highlights the percentages of MBTI® opposites measured in this study. Overall, students' dominant psychological preferences determined by MBTI® were Extraversion (78.1%, *n* = 303),

Feeling (67.5%, *n* = 262), and Perceiving (66.8%, *n* = 259). With the dichotomy of Sensing (50%, *n* = 194) and Intuition (50%, *n* =194) a perfect split was found between the subjects who completed instrumentation. For agricultural students the most prevalent set of opposites were Extraversion (76.0%, *n* =155), Sensing (52.5%, *n* = 107), Feeling (59.3%, *n* = 121), and Perceiving (67.2%, *n* = 137). The non-agricultural students most frequent set of opposites were Extraversion (80.4%, *n* = 148), Intuition (52.7%, *n* = 97), Feeling (76.6%, *n* = 141), and Perceiving (66.3%, *n* = 122). The largest disparity in preferences between the two groups of students came between Thinking and Feeling where agriculture students were 59.3% Feeling (*n* = 121), and Non-Agricultural Students were 76.6% Feeling (*n* = 141). Other dichotomies were similar in percentages between the two audiences.

Table 4.5
*Students by MBTI® Preferences*

| | Agriculture (*n* = 204) | | Non-Agriculture (*n* = 184) | | Total (*n* = 388) | |
|---|---|---|---|---|---|---|
| Preference | *f* | (%) | *F* | (%) | *F* | (%) |
| | | | Attitude | | | |
| Extraversion | 155 | 76.0 | 148 | 80.4 | 303 | 78.1 |
| Introversion | 49 | 24.0 | 36 | 19.6 | 85 | 21.9 |
| | | | Perception | | | |
| Sensing | 107 | 52.5 | 87 | 47.3 | 194 | 50.0 |
| Intuition | 97 | 47.5 | 97 | 52.7 | 194 | 50.0 |
| | | | Judgment | | | |
| Thinking | 83 | 40.7 | 43 | 23.4 | 126 | 32.5 |
| Feeling | 121 | 59.3 | 141 | 76.6 | 262 | 67.5 |
| | | | Orientation to the Outer World | | | |
| Judging | 67 | 32.8 | 62 | 33.7 | 129 | 33.2 |
| Perceiving | 137 | 67.2 | 122 | 66.3 | 259 | 66.8 |

## Objective Three

Objective three in this research study aimed to describe the most frequent MBTI® four letter combinations among agricultural and non-agricultural students. Complete documentation of these four letter combinations is given in Table 4.6. For the complete

group of subjects, the three most prevalent psychological types were ENFP (26.4%, *n* = 102), ESFP (13.0%, *n* = 50), and ESFJ (9.6%, *n* = 37). The three least prevalent types for the entire group were INTJ (0.3%, *n* = 1), INFJ (1.3%, *n* = 5), and INTP (2.1%, *n* = 8). The three highest percentages found among agricultural students were ENFP (22.7%, *n* = 46), ESTP (11.3%, *n* = 23), and ESFP (10.8%, *n* = 22). The three lowest findings for agricultural students were INTJ (0.0%, *n* = 0) with no students recorded followed by INFJ (2.0%, *n* = 4) and ISFJ (2.0%, *n* = 4). The group of non-agricultural students most common four letter combinations were ENFP (30.6%, *n* = 56), ESFP (15.3%, *n* = 28), and ESFJ (12.0%, *n* = 22). The least common combinations for non-agricultural students were INFJ (0.5%, *n* = 1), INTJ (0.5%, *n* = 1), and INTP (1.6%, *n* = 3).

Table 4.6
*Students by MBTI® Psychological Type*

| | Agriculture (*n* = 203) | | Non-Agriculture (*n* = 183) | | Total (*n* = 386) | |
|---|---|---|---|---|---|---|
| Psychological Type | *f* | (%) | *F* | (%) | *f* | (%) |
| ESTJ | 16 | 7.9 | 8 | 4.4 | 24 | 6.2 |
| ISTJ | 11 | 5.4 | 4 | 2.2 | 15 | 3.9 |
| ESTP | 23 | 11.3 | 7 | 3.8 | 30 | 7.8 |
| ISTP | 5 | 2.5 | 6 | 3.3 | 11 | 2.8 |
| ESFJ | 15 | 7.4 | 22 | 12.0 | 37 | 9.6 |
| ISFJ | 4 | 2.0 | 8 | 4.4 | 12 | 3.1 |
| ESFP | 22 | 10.8 | 28 | 15.3 | 50 | 13.0 |
| ISFP | 11 | 5.4 | 4 | 2.2 | 15 | 3.9 |
| ENTJ | 7 | 3.4 | 5 | 2.7 | 12 | 3.1 |
| INTJ | 0 | 0.0 | 1 | 0.5 | 1 | 0.3 |
| ENTP | 15 | 7.4 | 9 | 4.9 | 24 | 6.2 |
| INTP | 5 | 2.5 | 3 | 1.6 | 8 | 2.1 |
| ENFJ | 10 | 4.9 | 12 | 6.6 | 22 | 5.7 |
| INFJ | 4 | 2.0 | 1 | 0.5 | 5 | 1.3 |
| ENFP | 46 | 22.7 | 56 | 30.6 | 102 | 26.4 |
| INFP | 9 | 4.4 | 9 | 4.9 | 18 | 4.7 |

## Objective Four

The fourth objective of this study looked to determine if a difference existed between agricultural and non-agricultural students on student characteristics and backgrounds. Student characteristics and background information for this study included items related to high school experiences, college choice decisions, associations to agriculture, and considerations in selecting an academic major.

Figure 4.1 illustrates activities participants were a part of while in high school. Virtually all agricultural students (99.5%, *n* = 205) and non-agricultural students (97.3%, *n* = 182) indicated participation in some type of high school activity, club, or organization. The five most frequently reported high school activities by agricultural students were athletics (77.7%, *n* = 160), FFA (57.3%, *n* = 118), National Honor Society (46.1%, *n* = 95), music or drama electives (44.7%, *n* = 92), and student council or government (35.9%, *n* = 74). The 4-H Club was the sixth most reported activity by agricultural majors with 32.0% (*n* = 66). With non-agricultural majors, the five most commonly reported activities were athletics (76.5%, *n* = 143), National Honor Society (50.3%, *n* = 94), music or drama electives (40.1%, *n* = 187), student council or government (39.6%, *n* = 74), and other vocational student organizations (31.6%, *n* = 59). Reported involvement in FFA and 4-H by non-agricultural students was 8.0% (*n* = 15) and 5.3% (*n* = 10) respectively. FFA and 4-H were also the least reported activities by non-agricultural majors.

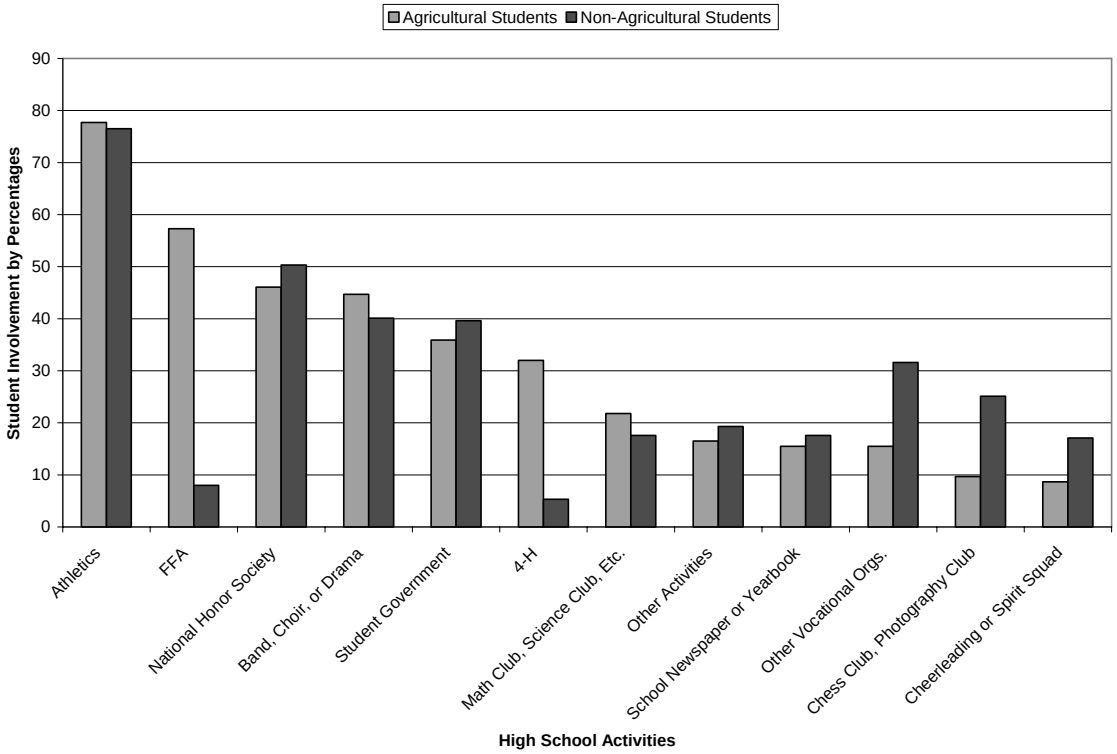


Figure 4.1. Percentages of agricultural and non-agricultural students participating in specific high school activities.

Students were asked two questions relative to what time period they might have decided to attend Texas Tech University and when they may have decided upon their selected academic major. The options students could select for these questions were 9th grade or below, 10th grade, 11th grade, 12th grade, or after high school.

For the large majority of agricultural students (48.8%, *n* = 100) and non-agricultural students (61.0%, *n* = 114) they indicated making their decision to attend Texas Tech University in the 12th grade. Table 4.7 demonstrates time periods for students' decision process upon decision to attend Texas Tech University.

Table 4.7
*Students by College Choice Decision Timeline*

| | Agriculture ($n$ = 205) | | Non-Agriculture ($n$ = 186) | |
|---|---|---|---|---|
| Point on Timeline | *f* | (%) | *f* | (%) |
| 9th Grade or Below | 38 | 18.5 | 18 | 9.6 |
| 10th Grade | 18 | 8.8 | 12 | 6.4 |
| 11th Grade | 45 | 22.0 | 37 | 19.8 |
| 12th Grade | 100 | 48.8 | 114 | 61.0 |
| After high school | 4 | 2.0 | 5 | 2.7 |

Table 4.8 demonstrates year in high school in which students selected their college major. Similar results were shown for decision of college major with the majority of agricultural students (52.2%, $n$ = 106) reporting final decisions related to this major selection occurring during the 12th grade. The majority of non-agricultural students (41.7%, $n$ = 78) also reported making decisions related to college major during the 12th grade. Of note, twice as many non-agricultural students (21.4%, $n$ = 40) chose their academic major after high school as compared to agricultural students (10.8%, $n$ = 22).

Table 4.8
*Students by Major Decision Timeline*

| | Agriculture ($n$ = 203) | | Non-Agriculture ($n$ = 187) | |
|---|---|---|---|---|
| Point on Timeline | *f* | (%) | *f* | (%) |
| 9th Grade or Below | 25 | 12.3 | 19 | 10.2 |
| 10th Grade | 14 | 6.9 | 18 | 9.6 |
| 11th Grade | 36 | 17.7 | 32 | 17.1 |
| 12th Grade | 106 | 52.2 | 78 | 41.7 |
| After high school | 22 | 10.8 | 40 | 21.4 |

Agricultural and non-agricultural students were also asked if they had knowledge of possible career opportunities within their selected major while in high school. Of agricultural students, 76% ($n$ = 155) of the group answered yes to this question with 79.0% ($n$ = 147) of non-agricultural students answering the same. When these two groups of students were asked if they currently believed there were a lot of job opportunities within their areas of study, 93.1% ($n$ = 190) of agricultural students and 93.5% ($n$ = 174) of non-agricultural students also said yes. Table 4.9 further highlights these results.

Table 4.9
*Students by Knowledge and Perceptions of Career and Job Opportunities Relative to Selected Major*

| | Agriculture ($n$ = 204) | | Non-Agriculture ($n$ = 186) | |
|---|---|---|---|---|
| Knowledge and Perception | *f* | (%) | *f* | (%) |
| Aware of Career Opportunities within Major in High School | | | | |
| Yes | 155 | 76.0 | 147 | 79.0 |
| No | 49 | 24.0 | 39 | 21.0 |
| Believe a Lot of Job Opportunities Available in Selected Major | | | | |
| Yes | 190 | 93.1 | 174 | 93.5 |
| No | 13 | 6.9 | 12 | 6.5 |

Table 4.10 shows the percentages of students in this study who entered Texas Tech University with college credit already earned. Agricultural (66.5%, $n$ = 135) and non-agricultural (61.5%, $n$ = 115) students were similar in terms of percentages of students who had completed college level coursework prior to entering Texas Tech University.

Table 4.10
*Students by College Hours Earned Prior to Entering TTU*

| | Agriculture ($n$ = 203) | | Non-Agriculture ($n$ = 187) | |
|---|---|---|---|---|
| Prior College Hours | *F* | (%) | *f* | (%) |
| Yes | 135 | 66.5 | 115 | 61.5 |
| No | 68 | 33.5 | 72 | 38.5 |

Table 4.11 indicates the confidence levels entering students have in persisting through their selected major. The highest response rates were indicated in that most students believed they "probably" would not change their academic major with 44.3% ($n$ = 90) of agriculture students reporting this and 44.1% ($n$ = 82) of non-agriculture majors also making this assertion. The second highest indication in this question was that 40.4% ($n$ = 82) of agricultural students and 33.9% ($n$ = 63) of non-agricultural students indicated they "possibly" would change majors. Less agricultural students (15.3%, $n$ = 31) said they would "definitely" not change majors than non-agricultural students (22.0%, $n$ = *41*). Agricultural students were also asked if they might "possibly" change to a non-agricultural major of which 12.8% ($n$ = 26) of this audience indicated they might do so.

Table 4.11
*Students by Confidence in Persistence Through Current Major*

| | Agriculture (*n* = 203) | | Non-Agriculture (*n* =186 ) | |
|---|---|---|---|---|
| Persistence Through Major | *f* | (%) | *f* | (%) |
| Definitely will not change | 31 | 15.3 | 41 | 22.0 |
| Probably will not change | 90 | 44.3 | 82 | 44.1 |
| Possibly will change | 82 | 40.4 | 63 | 33.9 |

With objective two, students were also asked questions related to possible associations to agriculture. Table 4.12 shows percentages of agricultural and non-agricultural students who indicated their immediate family received some level of income from agriculture. The majority of agricultural students (50.8%, *n* = 91) indicated their immediate family received no income from agriculture. Of agriculture students who did indicate family income from agriculture, 19.0% (*n* = 34) of respondents showed family earnings of 76% to 100%. This was followed by 11.2% (*n* = 20) of agricultural students who showed family earnings to range from 1% to 25%, with 10.1% (*n* = 18) *of* students next indicating their family earnings being from 26% to 50%, and finally 8.9% (*n* = 16) of students indicating an agricultural earning range of 51% to 75%. For non-agricultural majors, 82.6% (*n* = 147) of students showed their immediate family received no income from agriculture.

Table 4.12
*Percentage of Immediate Family's Income from Agriculture*

| | Agriculture ($n$ = 179) | | Non-Agriculture ($n$ = 178) | |
|---|---|---|---|---|
| Percent of Household Income | *f* | (%) | *F* | (%) |
| 0 | 91 | 50.8 | 147 | 82.6 |
| 1 to 25 | 20 | 11.2 | 15 | 8.4 |
| 26 to 50 | 18 | 10.1 | 9 | 5.1 |
| 51 to 75 | 16 | 8.9 | 0 | 0.0 |
| 76 to 100 | 34 | 19.0 | 7 | 3.9 |

Past family earnings from agriculture, participants were also asked to indicate types of agricultural involvements that might exist. Figure 4.2 illustrates these associations by percentage for each type of family association. Livestock production was first for family involvement by both agricultural students (38.3%, $n$ = 79) and non-agricultural students (11.8%, $n$ = 22). This was followed by crop production for both agricultural and non-agricultural students at 31.1% ($n$ = 64) and 5.3% ($n$ = 10) respectively. Other family associations to agriculture, by agricultural majors, were farm inputs (11.7%, $n$ = 24), other (11.2%, $n$ = 23), Extension/education (5.3%, $n$ = 11), marketing (4.9%, $n$ = 10), processing (4.4%, $n$ = 9), veterinarian (2.9%, $n$ = 6), and wholesale/retail (2.4%, $n$ = 5). For the non-agricultural students, the other family associations were other (5.9%, $n$ = 11), marketing (4.8%, $n$ = 9), farm inputs (4.3%, $n$ = 8), wholesale/retail (2.7%, $n$ = 5), processing (2.1%, $n$ = 4), veterinarian (1.1%, $n$ =2), and Extension/education (0.5%, $n$ = 1).

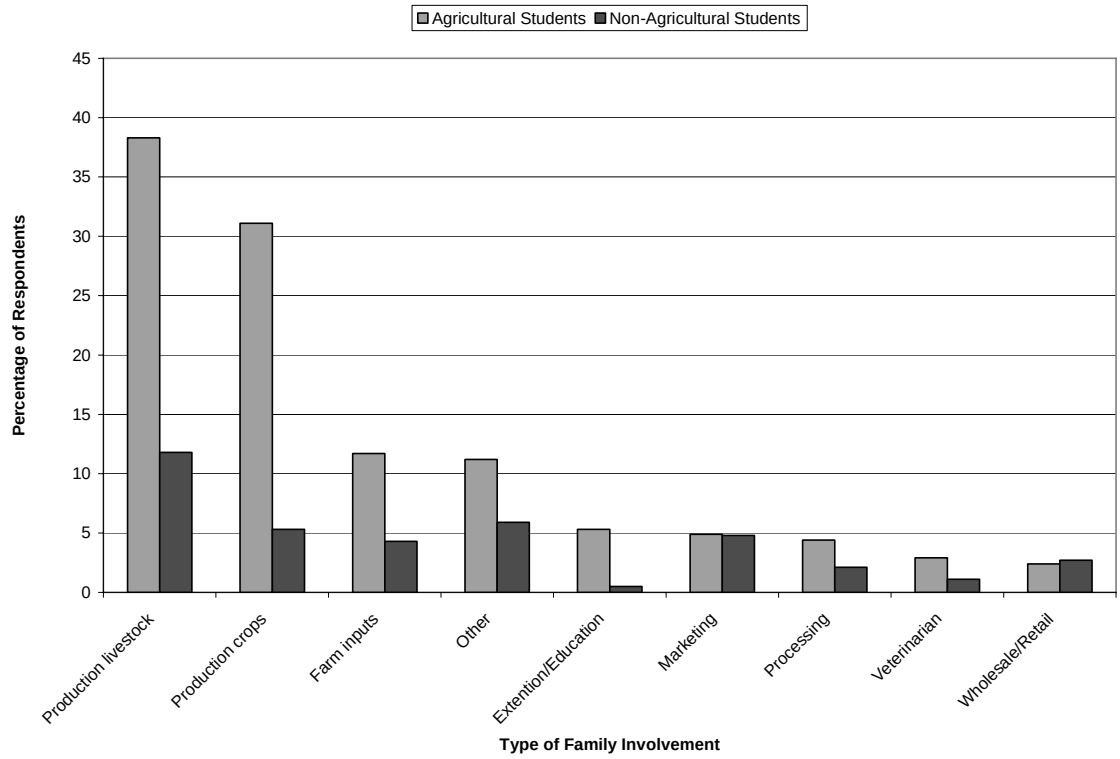


Figure 4.2. Family associations to agriculture.

Agricultural and non-agricultural students were also asked to indicate other types of associations that might exist between their family and agriculture. Figure 4.3 further illustrates these findings. With agricultural majors, the largest reported family associations from this data was FFA (36.4, $n$ = 75), followed by 4-H (25.2%, $n$ = 52), agricultural employment (24.2%, $n$ = 50), hobby farm (21.8%, $n$ =45), other (7.3%, $n$ = 15), and government agency (3.4%, $n$ =7). The largest association identified by non-agricultural majors was a hobby farm (9.1%, $n$ = 17), followed by agricultural employment (5.3%, $n$ = 10), FFA (4.8%, $n$ = 9), 4-H (4.3%, $n$ = 8), government agency (3.2%, $n$ = 6), and other (2.7%, $n$ = 5).

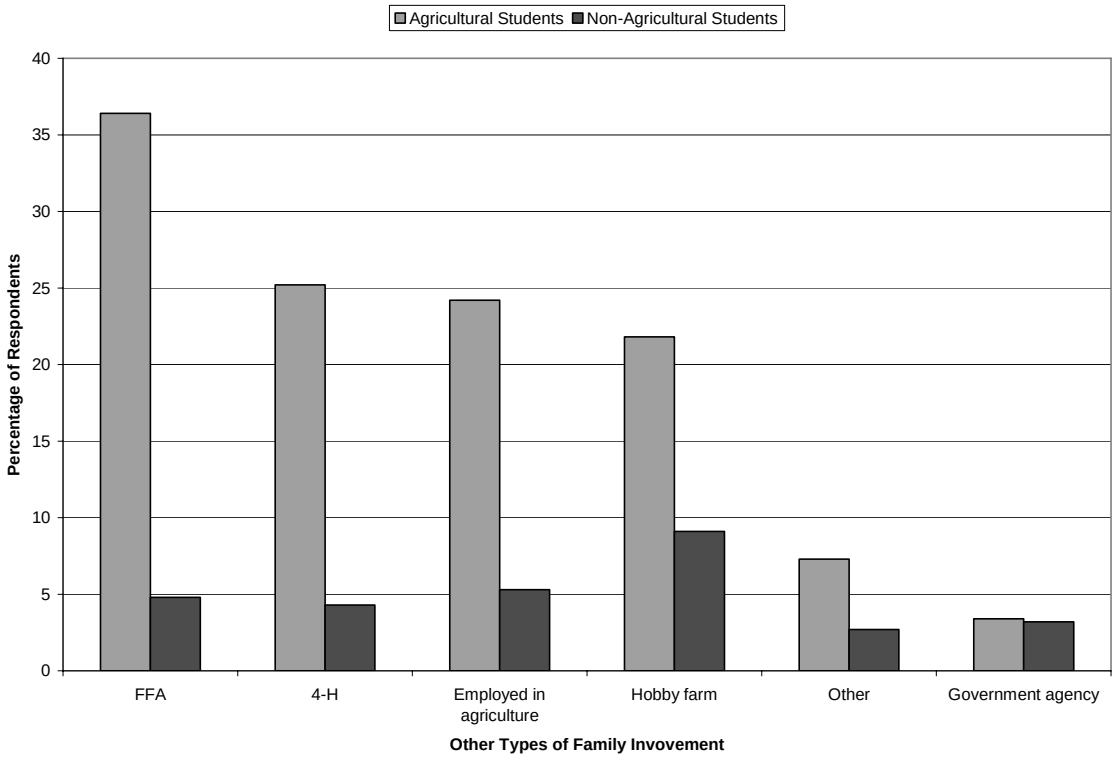


Figure 4.3. Other family associations to agriculture.

Other items under objective four which aimed to identify students' associations to agriculture looked at agricultural work experiences and agricultural science courses taken during high school. Over half of the study's participants majoring in agriculture (58.3%, $n$ = 119) indicated they had taken agricultural science courses in high school as opposed to 41.7% ($n$ = 85) who indicated they had not. With non-agricultural students, only 14.4% ($n$ = 27) reported taking agricultural courses in high school while 85.6% ($n$ = 159) reported not taking these same courses. Table 4.13 highlights these findings.

Table 4.13
*Students by Agriculture Science Courses in High School*

| High School Agri-Science Courses | Agriculture (*n* = 204) | | Non-Agriculture (*n* = 186) | |
|---|---|---|---|---|
| | *F* | (%) | *f* | (%) |
| Yes | 119 | 58.3 | 27 | 14.5 |
| No | 85 | 41.7 | 159 | 85.5 |

Figure 4.4 highlights previous types of agricultural work experiences participants may have had prior to entering Texas Tech University. The most common findings for agricultural students were 56.3% (*n* = 116) of this group indicated work on a family farm or ranch and 35.4% (*n* = 73) showed similar work on a non-family farm or ranch. These top work experiences were followed by work experiences in wildlife management (12.6%, *n* = 26), other agricultural work (12.6%, *n* = 26), work for a veterinarian (12.1%, *n* = 25), landscaping business (12.1%, *n* = 25), horticulture (11.7%, *n* = 24), food processing (8.7%, *n* = 18), golf course (8.3%, *n* = 17), Extension service (7.8%, *n* = 16), forestry-related (4.4%, *n* = 9), and agricultural biology experience (4.4%, *n* = 9). The most common agricultural work experience for non-agriculture majors was also work on a family farm or ranch (12.3%, *n* = 23) with second being work on a golf course (8.6%, *n* = 16). Other finings for these participants were landscaping business (6.4%, *n* = 12), work on non-family farm or ranch (5.3%, *n* = 10), other agricultural work (4.8%, *n* = 9), wildlife management (3.7%, *n* = 7), work for a veterinarian (3.7%, *n* = 7), horticulture (3.2%, *n* = 6), food processing (2.1%, *n* = 4), Extension service (1.6%, *n* = 3), forestry-related (1.6%, *n* = 3), and agricultural biology experience (1.6%, *n* = 3).

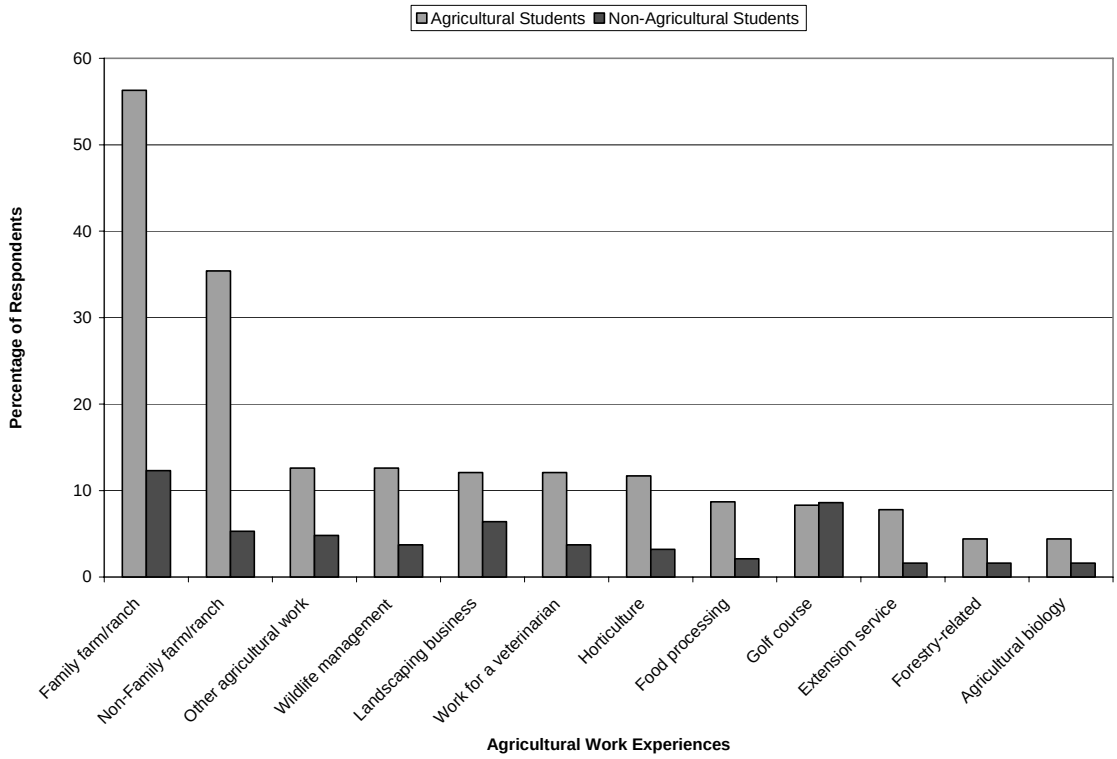


Figure 4.4. Types of agricultural work experiences by students

Finally, students were asked for information on special considerations they may have made in selecting an academic major. These items included questions in which students tried to identify how much consideration they may have given to certain factors when deciding upon their initial college major. The factors given consideration in this section included items such as prestige of career, working with people, and income gained after college. Respondents measured these items on a ten-point Likert type scale.

Table 4.14 highlights findings from this section. Agricultural respondents indicated the top five items they gave the most consideration to as future job market of career ($M$ = 7.77, $SD$ = 2.39), working with people ($M$ = 7.73, $SD$ = 2.51), field (out-of-office) work ($M$ = 7.51, $SD$ = 3.05), working outdoors ($M$ = 7.44, $SD$ = 3.1), and income gained after college ($M$ = 7.42, $SD$ = 2.68). The top five items of consideration for non-

agricultural students were future job market of career (*M* = 8.55, *SD* = 2.12), income gained after college (*M* = 8.36, *SD* = 2.24), working with people (*M* = 8.30, *SD* = 2.15), prestige of career (*M* = 7.71, *SD* = 2.31), and location of career (*M* = 7.29, *SD* = 2.62).

Table 4.14
*Considerations Made by Students in Selection of an Academic Major*

| | Agriculture (*n* = 206) | | | Non-Agriculture (*n* = 187) | | |
|---|---|---|---|---|---|---|
| Considerations Upon Major | Rank | Mean | SD | Rank | Mean | SD |
| Future job market of your career | 1 | 7.77 | 2.39 | 1 | 8.55 | 2.12 |
| Working with people | 2 | 7.73 | 2.51 | 3 | 8.3 | 2.15 |
| Field (out-of-office) work | 3 | 7.51 | 3.05 | 6 | 6.05 | 3.21 |
| Working outdoors | 4 | 7.44 | 3.1 | 7 | 3.94 | 3.2 |
| Income gained after college | 5 | 7.42 | 2.68 | 2 | 8.36 | 2.24 |
| Location of your career | 6 | 7.27 | 2.82 | 5 | 7.29 | 2.62 |
| Working with animals | 7 | 6.78 | 3.36 | 8 | 2.24 | 2.11 |
| Prestige of your career | 8 | 6.45 | 2.79 | 4 | 7.71 | 2.31 |
| Working with plants | 9 | 4.73 | 3.16 | 9 | 1.89 | 1.73 |

## Objective Five

Objective five looked to determine if a difference existed between agricultural and non-agricultural students on external influences. For the purpose of this study external influences were grouped into three main categories which included: prior

exposure to major, people of influence, and college or departmental factors. Means and standard deviations were used to describe these data.

Figure 4.5 illustrates mean scores produced for each item under exposure to major for agricultural students along with their rank order. The five highest items under this category were personal work experience ($M$ = 7.44, $SD$ = 6.64), related hobbies ($M$ = 7.33, $SD$ = 3.18), high school coursework ($M$ = 6.78, $SD$ = 5.44), related clubs or organizations ($M$ = 6.75, $SD$ = 3.53), and relatives in a similar field ($M$ = 6.54, $SD$ = 3.47). The remaining items under exposure to agriculture were newspaper articles ($M$ = 4.46, $SD$ = 2.68), internet sources ($M$ = 4.43, $SD$ = 2.76), technical journals ($M$ = 4.42, $SD$ = 2.80), television programs ($M$ = 4.41, $SD$ = 2.62), non-technical magazines ($M$ = 4.32, $SD$ = 2.63), radio broadcasts ($M$ = 3.67, $SD$ = 2.54).

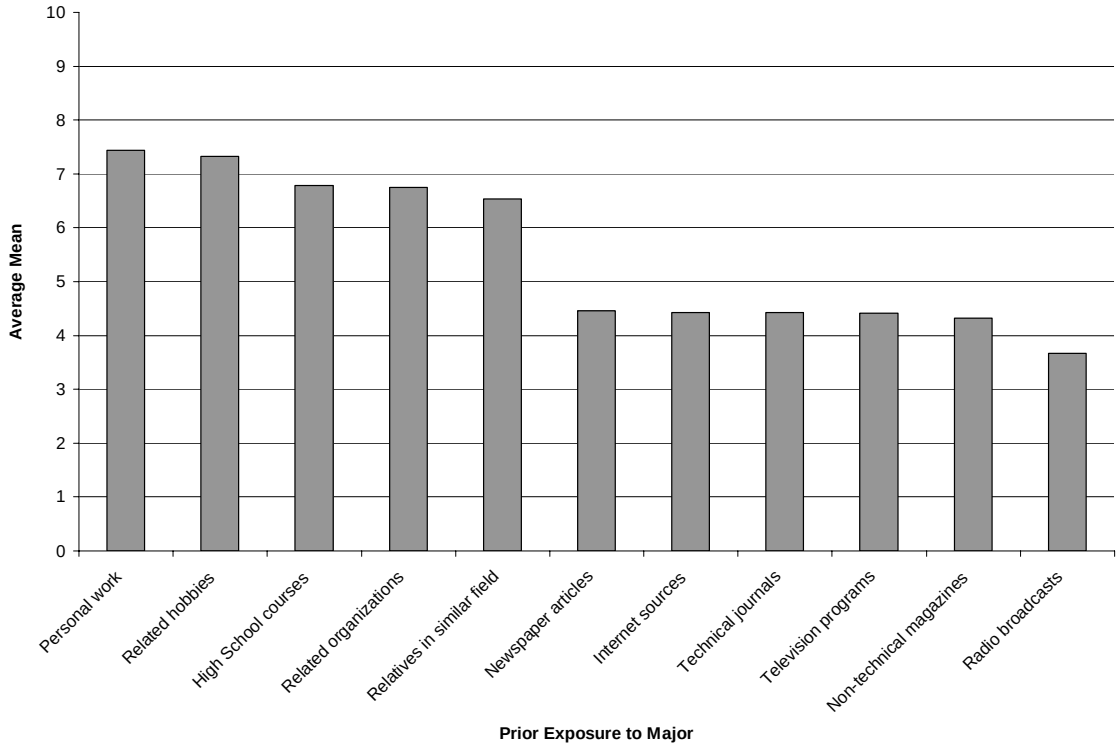


Figure 4.5. Mean scores of agricultural students on exposures to agriculture.

Figure 4.6 illustrates mean scores produced for each item under exposure to major for non-agricultural students along with their rank order. The five highest rated items for non-agricultural students were high school courses (*M* = 6.61, *SD* = 2.90), related hobbies (*M* = 5.90, *SD* = 3.58), relatives in a similar field (*M* = 5.65, *SD* = 3.59), internet sources (*M* = 5.50, *SD* = 2.95), and personal work experience (*M* = 5.43, *SD* = 3.66). The other items with lower mean scores were related clubs or organizations (*M* = 4.84, *SD* = 3.52), television programs (*M* = 4.69, *SD* = 2.95), non-technical magazines (*M* = 4.42, *SD* = 2.84), newspaper articles (*M* = 4.11, *SD* = 2.77), technical journals (*M* = 3.71, *SD* = 2.72), and radio broadcasts (*M* = 3.38, *SD* = 2.45).

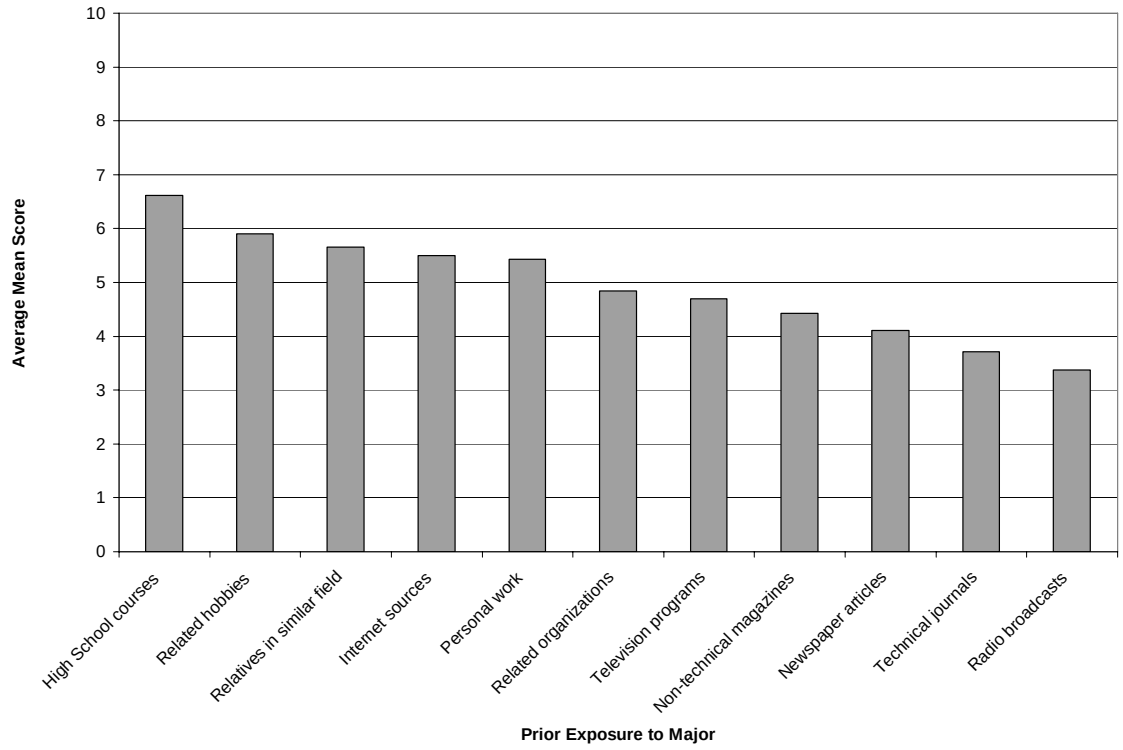


Figure 4.6. Mean scores of non-agricultural students on exposure to agriculture.

Table 4.15 compares mean scores and rank order for exposure to major by agricultural and non-agricultural majors. Agricultural students indicated higher mean scores on 8 of 11 items.

Table 4.15
*Perceived Differences on External Influences*

| | Agriculture ($n$ = 206) | | | Non-Agriculture ($n$ = 187) | | |
|---|---|---|---|---|---|---|
| Prior Exposure to Major | Rank | Mean | *SD* | Rank | Mean | *SD* |
| Personal work experience | 1 | 7.44 | 6.64 | 5 | 5.43 | 3.66 |
| Related hobbies | 2 | 7.33 | 3.18 | 2 | 5.90 | 3.58 |
| High School courses | 3 | 6.78 | 5.44 | 1 | 6.61 | 2.90 |
| Related clubs or organizations | 4 | 6.75 | 3.53 | 6 | 4.84 | 3.52 |
| Relatives in similar field | 5 | 6.54 | 3.47 | 3 | 5.65 | 3.59 |
| Newspaper articles | 6 | 4.46 | 2.68 | 9 | 4.11 | 2.77 |
| Internet sources | 7 | 4.43 | 2.76 | 4 | 5.50 | 2.95 |
| Technical journals | 8 | 4.42 | 2.80 | 10 | 3.71 | 2.72 |
| Television programs | 9 | 4.41 | 2.62 | 7 | 4.69 | 2.95 |
| Non-technical magazines | 10 | 4.32 | 2.63 | 8 | 4.42 | 2.84 |
| Radio broadcasts | 11 | 3.67 | 2.54 | 11 | 3.38 | 2.45 |

The second factor evaluated under external influences was people of influence. Figure 4.7 highlights the mean scores and rank order for agriculture students relative to people of influence. Mean scores greater than five were produced for items of parent or guardian ($M$ = 6.86, $SD$ = 2.8), professional in a similar field ($M$ = 6.32, $SD$ = 3.47), personal role model ($M$ = 6.16, $SD$ = 8.02), high school agri-science teacher ($M$ = 5.71,

*SD* = 3.73), friend in high school (*M* = 5.30, *SD* = 3.13). Other mean scores produced by agricultural majors ranged from 4.96 (*SD* = 3.41) to 3.26 (*SD* = 2.74). These items included friend in college (*M* = 4.96, *SD* = 3.41), high school science teacher (*M* = 4.86, *SD* = 3.17), extension professional (*M* = 4.57, *SD* = 3.5), sister or brother (*M* = 4.41, *SD* = 3.24), other high school teachers (*M* = 3.81, *SD* = 3.22), high school counselor (*M* = 3.52, *SD* = 3.01), and high school principal (*M* = 3.26, *SD* = 2.74).

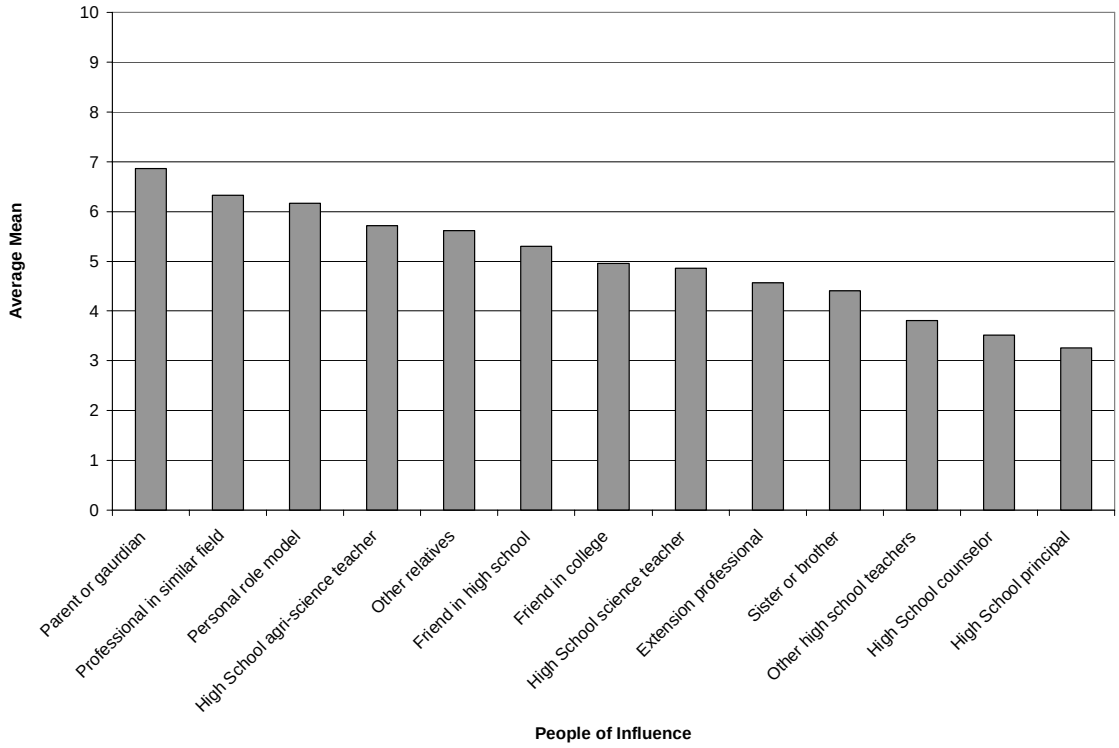


Figure 4.7. Mean scores of agricultural students on people of influence.

Figure 4.8 highlights the mean scores and rank order for non-agriculture students relative to people of influence. Mean scores greater than five were produced for items of parent or guardian (*M* = 7.03, *SD* = 2.72), professional in a similar field (*M* = 6.05, *SD* = 3.43), other relatives (*M* = 5.3, *SD* = 3.11), and personal role model (*M* = 5.23, *SD* = 3.71). The next five highest mean scores ranged from 4.90 (*SD* = 2.94) to 3.94 (*SD* =

2.97). These five items were friend in high school (*M* = 4.90, *SD* = 2.94), other high school teachers (*M* = 4.42, *SD* = 4.33), friend in college (*M* = 4.33, *SD* = 3.05), high school science teacher (*M* = 4.08, *SD* = 3.23), and sister or brother (*M* = 3.94, *SD* = 2.97). Remaining items from this list were high school counselor (*M* = 3.37, *SD* = 2.82), high school principal (*M* = 2.68, *SD* = 2.58), Extension professional (*M* = 2.40, *SD* = 2.39), and high school agri-science teacher (*M* = 1.99, *SD* = 2.20).

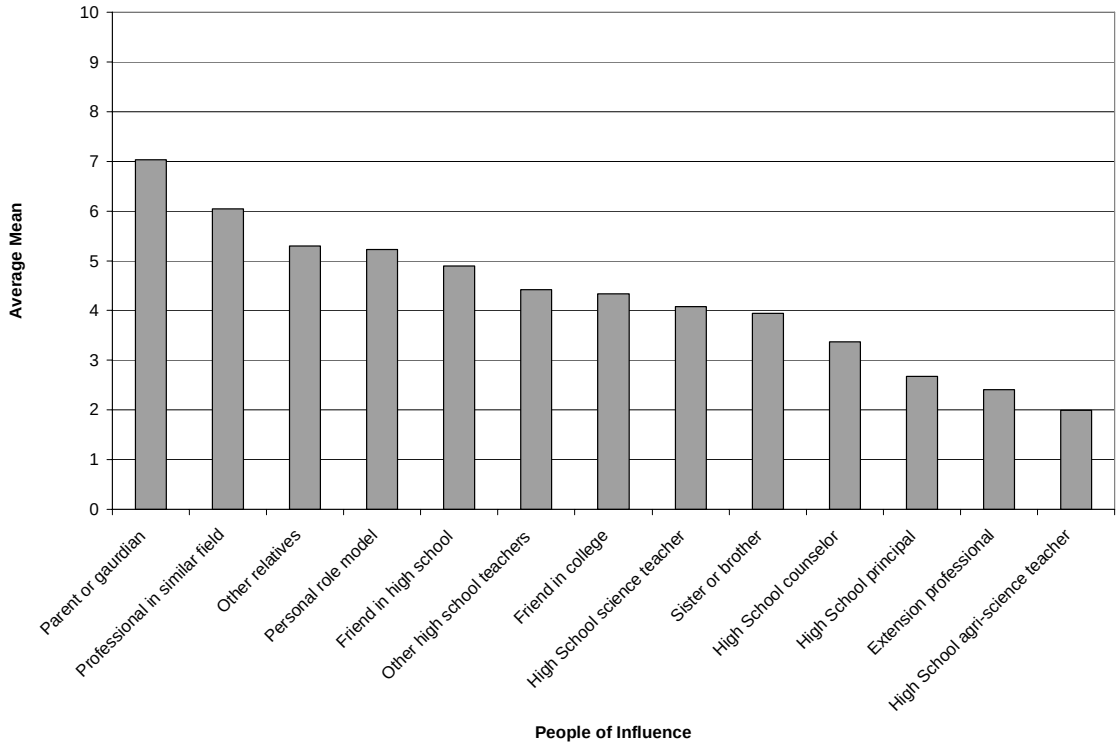


Figure 4.8. Mean scores of non-agricultural students on people of influence.

For agricultural majors, higher mean scores were found on 9 of 13 items. Parent or guardian was the most significant person of influence by both groups of agricultural students and non-agricultural students. Parent or guardian, was one of the two items where non-agricultural students had a higher mean score (*M* = 7.03, *SD* = 2.72) as

compared to agricultural students ($M$ = 6.86, $SD$ = 2.80). Table 4.16 compares mean scores and rank order for people of influence by agricultural and non-agricultural majors.

Table 4.16
*Perceived Influence of Individual Persons*

| | Agriculture ($n$ = 206) | | | Non-Agriculture ($n$ = 187) | | |
|---|---|---|---|---|---|---|
| People of Influence | Rank | Mean | SD | Rank | Mean | SD |
| Parent or guardian | 1 | 6.86 | 2.8 | 1 | 7.03 | 2.72 |
| Professional in similar field | 2 | 6.32 | 3.47 | 2 | 6.05 | 3.43 |
| Personal role model | 3 | 6.16 | 8.02 | 4 | 5.23 | 3.71 |
| High School agri-science teacher | 4 | 5.71 | 3.73 | 13 | 1.99 | 2.2 |
| Other relatives | 5 | 5.62 | 3.26 | 3 | 5.3 | 3.11 |
| Friend in high school | 6 | 5.3 | 3.13 | 5 | 4.9 | 2.94 |
| Friend in college | 7 | 4.96 | 3.41 | 7 | 4.33 | 3.05 |
| High School science teacher | 8 | 4.86 | 3.17 | 8 | 4.08 | 3.23 |
| Extension professional | 9 | 4.57 | 3.5 | 12 | 2.4 | 2.39 |
| Sister or brother | 10 | 4.41 | 3.24 | 9 | 3.94 | 2.97 |
| Other high school teachers | 11 | 3.81 | 3.22 | 6 | 4.42 | 3.46 |
| High School counselor | 12 | 3.52 | 3.01 | 10 | 3.37 | 2.82 |
| High School principal | 13 | 3.26 | 2.74 | 11 | 2.68 | 2.58 |

College or departmental factors was the final category under external influences. Figure 4.9 demonstrates the mean scores and rank order for items in this category as found for agricultural students. The five highest rated items for college or departmental

factors influencing agricultural majors were friendly college atmosphere (*M* = 7.22, *SD* = 2.87), teaching reputation in college (*M* = 7.04, *SD* = 6.45), faculty's friendliness (*M* = 6.96, *SD* = 3.00), teaching reputation in department (*M* = 6.57, *SD* = 3.03), and departmental clubs or activities (*M* = 6.23, *SD* = 3.34). Personal visit with college representatives (*M* = 5.61, *SD* = 3.55), activities on TTU campus (*M* = 5.51, *SD* =3.27), and TTU internet sources (*M* = 5.36, *SD* = 3.17) also showed mean scores greater than five. College or departmental factors rounding out the list for agricultural students were departmental scholarships (*M* = 4.87, *SD* = 3.39), informational pamphlets (*M* = 4.71, *SD* = 2.84), college alumni (*M* = 4.67, *SD* = 3.47), high school visits from TTU representatives (*M* = 4.56, *SD* = 3.56), and advertisements about major (*M* = 4.44, *SD* = 3.03).

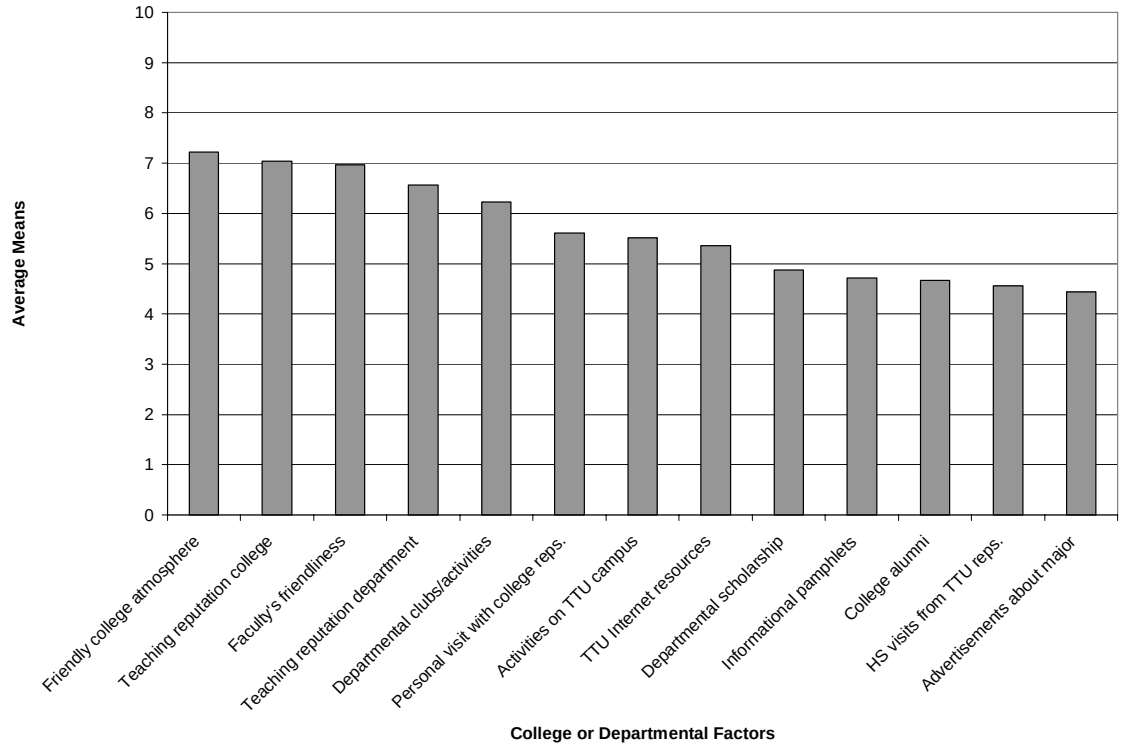


Figure 4.9. Mean score of agricultural students on college or departmental factors.

Figure 4.10 illustrates mean scores and rank order of college or departmental factors for non-agricultural majors. Friendly college atmosphere (*M* = 5.7, *SD* = 3.23), teaching reputation of department (*M* = 5.48, *SD* =3.4), teaching reputation of college (*M* = 5.33, *SD* = 3.15), TTU internet sources (*M* = 4.91, *SD* = 3.40), and faculty's friendliness (*M* = 4.88, *SD* = 3.08) were the five highest rated items by non-agricultural participants. Remaining items included informational pamphlets (*M* = 4.76, *SD* = 3.26), personal visit with college representatives (*M* = 4.64, *SD* = 3.26), activities on TTU campus (*M* = 4.20, *SD* = 3.06), advertisements about major (*M* = 4.11, *SD* = 3.31), departmental clubs or activities (*M* = 4.02, *SD* = 2.89), college alumni (*M* = 3.36, *SD* = 3.08), high school visits from TTU representatives (*M* = 3.08, *SD* = 2.91), and departmental scholarships (*M* = 2.96, *SD* = 2.86).

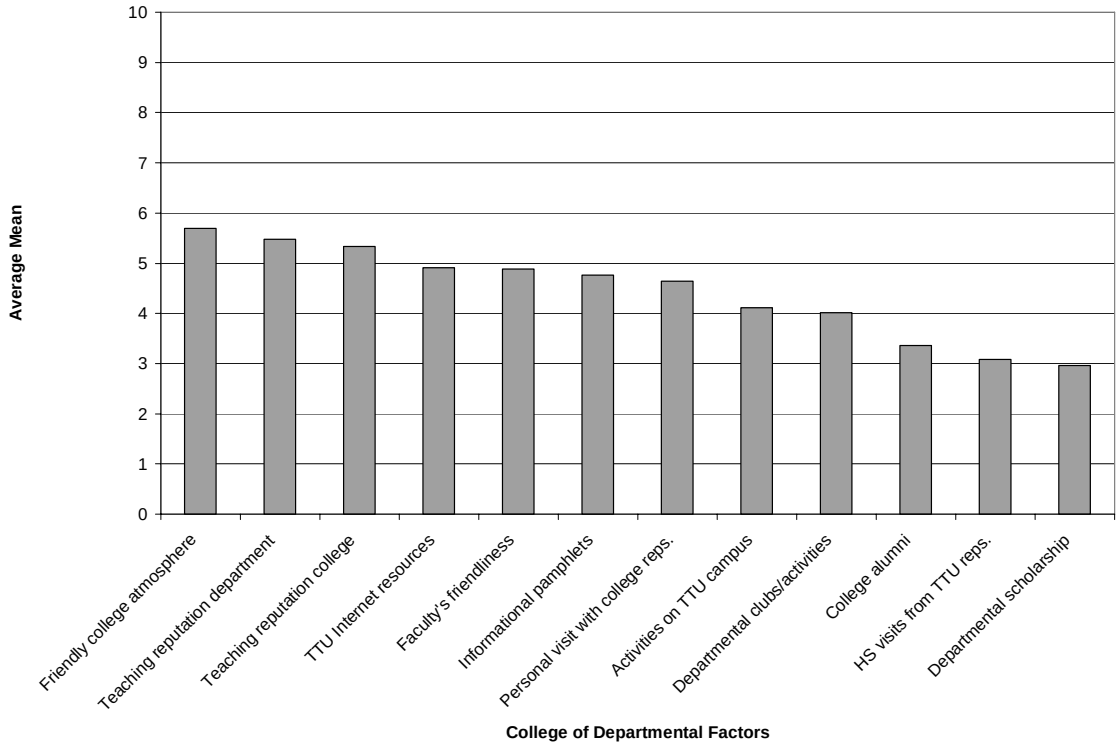


Figure 4.10. Mean score of non-agricultural students on college or departmental factors.

Table 4.17 compares mean scores and rank order for college or departmental factors by agricultural and non-agricultural majors. Agricultural students indicated higher mean scores on 12 of 13 items. The range of scores for agricultural students was from 7.22 (*SD* =2.87) to 4.44 (*SD* = 3.03). Non-agricultural students had a range of scores from 5.70 (*SD* = 3.23) to 3.08 (*SD* = 2.86). The only item which was found to have higher mean scores for non-agricultural students was informational pamphlets (*M* = 4.76, *SD* = 3.08). The mean score found on this item for agricultural students was 4.71 (*SD* = 2.84).

Table 4.17
*Perceived Influence of College or Departmental Factors*

| | Agriculture ($n$ = 206) | | | Non-Agriculture ($n$ = 187) | | |
|---|---|---|---|---|---|---|
| College or Departmental Factors | Rank | Mean | SD | Rank | Mean | SD |
| Friendly college atmosphere | 1 | 7.22 | 2.87 | 1 | 5.7 | 3.23 |
| Teaching reputation college | 2 | 7.04 | 6.45 | 3 | 5.33 | 3.4 |
| Faculty's friendliness | 3 | 6.96 | 3 | 5 | 4.88 | 3.15 |
| Teaching reputation department | 4 | 6.57 | 3.03 | 2 | 5.48 | 3.4 |
| Departmental clubs/activities | 5 | 6.23 | 3.34 | 10 | 4.02 | 3.08 |
| Personal visit with college reps. | 6 | 5.61 | 3.55 | 7 | 4.64 | 3.26 |
| Activities on TTU campus | 7 | 5.51 | 3.27 | 9 | 4.11 | 3.26 |
| TTU Internet resources | 8 | 5.36 | 3.17 | 4 | 4.91 | 3.31 |
| Departmental scholarship | 9 | 4.87 | 3.39 | 13 | 2.96 | 2.89 |
| Informational pamphlets | 10 | 4.71 | 2.84 | 6 | 4.76 | 3.08 |
| College alumni | 11 | 4.67 | 3.47 | 11 | 3.36 | 2.91 |
| HS visits from TTU reps. | 12 | 4.56 | 3.56 | 12 | 3.08 | 2.86 |
| Advertisements about major | 13 | 4.44 | 3.03 | 8 | 4.2 | 3.06 |

External influences were measured on 37 individual items in the categories of exposure to major (11 items), people of influence (13 items), and college or departmental factors (13 items). With agricultural participants, 19 items had a mean score of 5.0 or more. Twelve items were found to have a mean score greater than 5.0 for non-

agricultural students. Table 4.18 lists the 19 items with means greater than 5.0 for agricultural participants along with the factors' means and standard deviations. The rank, means, and standard deviations for the 19 agricultural factors are also included for non-agricultural students. Of the 19 items agricultural students indicated, five items were related to exposure to major, six items were related to people of influence, and eight items were related to college or departmental factors.

Table 4.18
*External Influences of Agricultural Students with Mean Scores Greater than 5.0.*

| | Agriculture (*n* = 206) | | | Non-Agriculture (*n* = 187) | | |
|---|---|---|---|---|---|---|
| External Influences | Rank | Mean | SD | Rank | Mean | SD |
| Personal work[a] | 1 | 7.44 | 6.64 | 9 | 5.43 | 3.66 |
| Related hobbies [a] | 2 | 7.33 | 3.18 | 4 | 5.90 | 3.58 |
| Friendly college atmosphere [c] | 3 | 7.22 | 2.87 | 5 | 5.7 | 3.23 |
| Teaching reputation college [c] | 4 | 7.04 | 6.45 | 10 | 5.33 | 3.15 |
| Faculty's friendliness [c] | 5 | 6.96 | 3 | 15 | 4.88 | 3.08 |
| Parent or guardian [b] | 6 | 6.86 | 2.8 | 1 | 7.03 | 2.72 |
| High school courses [a] | 7 | 6.78 | 5.44 | 2 | 6.61 | 2.90 |
| Related organizations [a] | 8 | 6.75 | 3.53 | 16 | 4.84 | 3.52 |
| Teaching reputation department [c] | 9 | 6.57 | 3.03 | 8 | 5.48 | 3.40 |
| Relatives in similar field [a] | 10 | 6.54 | 3.47 | 6 | 5.65 | 3.59 |
| Professional in similar field [b] | 11 | 6.32 | 3.47 | 3 | 6.05 | 3.43 |
| Departmental clubs/activities [c] | 12 | 6.23 | 3.34 | 27 | 4.02 | 3.08 |
| Personal role model [b] | 13 | 6.16 | 8.02 | 12 | 5.23 | 3.71 |
| High School agri-science teacher [b] | 14 | 5.71 | 3.73 | 37 | 1.99 | 2.20 |
| Other relatives [b] | 15 | 5.62 | 3.26 | 11 | 5.30 | 3.11 |
| Personal visit with college representatives[c] | 16 | 5.61 | 3.55 | 19 | 4.64 | 3.26 |
| Activities on TTU campus [c] | 17 | 5.51 | 3.27 | 25 | 4.11 | 3.31 |
| TTU Internet resources [c] | 18 | 5.36 | 3.17 | 7 | 5.50 | 2.95 |
| Friend in high school [b] | 19 | 5.3 | 3.13 | 14 | 4.90 | 2.94 |

[a] Prior exposure to major. [b] People of influence. [c] College or departmental factors.

## Objective Six

Objective six was developed to determine if a relationship existed between psychological preferences measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major. Pearson product-moment correlation coefficients were calculated to identify possible relationships between MBTI® dichotomies and external influences. MBTI® measured participants' preferences in the dichotomies of extravert-introvert, sensing-intuition, thinking-feeling, and judging-perceiving. For external influences, a summative mean was calculated for each category which included exposure to major, people of influence, and college or departmental factors. While these summated means had little power in interpretation, they served as comparison between the two groups.

The correlation coefficients between extravert-introvert and external influences were -.143 for exposure to major, -.078 for people of influence, and -.093 for college or departmental factors. The correlation coefficients between sensing-intuition and these same external factors were .014 for exposure to major, -.016 for people of influence, and -.038 for college or departmental factors. The correlation coefficients produced within the thinking-feeling dichotomy were .033 (exposure to major), .030 (people of influence), and -.032 (college or departmental factors). Finally within the judging-perceiving preferences, correlation coefficients were produced of -.001 for exposure to major, .021 for people of influence, and -.123 for college or departmental factors. All correlations from these findings were low or negligible whether positive or negative (Davis, 1971). Table 4.19 further demonstrates these associations.

Table 4.19
*Pearson Product-Moment Correlation Coefficients Between MBTI® Preferences and External Influences*

| | E-I | S-N | T-F | J-P |
|---|---|---|---|---|
| Exposure to Major | -.143 | .014 | .033 | -.001 |
| People of Influence | -.078 | -.016 | .030 | .021 |
| College or Departmental Factors | -.093 | -.038 | -.032 | -.123 |

# CHAPTER V

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Purpose and Objectives

The purpose of this study was to examine the factors that influence selection of college major by students entering agricultural and non-agricultural degree programs at Texas Tech University in the fall 2007. Moreover, this study examined the role psychological type has upon students' selection of an academic major. In order to guide this study the following research objectives were developed:

1. Describe demographic characteristics of first year students majoring in agricultural and non-agricultural degree programs.
2. Describe the most frequent MBTI® preferences among agricultural and non-agricultural students.
3. Describe the most frequent MBTI® four letter combinations among agricultural and non-agricultural students.
4. Determine if a difference existed between agricultural and non-agricultural students on student characteristics and backgrounds.
5. Determine if a difference existed between agricultural and non-agricultural students on external influences.
6. Determine if a relationship existed between psychological type measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major.

## Limitations

Data from this study were collected from first time college students enrolling at Texas Tech University in fall 2007. Caution should be utilized in interpretation of results and generalizations to other populations of students should not occur. This study was confined to students' initial selection of an academic major and did not account for student retention, or changing of college majors.

## Research Design

This quantitative study was non-experimental and utilized a descriptive-correlation research design. The relationships evaluated in this study were factors associated to how freshman students choose an academic major. The variables explored included student characteristics and backgrounds, external influences, and psychological type. Data pertaining to student characteristics and backgrounds and external influences upon selection of academic major were recorded in a descriptive questionnaire adapted from Wildman (1997). Psychological type was measured by the Myers-Briggs Type Indicator (MBTI®) Form M.

## Population and Sample

The target population for this study was identified as first time college students entering into the College of Agricultural Sciences and Natural Resources at Texas Tech University in fall 2007. The accessible population for this study was all entering freshman who attended a New Student Orientation (NSO) session in the summer of 2007 and selected an academic major in the College of Agricultural Sciences and Natural

Resources (*n*=207). In order to achieve the purpose of this study, a nonequivalent control group was established from a convenience sample of freshman students enrolled in IS1100: Tech Transition (*n*=187).

## Instrumentation

The participants of this study were asked to complete two data collection instruments. The first instrument, the MBTI®, was used to measure psychological type of student participants. Factors in High School that Influence Choice of Major in College developed by Wildman (1997) served as the basis for the second instrument. This instrument looked to discover what factors in high school influenced the choice of major by agricultural students. For the purpose of this study, this questionnaire was adapted into two forms, one for agricultural students and a second for non-agricultural students. Both instruments contained similar items but were worded appropriately for students in agricultural and non-agricultural degree programs.

## Data Collection Procedures

Data collection for this study occurred in two parts for the two groups of students participating in this study. The two groups were entering freshman agricultural students and first time non-agricultural college students enrolled in IS1100: Tech Transition.

All participants were verbally asked to participate in this study and were notified the study was voluntary. An incentive was offered by the researchers who agreed to share students' MBTI® results with those who were interested. Solicitation of participants was followed by instructions for both MBTI® Form M and the Survey of

Incoming Students. MBTI® Form M was administered by the researchers first. As students completed this instrument they would raise their hand to receive the Survey of Incoming Students. However students were asked to keep both instruments until completion of the second so the instruments could be coded for correlation of MBTI® Form M and the Survey of Incoming Students.

## Data Analysis

The objectives of this study guided the data analysis procedures utilized in this research study. Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 15.0. Data were imported into SPSS from Microsoft Excel from which data were initially entered. For the first five objectives of this study, frequencies, percentages, means, and standard deviations were used for description and comparison of factors which influenced entering students' initial selection of academic majors. The sixth objective sought to determine if relationships existed between psychological type and external influences upon selection of an academic major. In order to measure this objective Pearson product-moment correlation coefficients were calculated.

## Summary of Findings

### Summary of Objective One

A total of 393 students participated in this study. Of this 206 students had declared agricultural majors within the College of Agricultural Sciences and Natural

Resources, while 187 students had declared non-agricultural majors in eight other colleges at Texas Tech University.

Of agricultural students in this study, 61.2% were male and 38.8% were female while 49.3% of non-agricultural students were male and 56.1% were female. From the agricultural group of students, 87.6% marked ethnicity as White/Non-Hispanic as did 84.6% of the non-agricultural students. Other ethnicities reported by students included Hispanic, Native American, Black/African American, Asian/Pacific Islander and other.

The vast majority of students in this study listed state residence as Texas with 92.6% of agricultural students, and 93.5% of non-agricultural students reporting this. In terms of permanent or home residence, the largest representation of agricultural students indicated coming from metropolitan areas (37.6%). Rural-farm had the second highest representation for agricultural students at 30.2%, and was followed by small city/town at 24.3% and rural non-farm at 7.9%. Non-agricultural students also indicated metropolitan area (68.4%) as the most represented home residence although by a greater margin. Small city/town (18.2%) was represented next and was followed by rural-farm at 10.2% and rural-non farm at 3.2%.

For this study all student age ranged from 18 years up to twenty years. In terms of class rank the mean percentage included students being in the top 23.4% of their high school graduating class. Agricultural students came in at an average of being in the top 22.6% of their class and non-agricultural students came in the top 24.2% ($n$ = 187) of their particular group of graduates.

Summary of Objective Two

Overall, students' dominant psychological preferences determined by MBTI® were Extraversion (78.1%), Feeling (67.5%), and Perceiving (66.8%). With the dichotomy of Sensing (50%) and Intuition (50%) a perfect split was found between the subjects who completed instrumentation. For agricultural students the most prevalent set of opposites were Extraversion (76.0%), Sensing (52.5%), Feeling (59.3%), and Perceiving (67.2%). The non-agricultural students most frequent set of opposites were Extraversion (80.4%), Intuition (52.7%), Feeling (76.6%), and Perceiving (66.3%). The largest disparity in preferences between the two groups of students came between Thinking and Feeling where agriculture students were 59.3% Feeling, and Non-Agricultural Students were 76.6% Feeling. Other dichotomies were similar in percentages between the two audiences.

Summary of Objective Three

For the complete group of subjects, the three most prevalent psychological types were ENFP (26.4%), ESFP (13.0%), and ESFJ (9.6%). The three least prevalent types for the entire group were INTJ (0.3%), INFJ (1.3%), and INTP (2.1%). The three highest percentages found among agricultural students were ENFP (22.7%), ESTP (11.3%), and ESFP (10.8%). The three lowest findings for agricultural students were INTJ (0.0%) with no students recorded, followed by INFJ (2.0%) and ISFJ (2.0%). The group of non-agricultural students most common four letter combinations were ENFP (30.6%), ESFP (15.3%), and ESFJ (12.0%). The least common combinations for non-agricultural students were INFJ (0.5%), INTJ (0.5%), and INTP (1.6%).

Summary of Objective Four

Virtually all agricultural students (99.5%) and non-agricultural students (97.3%) indicated participation in some type of high school activity, club, or organization. The three most frequently reported high school activities by agricultural students were athletics (77.7%), FFA (57.3%), and National Honor Society (46.1%). The 4-H Club was the sixth most reported activity by agricultural majors with 32.0%. With non-agricultural majors, the three most commonly reported activities were athletics (76.5%), National Honor Society (50.3%), and music or drama electives (40.1%). FFA and 4-H were the least reported activities by non-agricultural majors.

The large majority of agricultural students (48.8%) and non-agricultural students (61.0%) indicated making their decision to attend Texas Tech University in the 12$^{th}$ grade. Similar results were shown for decision of college major with the majority of agricultural students (52.2%) and non-agricultural students (41.7%) reporting final decisions related to this major selection also occurring during the 12$^{th}$ grade. When asked if they had knowledge of possible career opportunities within their selected major while in high school 76.0% of agricultural students, and 79.0% of non-agricultural students answered yes to this question. When these two groups of students were asked if they currently believed there were a lot of job opportunities within their areas of study, 93.1% of agricultural students and 93.5% of non-agricultural students also said yes.

Agricultural (66.5%) and non-agricultural (61.5%) students were similar in terms of percentages of students who had completed college level coursework prior to entering Texas Tech University. In terms of persistence through their current major, 44.3% of agricultural students believed they "probably" would not change their major, 40.4% felt

they "possibly" would change majors, and 15.3% said they "definitely" would not change their major. Of non-agricultural students, 44.1% indicated they "probably" would not change majors, 33.9% believed they "possibly" would change their major, and 22.0% of this group felt they "definitely" would not change majors. Also, only 12.8% of agricultural students indicated they might change to a non-agricultural degree program.

The majority of agricultural students (50.8%) indicated their immediate family received no income from agriculture. Of agriculture students who did indicate family income from agriculture, 19.0% of respondents showed family earnings of 76% to 100%. This was followed by 11.2% of agricultural students who showed family earnings to range from 1% to 25%, with 10.1% of students next indicating their family earnings being from 26% to 50%, and finally 8.9% of students indicating an agricultural earning range of 51% to 75%. For non-agricultural majors, 82.6% of students showed their immediate family received no income from agriculture.

Beyond family earnings from agriculture, participants were also asked to indicate types of agricultural involvements that might exist. Livestock production was first for family involvement by both agricultural students (38.3%) and non-agricultural students (11.8%). This was followed by crop production for both agricultural and non-agricultural students at 31.1% and 5.3% respectively. Other family associations to agriculture, by agricultural majors, were farm inputs (11.7%), other (11.2%), Extension/education (5.3%), marketing (4.9%), processing (4.4%), veterinarian (2.9%), and wholesale/retail (2.4%). For the non-agricultural students, the other family associations were other (5.9%), marketing (4.8%), farm inputs (4.3%), wholesale/retail (2.7%), processing (2.1%), veterinarian (1.1%), and Extension/education (0.5%).

Agricultural and non-agricultural students were also asked to indicate other types of associations that might exist between their family and agriculture. With agricultural majors, the largest reported family associations from this data was FFA (36.4%), followed by 4-H (25.2%), agricultural employment (24.2%), hobby farm (21.8%), other (7.3%), and government agency (3.4%). The largest association identified by non-agricultural majors was a hobby farm (9.1%), followed by agricultural employment (5.3%), FFA (4.8%), 4-H (4.3%), government agency (3.2%), and other (2.7%).

Other items under objective four which aimed to identify students' associations to agriculture looked at agricultural work experiences and agricultural science courses taken during high school. Over half of the study's participants majoring in agriculture (58.3%) indicated they had taken agricultural science courses in high school as opposed to 41.7% who indicated they had not. With non-agricultural students, only 14.4% reported taking agricultural course.

The most common findings for agricultural students were 56.3% of this group indicated work on a family farm or ranch and 35.4% showed similar work on a non-family farm or ranch. These top work experiences were followed by work experiences in wildlife management (12.6%), other agricultural work (12.6%), work for a veterinarian (12.1%), landscaping business (12.1%), horticulture (11.7%), food processing (8.7%), golf course (8.3%), Extension service (7.8%), forestry-related (4.4%), and agricultural biology experience (4.4%).

The most common agricultural work experience for non-agriculture majors was also work on a family farm or ranch (12.3%) with second being work on a golf course (8.6%). Other findings for these participants were landscaping business (6.4%, $n = 12$),

work on non-family farm or ranch (5.3%), other agricultural work (4.8%), wildlife management (3.7%), work for a veterinarian (3.7%), horticulture (3.2%), food processing (2.1%), Extension service (1.6%), forestry-related (1.6%), and agricultural biology experience (1.6%).

Finally, students were asked for information on special considerations they may have made in selecting an academic major. Agricultural respondents indicated the top five items they gave the most consideration to as future job market of career ($M$ = 7.77, $SD$ = 2.39), working with people ($M$ = 7.73, $SD$ = 2.51), field (out-of-office) work ($M$ = 7.51, $SD$ = 3.05), working outdoors ($M$ = 7.44, $SD$ = 3.1), and income gained after college ($M$ = 7.42, $SD$ = 2.68). The top five items of consideration for non-agricultural students were future job market of career ($M$ = 8.55, $SD$ = 2.12), income gained after college ($M$ = 8.36, $SD$ = 2.24), working with people ($M$ = 8.30, $SD$ = 2.15), prestige of career ($M$ = 7.71, $SD$ = 2.31), and location of career ($M$ = 7.29, $SD$ = 2.62).

Summary of Objective Five

With exposure to major, the five highest items under this category for agricultural participants were personal work experience, related hobbies, high school coursework, related clubs or organizations, and relatives in a similar field. The range in means for these five items was 7.44 ($SD$ =6.64) to 6.54 ($SD$ = 3.47). The range of remaining items for agricultural students was much lower at 4.46 ($SD$ = 2.0) to 3.67 ($SD$ = 2.54). These remaining items included newspaper articles, internet sources, technical journals, television programs, non-technical magazines, and radio broadcasts.

The five highest rated items for non-agricultural students were high school courses, related hobbies, relatives in a similar field, internet sources, and personal work experience. The means for these items were from 6.61 (*SD* = 6.61) to 5.43 (*SD* = 3.66). The other items with lower mean scores were related clubs or organizations, television programs, non-technical magazines, newspaper articles, technical journals, and radio broadcasts. Findings from these six exposures showed means which varied from 4.84 (*SD* = 3.52) to 3.38 (*SD* = 2.45). Overall, agricultural students indicated higher mean scores on 8 of 11 items. The three items non-agricultural students measured higher were Internet sources, television programs, and non-technical magazines.

Significant people were the second factor evaluated under external influences. For agricultural students, six groups of people generated means over 5.0 and ranged from 6.86 (*SD* = 2.8) to 5.30 (*SD* = 3.13). These six influences included parent or guardian as most influential followed by professional in a similar field, personal role model, high school agri-science teacher, and friend in high school. Other mean scores produced by agricultural majors ranged from 4.96 (*SD* = 3.41) to 3.26 (*SD* = 2.74). These remaining groups of people included friend in college, high school science teacher, extension professional, sister or brother, other high school teacher, high school counselor, and high school principal.

For significant people, non-agricultural participants indicated means higher than five on only four sets of people represented. These four means were from 7.03 (*SD* = 2.72) down to 5.23 (*SD* = 3.71) and included parent or guardian as highest, with professional in a similar field, other relatives, and personal role models next. The next five highest mean scores ranged from 4.90 (*SD* = 2.94) to 3.94 (*SD* = 2.97). These five

groups were friend in high school, other high school teachers, friend in college, high school science teacher, and sister or brother. The remaining people from this list included high school counselor, high school principal, Extension professional, and high school agri-science teacher. The means for these four were from 3.37 (*SD* = 2.82) to 1.99 (*SD* = 2.20).

College or departmental factors was the final category under external influences. The five highest rated items for this group of factors influencing agricultural majors were friendly college atmosphere, teaching reputation in college, faculty's friendliness, teaching reputation in department, and departmental clubs or activities. Means from these factors were from 7.22 (*SD* = 2.87) to 6.23 (*SD* = 3.34). Personal visit with college representatives, activities on TTU campus, and TTU internet sources also showed mean scores greater than five and were from 5.61 (*SD* = 3.55) to 5.36 (*SD* = 3.17). College or departmental factors rounding out the list for agricultural students were departmental scholarships, informational pamphlets, college alumni, high school visits from TTU representatives, and advertisements about major. These items produced mean scores from 4.87 (*SD* = 3.39) to 4.44 (*SD* = 3.03).

With means from 5.7 (*SD* = 3.23) to 4.88 (*SD* = 3.08) friendly college atmosphere, teaching reputation of department, teaching reputation of college, TTU internet sources, and faculty's friendliness were the five highest rated items by non-agricultural participants. Remaining items included informational pamphlets, personal visit with college representatives, activities on TTU campus, advertisements about major, departmental clubs or activities, college alumni, high school visits from TTU

representatives, and departmental scholarships. Mean scores for these factors by non-agricultural students ranged from 4.76 (*SD* = 3.08) to 2.96 (*SD* = 2.89).

Finally, external influences were measured on 37 individual items in the categories of exposure to major, people of influence, and college or departmental factors. With agricultural participants, 19 items had a mean score of 5.0 or more. Twelve items were found to have a mean score greater than 5.0 for non-agricultural students. The five highest rated external influences by agricultural majors were personal work and related hobbies, from the grouping of exposure to major, along with friendly college atmosphere, teaching reputation of college and faculty's friendliness from the listing of college or departmental factors. The highest rated factor from the significant people category was parent or guardian and came in sixth overall. Parent or guardian was the highest rated factor for non-agricultural students.

Summary of Objective Six

Objective six was developed to determine if a relationship existed between psychological preferences measured from MBTI® and external influences upon agricultural and non-agricultural students' selection of college major. Pearson product-moment correlation coefficients were calculated to identify possible relationships between MBTI® dichotomies and external influences. The correlation coefficients between extravert-introvert and external influences were -.143 for exposure to major, -.078 for people of influence, and -.093 for college or departmental factors. The correlation coefficients between sensing-intuition and these same external factors were .014 for exposure to major, -.016 for people of influence, and -.038 for college or

departmental factors. The correlation coefficients produced within the thinking-feeling dichotomy were .033 (exposure to major), .030 (people of influence), and -.032 (college or departmental factors). Finally within the judging-perceiving preferences, correlation coefficients were produced of -.001 for exposure to major, .021 for people of influence, and -.123 for college or departmental factors. All correlations from these findings were low or negligible whether positive or negative (Davis, 1971).

## Conclusions

### Conclusions from Objective One

1. Agricultural and non-agricultural participants in this study were very similar in terms of age, class rank, state residence, and ethnicity. However with home residence and gender, these two groups of students were more dissimilar in nature.
2. While metropolitan area represented home for the greatest percentage of students, almost twice as many non-agricultural students (68%) came from this environment as did agricultural students (38%). Disparity was also found for students from rural-farms as three times as many agricultural students (30%) indicated this as home as did non-agricultural students (10%).
3. Overall, participants in this study were 53% male and 47% female. These findings were very similar to enrollments at Texas Tech University (TTU) for fall 2006 where the undergraduate population was 55% male and 45% female (Department of Institutional and Research Management [DIRM]). However, the two groups of students in this study deviated slightly from prior numbers as the agricultural group

was 61% male, and the non-agricultural group was 56% female. Also slightly skewed in relation to gender, are that in a national report by Goecker et al. (2004), it was shown that females (53%) were predominant in agricultural degree programs as compared to males (47%).

4. With ethnicity, the majority of both agricultural and non-agricultural participants were classified as White/Non-Hispanic. However, the non-agricultural students showed slightly more ethnic diversity at 15.6% minority enrollments as compared to 12.4% for agricultural participants. Yet, reported numbers for TTU undergraduates were 80% White, 12% Hispanic, 3.5% Black, 3% Asian, and 0.6% Native American (DIRM, 2006). National percentages found 16% of all agricultural students to be from ethnic minorities (Goecker et al., 2004).
5. In relation to state residence agricultural and non-agricultural students were virtually identical to one another. With agricultural respondents in this study, 93% were in-state students from Texas. Of non-agricultural respondents, 94% were also from Texas. These numbers were consistent with previous DIRM reports which showed first year college students at TTU to be 93.5% from Texas in the fall 2006 class of entering students.

Discussion from Objective One

Agricultural students in this study came from a variety of settings with representations of students from both urban and rural environments. From this it appears that the College of Agricultural Sciences and Natural Resources at Texas Tech University has been affective in attracting both students from small towns and rural farms along with

students from metropolitan areas. However with indications of rural populations declining in numbers in many areas, the College of Agricultural Sciences and Natural Resources will need to continue to grow numbers of metropolitan students in the program without sacrificing recruitment of students from rural settings. With this in mind, the College of Agricultural Sciences and Natural Resources will need to continue to focus recruitment efforts toward multiple communities along with multiple audiences of students which will represent multiple ethnicities along with both males and females.

Conclusions from Objective Two

1. The large majority of agricultural students in this study had a preference toward extraversion at 76% as did non-agricultural students at 80%. These findings of Texas Tech students were dissimilar to findings at the University of Nebraska where 54% of agricultural students preferred introversion over extraversion at 46% (Barrett, 2007). Bayne (2004) also found discrepancy in a national sample of US adults who were evenly split between the E-I opposites.
2. From the dichotomy of S-N, overall participants in this study were half thinking and half feeling. When divided, agricultural students did have a slightly higher number of students with a preference toward sensing, while non-agricultural students had a slightly higher number of students with a preference toward intuition. Again, these numbers varied from numbers produced by Barrett whose sample of agriculture students resulted in 84% of respondents with a sensing preference.
3. More agricultural and non-agricultural students were feelers than thinkers. However, the greatest discrepancy in percentages between the two groups was found within this

dichotomy. Sixty percent of agricultural students preferred feeling while 76% of non-agricultural students did. Yet caution should be used as results from this set of opposites may be reflective of differences in gender more so than relationship to major. Nationally, Bayne found US females to 24% T and 76% F, this varied from males which were identified as 57% T and 43% F.

4. Students who favored perceiving outnumbered judgers by a two to one margin for both groups of students in this study. This was almost opposite to what Barrett (2007) found at the University of Nebraska where 57% of students preferred judging. Barrett's numbers were more in line with national percentages for US adults which showed the population to be 54% J and 46% P.
5. The findings for each of the four preferences of E-I, S-N, T-F, and J-P appear to be somewhat unique to this particular set of Texas Tech University students. Findings by Bayne (2004), and Barrett (2004) were dissimilar to this sample, yet also showed discrepancies from one another.

Discussion from Objective Two

With differences found between the psychological preferences of this study's participants and other populations of students and adults, it may be plausible that the culture of Texas Tech University simply attracts more E, N, and P students. Also plausible might be that the communities, from which students in this study came, may naturally have a higher number of students with preferences toward these particular opposites.

Conclusions from Objective Three

1. Overwhelmingly, the dominant MBTI® four letter combination was ENFP for agricultural (23%), and non-agricultural (30.6%) participants. The number of students with an ENFP type doubled the next grouping of students for agricultural and non-agricultural participants. The second greatest combination for agricultural students was ESTP (11%) while ESFP (15%) was second highest for non-agricultural participants.
2. The three least found MBTI® preferences for agricultural students were INTJ, INFJ, and ISFJ. For non-agricultural students, the lowest representations for type were INFJ, INTJ, and INTP.
3. Overall the range in the 16 MBTI® types varied from 26% down to 0.3% for this group of respondents. Nationally, Bayne (2007) indicated a range of types from 12% to 2%.

Discussion from Objective Three

Again, just as with the individual preferences, differences in the proportions of the psychological types found from students in this research are dissimilar from previous findings. Continued research of this phenomenon is warranted. Why do discrepancies exist between these particular students and other populations? Are the psychological types of freshman agriculture students in this particular study dissimilar to the psychological types of agricultural students who entered Texas Tech University prior to fall 2007?

Conclusions from Objective Four

1. Agricultural and non-agricultural students were similar in terms of participation in high school activities such as athletics, national honor society, music or drama electives, and student government. They were dissimilar in terms of participation in high school activities such as FFA and 4-H. Of agricultural students, over half participated in FFA (57%), and one-third participated in 4-H (32%). Of non-agricultural students only 8% had been in FFA and only 5% had been in 4-H.
2. Both groups of subjects were alike in that it was during the 12$^{th}$ grade that the majority of both groups indicated making final decisions to attend Texas Tech University, and upon selection of an academic major. Bobbitt (2006) found similar results as to timing of these decisions.
3. Over 75% of agricultural and non-agricultural participants indicated they were aware of possible career opportunities within their respective majors in high school and 93% of students in both groups believed a lot of job opportunities were available from their selected majors. Wildman (2007) indicated only 47% of New Mexico State students enrolled in agriculture had similar knowledge of careers, and only 62% believed a lot of job opportunities were available. However these discrepancies should be cautioned as Wildman studied multiple classifications of undergraduates.
4. Almost two-thirds of agricultural and non-agricultural students had completed college credits prior to entering Texas Tech University in fall 2007. Students' perceptions of their predicted persistence through their current majors were also similar.
5. Half of agricultural respondents identified their immediate family to generate some level of income from some type of agricultural source. Less than 20% of non-

agricultural respondents made this same declaration. However one in four non-agricultural students indicated a general family association to agriculture such as family farm or ranch. Three out of four agricultural students indicated family associations to agriculture which ranged from family or ranch, to farm inputs, to Extension or education just to give a few examples.

6. Of agricultural students in this study, 58% took high school agricultural courses as did 14% of non-agricultural students. For personal work experiences 75% of agricultural and 25% of non-agricultural students indicated they had past jobs associated to agriculture.
7. The consideration both agricultural students and non-agricultural students rated the highest was "future job market of your career." "Working with people" was the second highest rated consideration for agriculture students, and was third for non-agricultural students. "Working with animals" and "working with plants" were rated seventh and ninth by agricultural students out of the nine items for consideration. Different rankings of these items were found by Wildman (1997).

Discussion from Objective Four

The agricultural participants of this study were much like the non-agricultural participants in relation to student characteristics and background information not associated to agriculture. However, it appears a key difference between these two groups of students does exist in terms of students' relationships to agriculture.

Conclusions from Objective Five

1. With the external influence of exposure to major, agricultural students rated five of the items significantly higher than all other items. These top five items were personal work experience, related hobbies, high school course work, related clubs or organizations, and relatives in a similar field. The lower rated items included newspaper articles, internet sources, technical journals, television programs, non-technical magazines, and radio broadcasts.
2. For non-agricultural students, the five items with the highest means for exposure to major were high school courses, related hobbies, relatives in a similar field, internet sources, and personal work experience. Personal work experience was ranked fifth for non-agricultural students as opposed to first for the agricultural group.
3. Parent or guardian was the most significant person of influence among agricultural and non-agricultural students and was one of only two groups of people rated higher by non-agricultural students as compared to agricultural students. This finding was consistent with findings from Bobbitt (2006), Washburn et al. (2002), and Thompson and Cole (1999).
4. Other groupings of people agricultural students rated to have means scores over five other than parents were professionals in a similar field, personal role model, high school agri-science teacher, other relatives, and friend in high school. Other than agri-science teacher these groupings were in the top five most influential people for non-agricultural students.
5. Agricultural students had higher mean scores on 12 of 13 items under college or departmental factors and at a fairly significant rate. Although friendly college

atmosphere had the highest mean for both groups, the mean for agricultural students on this item was 7.22 (*SD* = 2.97) as compared to 5.7 (*SD* = 3.23) for non-agricultural majors. Also, most items were similar in terms of rank with the exception of departmental clubs or activities which was ranked fifth for agricultural participants and tenth for non-agricultural participants. From these results, a stronger college or departmental connection may exist for agricultural majors than for non-agricultural majors.

6. Overall 31 of 37 external influence items had higher means scores for agricultural students than for non-agricultural students. With agricultural participants, 19 items had a mean score of 5.0 or more. Twelve items were found to have a mean score greater than 5.0 for non-agricultural students.

Discussion from Objective Five

From findings relative to external influences and selection of major, it appears a stronger connection exists between the items measured in this study and agricultural students as opposed to the non-agricultural participants overall. Particularly, these agricultural students may have had more exposure to their major, people who work in a similar type field, and the College of Agricultural Sciences and Natural Resources specifically. From this it appears that the College of Agricultural Sciences and Natural Resources is attracting students who have strong agricultural backgrounds. Furthermore, it appears the College of Agricultural Sciences and Natural Resources is doing an affective job in communicating with students.

Conclusions for Objective Six

1. Only low to negligible relationships were found between the four MBTI® dichotomies and external influences. Essentially, perceptions of external influences were minimally correlated to the four sets of opposites.

Discussion from Objective Six

How students in this research perceive things such as external influences upon their selection of a particular major does not seem to be influenced by their particular MBTI® preferences. From this it appears various external influences can be influential toward a variety of psychological types. With this in mind, no specific external influence should be limited to one particular audience of students according to their particular preferences.

## Recommendations

1. This study looked at factors associated to how students selected their initial major upon entering Texas Tech University for the first time in fall 2007. Continual research should be conducted to see how this audience may vary in terms of academics, retention, and persistence through their selected academic majors.
2. Agricultural respondents in this study were predominantly White/Non-Hispanic males who were traditionally aged college students from Texas. Opportunities should be explored which might increase numbers of students who are female, from ethnic minorities, non-traditional age groups, and who are from out-of-state. Students from

bordering counties in Oklahoma and New Mexico are eligible for in-state tuition rates, why more of these students are not entering the College of Agricultural Sciences and Natural Resources at Texas Tech University should be evaluated.

3. Both agricultural and non-agricultural students heavily favored the preferences of extraversion, feeling, and perceiving. Research should be performed to see if these percentages are consistent throughout the College of Agricultural Sciences and Natural Resources and for Texas Tech University. If these findings hold true for either grouping, further research should be conducted to see why more students preferring introversion, thinking, and/or judging are not enrolling at Texas Tech University.
4. Exposure to major was clearly a large factor upon how students initially selected their academic major. For colleges of agriculture to grow, ways to expose more students to agricultural majors and careers should be developed. This may include expansion and promotion of already established youth organizations associated to agriculture to new audiences of students or development of new programs aimed at all age groups of students. Also, agricultural work experience appeared to be highly related to selection of an agricultural major, possible internships for high school students in various agricultural areas should also be developed.
5. Parent or guardian, was identified as the most influential person for how students selected their academic major. This group should be made aware of educational opportunities in agriculture and at Texas Tech University. Also this type of contact should be made with agricultural professionals, agri-science teachers, alumni, Extension agents, and high school counselors. Although Extension professionals and

high school counselors were rated low in this study for level of influence, education towards these two groups might increase their impact upon agricultural students.

6. Agricultural participants rated college or departmental factors higher on all but one item as compared to non-agricultural students. Perhaps, a stronger connection exists between students in the College of Agricultural Sciences and Natural Resources and their college than in other colleges. Agricultural student's high perceptions of a friendly college atmosphere, the college's teaching reputation, and of departmental clubs or organizations should be promoted to potential students.
7. Correlations between MBTI® learning styles and external influences showed no significant differences between students. Continued research should be conducted to see if these findings are consistent with other groups of students. However until such research can be performed, colleges of agriculture and the College of Agricultural Sciences at Texas Tech University should utilize multiple communication channels and recruitment efforts toward multiple audiences of students.

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# APPENDIX A

# SURVEY OF ENTERING AGRICULTURAL STUDENTS


*Survey of*

# Entering Students

*Fall 2007*

**This is a project of the**

**Department of Agricultural Education & Communications**
**Texas Tech University**

**Box 42131**

**Lubbock, TX 79409-2123**

**(806) 742-2816**

# Purpose of the Study

The purpose of this study is to gain information from students who have chosen to enroll in Texas Tech University's College of Agricultural Sciences and Natural Resources for fall 2007.

We hope you will take the time to participate in this study. It should take you approximately 15 minutes to complete the questionnaire

**The responses you provide will remain confidential.** Only summarized data will be reported in order to protect the identity of each individual respondent.

Participation in this study is voluntary, and you have the right to withdraw at any time. By completing this questionnaire, you are agreeing to participate in this study.

This follow-up study will give you the opportunity to comment on influences upon your selection of college major. However, there is no compensation or direct benefit for your participation. No risk to physical, psychological or economic well-being of participants is foreseen.

For questions about your rights as a subject or about injuries caused by this research, contact the Texas Tech University Institutional Review Board for the Protection of Human Subjects, Office of Research Services, Texas Tech University, Lubbock, Texas, or call (806) 742-3884.

If you have any questions about this study, please e-mail Dr. Steve Fraze at steven.fraze@ttu.edu or Kevin Williams at kevin.b.williams@ttu.edu or call (806) 742-2816.

Thank you for participating in the study, and welcome to CASNR!

# Survey of Entering Students

*For this questionnaire use the scale beside each question and circle the number of the correct option. If a blank is provided, please clearly print your answer. Thank you.*

## Section I: Factors in Selecting Your Major

Section I lists several factors that may have influenced students in high school to choose their particular major in college. On the scale from 1 to 10, please respond to the following statements by circling the number that best describes how each statement was influential for you in choosing your particular major. Circling a 10 would mean that a factor was very influential, while circling a 1 would mean a factor was not influential.

1. How influential were the following factors when making your decision to choose a major?
*(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| Prior Exposure to Agriculture & Natural Resources | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Internet sources about agriculture & natural resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| b. TV programs about agriculture & natural resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| c. Newspaper articles about agriculture & natural resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| d. Radio broadcasts about agriculture & natural resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| e. Agricultural science courses in high school | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| f. Non-technical magazines about agriculture & natural resources *(Time, US News, Newsweek, etc.)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| g. Technical journals focused on agriculture & natural resources *(Journal of Wildlife Management, Journal of Animal Science, etc.)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| h. Relatives in an agricultural & natural resources field of work *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| i. Personal work in an agricultural & natural resources field of work *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| j. Agricultural & natural resources related clubs or organizations *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| k. Agricultural & natural resources related hobbies *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| l. 4-H or FFA leadership development events | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| m. 4-H or FFA livestock shows, horse shows, or rodeos | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| n. 4-H or FFA judging or career development events | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| o. Any other agricultural & natural resources experience(s) *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

2. How influential was input from the following individuals when making your decision to choose a major? *(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| People of Influence | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Parent or guardian | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| b. Sister or brother | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| c. Other relatives | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| d. Friend in high school | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| e. Friend in college | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| f. Personal role model *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| g. High school science teacher *(biology, chemistry, earth science)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| h. Extension professional *( 4-H agent or 4-H leader)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| i. High school counselor | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| j. High school agriculture science teacher | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| k. Agricultural professional (veterinarian, rancher, wildlife manager, etc.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| l. High school principal or administrator | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| m. Other High School Teacher(s) (history, math, English) *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| n. Please list any professional titles or others in your academic area that may have influenced you in choosing your selected major: _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

3. How influential were the following factors when making your decision to choose a major? *(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| TTU College or Departmental Factors | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Alumni from the college of agriculture and natural resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| b. Scholarship(s) from your department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| c. Other financial incentives *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| d. Informational pamphlets about your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| e. Personal visit with a representative from TTU College of Agricultural Sciences & Natural Resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| f. Faculty's friendliness in your department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| g. High school visits from TTU College of Agricultural Sciences & Natural Resources representatives | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| h. Friendly atmosphere in College of Agricultural Sciences & Natural Resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| i. Teaching reputation of agricultural professors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| j. Teaching reputation of your departmental & major professors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| k. TTU Internet sources about your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| l. Advertisements about College of Agricultural Sciences & Natural Resources | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| m. Agricultural Related Clubs/Activities | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| n. Activities on the TTU campus | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| o. Please list any other factors that have influenced you in selecting your current major: | | | | | | | | | | |

## Section II: High School and College Information

The following questions are related to experiences in high school or just prior to entering college. Please circle the letter that closely describes your experience(s) before entering college.

1. Which of the following agricultural work experiences did you have before you graduated from high school? *(Circle all that apply.)*

   A. No agricultural work experience
   B. Food processing
   C. Horticulture
   D. Work for a veterinarian
   E. Work on family farm or ranch
   F. Work on other farm or ranch
   G. Forestry-related
   H. Extension service
   I. Wildlife management
   J. Golf course
   K. Agricultural biology experience
   L. Landscaping business
   M. Other agricultural experience (Specify: _____)

2. Which of the following activities did you participate in while attending high school? *(Circle all that apply.)*

   A. No high school activities
   B. Student council or student government
   C. Cheerleading or spirit squad
   D. School newspaper or yearbook
   E. Athletics
   F. School electives *(debate, drama, band, chorus, etc.)*
   G. Hobby clubs *(chess, photography, etc.)*
   H. FFA
   I. Other vocational student organizations (i.e., FCCLA, DECA)
   J. School subject clubs (i.e., science club, math club)
   K. National Honor Society
   L. 4-H
   M. Other high school activity *(Please Specify: _____)*

3. During which year did you decide to attend TTU? *(Please circle only one item.)*

   A. 9th grade or below
   B. 10th grade
   C. 11th grade
   E. 12th grade
   F. After high school

4. During which year did you decide upon your selected college major?

   A. 9th grade or below
   B. 10th grade
   C. 11th grade
   E. 12th grade
   F. After high school

5. Were you enrolled in an agricultural science program in high school?

   A. Yes *(If yes, for how many semesters? _____)*
   B. No

6. Do you have college credit entering as a full-time TTU student?

   A. Yes, hours completed during high school *(How many hours? _____)*
   B. Yes, hours completed after high school *(How many hours? _____)*
   C. No hours completed as of yet

7. In high school were you aware of the various agricultural majors available at TTU?

   A. Yes
   B. No

8. In high school did you have knowledge of the possible career opportunities in your selected major?

   A. Yes
   B. No

9. Do you believe there are currently a lot of job opportunities in your selected major?

   A. Yes
   B. No

10. Do you anticipate changing your major during college?

    A. No, definitely not
    B. No, probably not
    C. Possibly, but into another agricultural & natural resources major
    D. Possibly, but into a non-agricultural & natural resources major

11. Is your immediate family associated with agriculture *(Select all that apply.)*

    A. Not involved in agriculture or natural resources
    B. Production - Livestock
    C. Production Crops
    D. Farm Inputs (Animal feeds, seed business, chemicals, etc.)
    E. Processing
    F. Extension/Education
    G. Marketing
    H. Veterinarian
    I. Wholesale/Retail (Grocer, food services, etc.)
    J. Other *(Please Specify: _____)*

12. What percentage of your family's household income is from agriculture? _____

13. Other ways my family is involved in agriculture & natural resources include: *(Select all that apply.)*

    A. None
    B. Hobby farm
    C. 4-H
    D. FFA
    E. Employed in agriculture
    F. Government agency
    G. Other *(Please Specify: _____)*

14. When selecting your choice of major to pursue, did you consider:
    *(Please circle a number from 1 to 10, according to how much consideration you made with the following items.)*

| | TTU College or Departmental Factors | No Consideration | | | | | | | | | High Consideration |
|---|---|---|---|---|---|---|---|---|---|---|---|
| a. | Prestige of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| b. | Income gained after college? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| c. | Future job market of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| d. | Location of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| e. | Working with animals? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| f. | Working with plants? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| g. | Working with people? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| h. | Field (out-of-office) work? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| i. | Working outdoors? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| j. | Any other consideration(s)? *(Please specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

## Section III: Demographics

The following questions are related to your personal background. Please fill in or circle the response that best describes you or your background history.

1. Gender: Female Male

2. Date of birth: _____

3. High school class rank: _____

4. ACT or SAT Score: _____

5. How many students were in your high school graduating class? _____

6. What is your home state? _____

7. Which of the following best describes where you live?

A. Rural-Farm
B. Rural-Non Farm
C. Small City/Town (Smaller than population of 10,000)
D. Metropolitan Area (Larger than population of 10,000

*8.* Ethnicity: *(Remember this information is kept confidential.)*

A. Asian, Pacific Islander
B. Black, African American
C. Hispanic
D. Native American
E. White, non-Hispanic
F. Other *(Please Specify:* _____*)*

*9.* What is your intended major? *(Please circle the number before only one item.)*

1) Agribusiness
2) Agricultural and Applied Economics
3) Agricultural and Applied Economic/General Business (Dual Degree)
4) Agricultural Communications
5) Agricultural Education
6) Agricultural Leadership
7) Agronomy
8) Animal Science: Animal Business
9) Animals Science: Animal Production
10) Animal Science: Meat Science
11) Animal Science: Pre-veterinarian
12) Environmental Conservation of Natural Resources
13) Food Technology
14) Horticulture
15) Horticulture: Turf Grass
16) Landscape Architecture
17) Plant Biotechnology
18) Range Management
19) Wildlife and Fisheries Management
20) Agriculture Undecided

**Thank You!**

# APPENDIX B

# SURVEY OF ENTERING NON-AGRICULTURAL STUDENTS


*Survey of*

# Incoming Students

*Fall 2007*

**This is a project of the**

**Department of Agricultural Education & Communications**
**Texas Tech University**

**Box 42131**

**Lubbock, TX 79409-2123**

**(806) 742-2816**

# Purpose of the Study

The purpose of this study is to gain information from students who have chosen to enroll in Texas Tech University for fall 2007.

We hope you will take the time to participate in this study. It should take you approximately 15 minutes to complete the questionnaire

**The responses you provide will remain confidential.** Only summarized data will be reported in order to protect the identity of each individual respondent.

Participation in this study is voluntary, and you have the right to withdraw at any time. By completing this questionnaire, you are agreeing to participate in this study.

This study will give you the opportunity to comment on influences upon your selection of college major. However, there is no compensation or direct benefit for your participation. No risk to physical, psychological or economic well-being of participants is foreseen.

For questions about your rights as a subject or about injuries caused by this research, contact the Texas Tech University Institutional Review Board for the Protection of Human Subjects, Office of Research Services, Texas Tech University, Lubbock, Texas, or call (806) 742-3884.

If you have any questions about this study, please e-mail Dr. Steve Fraze at steven.fraze@ttu.edu or Kevin Williams at kevin.b.williams@ttu.edu or call (806) 742-2816.

Thank you for participating in the study, and welcome to Texas Tech University!

# Survey of Entering Students

*For this questionnaire use the scale beside each question and circle the number of the correct option. If a blank is provided, please clearly print your answer. Thank you.*

---

## Section I: Factors in Selecting Your Major

Section I lists several factors that may have influenced students in high school to choose their particular major in college. On the scale from 1 to 10, please respond to the following statements by circling the number that best describes how each statement was influential for you in choosing your particular major. Circling a 10 would mean that a factor was very influential, while circling a 1 would mean a factor was not influential.

4. How influential were the following factors when making your decision to choose a major?
*(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| Prior Exposure to College Major | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| p. Internet sources about your college major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| q. TV programs about your college major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| r. Newspaper articles about your college major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| s. Radio broadcasts about your college major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| t. High school courses about your college major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| u. Non-technical magazines about your college major *(Time, US News, Newsweek, etc.)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| v. Technical journals focused on your college major *(Journal of Human Sciences, Journal of Education, etc.)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| w. Relatives in a field of work similar to your major *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| x. Personal work experience related to your major *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| y. Clubs or organizations related to your major *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| z. Hobbies related to your college major *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| aa. Any other experience(s) related to your selected major *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

5. How influential was input from the following individuals when making your decision to choose a major? *(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| People of Influence | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| o. Parent or guardian | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| p. Sister or brother | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| q. Other relatives | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| r. Friend in high school | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| s. Friend in college | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| t. Personal role model *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| u. High school science teacher *(biology, chemistry, earth science)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| v. Extension professional *( 4-H agent or 4-H leader)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| w. High school counselor | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| x. High school agriculture science teacher | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| y. Professional in a field of work similar to your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| z. High school principal or administrator | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| aa. Other High School Teacher(s) (history, math, English) *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| bb. Please list any professional titles or others in your academic area that may have influenced you in choosing your selected major: _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

6. How influential were the following factors when making your decision to choose a major? *(Please circle a number from 1 to 10, based on how much influence the following items may have had upon your selecting a major.)*

| TTU College or Departmental Factors | Not Influential | | | | | | | | | Very Influential |
|---|---|---|---|---|---|---|---|---|---|---|
| p. Alumni from your college or department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| q. Scholarship(s) from your department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| r. Other financial incentives *(Please Specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| s. Informational pamphlets about your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| t. Personal visit with a representative from your college or department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| u. Faculty's friendliness in your department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| v. High school visits from TTU representatives | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| w. Friendly atmosphere in your college | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| x. Teaching reputation of professors in your college | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| y. Teaching reputation of your departmental & major professors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| z. TTU Internet sources about your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| aa. Advertisements about your major | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| bb. Clubs/Activities within your department | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| cc. Activities on the TTU campus | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| dd. Please list any other factors that have influenced you in selecting your current major: | | | | | | | | | | |

## Section II: High School and College Information

The following questions are related to experiences in high school or just prior to entering college. Please circle the letter that closely describes your experience(s) before entering college.

15. Did you have any of the following work experiences related to agriculture before you graduated college? *(Circle all that apply.)*

A. No agricultural work experience
B. Food processing
C. Horticulture
D. Work for a veterinarian
E. Work on family farm or ranch
F. Work on other farm or ranch
G. Forestry-related
H. Extension service
I. Wildlife management
J. Golf course
K. Agricultural biology experience
L. Landscaping business
M. Other agricultural experience (Specify: _____)

16. Which of the following activities did you participate in while attending high school? *(Circle all that apply.)*

A. No high school activities
B. Student council or student government
C. Cheerleading or spirit squad
D. School newspaper or yearbook
E. Athletics
F. School electives *(debate, drama, band, chorus, etc.)*
G. Hobby clubs *(chess, photography, etc.)*
H. FFA
I. Other vocational student organizations (i.e., FCCLA, DECA)
J. School subject clubs (i.e., science club, math club)
K. National Honor Society
L. 4-H
N. Other high school activity *(Please Specify: _____)*

17. During which year did you decide to attend TTU? *(Please circle only one item.)*

A. 9th grade or below
B. 10th grade
C. 11th grade
E. 12th grade
F. After high school

18. During which year did you decide upon your selected college major?

A. 9th grade or below
B. 10th grade
C. 11th grade
E. 12th grade
F. After high school

19. Were you enrolled in an agricultural science program in high school?

    A. Yes *(If yes, for how many semesters? _____)*
    B. No

20. Do you have college credit entering as a full-time TTU student?

    A. Yes, hours completed during high school *(How many hours? _____)*
    B. Yes, hours completed after high school *(How many hours? _____)*
    C. No hours completed as of yet

21. In high school were you aware of the various college majors available at TTU?

    A. Yes
    B. No

22. In high school did you have knowledge of the possible career opportunities in your selected major?

    A. Yes
    B. No

23. Do you believe there are currently a lot of job opportunities in your selected major?

    A. Yes
    B. No

24. Do you anticipate changing your major during college?

    A. No, definitely not
    B. No, probably not
    C. Possibly, but into another agricultural & natural resources major
    D. Possibly, but into a non-agricultural & natural resources major

25. Is your immediate family associated with agriculture *(Select all that apply.)*

    A. Not involved in agriculture or natural resources
    B. Production - Livestock
    C. Production Crops
    D. Farm Inputs (Animal feeds, seed business, chemicals, etc.)
    E. Processing
    F. Extension/Education
    G. Marketing
    H. Veterinarian
    I. Wholesale/Retail (Grocer, food services, etc.)
    J. Other *(Please Specify: _____)*

26. What percentage of your family's household income is from agriculture? _____

27. Other ways my family is involved in agriculture & natural resources include: *(Select all that apply.)*

    A. None
    B. Hobby farm
    C. 4-H
    D. FFA
    E. Employed in agriculture
    F. Government agency
    G. Other *(Please Specify: _____)*

28. When selecting your choice of major to pursue, did you consider:
    *(Please circle a number from 1 to 10, according to how much consideration you made with the following items.)*

| | TTU College or Departmental Factors | No Consideration | | | | | | | | | High Consideration |
|---|---|---|---|---|---|---|---|---|---|---|---|
| k. | Prestige of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| l. | Income gained after college? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| m. | Future job market of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| n. | Location of your career? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| o. | Working with animals? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| p. | Working with plants? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| q. | Working with people? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| r. | Field (out-of-office) work? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| s. | Working outdoors? | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| t. | Any other consideration(s)? *(Please specify: _____)* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

## Section III: Demographics

The following questions are related to your personal background. Please fill in or circle the response that best describes you or your background history.

10. Gender: Female Male

11. Date of birth: _____

12. High school class rank: _____

13. ACT or SAT Score: _____

14. How many students were in your high school graduating class? _____

15. What is your home state? _____

16. Which of the following best describes where you live?

A. Rural-Farm
B. Rural-Non Farm
C. Small City/Town (Smaller than population of 10,000)
D. Metropolitan Area (Larger than population of 10,000

*17.* Ethnicity: *(Remember this information is kept confidential.)*

A. Asian, Pacific Islander
B. Black, African American
C. Hispanic
D. Native American
E. White, non-Hispanic
F. Other *(Please Specify:* _____*)*

9. Which college are you enrolled in? *(Please circle the number before only one item.)*

21) College of Agricultural Sciences & Natural Resources
22) College of Architecture
23) College of Arts & Sciences
24) Rawls College of Business
25) College of Education
26) College of Engineering
27) Honors College
28) Human Sciences
29) Mass Communications
30) Visual and Performing Arts

10. What is your intended college major? _____

**Thank You!**