Career Values and Perceptions of Agricultural Careers of Gifted and Talented Students in the Virginia Governor's School for Agriculture

by

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

Doctor of Philosophy
in
Career and Technical Education
Committee Members

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October 18, 2006

Blacksburg, VA

Keywords: Agricultural careers
Career values
Governor's School for Agriculture
Influences on career decisions
Perceptions of agriculture

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Abstract

Career choice is governed by what individuals value and their perception of the realities that exist in a given field. Agriculture career education of gifted and talented students, therefore, must begin with an assessment of the values of the students, their assumptions regarding fields within the agriculture industry, and factors that influence their career decisions. This descriptive study summarized values and perceptions held by participants in the 2006 Virginia Governor's School for Agriculture (VGSA). Originally, the VGSA hosted 98 students; one student withdrew from the program. The results of the study confirmed that there is still much controversy and misunderstanding about agriculture and careers in the agriculture arena.

The testing process included a survey of career values called the *Values Scale.* This instrument was developed by Dorothy Nevill and Donald Super and last updated in 1989. The 106-question survey measured 21 personal career values of participants. Follow-up data were collected gauging the students' thoughts on agriculture careers, agriculture companies, their individual career goals, and the influences that shaped their career decisions.

The career values of the VGSA Class of 2006 were surprisingly similar to high school student data collected in 1989. There were slight decreases in the value placed on economic rewards and security, but many of the other values mirrored past national data.

Most students (n=73) were able to name five agriculture careers with “farmer” garnering most of the responses; however, 29 students did not name a single agriculture company.

A majority of the students (n=56) stated that they had made a career decision; however, most of these (n=32) also stated their career was not in the field of agriculture. Half of those having a career goal made their decision prior to their sophomore year in high school.

Parents were named by the students as the greatest single influence on career decision among ten choices. School experiences, work experiences, and people who work in the field were also high among influences. Suggestions for further research include identifying effective methods of agricultural career exploration within VGSA and value comparisons between gifted students and the general student population.

Dedication

Writing this may be one of the more daunting tasks of this project. My greatest fear is that in my rush to complete this work, I will overlook someone. Please accept my apologies if I have omitted anyone. I assure you it was not intentional.

I read once that a person should always focus the majority of their attention to those who would cry at your funeral. It is a way to cut through the clutter of our lives. By simply asking if a person would weep for you, one can accurately assess the amount of importance one should place on that person's opinion. The past twelve months have seen some extraordinary highs and lows in my life. The loss of my dad, Mr. David B. Overbay, rates as one of the most crushing times that I have encountered to date. My hope was to present him this degree on the occasion of his 81st birthday, but alas that will not come to pass. I often think about the correctness of saying that Dad will not see me graduate. I know (and have been reminded by more than one) that Dad will indeed see me earn my Ph.D., so I suppose my sadness comes from the fact that I will not get to see him see me at graduation. I sometimes feel a little guilty for that thought, but the reality of it is inescapable. I dedicate this work to you Daddy; I will always love you and miss you.

Among those having to endure the entire trial with me, I would like to thank my best friend, my wife, Andrea Echols Overbay. Miss Andy was who God had in mind when it was recorded that a good wife is more precious than rubies, emeralds, and much fine gold. You truly are the greatest thing that ever happened to a bum like me. I cherish you.

My daughter Hillary will be glad to know that I am done spending her college fund on my own education. Sweetie, you know too what it is to not have our Davy see your victories. Don't you know he would have popped with pride to see you win Miss Chilhowie 2006? The Lord knows I did. I have always admired your toughness and your ability to work with all people. I hope this degree inspires you to never say "never." As Lisa W. Johnson once said, "[We] Overbays are a determined lot."

To Dr. Daisy Stewart, thanks for all of your kindness, inspirations, understanding, and wisdom. I know I would have never thought of the possibility of this undertaking without your guidance. Thank you is not nearly enough, but it is all I have.

To Dr. Cathy Sutphin, your encouragement has propelled me through some rather stormy seas. It is interesting to think about how we shape those around us. Dee Whittier's advice to you became your advice to me and my advice to others. Life is like a pond. A small pebble will send ripples to its outermost boundaries.

To Dr. Tom Broyles and the VSGA crew, thanks for allowing me to come along for the ride. You have added a level of "do-ability" to this research and I cannot say thanks enough. To Dr. Mike Akers, thanks for being there and listening to my wild ramblings in seminar! I appreciate your comments and encouragement. Good luck keeping Chase Scott and John Welsh in line simultaneously!

A special "thank you" goes to Pat O'Reilly, Todd Ogle, and Eric Lichtenberger of the Center for Assessment and Evaluation and Educational Programs (CAEEP). Your assistance, guidance, and friendship are most appreciated. I have come to understand more clearly over the past year that the greatest title in the entire world is the mantle of "Friend." I dedicate this work to all my friends. Family or not, I love you all. Thanks!

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Chapter 1

Introduction

Agriculture has been identified as the precursor to civilization. In his book that was adapted into a PBS/National Geographic special presentation by the same name, *Guns, Germs, and Steel*, Jared Diamond noted that wherever agriculture flourished, there also civilization sprang forth (Diamond, 1999). It is clear, however, that agriculture is at the very least undervalued in our society. It could even be said that agriculture and those who practice it have a negative image in the eyes of many members of the population of the United States.

This negative image of agriculture is well documented in the literature and permeates all levels of society, even our children. The true power of the United States lies in our ability to not only flex our muscles economically, politically, and militarily, but also in our ability to feed our people and many other nations across the globe. An agriculture ownership of less than five million people is responsible for the entire agriculture output in a country of over 280 million (American Farm Bureau [AFB], 2005; US Census, 2005). The average age of American farm operators recorded in *The 2002 Census of Agriculture* showed an increase of 1.3 years over 1997 census data (National Agricultural Statistics Survey [NASS], 2005). Young people are not entering the field of production agriculture as rapidly as older farmers are leaving, retiring, or dying. A common saying these days is that "agriculture is dying." Some numbers substantiate that sentiment on the surface, but an exploration of the facts points to an evolution of agriculture. According to *The 2002 Census of Agriculture*, two segments of agriculture are actually growing. The number of farms over 2000 acres and those under 100 acres are

increasing in numbers (NASS, 2005). The growth in small farms is especially interesting given the fact that economies of scale drive today's modern agricultural markets, usually indicating that bigger is better. So why are farms in the smallest categories growing? Investigations point to people buying farms as retirement locations. Some younger people are also drawn to small farms as a life style choice according to Ed Davis, Professor of Geology at Emory and Henry College (E. Davis, personal communication, September, 2005). Dr. Davis also served as the administrator of a parcel of farm property owned by the small liberal arts school and he reported that students often ask about farming as a career.

Background of Study

Gifted students like those who attend VGSA are a source of information to society. They have ability to influence classmates, friends, teachers, counselors, and parents. If they were educated about the realities of modern agriculture, they could serve as a resource to members of their schools and communities.

Gifted students are influenced by others. Over many years, parents have been recognized as the single greatest influence in the life of a gifted student. Fidler (1969) and Baucum (2005) both recognized the special relationship that parents enjoy with their gifted offspring. Baucum stated that parents of gifted children tended to be more active in the lives of their offspring and partnered with their children in shaping the gifted student's future.

Student organizations such as 4-H and FFA also have a tremendous impact in shaping young lives. Astroth and Haynes (2001) found that members of 4-H had higher levels of positive identity and social competency than non-member peers. Astroth and

Haynes also noted that members of 4-H were less likely to engage in unhealthy behaviors such as drinking, smoking, or drug use. Following this theme, Goodwin, Barnett, Pike, Puetz, Lanting, and Ward determined that good life skills led youth to be more competent and contributing members of society (Goodwin et al., 2005). Kotrlik and Harrison (1987) found the same to be true of FFA members in Louisiana. Parents were the major influence in their lives and FFA advisors were also a major influence in their career decisions.

The Commonwealth of Virginia invested in the Governor's School Program in 1973, when Governor Linwood Holton signed legislation establishing the program (Booth, 1982). According to the Virginia Department of Education (VDOE), Governor's Schools exist in three forms. There are Academic-Year Governor's Schools, Summer Regional Governor's Schools, and Summer Residential Governor's Schools (VDOE, n.d.b).

The Virginia Governor's School for Agriculture (VGSA) is a Summer Residential Governor's School. Gifted students come to the campus of Virginia Tech, stay in dormitories on the university campus, and receive intensive training and experience in the science of agriculture. The VGSA Class of 2006 consisted originally of 98 youth, but one student withdrew from the program due to illness.

In order to help characterize work values of the participants, a suitable instrument had to be either developed or found. A review of the literature eventually led to the *Values Scale* by Dorothy D. Nevill and Donald E. Super (1989). The *Values Scale* evolved from a long history of career and occupational research dating back to the early 1900s. The *Values Scale* formed the backbone of the pretest and posttest instruments used

in this research; the pretest instrument can be found in Appendix A, while the posttest is exhibited in Appendix B.

Abraham Maslow theorized that human beings have needs that grow as the individual develops talents to conquer one level of needs and move on to the next. Maslow's work might be summarized as a triangle with the most basic of human needs (food, water, and shelter) at the base of the triangle and the need for self actualization (challenging projects, learning at high levels) at the pinnacle.

Herrington (2004) included a diagram similar to Figure 1 in his evaluation of Maslow's work. Herrington theorized from Maslow's work that human ability drove human needs. While every person must strive to fill the bottom level of the triangle, personal situations limit the individual's ability to move up to higher levels of Maslow's hierarchy. A good example might be a single parent. A single parent might have the intellectual ability to achieve high levels in Maslow's model; however, personal circumstances (child care, logistics, and access to resources) limit the person's ability to move up the triangle.

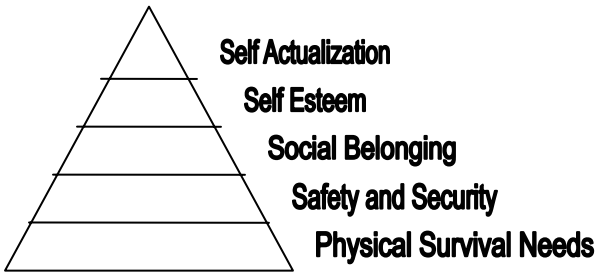

Figure 1. Maslow's Hierarchy of Needs

In thinking about gifted students who attend the VGSA, it could be generalized that these students have fewer barriers than average high school juniors and seniors. The

students were selected by their school to attend the month-long enrichment program after being recognized as above-normal achievers. The student expense is paid for by the State and the local school system; however, there is an expense in living away from home and taking time from summer jobs, so there is a significant opportunity cost associated with attending VGSA. Each participant in VGSA has made a decision that attending the program has some benefit to them that is greater than the loss of their time, whether at work or play. With this in mind, the gifted and talented students who attended the VGSA had less hindering them from dreaming of achieving at the highest levels of Maslow's hierarchy.

Because these students have been recognized as gifted, it is reasonable to assume that they have fewer barriers to limit their desires for personal achievement and fulfillment. Since barriers to achievement are at low levels with this population, an instrument like the *Values Scale* had the potential to accurately measure the career values of the participants. For this reason, an online survey based on the *Values Scale* was used in this research project.

Problem Statement

The changing face of American agriculture points to the need for an active recruitment of talented youth into agriculture. According to Spell (2006), professional human resource officials of agricultural companies have reported a decline in the available talent pool, resulting in a need to recruit to agriculture young people who possess no personal experience in the field. The Virginia Governor's School for Agriculture (VGSA) is one vehicle for this recruitment effort. The VGSA gathers a diverse group of young students, the majority of whom have no experience in agriculture.

Agriculture human resource personnel from across the country agreed that recruiting young people to agricultural industries continues to be a problem, due mostly to a lack of understanding about what opportunities exist in agriculture (Spell, 2006). The National Agriculture Human Resources Roundtable also recognized the need to recruit gifted and talented young minds to agricultural fields.

Purpose of the Study

A logical first step to rectifying this situation was to explore what students think about careers, agriculture, and agricultural careers. This study focused on the mechanics of forming a decision on careers, the students' perceptions of agriculture, and the influences that helped students make their decisions. The goal of the study was to increase the understanding of gifted students' thought processes so that suitable interventions might be devised.

The following research questions were explored in this study.

1. What are the characteristics of the students attending the 2006 VGSA?
2. What are the career values reported by the participants of the 2006 VGSA and how are the values related to selected variables?
3. What are the perceptions of agricultural careers reported by the 2006 VGSA participants and how are the perceptions related to selected variables?
4. What are the influences that shape the values and perceptions of the 2006 VGSA participants and how are the influences related to selected variables?
5. What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session?

Limitations

The results of this study may only be inferred to students completing the 2006 Virginia Governor's School for Agriculture program. The researcher recognizes this limitation to the study. The instrument was piloted utilizing Agriculture and Natural Resource Extension agents in the counties of Southwest Virginia. Although adults were used, it was felt that the reading level of the gifted students would be roughly equivalent to the agents, and the main goal of the pilot was to test for readability. Two issues that arose during the pretest session were: (a) answer sharing on questions asking participants to list agricultural careers and companies; and (b) one student not knowing how to describe her home location ("farm" or "not on a farm with experience") due to a divorce situation.

Definitions

4-H: An organization for young people, ages 5-19, sponsored by the Extension Service to foster agricultural, homemaking, and life skills. The four Hs stand for "head, heart, hands, and health" (Ohio Farm Bureau, 2006).

Agricultural careers: Careers in or related to agriculture. These would include traditional production roles as well as (but not limited to) supply, finance, government, education, and marketing careers.

Agriculture: The science of providing people with food and fiber. This industry relates to food and fiber production, processing, marketing, and research.

Career values: Personal attributes or beliefs that shape a person's career decisions.

FFA: An organization for middle school and high school youth dedicated to agricultural education. Previously, FFA stood for "Future Farmers of America," but it is now

formally known as “The National FFA Organization” (National FFA Organization, 2006).

Gifted and talented students: Students “whose abilities and potential for accomplishment are so outstanding that they require special educational programs to meet their educational needs” (Virginia Department of Education, n.d.a, n.p.)

Non-farm with experience: This term is used to define the residency of students who do not live on a farm but have personal experience in an agricultural setting. An example would be a student who does not live on a farm, but has grandparents who operate a farm or agribusiness.

Values Scale: A survey instrument consisting of 21 factors that a person might choose as being important in their career decisions (Nevill & Super, 1989).

Virginia Governor’s School for Agriculture: The summer residential Governor’s School at Virginia Tech’s Blacksburg campus that takes place during the month of July. Students receive hands-on intensive instruction in agricultural science, human health, natural resources, and veterinary medicine (Virginia Governor’s School for Agriculture [VGSA], 2006 b, p. 3-4).

Virginia Governor’s School Program: Special program for gifted and talented students sponsored by the Virginia Department of Education that was established by former Governor Linwood Holton. There are three types of Governor’s School programs: Academic All-Year, Summer Residential, and Summer Regional (VDOE, n.d.b).

Virginia Summer Residential Governor’s School Program: Virginia Governor’s School program that provides “intensive educational experiences in visual and performing arts; humanities; mathematics, science, and technology; medicine and life sciences; or through

mentorships in marine science or engineering" (VDOE, n.d.b, n.p.). Customarily, this program takes place during the summer, and students live on a Virginia college or university campus for approximately five weeks.

Organization of the Study

Chapter 1 includes the introduction, background of the Virginia Governor's School for Agriculture, need for the study, problem statement, objectives of this study, definition of terms, limitations of the research, and the organization of the study.

Chapter 2 contains a review of the literature that includes the theories behind career exploration and choices, the agricultural industry, gifted and talented students, the VGSA program, and the Values Scale instrument developed by Nevill and Super.

Chapter 3 provides a description of the methodology used in this research. The chapter offers an explanation of the design of the study, the sample and population, the instrument, methods and procedures used to collect the data, and the way the data were analyzed and interpreted.

Chapter 4 frames the findings of the study. It includes demographic variable analysis and how each variable pertains to the outcome of the study. Finally, Chapter 5 offers a discussion of the findings and draws from the results implications for practice and for future research.

Summary

Agriculture continues to evolve as an industry. Over the course of the past century, America's dependence on agricultural workers has evolved in like fashion. The fact that fewer people are involved in agriculture has resulted in a decrease in agricultural literacy among the general population, and in turn has established a somewhat unrealistic

perception of agriculture in the minds of many citizens. This phenomenon is also true of the youth of this nation.

Programs like the Virginia Governor's School for Agriculture seek to alleviate these negative perceptions toward agriculture and highlight the opportunities that await gifted and talented young people in the agriculture industry of the United States. Currently, no organized curriculum in the VGSA exists to educate participants about careers in agriculture. It makes sense to evaluate the current level of participant knowledge about agriculture and careers as well as their current status in making a career choice before designing a curriculum to meet the challenge. With gains of information on the characteristics, outcomes of this research might influence future VGSA educational programming.

Chapter 2

Literature Review

The areas of literature review for this study include the theoretical framework of career development, career choices and youth, values and career decisions, variables, agriculture, Virginia Governor's Schools and the VGSA, gifted students, and the *Values Scale* instrument. A summary of these areas completes this chapter.

Theoretical Framework

The body of work in career development dates back to the early part of the 20th century. Interestingly, the authors of these works have formed enclaves over the years within a select number of universities. For example, Super, Ginzberg, Ginsburg, Herma, Crites and Axelrod all called Columbia University home at various points in their careers. The University of Minnesota also served as a "gathering point" for several researchers in career development and choice. Early researchers met opposition from scholars of psychology and psychiatry in the formation of a theoretical framework for career choice.

It became the mission of Ginzberg's group to develop such a framework. In the 1951 book, *Occupational Choice: An Approach to a General Theory*, Ginzberg, Ginsburg, Axelrod and Herma wrote, "It is our objective to develop a theory so comprehensive as to permit the identification and analysis of the major factors in the vocational decision-making of the individual" (Ginzberg, Ginsburg, Axelrod, & Herma, 1951, p. 25).

Life is full of choices, and choices require observations and speculation into the realities that exist in our lives. In writing about the psychology behind choice, Holland (1966) quoted Charles Darwin, "Without speculation, there is no good and original

observation" (Holland, p.1). Our ability to make choices is driven by needs and is shaped by circumstances according to Maslow (1943). Maslow theorized that our needs exist in levels, starting with the most basic human needs and gravitating up in scale until a limitation or influence prohibits us from desiring more from our lives. In 1937, R.S. and Helen Lynd stated that occupations were "the most nearly dominant single influence in a man's life" (Lynd & Lynd, 1937, p. 24). From the convergence of these two basic theories, the discussion regarding the psychology of career choice arose.

Many early psychologists felt that vocational or career choice was too individualistic in nature to be captured by a central theory. Indeed, many factors do come into play when deciding upon a career. A handful of researchers did step forward however to accept the challenge. One of the pioneers of the psychology behind vocational or career choice was Holland (1966). Holland wrote that the discussion about our vocational needs continues throughout our lives and the perceptions of the person making the decision help to form an interest in a vocation or career (p. 2). Holland referred to interest measures as interest inventories and he found that "interest inventories are personal inventories being that vocational interests are an expression of personality" (p. 3). Assessing vocational interests was considered trustworthy because of the demeanor of the questions asked and the ramifications (or lack thereof) to the interviewee. "Assessing vocational interest is socially valuable and positive, not distorted like personal questions" (p. 7).

Another pioneer in the study of career choice was Donald Super. In *Psychology of Careers*, Super (1957) offered that career choices are powered when "three major needs are sought: human relations, work, and livelihood" (p. 3). A basic question that Super

asked was “why do we work?” The most obvious answer was to earn a living; however, Super found this to be only a superficial response to a deeply personal issue. Over the course of his research, Super collected evidence that careers serve as an outward “recognition of the worker as a person” (p. 3). Social status was another idea put forth; although status was qualified by Super as appearing to be more of a need of persons in higher levels of occupations (p. 6). Work was seen as a source of self-expression, and the use of skills and knowledge was seen as a help to make work activities interesting (p. 10).

Two topics come into play with the psychology of careers, perceptions of the persons making career choices and the reality in which the career exists. Ginzberg et al. (1951), Super (1957), and Holland (1966) all wrote that these become somewhat mottled by that the fact the perceptions become realities when persons are engaged in making career decisions. Careers can become stereotyped by society and seen as inherently skilled or unskilled as dictated by the stereotype. Stereotypes in our society are mostly associated with race and gender discrimination, and the overwhelming majority of the literature devoted to the investigation of stereotypes relates to these variables. Stereotypes can be either negative or positive. For example, police officers and fire fighters in the post-9/11 era enjoy a positive stereotype noted in survey data from the Statistical Program for the Social Sciences (SPSS) (2006, p. 12). Stereotypes are defined as generalizations that people use to frame their thoughts about another person. According to Schneider (2004), stereotypes, even positive ones, can be limiting as they impose labels and they categorize their victims. Stereotypes take many forms. As Lichtenberger (2004) found in his review of literature, the word “stereotype” is generally perceived as a negative term. Stereotypes limit the ability of their users to see the individuality of others,

and they categorize people as members of a group. The stereotyped person is seen as having all the characteristics of that group (Lichtenberger, 2004). The literature supported the idea that parents are one source of early childhood stereotype formation. Again, most of the research and literature examines parental involvement in the formation of prejudicial stereotypes; however, it is also noted in the literature that senior high students list parents as the most influential people in their choices of both college paths and careers (Kotrlik & Harrison, 1987).

Another area of our lives that is often stereotyped involves the generation with which we are identified. Dittman (2005) identified three main generations currently occupying the workplace: Baby boomers, Generation Xers, and Millennials. The members of the VGSA Class of 2006 are classified as Millennials. According to Heathfield (2006), Millennials are defined as people born between 1980 and 2000. Heathfield characterized Millennials as being team oriented, connected, and working well with diverse populations. Heathfield adds that Millennials seek constant feedback on their progress at work.

Each generation has some unique experiences that they bring to the workplace and their reactions to these experiences tend to shape how each generation is characterized. Baby boomers are seen as materially driven and workaholics to their younger coworkers. Millennials tend to seek more personal freedom and thus are often judged as selfish or lazy (Smola & Sutton, 2002, p. 364; Dittman, 2005, p. 54). Smola and Sutton also found, however, that work values tend to vary with the age of the worker (p. 382).

Career Choices and Youth

The participants of this study are entering into a transitional time in their lives. Most are considering an educational path as well as a career path. Super (1957) referred to this transition as a "time of cultural adaptations" (p. 101). Youth are moving from the culture of the "adolescent world to the adult world" (p. 102). The history of the United States fuels this time of transition in the lives of our youth. Our country is steeped in the tradition of self-improvement, what Super termed as "rising in the world" (p. 106). A child's family history and traditions come into play with career choices as well. "Parents and teachers tend to aid and abet the desire to rise in the world. Parents indicate that they want their children to have better jobs than their own, to have an easier life than they had themselves" (p. 107).

Super named seven factors that influence career decisions in young people. They are: intelligence, education, extracurricular activities, work experience, personality, contacts, and vocational guidance. Interestingly, intelligence, according to Super, was not a major contributing factor in career choice, nor was education. His findings gave credence to old saying that "it isn't what you know, but who you know." Contacts were reported as the most important factor in determining career paths. Super termed the use of contacts as "undemocratic, but very powerful" influences on career choices (p. 110).

Super also saw vocational guidance as an important but underdeveloped factor in career decision-making. Vocational guidance (or a more modern term, career guidance) according to Super, needed to focus on assisting students to develop self concepts that were grounded in the realities of the requirements of positions and the world of work. "A well formulated self concept, which takes into account the realities of the working world,

makes for an easier transition from school to work;" therefore, "a major goal for education should be the development of clear, well-formulated, and realistic self concepts" (p. 111).

Values and Career Decisions

Super devoted many years to the study of values and how values influence career choices. As research progressed, a general theme emerged that suggested that personal characteristics, personal values, and career choices might be linked together. Ginzberg et al. (1951) also worked to help shape a theory of values and career choices. Ginzberg's team pointed out that the role of values has been generally less recognized simply because a theory governing their import remained elusive to researchers. Ginzberg et al. also noted that the German researcher Spranger developed categories of personal values to help describe what drove people to make the decisions they made. Spranger's work used values to distinguish people under the framework of the driving forces in their lives. For example the "economic person" was primarily concerned with wealth and income—other values mattered very little. This followed suit in the case of other values types. Further, Ginzberg et al. pointed out that Spranger's work on values was validated by the work of Vernon and Allport (p. 24). Ginzberg's group established the validity of using a small, relatively homogenous group like the VGSA participants. They found that studying differences between homogenous groups and charting any irregularities between individuals helped to establish the pathways of the decision-making process. Overall, they found that the "occupational choice is a developmental process; it is not a single decision," and the process is fraught with compromise (p. 185). They noted that "throughout the years, the individual learns enough about his interests, capacities, and

values and about the opportunities and limitations in the real world to make an occupational choice that will yield him maximum satisfaction" (p. 185).

Variables

Age, year in school, and generational comparisons. While the participants of this study are relatively the same age, it is fitting to discuss the career decision process in the light of the stage of life that these young people are experiencing. Jean Pierre Jordaan and Martha Bennett Heyde (1979) compiled data on an all male group in their work, *Vocational Maturity During the High School Years.* Their participants ranged from 9th to 12th grade students. They noted that while career choices can occur in elementary school, the process really begins with the tracking of students during their high school experience (p. 2). Their work is also tied to Maslow's theory of needs in that they found that while students aspire to great things, over time their aspirations give way to the "wisdom of vocational preference" (p. 136). Mental ability and socioeconomic accessibility are the realities that frame the dwelling where their career choice will reside (p. 136). Jordaan and Hyde concluded that vocational maturity involved the student's crystallization of interest through experiences (p. 137).

The students in this study responded to an instrument that predates their birth. Comparisons were made between their career values and those of United States high school students who were members of the classes of 1989 and 1990. Earlier in this chapter, it was discussed that much research has been done regarding career values and how these values have shifted during the course of lives of the VGSA Class of 2006. The data collected were used to show evidence of this or offer a rebuttal to this trend.

Gender. Gifted students differ from the general population of students. They also differ amongst themselves; one of the areas where differences typically arise is gender. Using Myers-Briggs personality testing, Sak (2004) found that gifted males had dissimilar traits compared to those of gifted females. Sak collected data on gifted high school juniors and seniors. Among other results, Sak found that gifted males tended to be more introverted and they tended to be more "thinking" as opposed to "feeling" (p. 78). Gifted girls tended to be more "perceiving" than males who were scored as being more "judging" (p. 78). Sak concluded that while gifted students tended to possess certain personality types, differences do exist along gender lines (p. 79).

Farm vs. Non-farm. Studies of farm children are rare; however, Glen Elder, Jr. and Rand Conger reported a comprehensive study of midwestern children in their book, *Children of the Land: Adversity and Success in Rural America* (2000). The authors described decades of research, chronicling the lives of hundreds of Iowa youth. Elder and Conger found that farm families affect the choices of their children. Farm children tended to exhibit more community involvement and leadership than those who grew up in other settings. They are more active in church, in school and other civic organizations.

Elder and Conger (2000) theorized that farm children tended to make choices based more on the wishes of their parents. This influence might be both limiting and liberating, dependent upon the thoughts of the parents and the sector of the agriculture industry in which the parents are engaged. The difference existed in the overall profitability of the farming operation (p. 63). Alarmingly, the authors found that there was a conventional wisdom that farmers were born and not made (p. 277). Non-farm youth, especially girls, were not likely to choose farming as a career.

Student organization membership. Memberships in student organizations can have a profound effect in the lives of young people. In 2001, Astroth and Haynes found that students involved in 4-H were more likely to succeed in school (getting more As than other children), be leaders in their school and community, be looked on as role models, and help others in their community (Astroth & Haynes, 2001, p. 9). Furthermore, they found that students were less likely to damage property, steal, or engage in reckless or dangerous personal behavior (p. 10). VGSA participants were asked to identify themselves as 4-H and FFA members and cross comparisons were completed to see if there were differences between members and their non-member peers.

Agriculture

Only a small percentage of today's population is involved in production agriculture. This is possible because of the advances made in the fields of biology, genetics, and chemistry, and the practical application of these advances by agricultural scientists. However, as a result of the smaller agricultural population, the agricultural literacy of the general public is at a very low level (Nordstrom, Wilson, Kelsey, Maretzki, & Pitts, 2000). This, in turn, leads to the public's questioning of agricultural production methods, animal well-being in farm animal systems, the environmental impact of agriculture, the utilization efficiency of resources in agriculture, and the safety of the food supply. It also possibly contributes to agriculture's poor image (Coulter, 1985; Guither & Curtis, 1983; Jamison & Lunch, 1992; Mallory & Summer, 1986).

Nordstrom et al. found that these perceptions, even among rural youth, often matched a stereotypical "hayseed" view of farming rather than the realities of a rapidly changing industry. Though farmers were considered important by urban and rural

students, urban youth had little interest in agricultural careers. In fact, all participants equated agriculture with farming rather than the wider industry (Nordstrom et al., 2002).

Virginia's Governor's Schools and the Virginia Governor's School for Agriculture

Virginia's Governor's Schools for the Gifted (VGSG) dated back to 1973. With the support of Governor Linwood Holton, Secretary of Education Earl Shiflet, and State Superintendent of Public Instruction Woodrow Wilkerson, requests to fund the VGSG gained approval from the General Assembly. At this time the Governor's School became a line item in the Commonwealth's budget. This was a controversial item due to the high cost ($600) per student (Booth, 1982). The Governor's School has flourished in Virginia in different forms. There are year-round schools such as the one at Pulaski County High School, the original month long summer program and middle school versions of Governor's School (Virginia Department of Education, n.d.b). In 2001, the Virginia Governor's School of Agriculture was held on the campus of Virginia Tech (Virginia Farm Bureau, 2000). Research by John Cannon and Tom Broyles found that VGSA had a positive effect on the program participants' perceptions of agriculture. Gifted students like those that attend VGSA are a source of information to society. They have ability to influence classmates, friends, teachers, counselors and parents. Properly schooled in the realities of modern agriculture, could they be more drawn toward a career in agriculture?

During the past few years, leaders of the Virginia Governor's School for Agriculture (VSGA) have worked to measure the perceptions that participants in the program have about agriculture. Their method of identifying these perceptions included a pretest and posttest that discovered the change that the VSGA generated in the participants' perceptions. One of the primary goals of this program was to recruit gifted

young people into the field of agriculture by making them aware of the opportunities that might await them (Cannon, 2004; Duncan & Broyles, 2004). Part of this mission included building the understanding that the science of agriculture includes many occupations in addition to farming.

Gifted Students

The federal definition of gifted students was originally developed in the 1972 Marland Report to Congress, and has been modified several times since then. The current definition, which is located in the Jacob K. Javits Gifted and Talented Students Education Act of 2001 (United States Department of Education [U.S. DOE], 2006, n.p.), is:

> Students, children or youth who give evidence of high achievement capability in area such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities. (n.p.)

States and districts are not required to use the federal definition, although many states base their definitions on the federal definition (National Association of Gifted Children [NAGC], 2005).

According to the Virginia Department of Education (VDOE), the term "gifted students" means those students in public and secondary schools beginning with kindergarten through graduation whose abilities and potential for accomplishment are so outstanding that they require special programs to meet their educational needs. These students will be identified by professionally qualified persons through the use of multiple criteria as having potential or demonstrated abilities and who have evidence of high performance capabilities, which may include leadership, in one or more of the following areas: intellectual aptitude or aptitudes; specific academic aptitude; technical or practical arts aptitude; and visual or performing arts aptitude (VDOE, 2005). The Columbus Group

added that “the uniqueness of the gifted renders them particularly vulnerable and requires modifications in parenting, teaching and counseling in order for them to develop optimally (NAGC, 2006, n.p.).

It has also been found that there are different values among students based on their academic performance. “Gifted” students are more likely to make career choices between 8th and 11th grade. Super also identified the existence of “early emergers” (1957, p. 383). These students are so gifted in one field or area that their career choice is apparent to them at a very early age. They tend to be problematic when studied for work values. These individuals also tend to see adults as their peers, and since they are usually not incorporated into the industry for which they have a particular talent as of yet, they are left with the potential for serious identity crises (Super, 1957).

Super and Bohn (1970) surmised that counseling gifted children was therefore problematic. However they recognized that this population was gaining more interest from the educational establishment and therefore needed to be studied. Sak (2004) studied gifted students using the Myers Briggs Personality Test. He found that “gifted adolescents were significantly more introverted” than normal children (p. 74). The most common type among gifted adolescents was intuition. Sak also noted that there were significant differences in gifted students’ preference towards thinking and perceiving (p. 74).

While a graduate student at the University of Calgary, Craig Harper (1991) also found the study of gifted youth to involve problems. Harper noted that as the definition of gifted continued to be expanded, the subset of students that comprised the gifted population continued to grow more different as a group. “One generalization that can be

safely made about gifted and talented individuals is that they differ from each other more than they resemble each other. Recently, gifted subpopulations have been identified in terms of their personal characteristics and the type of career development problems they typically possess," stated Harper (p. 14). Research by Sak (2004) supported Harper's work. Sak found that gifted males and gifted females had significantly different personality measures (p. 75).

Gifted students achieve at very high levels. While that statement might seem a bit elementary, it helps to understand the linkage between student needs and career choices, as explained by Maslow's theory. Abraham Maslow (1943) theorized that there is a hierarchy of human needs. The most basic of human needs are found at the base of the Maslow pyramid. Upon satisfying the needs of one level of the pyramid, the person then moves up to the next section of the pyramid. Herrington (2004) used Maslow's Pyramid to explain the "knowledge worker" phenomenon. Herrington postulated that as economic growth occurred, the worker's desires grew. Work had become a "sort of life rather than a Monday through Friday sort of dying" (p. 8). From this idea, one might also theorize that as students achieve more, the needs they value become more complex.

Values Scale Instrument

Donald Super, Professor Emeritus at Columbia University, devoted years of effort to the study of values and how they affect the choices that all of us make toward the careers we pursue and the careers that we avoid as well. Dorothy Nevill (1989) determined that the roles that we choose are determined by many factors including our gender, age, and family status. Different values can affect roles simultaneously at different points in our lives. "For example, early in one's occupational career, emphasis

might be on attaining economic rewards. Later, as one earns more money and occupies a higher position, social relations and altruism may be more consciously sought through the worker role" (Nevill & Super, 1989).

This relationship might even manifest itself in reverse in the case of some females. Concern for the family might make altruistic values more important early in establishing a family, and then a more economically-driven value system might come forward later in the person's life. Studies have also looked at the relationships between values and race, values and gender, and values and occupation. Brown (2002) indicated that values affected career choice. Brown's findings supported Super's early work found in *The Psychology of Careers* (1957). Super theorized that preference toward careers was closely related to ways in which people view themselves and the value they place on different aspects of life. The selection of a career was made after consideration was given to what the career would provide for the individual. Thus the career is seen as a vehicle to help a person evolve into the person they perceive themselves as being.

Other researchers found that careers can be viewed in different ways by different people. For example, Raylesberg (1949) found that engineering might be seen as scientific by some but as materialistic or altruistic by others.

The Work Importance Study (WIS) also confirmed that Nevill and Super's *Values Scale* was consistent with other models such as the Holland Model and the Strong Inventory (Nevill & Super, 1989, p. 1). There has been very little research, however, that addresses specific fields or careers within a field. An example of research that studied students in a specific field used mortuary students as participants. Shaw and Duys (2005) looked at work values in mortuary students in 2005 and found that values of these

particular individuals were different than the national norms from students of the same age. For example, Shaw and Duys found that mortuary students were more goal oriented and tended to decide on their career path earlier than their age group peers. The same may be the case for students choosing careers in agricultural industries.

The VSGA may serve as a good barometer for gauging youths' interests in agriculture. Ginzberg et al. (1951) wrote that while theorizing about work values is difficult, children usually entered into a phase of considering values around the ages of 15 to 16. During this period, Ginzberg et al. thought that youth were beginning to start combining and synthesizing ideas about their future such as: what their interests are, what abilities do they have, what lifestyle they want to pursue, and what career will accommodate the preceding. Holland agreed with these ideas saying that career choice is driven by a person's attraction to "tasks and situations that gratify his personal needs and give him satisfaction" (Holland, 1966, p. 67). Career choice is a means by which young people plot out their place in society and establish their adult social identity apart from their family, even when that identity is in alignment with the parents' identities.

The previous discussion develops the foundation for the use of the *Values Scale* (VS) instrument to help describe the participants of the Virginia Governor's School for Agriculture and their career choices and aspirations. First, the VS has established data on three separate groups: high school students, university students, and working adults. For the purpose of this study, the data for high school students will be used to establish the norm for comparison to the VSGA participants. The high school data sets were reported on 2,816 participants and established internal consistency (alpha coefficients) as a measure of reliability for each value. The VS has further "established validity by (a)

reviewing the values literature of each participating country; (b) studying the lists of values thus developed; (c) equating categories with similar meanings and eliminating item meaning duplication; (d) writing definitions in small cross national working groups; and (e) reviewing the definitions in the general meetings of project directors" (Nevill & Super, 1989, p. 24). Sample items were used by multi-national psychologists who wrote additional items. Items were then reviewed by a multicultural group for understanding, meaning, and consistency (p. 24).

Summary

The review of literature gives evidence of the importance of this study. Agriculture is a critical industry in the success of our nation, and gifted children are one of our greatest assets. The Virginia Governor's School for Agriculture has set the goal of helping gifted and talented students identify more career possibilities in the field of agriculture. Our ability to describe the values of the VSGA participants will assist the program's leaders in shaping curricula that help to focus young minds on the industry's career possibilities.

Chapter 3

Methodology

This chapter describes the procedures for collecting and analyzing the data for this research study. The research questions for this study were:

1. What are the characteristics of the students attending the 2006 VGSA?
2. What are the career values reported by the participants of the 2006 VGSA and how are the values related to selected variables?
3. What are the perceptions of agricultural careers reported by the 2006 VGSA participants and how are the perceptions related to selected variables?
4. What are the influences that shape the values and perceptions of the 2006 VGSA participants and how are the influences related to selected variables?
5. What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session?

This chapter includes a description of the study design, the instrument, and the methods used for data collection and analysis.

Design of the Study

This research is a quantitative, descriptive study. Quantitative research was defined by Rossman and Rallis (2003) as "predictive statements grounded in theory or speculation about how two or more variables are related." Research of this nature "seeks outcomes that are measurable with a number such as a score, rating, or amount" (Rossman & Rallis, 2003, p. 8). Issac and Michael (1990) defined descriptive research as facts and characteristics of a population that are systematically described with a degree of accuracy. The *Values Scale* was developed by Dorothy D. Nevill and Donald E. Super (1989) to include 21 scales identifying needs that drive a person toward a career choice.

The instrument was tested for reliability and validity using over 2000 high school students; therefore, the results of past research using the *Values Scale* have been matched with the findings from the target population of this study.

Population of the Study

Burns (2000) defined a population as "an entire group of people or objects or events which all have at least one characteristic in common, and must be defined specifically and unambiguously" (p. 83). In this study, all students attending the 2006 Virginia Governor's School for Agriculture (VGSA) were invited to participate. VGSA attendance is the common characteristic among this population, and since this group is unique unto itself, no comparisons or generalizations were implied. The original number of students enrolled in the program totaled 98; however, one student withdrew from the program due to medical reasons. The students selected one of six majors. The majors available to the 2006 class were: Agriculture Economics, Agriculture Leadership, Animal Science, Plant Science, Veterinary Medicine, and Natural Resources (VGSA, 2006, p. 4). According to the VGSA student handbook, the coursework of each major was not exclusive to that major. Instruction and assignments cut across many disciplines.

From the course descriptions listed on the VGSA website, Agricultural Economics majors received instruction in the financial realities of both production agriculture and agribusinesses. Agricultural Leadership was a new major for 2006. Students enrolled in this major were focused on key agricultural issues such as career evaluation and heightening agricultural literacy. Animal Science majors were given a broad appreciation for species housed on the Virginia Tech campus. Plant Science students studied botany and related research areas such as bioinformatics. Veterinary

Medicine enrollees were exposed to research and practices related to animal health issues such as those studied at the Virginia Maryland Regional College of Veterinary Medicine (VMRCVM) on the Virginia Tech campus. Finally, Natural Resource students were instructed on topics such as urban landscaping and geospatial information systems (VGSA, 2006, p. 1-8).

Instrument

The *Values Scale* (*VS*) instrument was developed by Dorothy D. Nevill, University of Florida, and Donald E. Super, University of Georgia and Professor Emeritus at Teachers College, Columbia University. It evolved from decades of work with the Work Importance Study (WIS). The VS has established data on three separate groups: high school students, university students, and working adults. For the purpose of this study, the data for high school students will be used to establish the norm for comparison to the VSGA participants. The high school data sets were reported on 2,816 participants and established internal consistency (alpha coefficients) as a measure of reliability for each value. The alpha coefficients for this research are reported in Chapter 4.

The original *VS* was only available in paper form, but permission was sought and granted by Dorothy Nevill to configure the instrument as an online tool. Pat O'Reilly and the staff of the Virginia Tech Center for Assessment and Evaluation of Educational Programs (CAEEP) were employed to complete the online conversion of the instrument. The instrument was offered during the pretest phase only and consisted of 105 questions instead off the paper form's 106 questions. The final question of the paper form was judged to be relevant only to persons who were already employed in a career field and

thus was omitted. This also made the conversion of the questions to the corresponding values scales more equal, given that each of the 21 values was composed of five questions.

The students were asked to respond to the questions as per the instructions given in the original *Values Scale* manual: to answer each question with their first impression and to answer all questions as quickly as possible. The entire 105 questions of the "Values" portion of the pretest were included on the first section of the online pretest instrument. Once the students left that section, it was not possible to return to it. The single student who tried to return to the previous section was locked out of the instrument and his data were collected via a paper version of the converted instrument. This student's answers were transcribed into SPSS following completion of the pretest.

Analysis of the *Values Scale* was done using SPSS and the crosstabulations function. The authors of the *VS* further "established validity by (a) reviewing the values literature of each participating country; (b) studying the lists of values thus developed; (c) equating categories with similar meanings and eliminating item meaning duplication; (d) writing definitions in small cross national working groups; and (e) reviewing the definitions in the general meetings of project directors" (Nevill & Super, 1989, p. 24).

The *Values Scale* consists of 106 questions that attempt to reveal the thoughts of the participants regarding work and life needs. Table 1 matches the 21 scales with the questions of the *VS* that elicit the data gathered from the instrument.

Table 1

Values Scales and Questions

Scales	Questions
Ability Utilization	1, 22, 43, 64, 85
Achievement	2, 23, 44, 65, 86
Advancement	3, 24, 45, 66, 87
Aesthetics	4, 25, 46, 67, 88
Altruism	5, 26, 47, 68, 89
Authority	6, 27, 48, 69, 90
Autonomy	7, 28, 49, 70, 91
Creativity	8, 29, 50, 71, 92
Economic Rewards	9, 30, 51, 72, 93
Life Style	10, 31, 52, 73, 94
Personal Development	11, 32, 53, 74, 95
Physical Activity	12, 33, 54, 75, 96
Prestige	13, 34, 55, 76, 97
Risk	14, 35, 56, 77, 98
Social Interaction	15, 36, 57, 78, 99
Social Relations	16, 37, 58, 79, 100
Variety	17, 38, 59, 80, 101
Working Conditions	18, 39, 60, 81, 102
Cultural Identity	19, 40, 61, 82, 103
Physical Prowess	20, 41, 62, 83, 104
Economic Security	21, 42, 63, 84, 105

Some scales have been determined to have either masculine or feminine tendencies; therefore, raw scores from the instrument were converted to standardized scores. Raw data were converted into standardized scores using the tables provided with the *VS* manual (Nevill & Super, 1989, p. 30). Comparison of groups both within the VGSA population and with national means was accomplished using raw data scores only

since the results for the national groups were listed as raw scores in the manual (p. 30-34).

The students in each major were brought as an intact group to the computer lab in Litton Reaves Hall on the Virginia Tech campus and allowed to complete the survey. The VS instrument was only given once to the participant population. Follow-up questions were developed to be used as a pretest/posttest design. These questions were developed using the VS as a model and sought to obtain more detailed information about the participants regarding their current career decision status and thoughts about agricultural careers in particular. Perceptions of agricultural careers were determined using Nevill and Super's scales and descriptive phrases (Nevill & Super, 1989, p. 8) and are seen in Table 2. The instrument was piloted with adults utilizing the Agriculture and Natural Resources (ANR) Extension Agents of Virginia Cooperative Extension's Southwest District. The pilot group was reached by email using the district's ANR listserv. The agents were given the entire pretest instrument accompanied by a follow-up section with the following questions:

1. Did you find this survey difficult to understand?
2. Was it easy to navigate through the instrument?
3. What comments or suggestions would you make to improve the instrument?

The results of the pilot instrument found the instrument was readable and easily navigable. To assess their current level of awareness, participants were asked to name five agricultural careers and five agricultural companies. The responses of the students were then tallied and results from pretest and posttest were compared for increased agricultural awareness.

The posttest concluded by asking the students to report on their Virginia Governor's School for Agriculture (VGSA) experience. Students were asked if VGSA increased or decreased the stability of their career choice, increased their respect for people involved in agriculture, affected their interest in an agricultural career, and increased their awareness of the importance of agriculture.

Table 2

Values and Corresponding Descriptive Phrases

Values	Descriptive Phrases
Ability Utilization	use all my skills and knowledge
Achievement	have results which show that I have done well
Advancement	get ahead
Aesthetics	make life more beautiful
Altruism	help others with problems
Authority	tell others what to do
Autonomy	act on my own
Creativity	discover, develop, or design new things
Cultural Identity	live where people of my religion and race are accepted
Economic Rewards	have a high standard of living
Economic Security	be where employment is regular and secure
Life Style	live according to my own ideas
Personal Development	develop as a person
Physical Activity	get a lot of exercise
Physical Prowess	work hard physically
Prestige	be admired for my knowledge and skills
Risk	do risky things
Social Interaction	do things with other people
Social Relations	be with friends
Variety	have every day be different in some way from the one before it
Working Conditions	have good space and light in which to work

Note: The source of the descriptive statements for each value is taken from the *Values Scale* manual by Nevill and Super (1989, p. 8).

Institutional Review Procedures

Virginia Tech Institutional Review Board (IRB) policies were followed. Since all members of the study's population were minors, letters and consent forms were sent to the parents seeking permission for their child to participate (Virginia Tech IRB, 2006, n.p.). The consent form, letter, and IRB approval are found in this document in Appendix

C, D, and E respectively. Follow up of the students' completion of the pre and post instrument included a thank-you note as per procedures spelled out by Dillman (2000, p. 35).

Procedure for Administration

Permission was granted by Dorothy D. Nevill to use the Values Scale (VS) and to place the instrument on-line (Appendix F). Participants were asked to access the questionnaire electronically in either the computer lab or their dorm room. Each student was given a password to use in accessing and submitting the instrument and also so VGSA faculty could monitor those who had not completed the questionnaire. The initial administration (the Values Scale instrument and pretest) was presented to the students during the first weekend of the VGSA program. The posttest was administered during the final week of the program. The raw data and standardized scores were managed using Filemaker 8 database management software. Filemaker 8 is a product of FileMaker Incorporated, a subsidiary of Apple Computer, Incorporated.

Data Analysis

Since this study uses an intact population, the analysis included an investigation of frequencies, means, and standard deviations to examine the 2006 VGSA students as a group. Cross-tabulations of data were accomplished using the Statistical Program for the Social Sciences (SPSS) Crosstabs function to compare groups within the population. Influences on students' career decisions were analyzed using the analysis of variance (ANOVA) function of SPSS. The ANOVA test established whether there were significant differences between the mean scores of ten career influences.

The groups that were compared were based on variables of gender, home location, and organization membership. Home location was separated into three categories. The three categories consisted of students who lived on a farm, students who did not live on a farm but had agricultural experience, and students who did not live on a farm and had no agricultural experience. There were four categories of organization membership: 4-H member, FFA member, member of both 4-H and FFA, and non-members of either organization.

Summary

This was a descriptive study that utilized an existing instrument (*Values Scale* [*VS*]) as a basis for an online instrument. Written permission to use the instrument was granted by the author. The instrument was piloted with adults utilizing the Agriculture and Natural Resources (ANR) Extension Agents of Virginia Cooperative Extension's Southwest District. The pilot group was reached by email using the district's ANR listserv. Responses were used for readability only since the reliability and validity of the instrument were previously established by the VS authors. The purpose of the research was to improve career education curriculum offered in future Virginia Governor's School for Agriculture programs.

Chapter 4

Findings of the Study

The purpose of this study was to investigate the values and perceptions held by the participants in the 2006 Virginia Governor's School for Agriculture (VGSA). Each VGSA student participated in the study; therefore, there was no need to measure non-respondent error. An online survey instrument based on Nevill and Super's the *Values Scale* (1989) was developed for this study and completed by VGSA students in a computer lab.

This chapter is arranged to answer the research questions proposed earlier in this dissertation. The specific research questions of this study were:

1. What are the characteristics of the students attending the 2006 VGSA?
2. What are the career values reported by the participants of the 2006 VGSA and how are the values related to selected variables?
3. What are the perceptions of agricultural careers reported by the 2006 VGSA participants and how are the perceptions related to selected variables?
4. What are the influences that shape the values and perceptions of the 2006 VGSA participants and how are the influences related to selected variables?
5. What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session?

Question 1: What are the characteristics of the students attending the 2006 VGSA?

This section describes the population of the 2006 class of the Virginia Governor's School for Agriculture. It again should be noted that this study examined this group in its entirety and recognizes the exclusiveness of this population. No inferences or generalizations to other groups can be made from this study. Numbers and responses represent the entire difference or similarity between subgroups. Subgroups within the

population included gender, home location, student organization affiliation (specifically 4-H and FFA membership), and major area of study within the VGSA program.

The gender, home locations, class, and organization membership of the 2006 Virginia Governor's School for Agriculture (VGSA) can be found in Table 3. The original number of students was 98; however, one student, a female living on a farm and a member of both FFA and 4-H, withdrew from the program due to health reasons. The responses to the pretest that were not repeated on the posttest were judged to be unaffected by the withdrawn student; therefore, questions about values, perceptions of agriculture, career decisions, and influences are reported using 98 students.

There were nearly twice as many females (n=64) as males (n=34) in the study. While the unevenness of these groups represents a challenge to the interpretation of the data, it should be noted that this gender make-up is reflective of the increasing number of females enrolled in the College of Agriculture and Life Sciences (Virginia Tech Office of Institutional Research and Effectiveness, 2006).

Three categories were employed to group students by their home location: non-farm, non-farm with experience, and students who lived on a farm. The second category, non-farm with experience, recognized that while students might not live on a farm, it is possible for them to have exposure to agriculture that might shape their responses to the survey instrument. For example, at least one student had a parent who farmed; however, the student lived off the farm with the parent who had custody. To include this student's responses in the non-farm category would misrepresent that data. Among the home location subgroups, students living on a farm were the smallest group (n=14). Non-farm

students with agricultural experience (n=26) was the next largest group, and the non-farm students (n=58) constituted the largest portion of the population.

Table 3

Characteristics of Participants in the 2006 VGSA [c]

Group	Females	Males	Total
Population	64	34	98[c]
Home location			
Farm	8	6	14
Non-farm with experience[a]	18	8	26
Non-farm[b]	38	20	58
Class			
Senior	41	22	63
Junior	22	12	34
Organization membership			
FFA members	15	5	20
4-H members	14	8	22
FFA member only	6	3	9
4-H member only	5	6	11
Both 4-H & FFA member	9	2	11
Non-member[b]	44	23	67

[a] This recognizes that even though some VSGA participants may not live on a farm, they may have had exposure to agriculture via a family member such as a grandparent.
[b] Non-respondents were added to these categories. The highest number of non-respondents was 2.
[c] One student withdrew from the program, bringing the final total number of students to 97.

The VGSA program is open to rising high school juniors and seniors from across Virginia. The 2006 group of students was composed of 63 seniors and 34 juniors. Finally, the population was categorized by their affiliation with either 4-H, FFA, or both. It was found that 22 students were members of 4-H and 20 were FFA members. Within these groups, 11 students were members of both organizations, while 11 were members of 4-H only and 9 were members only of an FFA chapter. An overwhelming majority of the VGSA Class of 2006 were not members of either organization (n=67). It was noted during the survey that several students asked what 4-H and FFA were and had no idea

about their existence. Interestingly, “4-H member only” was the single category in which males were in the majority.

The students were also grouped by the major fields of study in which they were enrolled at the VGSA. Students were asked to rank their choices of majors and were assigned based on their highest choices in a process that also resulted in similar numbers in each group. Table 4 illustrates the number of students in each major as well as their gender.

Table 4

VGSA Student Population by Major and Gender

Major	Females	Males	Total
Agricultural Economics	8	7	15
Agricultural Leadership	10	5	15
Animal Science	11	6	17
Plant Science	11	6	17
Natural Resources	10	7	17
Veterinary Medicine	13	3	16

Note: The number of students does not include the student who withdrew.

Question 2: What are the career values held by the participants of the 2006 VGSA and how are the values related to selected variables?

The *Values Scale* (*VS*) developed by Nevill and Super (1989) was the instrument chosen to answer question 2. The internal consistency of the *VS* for high school students was established by Nevill and Super using alpha coefficients for each of 21 values. The alpha coefficients ranged from 0.80 for Risk and Creativity to 0.60 for Life Style (1989,

p. 25). To establish reliability for this study, an alpha coefficient was established using Statistical Program for the Social Sciences (SPSS). The alpha coefficient for the instrument was found to be 0.82, which is higher than the alpha coefficients reported by Nevill and Super (p. 25). Utilizing SPSS functions, Cronbach's alpha coefficient was calculated for the study if a variable was removed. This method seeks to find outlying values by the process of elimination. The alpha coefficient when a value was deleted ranged from .80 to .82; therefore the results for each value was deemed reliable.

Using crosstabulations, it was found that while the numerical ranking of traits differed slightly between females and males, there was no difference between the genders in which scales they grouped near the top of the values and which scales were found near the bottom of the 21 values. Table 5 reports the raw score for each scale and the ranking of each scale for the males and females.

From Table 5, one can see that the Achievement value is paramount to both females and males. The five highest ranked scales for females are the same five as for the males (Achievement, Ability Utilization, Personal Development, Altruism, and Economic Security). Likewise, the four lowest ranked scales for females and males are composed of the same scales (Authority, Cultural Identity, Risk and Physical Prowess).

The next variable for which the students' *Values Scale* results were analyzed was the place of residency or home location of the student. In past VGSA studies, students were grouped using the population size of their residence zip code. While the accuracy of that measure is acknowledged, it omits a key component of the student's life, and that is their experience while living where they reside. Certainly, an urban youth who visited

and interacted with relatives living on farms would have different opinions and values (at least as far as agriculture was concerned) than their urban peers with no such experience.

Table 5
Raw Career Value Score and Rank by Gender

	Female(n=63)			Male (n=34)		
Values	Score	SD	Rank	Score	SD	Rank
Achievement	17.27	1.98	1	16.79	2.59	1
Ability utilization	17.23	2.06	2	16.32	2.53	3
Personal development	16.80	1.83	3	16.12	2.35	4
Altruism	16.70	3.65	4	15.35	3.33	5
Economic security	16.02	3.11	5	16.65	3.33	2
Life style	15.38	2.34	6	15.29	2.37	7
Social relations	15.20	2.68	7	15.06	2.62	8
Economic rewards	14.64	3.55	8	15.35	3.78	5
Aesthetics	14.61	3.41	9	13.94	3.74	12
Creativity	14.55	3.12	10	14.32	3.25	10
Advancement	14.48	3.25	11	14.82	3.69	9
Working conditions	14.39	2.80	12	13.59	3.39	16
Autonomy	14.02	2.98	13	14.09	2.83	11
Social interaction	13.58	3.16	14	13.74	2.57	12
Prestige	13.53	3.48	15	13.62	3.95	15
Variety	13.27	3.03	16	13.24	2.63	17
Physical activity	13.03	3.76	17	13.68	3.70	14
Authority	12.67	3.03	18	12.53	2.57	19
Cultural identity	12.28	3.31	19	12.26	3.71	20
Risk	10.97	3.82	20	12.56	3.96	18
Physical prowess	9.25	2.70	21	10.38	3.01	21

Note: There were five items per value, and each was rated on a four-point scale in which 1 = of little or no importance and 4= very important. This resulted in a range of scores from 5 to 20 for each value.

In order to examine this possible difference, students were asked to describe their living conditions under one of three headings: (a) live on a farm; (b) do not live on a farm, but have some agricultural experience; and (c) do not live on farm and have no agricultural experience. Again there was an imbalance in the numerical make-up among these groups. The non-farm group (n=58) was vastly larger in number to either the non-farm with experience group (n=26) or the group living on a farm (n=14). Table 6 shows the raw scores from each scale as well as the ranking of each among the three home location categories. Once again, very little of the difference in the ranking of the students' values scores could be explained using the variables of home location or agricultural experience. Students from a "non-farm with experience" background tended to rank physical activity as more important than the other groups; however, the top five scales and the bottom three scales for each group matched.

The *Values Scale* manual (Nevill & Super, 1989) provided data from 1989 regarding the national mean for high school students in the United States. Research conducted by Dittman (2005) and Smola and Sutton (2002) reported a shift in values that has occurred in the United States as new generations of workers come of age. To investigate this theory with the population of this study, the raw scores of the 2006 VGSA students were compared to the national mean of United States high school students collected prior to 1989. The data were reported by gender and are found in Table 7 (females) and Table 8 (males). Of the differences that were observed, the greatest difference in raw scores existed within the scale of Economic Rewards. Both females and males had raw scores that were much lower, -2.22 and -1.42 points respectively, when compared to the national mean provided in the *Values Scale* manual (Nevill & Super,

1989). Both female and male VGSA students exhibited the greatest positive difference for the scale of "Altruism," with differences of +1.62 and +2.00 respectively.

Table 6

Raw Career Value Score and Rank by Home Location

	Non-farm (n=56)			NF with exp.[a] (n=26)			On-farm (n=14)		
Values	Score	SD	Rank	Score	SD	Rank	Score	SD	Rank
Achievement	17.16	2.10	1	16.96	2.63	1	17.21	1.97	1
Ability utilization	17.13	2.20	2	16.46	2.39	3	16.79	2.42	2
Altruism	16.80	3.22	3	15.38	4.18	4	15.36	3.82	5
Personal development	16.63	2.25	4	16.50	1.68	2	16.50	1.99	3
Economic security	16.25	3.53	5	16.38	2.95	4	16.07	2.40	4
Life style	15.45	2.34	6	15.27	1.82	6	15.21	2.19	7
Social relations	15.39	2.69	7	15.08	2.33	7	14.29	3.10	10
Economic rewards	15.20	3.65	8	14.69	3.90	11	14.43	3.03	9
Working conditions	14.68	2.79	9	13.38	3.41	16	13.00	2.66	16
Advancement	14.63	3.61	10	14.31	3.39	13	14.93	2.87	8
Creativity	14.41	3.04	11	13.88	3.47	15	15.36	2.95	5
Aesthetics	14.15	3.22	12	15.04	4.17	8	13.79	3.58	12
Social interaction	14.00	2.49	13	13.27	3.40	17	12.86	3.78	17
Autonomy	13.84	3.08	14	14.73	2.26	10	14.07	3.10	11
Prestige	13.43	3.50	15	14.46	3.83	12	12.57	3.94	18
Variety	12.91	2.80	16	14.00	3.31	14	13.29	2.43	13
Authority	12.46	3.09	17	12.85	2.46	18	13.07	2.84	15
Physical activity	12.41	3.55	18	15.04	3.94	8	13.14	3.06	14
Cultural identity	12.30	3.59	19	12.54	3.48	20	11.43	2.71	20
Risk	11.14	3.68	20	12.81	3.99	19	11.50	4.18	19
Physical prowess	9.38	2.71	21	10.17	3.01	21	9.93	3.03	21

[a] NF with exp= Non farm with experience. This group was composed of youth who did not live on a farm; however, they judged themselves as having agricultural experience. These experiences ranged from having grandparents who farmed to having one single parent who farmed.

Table 7

Comparison of Female 2006 VGSA Raw Career Value Scores to National Scores for High School Students Prior to 1989

	VGSA Females N= 63			1989 High School Females N= 1,461			VGSA Scores minus National Scores
Value	Score	SD	Rank	Score	SD	Rank	Difference
Achievement	17.27	1.98	1	16.97	2.63	1	+0.30
Ability Utilization	17.23	2.06	2	16.12	2.64	5	+1.11
Personal Development	16.80	1.83	3	16.30	2.47	4	+0.50
Altruism	16.70	3.65	4	15.08	3.12	8	+1.62
Economic Security	16.02	3.11	5	16.48	2.91	3	-0.46
Life Style	15.38	2.34	6	15.38	2.78	7	0.00
Social Relations	15.20	2.68	7	14.98	3.28	10	+0.22
Economic Rewards	14.64	3.55	8	16.86	2.90	2	-2.22
Aesthetics	14.61	3.41	9	14.66	3.29	12	-0.05
Creativity	14.55	3.12	10	14.19	3.44	14	+0.31
Advancement	14.48	3.25	11	15.82	3.08	6	-1.34
Working Conditions	14.39	2.80	12	15.05	3.03	9	-0.66
Autonomy	14.02	2.98	13	14.46	3.12	13	-0.44
Social Interaction	13.58	3.16	14	13.51	2.97	15	+0.07
Prestige	13.53	3.48	15	14.67	3.28	11	-1.14
Variety	13.27	3.03	16	13.51	2.97	15	-0.24
Physical Activity	13.03	3.76	17	13.34	3.21	17	-0.31
Authority	12.67	3.03	18	12.50	3.11	19	-0.17
Cultural Identity	12.28	3.31	19	12.69	3.40	18	-0.41
Risk	10.97	3.82	20	10.91	3.59	20	+0.08
Physical Prowess	9.25	2.70	21	9.13	2.82	21	+0.12

Note: National data were found in Appendix B of the *Values Scale* manual (Nevill & Super, 1989, p. 33).

Table 8

Comparison of Male 2006 VGSA Raw Career Value Scores to National Scores for High School Students Prior to 1989

	VGSA Males N= 36			1989 High School Males N= 1,461			VGSA Scores minus National Scores
Value	Score	SD	Rank	Score	SD	Rank	Difference
Achievement	16.79	2.59	1	16.40	2.61	2	+0.39
Economic Security	16.65	3.33	2	16.24	3.07	3	+0.41
Ability Utilization	16.32	2.53	3	15.68	2.81	5	+0.64
Personal Development	16.12	2.35	4	15.42	2.66	6	+0.70
Altruism	15.35	3.33	5	13.35	3.33	16	+2.00
Economic Rewards	15.35	3.78	5	16.77	2.95	1	-1.42
Life Style	15.29	2.37	7	15.26	2.76	7	+0.03
Social Relations	15.06	2.62	8	14.71	3.08	9	+0.35
Advancement	14.82	3.69	9	15.84	3.01	4	-1.02
Creativity	14.32	3.25	10	14.26	3.27	12	+0.06
Autonomy	14.09	2.83	11	14.77	3.11	8	-0.68
Aesthetics	13.94	3.74	12	13.65	3.23	14	+0.29
Social Interaction	13.74	2.57	13	13.23	3.16	18	+0.51
Physical Activity	13.68	3.70	14	14.26	3.08	12	-0.58
Prestige	13.62	3.95	15	14.35	3.31	11	-0.73
Working Conditions	13.59	3.39	16	14.48	3.01	10	-0.89
Variety	13.24	2.63	17	13.40	2.92	15	-0.16
Risk	12.56	3.96	18	12.35	3.81	20	+0.21
Authority	12.53	2.57	19	13.29	3.09	17	-0.76
Cultural Identity	12.26	3.71	20	12.51	3.42	19	-0.25
Physical Prowess	10.38	3.01	21	10.80	3.32	21	-0.42

Note: National data were found in Appendix B of the *Values Scale* manual (Nevill & Super, 1989, p. 33).

Question 3: What are the perceptions of agricultural careers held by the 2006 VGSA participants and how are the perceptions related to selected variables?

Following the administration of the Values Scale instrument, students were asked to choose whether a career in the field of agriculture would provide an outlet for each of the 21 scales of the *VS* instrument. Students were provided sample phrases for each value (the first 21 items from the *VS*) and then asked to choose if the value would be likely or unlikely to be provided in an agricultural career. The phrases used to describe each value are found in Table 2 on page 33, Chapter 3 of this dissertation.

This question was repeated in the posttest. The posttest instrument was designed to measure the effect that Virginia Governor's School for Agriculture (VGSA) had as a treatment on the students' perceptions of agriculture. In Table 9, the percentages of students who identified each value as "likely" to be provided in an agricultural career are reported. The value scores are arranged by the percentages resulting from the pretest, and the gain or loss from the pretest to the posttest is listed.

From Table 9, it was learned that the most substantial gains were made in the areas of economic security, prestige, and cultural identity—each experiencing double-digit gains in the percentage of students who viewed that value as being provided within an agricultural career. Seventeen values experienced positive gains while only four had losses. It should also be noted that the perceived likeliness of the scales "Authority" and "Autonomy" experienced a double–digit losses of 13.4 and 11.6 respectively. The overall ranking of the values tended to be the same. The values that were more "likely" continued to be viewed as such and those near the bottom of the rankings on the pretest continued to be found there on the posttest.

The students were next tested on their knowledge about agricultural careers and companies. Each student was asked to name five agricultural careers and five agricultural companies. Of the 98 original respondents, 73 students were able to name five careers. It should be noted that students in the majors that took the test earlier in the testing session engaged in answer sharing during this phase of questioning. Instructions were given to later groups (majors) to not share answers.

In Table 10, the careers named by the VGSA population are listed with the number of times they were mentioned. Careers named were cross-checked for spelling and grouped accordingly. For example, there were five different spellings given for "veterinarian." The analysis by Statistical Program for the Social Sciences (SPSS) listed each spelling as a different response, so it was necessary to examine the data to place answers in the intended position. As shown in Table 10, production agriculture was foremost on the minds of the VGSA students. The response of "farmer" was by far the most popular answer with 93 responses. "Veterinarian" was next highest with 46 responses. From there, responses of other careers dropped into the teens and single digits.

As part of the VGSA program, the students enrolled in the Agriculture Leadership major received instruction on agricultural careers and opportunities using the AgforLife.com curriculum developed by Texas A&M University and marketed through AGCareers.com (Spell, 2006). None of the other five majors received this training. As a result of their exposure, the Agriculture Leadership students, who ranked fifth in their ability to name careers in the pretest instrument, ranked first in their ability to name careers in the posttest. Table 11 exhibits this knowledge gain.

Table 9

Students' Percentages of Likeliness of Values to be Provided in Agricultural Careers (Pre and Post)

	Student Percentages of Likeliness				
Scale	Pretest	Rank	Posttest	Rank	Gain/Loss
Physical Activity	91.8	1	90.7	5	-1.1
Physical Prowess	90.8	2	93.8	3	+3.0
Altruism	90.8	3	95.9	1	+5.1
Social Interaction	89.8	4	95.9	1	+6.1
Achievement	87.8	5	86.6	7	-1.2
Personal Development	84.7	6	91.8	4	+7.1
Creativity	80.6	7	84.5	9	+3.9
Aesthetics	79.6	8	87.6	6	+8.0
Working Conditions	78.6	9	86.6	7	+8.0
Variety	77.6	10	80.4	11	+2.8
Autonomy	76.5	11	64.9	17	-11.6
Lifestyle	74.5	12	80.4	11	+5.9
Cultural Identity	71.4	13	81.4	10	+10.0
Social Relations	70.4	14	73.2	14	+2.8
Risk	70.4	15	76.3	13	+5.9
Ability Utilization	63.3	16	71.1	15	+7.8
Advancement	62.2	17	63.9	18	+1.7
Prestige	57.1	18	69.1	16	+12.0
Economic Security	50.0	19	62.9	19	+12.9
Authority	48.5	20	35.1	21	-13.4
Economic Rewards	37.8	21	46.4	20	+8.6

Note: "Percentage of Likeliness" refers to the percentage of students who responded that a particular value was likely to be provided by an agricultural career. Possible range= 0-100%.

Table 10

Agricultural Careers by Number of Student Responses

Career	Number	Career	Number
Farmer	93	Agronomist	2
Veterinarian	46	Climatologist	2
Agribusiness owner	18	Crop analyst	2
Breeder	18	Crop duster	2
Agriculture teacher	17	Food inspector	2
Scientist/researcher	17	Herdsman/shepherd	2
Biologist	10	Horse therapist	2
Engineer	10	Landscape architect	2
Economist	9	Veterinary technician	2
Extension agent	9	Artificial insemination technician	1
Professor	9	Animal biologist	1
Chemist	8	Aquaculturist	1
Conservationist/ecologist	8	Biochemist	1
Game warden	8	Cattle buyer	1
Geneticist	8	Consultant	1
Forester	7	Cow milker	1
Gardner	7	Cowboy	1
Meat processor	7	Dairy inspector	1
Nutritionist	6	Feedlot operator	1
Equine trainer	6	Fisherman	1
Landscaper	6	Fishery biologist	1
Teacher	5	Food supplier	1
Turfgrass manager	4	Global information system coordinator	1
Farm worker	4	Grocer	1
Food processor	4	Inventor	1
Lobbyist	4	Livestock manager	1
Accountant	3	Manager	1
Botanist	3	Packaging	1
Florist	3	Pesticide applicator	1
Horticulturist	3	Pet psychologist	1
Mechanic	3	Soil remediator	1
Park ranger	3	Soil tester	1
Rancher	3	Tractor driver	1
Sales representative	3	Welder	1

Table 11

Mean Number of Agricultural Careers Named by Students in Each Major

	Careers Named		Ranking	
Major	Pretest	Posttest	Pretest	Posttest
Veterinary Medicine	4.63	4.56	1	2
Natural Resources	4.47	4.47	2	3
Animal Science	4.24	4.41	3	4
Plant Science	4.35	4.41	4	5
Agriculture Economics	4.00	4.33	6	6
Agriculture Leadership	4.07	4.67	5	1

The means indicate that students in four of the majors were able to name more careers in the post test. The Natural Resources group had the same mean, while the Veterinary Medicine group named fewer careers.

Next on both pretest and posttest, students were asked to name five agricultural companies. In both testing periods, this particular question gave the students the most problems as a population. Students visibly struggled to fill in at least one blank, even with the reassurance that the there were no “correct” answers and that the test was only a measure of their own personal thoughts and views.

Of the 98 participants in the pretest, 29 students did not name a single agricultural company. Businesses that have recently focused more toward consumer-oriented operations, such as Southern States or John Deere, were more readily named. The students also appeared to use some creativity in naming companies. Table 12 lists the companies named by the VGSA student population. Again there was some answer sharing among the students, however efforts to curtail talking were effective.

Once again the students exhibited knowledge gain during the course of the 2006 VGSA program. Table 13 indicates that while Agriculture Leadership retained its pretest high ranking, four other majors showed increased ability to name agricultural companies. Again one group, the Animal Science majors, named fewer companies in the posttest. Some of this loss can be attributed to fatigue, as the Animal Science majors, who were tested last, exhibited the greatest loss in ability.

Question 4: What are the influences that shape the values and perceptions of the 2006 VGSA participants and how are the influences related to selected variables?

Following the listing of agricultural careers and companies, students were asked if they had come to a decision about their own career. Based on their reply, the online instrument branched to give participants different questions. Those answering that they had made a career choice were asked if their future career was in the field of agriculture, when they had made their career choice, and what were the most important influences on their career choice. Those answering that they had not yet made a decision were asked if they would consider an agricultural career, when they expected to make a decision, how concerned they were about making a decision, and the influences they expected to help them make a decision.

Table 12

Agricultural Companies by Number of Student Responses

Company	Number	Company	Number	Company	Number
Tyson	23	Sunkist	2	Hershey's	1
Southern States	21	Accelerated Genetics	1	Honda	1
John Deere	19	Ag For Life	1	Jimmy Dean	1
Perdue	19	AQHA	1	Kellogg's	1
Butterball	9	Boar's Head	1	Kraft	1
Individual Farms	9	Braum's	1	Land O'Lakes	1
Chiquita	7	California Cheese	1	Let Us Produce	1
Dole	6	Cargill	1	Marva Maid	1
Farm Bureau	5	Carhartt	1	McCormick	1
Farm Credit	5	Chookhyop	1	MD/VA Milk Coop	1
Holstein Association	5	Cold Stone Creamery	1	Miracle Gro	1
Tractor Supply Co.	5	Country Crock	1	Nonghyop	1
Jersey Association	4	Country Farm	1	Pericana Chicken	1
Select Sires	4	Cub Cadet	1	Pfizer	1
Tropicana	4	Dairyman's Specialty	1	Piedmont Milk	1
Angus Association	3	Dean's Foods	1	Private Vet Service	1
Ben & Jerry	3	Dip N Dots	1	Safeway	1
Co-op	3	Dover Saddlery	1	Smithfield	1
Ford	3	DuPont	1	Smith's	1
Massey Ferguson	3	Farm Service Agency	1	Star-Cured Tobacco	1
NewHolland	3	Farmer's Associations	1	Stateline Tack	1
Purina	3	Farmers R Us	1	Stouffer’s	1
Chicago Meat Packers	2	Figi	1	SUDIA	1
Eggland's Best	2	First Bank and Trust	1	Sullivan’s	1
FFA	2	Florida Natural	1	Tecumseh	1
International Paper	2	Food Lion	1	Triple A	1
Kubota	2	Food Pavilion	1	Triple Crown	1
Monsanto	2	General Mills	1	VA Tech	1
Pet Milk	2	Green Giant	1	VDGIF	1
Rockingham Coop	2	Georgia Pacific	1	Young's	1
Scott's Lawn Products	2	Hebrew National	1		

Table 13

Mean Number of Agricultural Companies Named by Students in Each Major

	Companies Named		Ranking	
Student Major	Pretest	Posttest	Pretest	Posttest
Agricultural Leadership	3.40	4.07	1	1
Natural Resources	2.82	2.94	2	3
Plant Science	2.59	3.53	3	2
Animal Science	2.53	2.00	4	6
Veterinary Medicine	2.38	2.63	5	5
Agricultural Economics	1.73	2.93	6	4

Within the entire 2006 VGSA student population, well over half (n=56) had made a career decision. Table 14 shows the contrasts of student career decisions by gender, organization membership, and home location.

Table 14

Career Decision by Selected Variables

Variable	Number in Category	Number Having Career Decisions	Number Having Career Decisions as a Percentage of the Category
Gender			
Female	64	38	60%
Male	34	18	53%
Organization			
FFA only	9	6	66%
4-H only	11	8	73%
Both FFA & 4-H	11	8	73%
Non-members	67	34	51%
Location			
Non-farm	58	30	52%
Non-farm w/ exp.	26	16	62%
Farm	14	9	65%

Membership in 4-H and FFA appeared to have a positive influence in helping students make career decisions. Members of both FFA and 4-H and those who were only 4-H members were 22 percentage points more likely to have made a career decision than their non-member peers. Members of FFA only were also more likely to have made a career decision. Results of home location as a variable suggest that as the level of

agricultural experience increased, students were more likely to have made a career decision.

Among the students who reported having made a career decision, females decided on careers earlier than their male counterparts. As exhibited in Table 15, 33% of males with a career decision identified that career choice prior to the 10th grade. In comparison, 58% of females came to their decision before the end of their freshman year in high school.

Table 15

Student Reported Grade Level of Career Decision

Grade	Females (n= 38)	Males (n=18)	Total (n=56)
1-3	7 (18%)	2 (11%)	9 (16%)
4-6	4 (11%)	1 (5%)	5 (9%)
7-9	11 (29%)	3 (17%)	14 (25%)
10-12	16 (42%)	12 (67%)	28 (50%)

The VGSA participants were also asked how likely they thought it was that their career decision would change. The majority of the students with career decisions felt that their choice was fairly stable. Only four students stated that their career choice was either "likely" or "very likely" to change. The majority of students (n=27) stated that their decision was "somewhat likely" to change, followed closely by 25 students who said that it was "not likely at all" that their decision would change.

Among the 56 students making a career choice, there was evidence of a lack of understanding regarding the scope of the field of agriculture. For example, some students

listed “Biochemist” as their career path but disagreed on whether that career was in the field of agriculture. “Lobbyist” was another career that was listed as “not in the field of agriculture” by some students, but was listed as an agricultural career by others (see Table 10, page 49).

The students who had not decided responded that they had some level of pressure to choose a career path. Twenty percent (n=8) answered that they were “very concerned” about not having a career choice. The largest number of students (n=17) answered that they felt “somewhat concerned” about not having a career choice. Ten students voiced that they were “not concerned at all” about not having a career choice. Students were asked when they expected to reach a decision, and nearly 81% stated that they would decide between high school graduation and the end of their first year in college/technical school.

Ten possible career influences were rated on importance by the students. For each influence, the students were given the choice of “very important,” “important,” “of some importance,” and “not important at all.” The responses were converted to a four-point scale where “very important” was four and “not important at all” received a score of one. The mean and standard deviation for each influence are reported in Table 16. Among the ten career influences the students rated, the four influences with the highest mean scores were: work experiences (3.15), school experiences (2.97), people they knew in the career field (2.90), and parents (2.80). The career influence with the lowest mean score for importance was guidance counselors (1.51).

An analysis of variance (ANOVA) was employed to check for the presence of a significant difference between the mean scores of the career influences. Table 17

represents the results of this analysis. It was found that there was no significant difference between the means of the top four career influences (work experience, school experience, people they knew in the career field, and parents). There was a significant difference between the previously mentioned career influences and the next five influences (teachers, student organizations, other family members, media, and friends). There was also a significant difference between the lowest influence, guidance counselors and all other career influences.

Table 16

Career Influences of 2006 VGSA Students (N=98)

			Number of Students Selecting	
Influences	Mean Score	SD	Most Important	Among Top Three
Work experiences	3.15	1.06	12	42
School experiences	2.98	1.08	11	45
People you know in the field	2.91	1.05	12	39
Parents	2.80	0.98	38	64
Teachers	2.20	1.08	10	45
Student organizations	2.16	1.12	3	16
Other family members	2.14	1.02	4	17
Media	2.13	1.01	5	19
Friends	1.99	1.02	2	19
Guidance counselors	1.51	0.79	0	4

Note: The mean represents the average of the responses given by students ranking each influence on a 4-point scale in which 4 = very important, 3 = important, 2 = of some importance, and 1 = of little or no importance. Students were given the opportunity to rank their top three influences. The heading of "Among Top Three" represents the number of times that an influence appeared in this ranking.

After the students were asked to rate each influence's level of importance, the students were asked to select the most important influence in their career decision as well as the second and third most important influences. The results of these questions yielded different results, in that parents were reported as the most important influence by 38 students. Work experience and people they knew in the career field were a distant second with 12 students selecting each as the most important career influence. No student selected guidance counselors as the most important influence.

The number of times a career influence appeared in the top three choices was also tallied. Parents again led all other choices as 64 students reported that parents were one of their top three career influences. Teachers and school experiences tied for second most selections with 45 and the influence of work experiences was chosen 42 times. Again guidance counselors were last with a tally of four.

Another analysis of career influences grouped students as being members of 4-H only, FFA only, or members of both organizations. When analyzing memberships, students who were members of both 4-H and FFA listed student organizations as more influential in career choice than their parents, even though parents were still the number one influence of students who were members of only one of these organizations. It should also be mentioned that students who were members of both organizations were a very small group within the population (n=11). This group was also unevenly skewed by gender with 9 girls and only 2 boys.

Table 17

Posthoc ANOVA of Influences on Student Career Decisions (n=97)

	Subset for alpha = 0.05		
Influences	1	2	3
Work experiences	3.15		
School experiences	2.98		
People you know in the field	2.91		
Parents	2.80		
Teachers		2.20	
Student organizations		2.16	
Other family members		2.14	
Media		2.13	
Friends		1.99	
Guidance counselors			1.51

Question 5: What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session?

The posttest administered to the 2006 Virginia Governor's School for Agriculture (VGSA) focused on measuring changes in students' thoughts about careers, knowledge of agricultural careers and companies, interest in agricultural careers, and agricultural awareness. As mentioned previously, knowledge of the agricultural careers and companies was increased as measured by the students' ability to name up to five of each. The number of students who did not name a single agricultural company on the pretest (n=29) was reduced to 15 on the posttest.

When asked if the VGSA had increased their awareness of agriculture, 19 students (9 females and 10 males) agreed, while 76 (53 females and 23 males) strongly agreed. One student did not respond. The same tendency was found when students were asked if VGSA increased their respect for people employed in agricultural careers. One student disagreed, while 29 agreed and 66 strongly agreed.

When asked what affect the VGSA had on their future career plans, 8 students reported that they were less sure about their career plans. Over 50% (n=49), however, said that the program made them more sure, while 39 stated that their career plans remained unchanged. Student interest in agricultural careers also increased with 68 students (47 females and 21 males) reporting an increased interest in pursuing an agricultural career. Twenty-four students (13 females and 11 males) reported no change in their interest in agriculture, while only 4 students (3 females and 1 male) stated that their interest in an agricultural career had decreased because of their VGSA experience.

Summary

This chapter has provided a presentation of the findings as related to the specific questions of the study. Data including frequencies, means, standard deviations, and rankings were included. The 2006 class of the VGSA was researched as a population and examined for subgroups. Subgroups were formed using the variables of gender, home location, and student organization memberships. Values of this population were also compared to national data collected over 17 years prior to this study.

Chapter 5

Discussion of Findings, Conclusions, and Recommendations

This chapter contains a summary and discussion of the findings of this study. Conclusions, implications, and recommendations for practice and further research are also included.

United States agriculture continues to evolve into something that is different than it was even 20 years ago. According to the U.S. Census Bureau (2006) and the National Agriculture Statistics Survey (2002), farmers no longer make up a significant portion of the national population nor the agricultural employment population. Students continue, however, to identify farmers and production agriculture as typical of agricultural careers. Approximately 22 million Americans work in over 300 careers in the agriculture sector of our national economy (National FFA Organization, 2006). Agricultural employers continue to report difficulty in filling positions (Spell, 2006), so it is reasonable to assume that demand for qualified agriculture industry employees will exceed the supply.

Farmers are a shrinking group in our population, so it is reasonable to assume that the supply of farm children is also dwindling. According to Dennis Clark (2006), John Deere human resource manager, students with farm backgrounds are desirable as trainees; however, the rarity of their availability makes it necessary to recruit employees with no agricultural background whatsoever. Clark added that employees with no agricultural background can be assets because they approach problems with fresh solutions. The majority of the students enrolled in the 2006 Virginia Governor's School for Agriculture (VGSA) had no agriculture experience; therefore, they were a reasonable population to use for a study on agricultural careers and perceptions of agriculture.

The specific research questions of this study were:

1. What are the characteristics of the students attending the 2006 VGSA?
2. What are the career values reported by the participants of the 2006 VGSA and how are the values related to selected variables?
3. What are the perceptions of agricultural careers of by the 2006 VGSA participants and how are the perceptions related to selected variables?
4. What are the influences that shape the values and perceptions of the 2006 VGSA participants and how are the influences related to selected variables?
5. What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session?

Discussion of the Findings

Question 1: What are the characteristics of the students attending the 2006 VGSA? The members of the 2006 class of the Virginia Governor's School for Agriculture were predominately females. Females outnumbered males by nearly a two to one margin, 64 females as compared to 34 males. This finding reflects realities in both past VGSA programs and enrollments in colleges of agriculture. Cannon (2005) and Duncan and Broyles (2004) reported VGSA populations that were predominately female. The Virginia Tech Office of Institutional Research and Effectiveness (2006) reported that the female enrollment in College of Agriculture at Virginia Tech outpaced males at nearly a two to one ratio.

Female interest in agriculture is not limited to Virginia. Nafukho (1998) found similar female to male ratios in the College of Agriculture at Louisiana State University. The National FFA Organization (2006) reported that females were a minority in their student enrollment (38%); however, females held 50% of the state leadership positions.

Only eight students reported that they resided on a farm. This small number is actually a much higher percentage than in the overall Virginia population. According to the US Census Bureau (2000), less than 2% of Virginia citizens live on farms. While the students who live on farms are members of one of the smallest subsets of the VGSA population, their numbers are four times greater than that which one might expect in a representative sampling of students.

Another abnormally large group within the 2006 VGSA program was members of FFA and 4-H. Thirty-one students were members of FFA, 4-H, or both organizations. From personal experience, 32% membership in 4-H or FFA is very high among high school students.

Question 2: What are the career values of the participants of the 2006 VGSA and how are they related to selected variables? The career values of the 2006 VGSA students were accessed using Nevill and Super's (1989) *Values Scale* (*VS*) instrument. The results of the *VS* showed that among the 2006 VGSA population, the values of Achievement, Ability Utilization, Personal Development, Altruism, and Economic Security were consistently in the top five values reported. At the other extreme, Physical Prowess, Physical Activity, Risk, Authority, and Cultural Identity were the five least important values reported by the VGSA class of 2006.

My interpretation of the *VS* instrument results was that generally, the gifted students of the 2006 VGSA desire a career in which others will recognize them as being among the best in their field. By the same token, this population did not seem to be interested in a career that they perceived as involving much physical exertion. Theories by Super (1957), Holland (1966), and Harper (1991) supported this interpretation. They

found that gifted students are driven to be acknowledged for their accomplishments and this desire for acknowledgement influences their decisions regarding education and career paths.

I also found that the data generated by the *VS* were interesting because there was very little difference between females and males. Sak (2004) found notable differences between gifted males and females when examining their personalities. One might hypothesize that differences in personalities might bring forth differences in personal values as well. This was not the case in this particular population. The results suggest that there is less difference between females and males when students are evaluated using the *Values Scale* instrument as compared to tests like the *Myers-Briggs* instrument used by Sak.

There was very little difference between groups delineated by home location. Elder and Conger (2000) theorized that students raised on a farm had different motivations than their non-farm peers. The results of this study did not support that theory.

A surprising result was how similar *VS* data for the 2006 VGSA participants were to Nevill and Super's (1989) assessment of high school populations nearly two decades prior. This seems to contradict research by Dittman (2005) and Heathfield (2006) that suggests that there were might be differences between career values of the 2006 VGSA students generation (Millennials) and the Generation Xers measured by Nevill and Super. The similarity might be explained by considering Super's (1957) theory that gifted students tend to have values similar to their parents. Nevill and Super's data were

collected 17 years ago; their participants would be the same generation as the parents of 2006 VGSA students.

Dittman (2005) reported that younger workers were interested in life styles over economic gains. Again, while economic rewards were lower among the VGSA population, raw score differences for "Life Style" were virtually nonexistent when comparing the VGSA student population with the national mean reported in the *VS* manual (Nevill & Super, 1989). A suggestion for this might be that the 2006 VGSA students were possibly more affluent than average and as such, were less motivated by money.

Of the differences that were observed, the greatest difference in raw scores existed within the scale of Economic Rewards. Both females and males had mean raw scores that were lower, -2.22 and -1.42 points respectively, when compared to the national means provided in the *Values Scale* manual (Nevill & Super, 1989, p. 33-34). The finding supports recent research that points out that monetary gains are not as important to Millennials (Smola & Sutton, 2002, p. 380).

Dittman (2005) reported that younger workers are tending to put less emphasis on the business side of their life, and Heathfield (2006) pointed out a trend towards more emphasis on personal and emotional goals. There were more similarities than differences between the gender subgroups in this study and their corresponding 1989 national groups; however both female and male VGSA students exhibited the greatest positive difference for the scale of "Altruism," with a difference of +1.62 and +2.00 respectively. I interpret this to mean that students of the 2006 VGSA were interested in helping others and that opportunities to volunteer would be of interest to them.

Question 3: What are the perceptions of agricultural careers of the 2006 VGSA participants? The evidence showed that when the 2006 VGSA students thought of agriculture, they thought of farmers, people engaged in production agriculture. They had very little information on the scope of agricultural careers and the agricultural companies that are desperately seeking skilled employees. In addition, it seemed to be apparent that the information that the VGSA students had about agriculture (particularly production agriculture) was dated. Their perceptions of agricultural careers were skewed toward manual work requiring at least moderate physical strength. They also saw agricultural careers as being financially risky. In general, the VGSA class of 2006 expressed a very narrow view of agriculture.

In the pretest and posttest, the 2006 Virginia Governor's School for Agriculture (VGSA) students were asked to name five agricultural careers and five agricultural companies. By a wide margin, "farmer" was the most commonly named agricultural career; however, very few students named individual farming operations as a possible agricultural company. My personal experience with fourth graders has yielded similar results. Very few students in fourth grade perceive production agriculture as a business.

A very discouraging result was the inability of 29 students to recall a single agricultural company. During the instrument testing, I enlisted the assistance of my wife's junior varsity basketball team. The team members (who were rising high school freshmen and sophomores) also experienced difficulty in naming agricultural companies.

Ginzberg, Ginsburg, Axelrod, and Herma (1951) theorized that perceptions of careers became realities of careers. When asked about the likelihood a value would have of being provided by an agricultural career, the students saw the physical values (physical

prowess and physical activity) as having a high likelihood to be provided by an agricultural career. The students responded that economic values (economic rewards and economic security) were least likely to be provided by a career in agriculture.

Over three decades of experience in agriculture have taught me that most students (and adults) align the term “agriculture” with “farm.” Many students’ perceptions of farming are old-fashioned. They describe agriculture as manual labor and farmers as people in bib overalls and straw hats. As a result, many students perceive agricultural careers as being physically demanding and low paying.

One observation that would make for an interesting study was that this population of gifted and talented students was hesitant to leave answers blank. There was much concern even during the posttest phase about not being able to fully complete the instrument. In rare instances, answers had to be merged or interpreted due to a student’s resourceful way of filling the blanks, for example, by expanding answers. One student filled all five blanks with the following: “Anyone who might raise food." This was judged to be a farmer and scored as one answer.

The data showed that the experience of attending the VGSA in 2006 led to an overall gain in the appreciation of agricultural careers to provide outlets for student expressions of most Values Scales in the *VS* instrument; although it should be stated that four values (Authority, Autonomy, Achievement, and Physical Prowess) had losses in “likeliness” responses. Of these, authority lost the most ground with a loss of 13.4 percentage points. It would be interesting to follow up that result with student interviews. It should also be mentioned that the overall ranking of the scales was mostly unchanged

as values related to manual labor stayed near the top and scales that dealt with financial benefits stayed near the bottom of the rankings.

The students were asked to reflect on their personal career goals. Fifty-six students stated that they had made a decision about their career and a majority of those (n=32) answered that their career choice was not in the field of agriculture. Again, this pointed out some misunderstandings within the VGSA student body. For example, while some students listed "lobbyist" as a career within the field of agriculture, others who listed lobbyist as being one of their career aspirations stated that lobbyist was not an agricultural career. Other conflicting career answers included biochemist and engineer.

An interesting outcome of the questions dealing with personal career goals was that of the students who responded that their career choice was in the field of agriculture, not a single response could be categorized as a career in production agriculture. Most were professional positions like professor, researcher, or teacher.

When questioned about the stability of their career choice, a majority of students (n=27) stated that their decision was "somewhat likely" to change, followed closely by 25 students who said that their decision's likelihood to change was "not likely at all." This is very interesting given the fact that as the average lifespan continues to grow there is a corresponding increase in the number of career changes people are expected to make (University of Virginia Human Resources, 2006, n.p.). However, I do acknowledge that this question was most likely interpreted by the students as asking how firm their decision was in the short-term rather than across their lifetime.

Question 4: What are the influences that shape the values and perceptions of the 2006 VGSA participants? My findings for this research question suggest that mentors can

be powerful influences in the career choices of gifted students. The findings also point out that guidance counselors are not a factor in shaping the career choices of the 2006 VGSA students. Students were asked to rate and then rank ten career influences based on the importance of the influence on the students' career decisions. The ratings asked students if the influence was very important, important, of some importance, or not important at all.

The results of this rating seemed to contradict the literature. Super (1957), Fidler (1969), and Harper (1991) reported that parents were the most important; however, the means of the importance ratings placed parents fourth behind work experiences, school experiences, and people the students knew who are incumbents in a career field. My observation was that the scores of the aforementioned influences were closely grouped and my investigation using ANOVA with the SPSS program showed that there was no significant difference between the four influences. This analysis did however prove that there was a significant difference between the top four mean scores for influence importance and the remainder of the influences. The mean score for guidance counselors was significantly lower than every other influence presented to the students.

The results of the ranking confirmed what much of the literature about gifted students has stated (Super, 1957; Fidler, 1969; Harper, 1991). Parents are a powerful influence in the life of most students, but parents of a gifted student are more influential in the student's life.

Parents were selected as the most important influence by 38 of the 98 original VGSA students. Work experience and people employed in the specific career field tied for the second most frequent response with 12 each. School experiences and teachers

received 11 and 10 votes respectively for most important influence. For the entire VGSA population, media (defined as TV, books, Internet, etc.) received more responses as "most important" (n=5) than did other family members (n=4), student organizations (n=3), and friends (n=2). No student in the 2006 VGSA program selected their guidance counselor as the most important influence.

When examining the number of times an influence was selected among the top three, parents again outdistanced the other choices. School experiences and teachers were tied for the second highest frequency of responses. One subgroup that seemed to differ from the norm was composed of students who were members of both FFA and 4-H. For this group, student organizations garnered the most responses as being among the top three influences. I interpret this as students expressing a need for mentorship. Four-H clubs and FFA chapters give students unique opportunities to explore career fields and meet mentors.

As a young 4-Her, I was personally familiar with many of the faculty of the Virginia Tech Dairy Science Department. The professors in the department attended 4-H functions and judged county fairs where I exhibited my animals. I was made to feel special and developed a comfort level with these important industry leaders. They had a very powerful influence on me personally. I decided that I would attend Virginia Tech and major in Dairy Science at the age of nine, all due to my experience in the 4-H program.

My early decision meshed with the work of Super (1957). Super (1957) indicated that gifted students tend to make career decision earlier than their peers. The majority of the 2006 VGSA students reported that they had made a career decision. Students

responding that they had made a career choice were asked to indicate when their decision was made by selecting from four timeframes differentiated by grade levels. The choices were: (a) grades 1-3; (b) grades 4-6; (c) grades 7-9, and (d) grades 10-12. Of the 56 students with a stated career goal, 28 arrived at this decision no later than the end of 9th grade. Females tended to make decisions sooner than males.

Agriculture and its employers must educate students as soon as possible in order to attract quality employees. At a recent national meeting of agriculture human resource professionals, recruiting employees from the high school ranks was discussed. While 50% of students with career goals reported making decisions between their sophomore and senior year, the fact is that employers would lose access to roughly 30% of this total population (n=98) by waiting until the latter stages of high school to begin recruiting. It was also noteworthy that of those who stated that they had not chosen a career path (n=41), over 80% stated that they would consider a career in the field of agriculture. This is actually a much higher percentage than those students with a selected career path as less than half (n=24) stated that their career choice was in the field of agriculture.

Question 5: What influence did the VGSA have on participant career goals and perceptions of agriculture during the 2006 session? The research of Duncan and Broyles (2004) and Cannon (2005) found that the VGSA program had a positive effect on attendees; my research on the 2006 VGSA students found the same. Overall, the posttest given during the final week of the program indicated that the 2006 VGSA program was a very positive experience for the students. On the posttest, students were again asked about the likeliness of the 21 values of the *Values Scale* instrument being provided by an

agricultural career. Eighteen of the 21 values had improved scores of likeliness; however, the overall ranking of the values by likeliness remained unchanged.

When asked about how VGSA affected their career decisions, the majority of students stated that the program had helped them to be surer of their career decision. Only eight students responded that they were less sure of their future goals. While four students stated that after attending VGSA, they had less interest in an agricultural career, 68 students indicated that their interest in an agricultural career increased during the 2006 VGSA program. All students in the study responded that they were more aware of agriculture because of the VGSA experience, and only one student stated they had less respect for agricultural professionals after completing the program.

Conclusions and Implications

As I reflected on the findings of this study, five major conclusions become apparent. The major conclusions were:

- The career values of the population were very similar across all demographic subgroups that I selected.
- Considerable misunderstanding and illiteracy exist about agriculture and career opportunities in agriculture.
- Successful recruitment of gifted students into agriculture will require agricultural companies to: (a) partner with parents; (b) begin early in the student's academic career, and (c) provide mentoring opportunities through school and work experiences.

- Collaboration between 4-H and FFA programs may have a great influence on future leaders of agriculture. Land-grant university faculty must play an active and personal role in these programs.
- VGSA is a positive experience for participants; however, enhanced career exploration curriculum can improve the program.

The remainder of this section will be organized using the preceding conclusions.

The career values of the population were very similar across all demographic subgroups that I selected. Currently the trend in career counseling involves the measurement of skills. As stated by Super (1957), gifted and talented students may possess a variety of skills, making skill measurements less useful. This research showed clearly that measurement of career values was more consistent across demographic cross-sections; therefore, values measurements might be more applicable especially for students and younger workers. An understanding of a person's values gives a more stable snapshot of the status of their career goals and counseling needs.

Considerable misunderstanding and illiteracy exist about agriculture and career opportunities in agriculture. My observation about the careers and companies named by the students indicates that the majority saw careers and opportunities in agriculture being dominated by less skilled tasks with physical demands and limited economic rewards. "Farmer" was the most named career, yet farm ownership and farm management are some of the most rare opportunities in agriculture. The level of agricultural literacy of this population was disturbing to me, but frankly not surprising. Kotrlik and Harrison (1987) found much the same in their research. Rural school-aged children I have interviewed in the past did not consider agriculture a business, so the inability of the 2006

VGSA population to name agriculture companies is not surprising. It is, however, an important point and an issue that is in need of correction.

Successful recruitment of gifted students into agriculture will require agricultural companies to: (a) partner with parents; (b) begin early in the student's academic career, and (c) provide mentoring opportunities through school and work experiences. The recruiting efforts of agricultural companies targeting gifted and talented students need to have three components. First, agricultural companies must include parents and guardians in the educational and recruitment process. Second, companies interested in recruiting gifted and talented students must begin the process as early in the students' educational career as possible. This conclusion meshes with the theories of Super (1957) and Harper (1991).

Finally, data collected on influences also indicated that students are shaped by personal experiences and personal interaction. Mentoring programs and opportunities for student interactions with adults should be implemented by agriculture professionals. Although it may seem to be inefficient and laborious, the best way to influence students continues to be one youth at a time through interpersonal relationships.

Collaboration between 4-H and FFA programs may have a great influence on future leaders of agriculture. Land-grant university faculty must play an active and personal role in these programs. FFA and 4-H should cease to see each other as competitors for the same audience. The findings of this study suggest that FFA and 4-H should draw on the strengths of each organization to provide the student members with as many opportunities as possible. It is true that the student numbers of this study are not large enough to stand alone as proof for this observation; however, it has been my

experience during 34 years as a 4-Her, 4-H/FFA volunteer, and Extension educator, that successful youth programs in Virginia are ones that view FFA and 4-H as complementary, not competitors.

Time is limiting factor in youth development. Teachers and agents have limited amounts of time and students have limited amounts of time to spend on extracurricular activities. Agents and teachers working together will allow students to be active in educational programs in agriculture year-round. Keeping young people involved and active is critical to retaining members of student organizations.

Connections to university faculty empower youth to imagine opportunities in the industry of agriculture. These interactions might also curb the misunderstanding that opportunities in agriculture are limited to production. This will require university administrators to provide travel funding for faculty members and foster the belief in faculty that youth development is necessary for agriculture's development.

VGSA is a positive experience for participants; however, an enhanced career exploration curriculum can improve the program. The findings of this study imply that the VGSA program at Virginia Tech is an asset to increasing agricultural awareness and recruiting gifted students to agricultural careers. The framework of this program should be used as a model (in conjunction with similar programs such as the one at Pennsylvania State University) to offer agricultural training to gifted students across the nation. These programs should seek out students from all backgrounds and not limit the educational offerings to more traditional agricultural audiences.

The students majoring in Agriculture Leadership at the VGSA received exposure to agricultural career exploration tools via the Ag for Life curriculum. The results of the

posttest suggested that the inclusion of this curriculum was effective in improving knowledge of agricultural career opportunities.

Recommendations

Recommendations for practice. One recommendation of this study is to incorporate values assessments into career counseling and exploration. Exploration of students' career values should be available to a greater number of students across the nation and assistance should be given to students to help them understand how to use their career values to make sound career path decisions.

Parents should be made aware of the importance of their role in career choices of their offspring. It is also important for parents to understand the values of their children and help them choose careers based on the student's values, not the perception of the career's prestige and rewards.

Parents and students could benefit from increased levels of agricultural literacy. There is a great need for curriculum development and public relations efforts aimed at diminishing the perception that production agriculture (farming) is representative of agricultural careers as a whole. It would also be helpful to offer these lessons at many different life stages, especially in grades 1-9.

All students across the United States should receive accurate information about agriculture. This study reiterated the importance of a proactive approach, adopted by the entire agriculture community, that elevates agricultural literacy and awareness across the nation. Often, pre-school and kindergarten children receive information based loosely on *Old McDonald's Farm* and get little or no other instruction for the remainder of their

educational careers on agriculture. This limits their ability to form realistic views of modern agricultural career opportunities.

Partnerships between 4-H and FFA should be recognized and rewarded by the agriculture community. Leaders should be mindful of past barriers to this initiative. Volunteers can help both groups equally and both can benefit from increased community involvement. Land-grant faculty members' willingness to volunteer their time to youth programming would increase mentoring opportunities for 4-H and FFA members alike.

Finally, agricultural career exploration should be a vital part of the VGSA curriculum. Too many children know far too little about agriculture. The use of the Ag for Life curriculum is highly recommended, and other sources of information and activities should also be explored or developed.

Recommendations for research. Suggestions for future research would include the broadening of the audience from which data would be gathered. The 2006 VGSA is a rather homogenous group and their academic ability is not typical among all of the nation's high school students. A study examining the career values and perceptions of agriculture of a cross-section of the entire student population would be beneficial.

It would be interesting to compare values and perceptions of students enrolled in high school agricultural education courses and students who do not have that exposure. I would also suggest a study comparing the values of students who are pursuing different careers in various fields.

Since the VGSA results were so close to the national averages of nearly two decades past, future research could to be directed at student/parent pairs to identify how parental values might be used as a barometer for the values of their offspring.

Understanding the dynamics of this student/parent values imprinting would be of great importance to any industry's future workforce planning efforts.

More study is also warranted to find the time frame of influences in students' lives and the strength of these influences within the time continuum. It is also necessary to gather more information about why agriculture continues to be linked almost solely to farming and how this misinformation is perpetuated. If agricultural literacy is to be elevated, when should that occur in students' lives and what are the best delivery methods to increase agricultural awareness?

Four-H and FFA memberships are a topic the needs more research. It appears that 4-H clubs and FFA chapters channel many students into the VGSA program. What aspects of organizations help facilitate this flow? For example, 4-H has 10 curriculum areas in which students can complete projects (Virginia Cooperative Extension, 2006). Are there curriculum areas that produce more VGSA students than others and if so, what do we do with that information?

Possible future research might seek to establish profiles of students for whom VGSA is most effective in recruiting for admission to Virginia Tech's College of Agriculture and Life Sciences (CALS). Another area of interest might be the need to seek more male participation in agriculture programs. Areas of future research might seek to identify specific aspects of the VGSA program that influenced increased agricultural awareness and perceptional shifts. This might best be accomplished by employing a qualitative research design aimed at matching themes gleaned from in-depth student interviews with specific events during the month-long VGSA program.

Summary

Gifted students are one of our nation's greatest assets. Their opinions and perceptions of agriculture have a great bearing on our nation's ability to remain a world leader in the production of food and fiber as well as the supporting industries that accompany this production.

During the course of this research, a CALS professor stated that the VGSA was targeting the wrong audience, meaning that too many students had no idea what agriculture was or had little or no intention to attend Virginia Tech and major in an agricultural field. Feedback from human resource officers of major agricultural companies at the U.S. Agriculture Human Resources Roundtable would suggest that non-traditional students are exactly the student population that should receive attention from programs like VGSA.

Understanding what young people value in a career, identifying when these career values are formed, and determining what influences shape these career values are necessary initial steps to improving our ability develop the agricultural leaders of tomorrow.

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Appendix A

What I Value

This inventory of values asks how important to you are the various values or satisfactions that most people seek in their lives. People differ in what is important to them, but to some extent people want the same things. The question is, to what degree are they important to you? Please answer all the questions as well as you can. Do not skip any questions and work rapidly. If you are not sure, guess—your first thought is most likely to be the right answer for you.

Scale:
1= of little or no importance
2= of some importance
3= important
4= very important

It is now or will in the future be important for me to . . .

1. use all my skills and knowledge.	1	2	3	4
2. have results which show that I have done well.	1	2	3	4
3. get ahead.	1	2	3	4
4. make life more beautiful.	1	2	3	4
5. help people with problems.	1	2	3	4
6. tell others what to do.	1	2	3	4
7. act on my own.	1	2	3	4
8. discover, develop, or design new things.	1	2	3	4
9. have a high standard of living.	1	2	3	4
10. live according to my own ideas.	1	2	3	4
11. develop as a person.	1	2	3	4
12. get a lot of exercise.	1	2	3	4
13. be admired for my knowledge and skills.	1	2	3	4
14. do risky things.	1	2	3	4
15. do things with other people.	1	2	3	4
16. be with friends.	1	2	3	4
17. have every day be different in some way from the one before.	1	2	3	4
18. have good space and light in which to work.	1	2	3	4

19. live where people of my religion and race are accepted.	1	2	3	4
20. work hard physically.	1	2	3	4
21. be where employment is regular and secure.	1	2	3	4
22. do work that takes advantage of my abilities.	1	2	3	4
23. know that my efforts will show.	1	2	3	4
24. get ahead quickly in my career.	1	2	3	4
25. find pleasure in the beauty of my work.	1	2	3	4
26. be involved in work in which the goal is helping people.	1	2	3	4
27. be able to be a leader at work.	1	2	3	4
28. make my own decisions at work.	1	2	3	4
29. create something new in my work.	1	2	3	4
30. have a good income.	1	2	3	4
31. live my life my way.	1	2	3	4
32. have ideas about what to do with my life.	1	2	3	4
33. take part in sports and other physical activities.	1	2	3	4
34. be recognized for my accomplishments	1	2	3	4
35. feel that there is some risk or danger in the work I do.	1	2	3	4
36. work in a group rather than by myself.	1	2	3	4
37. do things with people I like.	1	2	3	4
38. do a number of different things during the day.	1	2	3	4
39. have good sanitary facilities (e.g. washroom) at work.	1	2	3	4
40. work where people of my ethnic origin have good job possibilities.	1	2	3	4
41. use powerful machines.	1	2	3	4
42. have a regular income.	1	2	3	4
43. develop my abilities.	1	2	3	4
44. reach a high standard in my work.	1	2	3	4
45. be able to get promotions.	1	2	3	4
46. be concerned with beauty in my work.	1	2	3	4

47. work in a way that makes the world a better place.	1	2	3	4
48. be the one who manages things at work.	1	2	3	4
49. be free to get on with a job in my own way.	1	2	3	4
50. have a chance to try out new ideas at work.	1	2	3	4
51. be well paid for whatever work I might do.	1	2	3	4
52. work at what I want to when I want to.	1	2	3	4
53. find personal satisfaction in my work.	1	2	3	4
54. be physically active in my work.	1	2	3	4
55. be held in high esteem because of my work.	1	2	3	4
56. take on dangerous tasks if they interest me.	1	2	3	4
57. be with other people while I work.	1	2	3	4
58. be with my kind of people.	1	2	3	4
59. change work activities frequently.	1	2	3	4
60. be protected from the weather while I work.	1	2	3	4
61. feel accepted at work as a member of my race or ethnic group.	1	2	3	4
62. use my strength.	1	2	3	4
63. have a secure position.	1	2	3	4
64. keep on learning new things at work.	1	2	3	4
65. do something at which I am really good at.	1	2	3	4
66. be able to think in terms of advancement.	1	2	3	4
67. be able to add to the beauty of the world.	1	2	3	4
68. improve the welfare and peace of the world.	1	2	3	4
69. make decisions that others follow.	1	2	3	4
70. be my own boss.	1	2	3	4
71. use new ideas and methods.	1	2	3	4
72. earn enough to live well.	1	2	3	4
73. decide what to do with my life.	1	2	3	4
74. cultivate my inner life.	1	2	3	4

75. make a real physical effort at work.	1	2	3	4
76. be viewed as a special person.	1	2	3	4
77. face the challenge of danger.	1	2	3	4
78. have people take time to chat.	1	2	3	4
79. have a job where I can easily make friends.	1	2	3	4
80. move around while doing things at work.	1	2	3	4
81. work in a place where I can really do my job.	1	2	3	4
82. work with people of my own background.	1	2	3	4
83. move big boxes and crates.	1	2	3	4
84. have a feeling of economic security.	1	2	3	4
85. have to think about what I am doing at work.	1	2	3	4
86. get the feeling I have really achieved something at work.	1	2	3	4
87. work where getting ahead is considered important.	1	2	3	4
88. be appreciated for the beauty of my work.	1	2	3	4
89. do work which improves things for other people.	1	2	3	4
90. have the authority to get things done.	1	2	3	4
91. set my own working hours.	1	2	3	4
92. be inventive in my job.	1	2	3	4
93. have all of the nice things I want.	1	2	3	4
94. plan my own work activities.	1	2	3	4
95. develop my own work life.	1	2	3	4
96. be able to be outdoors a great deal.	1	2	3	4
97. have people recognize the work I have done.	1	2	3	4
98. be able to run reasonable risks when there is something to gain.	1	2	3	4
99. deal with a variety of people at work.	1	2	3	4
100. work where there are friendly people.	1	2	3	4
101. be able to do my work in a variety of ways.	1	2	3	4
102. have a comfortable temperature at work.	1	2	3	4

103. be true to the values of my people.	1	2	3	4
104. carry heavy loads.	1	2	3	4
105. know that I can always make a living.	1	2	3	4

About you:

Are you ____male

____female

Where do you live?

____ on a farm

____ not on a farm, but I have some agricultural experience

____ not on a farm, and I have no agricultural experience

Are you or were you a 4-H member? _____ yes _____ no

Are you or were you an FFA member? _____ yes _____ no

Values and Agriculture:

Please indicate whether you believe it is **likely** or **unlikely** that a career in agriculture would provide you an opportunity to:

1. use all my skills and knowledge	Likely	Unlikely
2. have results which show that I have done well	Likely	Unlikely
3. get ahead	Likely	Unlikely
4. make life more beautiful	Likely	Unlikely
5. help others with problems	Likely	Unlikely
6. tell others what to do	Likely	Unlikely
7. act on my own	Likely	Unlikely
8. discover, develop, or design new things	Likely	Unlikely
9. have a high standard of living	Likely	Unlikely
10. live according to my own ideas	Likely	Unlikely
11. develop as a person	Likely	Unlikely
12. get a lot of exercise	Likely	Unlikely
13. be admired for my knowledge and skills	Likely	Unlikely
14. do risky things	Likely	Unlikely
15. do things with other people	Likely	Unlikely
16. be with friends	Likely	Unlikely

17. have every day be different in some way	Likely	Unlikely
18. have good space and light in which to work	Likely	Unlikely
19. live where people of my religion and race are accepted	Likely	Unlikely
20. work hard physically	Likely	Unlikely
21. be where employment is regular and secure	Likely	Unlikely

Name five agricultural careers.

1.
2.
3.
4.
5.

Name five agricultural companies.

1.
2.
3.
4.
5.

Select one: Have you decided on your future career goals? _____Yes

_____ No

For those answering that they had made a career choice:

Your Career Choice

1. Is your career choice in the field of agriculture? _____ Yes

   _____ No

2. What is your specific career choice? _____

3. How likely are you to change your mind?
    a. Not likely at all
    b. Somewhat likely
    c. Likely
    d. Very likely
4. When did you make your career decision?
    a. Grade 1-3
    b. Grade 4-6
    c. Grade 7-9
    d. Grade 10-12
5. How important were the following in helping you decide on your career?

    Scale:
    1= of little or no importance
    2= of some importance
    3= important
    4= very important

Parents	1	2	3	4
Other family members	1	2	3	4
Guidance counselors	1	2	3	4
Teachers	1	2	3	4
Friends	1	2	3	4
People you know in the field of your career	1	2	3	4
Work experiences	1	2	3	4
School experiences	1	2	3	4
Student organizations (FFA, 4-H, SGA, etc.)	1	2	3	4
Media (books, TV, movies, Internet, etc.)	1	2	3	4

6. From the above influences, please rank the top three influences in their order of importance. (For each of the following, students were given a list of all the influences and could select one. After the influence was selected, it was removed from the next set of choices.)

   Most important?
   Second most important?
   Third most important?

For participants answering that they had not made a career choice:

Your Career Choice

1. Would you consider a career in agriculture? ____ Yes

   ____ No

2. When do you think that your decision will be made?

   1. Following high school graduation
   2. After your first year of college/technical school
   3. During your final year of college/technical school
   4. Following graduation from college/technical school

3. How concerned are you about not having a career choice? (1= very concerned, 2= concerned, 3= somewhat concerned, 4= not concerned at all)

   1 2 3 4

4. How important do you think the following will be in helping you make a decision?

Scale:
1= of little or no importance
2= of some importance
3= important
4= very important

Parents	1	2	3	4
Other family members	1	2	3	4
Guidance counselors	1	2	3	4
Teachers	1	2	3	4
Friends	1	2	3	4
People you know in the field	1	2	3	4
Work experiences	1	2	3	4
School experiences	1	2	3	4
Student organizations (FFA, 4-H, SGA, etc.)	1	2	3	4
Media (books, TV, movies, Internet, etc.)	1	2	3	4

6. From the above influences, please rank the top three influences in their order of importance. (For each of the following, students were given a list of all the influences and could select one. After the influence was selected, it was removed from the next set of choices.)

Most important?
Second most important?
Third most important?

Pilot only:

Did you find this survey difficult to understand? ____ Yes ____ No

If yes, what specific parts (words, phrasing, etc.) were difficult?

Thank you for completing this survey! Please visit our sponsors via the links below!

AgForLife.com: http://www.agforlife.com/

AgCareers.com: http://www.agcareers.com/

First Bank and Trust: http://www.firstbank.com/

Appendix B

Instrument given during final week of VGSA

Values and Agriculture:

Please indicate whether you believe it is **likely** or **unlikely** that a career in agriculture would provide you an opportunity to:

1. use all my skills and knowledge	Likely	Unlikely
2. have results which show that I have done well	Likely	Unlikely
3. get ahead	Likely	Unlikely
4. make life more beautiful	Likely	Unlikely
5. help others with problems	Likely	Unlikely
6. tell others what to do	Likely	Unlikely
7. act on my own	Likely	Unlikely
8. discover, develop, or design new things	Likely	Unlikely
9. have a high standard of living	Likely	Unlikely
10. live according to my own ideas	Likely	Unlikely
11. develop as a person	Likely	Unlikely
12. get a lot of exercise	Likely	Unlikely
13. be admired for my knowledge and skills	Likely	Unlikely
14. do risky things	Likely	Unlikely
15. do things with other people	Likely	Unlikely
16. be with friends	Likely	Unlikely
17. have every day be different in some way	Likely	Unlikely
18. have good space and light in which to work	Likely	Unlikely
19. live where people of my religion and race are accepted	Likely	Unlikely
20. work hard physically	Likely	Unlikely
21. be where employment is regular and secure	Likely	Unlikely

Name five agricultural careers.

1.
2.
3.
4.
5.

Name five agricultural companies.

1.
2.
3.
4.
5.

Following participation in VGSA, I am _____ of my career choice.

1. more sure
2. less sure
3. neither more or less sure

Because of VGSA, I have more respect for people involved in agriculture.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

My interest in a possible agricultural career has _____.

1. increased
2. decreased
3. unchanged

Regardless of my career choice, I am more aware of the importance of agriculture.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Thank you for your help and best wishes for a successful school year!

Appendix C

Virginia Polytechnic Institute and State University

Informed Consent for Participants
in Research Projects Involving Human Subjects

Title of Project: Work Values Of Participants Enrolled In The Virginia Summer Residential Governor's School Of Agriculture

Investigators: Dr. Tom Broyles, Dr. Daisy Stewart, Mr. Andy Overbay

I. Purpose of this Research/Project

The purpose of this study is to investigate the values that students attending the summer enrichment program commonly known as the VA Governor's School of Agriculture (VGSA) place on work and how these values affect their decisions about careers. The knowledge gained will assist VGSA staff to shape career curriculum and guidance offered by through program. Participants will be VGSA students (n=100) and no exclusions will be made. Participants are rising junior and seniors in high school.

II. Procedures

The participants will be invited to complete an online survey asked their opinion about work using the Values Scale instrument developed by Dr. Donald E. Super and Dr. Dorothy D. Nevill as a model. The survey will be offered at the beginning of the program and a follow-up survey will be offered at the end of the program. Participants will be asked about career decisions they may have already made and their opinion of careers in agriculture. At no time will specific names or other identifying information be collected. All data will be collected on campus and retained on disk in the program director's office using the double lock method.

III. Risks

This study has been reviewed and approved by VA Tech's Institutional Review Board. It received "Exempt" status which means that it is seen as the safest of all possible research involving students under the age of 18. Individual answers and identities of the participants will be protected at all times.

IV. Benefits

Agriculture continues to be an important industry to Virginia. Objectives of the VGSA include increasing awareness of rewarding opportunities available to students through careers in agriculture. This study will give insights into current students' thoughts about careers and help VGSA faculty and staff to tailor the program's content to meet participant needs. No promise or guarantee of benefits will be made to encourage participation. Parents/guardians may contact the researcher for a summary of the results following completion of the program.

(Continued on Back)

V. Extent of Anonymity and Confidentiality

The protection of your child's identity is a top priority of this study. At no time will information be collected where a student can be identified or singled out. At no time will researcher release the results of the study to anyone other than individuals working on the project without your written permission.

VI. Compensation

There is no compensation provided with this study.

VII. Freedom to Withdraw

Students are free to withdraw from the survey at any time

VIII. Participant's Responsibilities

It is the student's responsibility to answer the survey as honestly as possible as per VGSA faculty instructions.

X. Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent: ____Yes ____No. Please bring form with you to registration. Thank you!

_____Date_____
Parent/Legal Guardian's signature

_____ Date _____
Student Signature

Should I have any pertinent questions about this research, I may contact:

Dr. Tom Broyles,
VGSA Program Director
tbroyles@vt.edu
(540) 231-8188

Dr. Daisy Stewart, Associate Professor
Teaching and Learning
daisys@vt.edu
(540) 231-8180

Andy Overbay
aoverbay@vt.edu
(276) 223-2542

Dr. David M. Moore, IRB Chairperson
moored@vt.edu
(540) 231-4991

This Informed Consent is valid from signature date to December 31, 2006.

Appendix D

To: Parents/Guardian of VSGA Participants

From: Dr. Tom Broyles, Program Director
Mr. Andy Overbay, Ph.D. Candidate, CTE

Re: Informed Consent

Dear Parent/Guardian:

Congratulations on your student's selection in the Virginia Summer Residential Governor's School of Agriculture (VGSA)! We are looking forward to their participation in the program. Past participants have found the VGSA to be a rewarding and fun experience.

In order to continue to improve our program offerings, we need your assistance. One of the objectives of the VGSA is to increase awareness of career opportunities to participants. To that end, we are asking your permission to allow your attendee to participate in a study aimed at helping to understand how gifted and talented students like yours come to decisions about careers.

Enclosed you will find an Informed Consent document approved by the VA Tech Institutional Review Board. Within that document, you will find information about the study and the means used to collect and protect the information gleaned from the participants. Please review this document and feel free to contact us with any questions or comments you might have. Thank you for your kind consideration and again, our most hearty congratulations!

Sincerely,

Dr. Tom Broyles
Program Director
VA Summer Residential Governor's School of Agriculture

Andy Overbay
PhD Candidate
Career & Technical Education

Appendix E

VirginiaTech

Office of Research Compliance
Institutional Review Board
1880 Pratt Drive (0497)
Blacksburg, Virginia 24061
540/231-4991 Fax: 540/231-0959
E-mail: moored@vt.edu
www.irb.vt.edu
FWA00000572(expires 7/20/07)
IRB # is IRB00000667

DATE: July 25, 2006

MEMORANDUM

TO: Thomas W. Broyles
Daisy L. Stewart
Andrew Overbay

Approval date: 7/25/2006
Continuing Review Due Date:7/10/2007
Expiration Date: 7/24/2007

FROM: David M. Moor

SUBJECT: **IRB Expedited Approval:** "Work Values of Participants Enrolled in the Virginia Summer Residential Governor's School of Agriculture (Two Parts: Pilot and Research Project)" , IRB

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective July 25, 2006.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtained re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

Important:
If you are conducting **federally funded non-exempt research**, this approval letter must state that the IRB has compared the OSP grant application and IRB application and found the documents to be consistent. Otherwise, this approval letter is invalid for OSP to release funds. Visit our website at http://www.irb.vt.edu/pages/newstudy.htm#OSP for further information.

cc: File

Appendix F

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

Department of Teaching and Learning

School of Education
300 War Memorial Hall
Blacksburg, Virginia 24061
(540) 231-5558 Fax: (540) 231-9075

May 19, 2006

Dorothy D. Nevill
2320 NW 24th Terrace
Gainesville, FL 32605-2815

Dear Dr. Nevill,

After speaking with my committee members, we decided that a personal letter would be best to file with my dissertation. To make this as convenient as possible, please find enclosed a return letter granting permission as well as a self-addressed, stamped envelope for your use.

Thank you so much for your assistance.

Sincerely,

Andy Overbay
Ph.D. Candidate
Career and Technical Education

Permission to Use Values Scale Instrument

I, Dorothy D. Nevill, grant to Mr. Andrew E. Overbay, a Ph.D. candidate at Virginia Tech, the right to use the Values Scale instrument as a component of his dissertation research. This permission gives Mr. Overbay the right to use all questions contained in the Values Scale instrument to construct a customized, online instrument to use with the participants in the 2006 Virginia Governor's School for Agriculture, a summer enrichment program for gifted high school students.

Dorothy D. Nevill

Date

Vita

Curriculum Vitae

Andy Overbay
District Program Leader
Southwest District
Virginia Cooperative Extension

A. Education

2006	Ph.D., Career and Technical Education, Virginia Tech; Cognate: Dairy Science
2004	Certified Grant Writing Specialist; Research Associates, Columbia, SC
2002	M.S., Career and Technical Education, Virginia Tech
1985	B.S., Dairy Science, College of Agriculture and Life Sciences, Virginia Tech

B. Previous Experience

Present	District Program Leader, Virginia Cooperative Extension (VCE), Southwestern Virginia
2003-2005	Dairy Extension Agent, Southwest Virginia District
2002-Jan. 2004	Unit Coordinator, Wythe County VCE, Wytheville, VA
2000-2003	Associate Extension Agent, Dairy Science, Wythe Co., VA
1998-2000	Territory Manager, Telmark LLC, Syracuse, NY
1988-1998	Owner/Manager, VA Middlefork Holsteins, Chilhowie, VA District Manager, Manco Genetics, Nokesville, VA
1985-1987	Farm Employee, VA Middlefork Holsteins, Chilhowie, VA

C. Honors and Awards

2005	Rufus Beamer Professional Development Award
2004	Inducted into Phi Kappa Phi University Honor Society
2004	Achievement Award, VA Association of Agricultural Extension Agents
2004	Outstanding Agent with Under Five Years Experience, Epsilon Sigma Phi
2004	Bill Skelton Scholarship Recipient