

Career Values and Perceptions of Agriculture: What These Gifted High School Students Thought

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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. Agricultural career education of gifted and talented students, therefore, must begin with an assessment of the values of the students, and their assumptions regarding fields within the agricultural industry. This quantitative 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 suggest that gifted students have similar career values across variables such as gender, home location, and student organization membership. Their values are very similar to those of their parents' generation. The results also confirmed that there is still much controversy and misunderstanding about agriculture and careers in the agriculture arena.

Introduction

Decisions about college choices and career pursuits are governed primarily by two things: (1) what a person values and (2) the perceptions they have about an industry or institution. Therefore, the first steps to recruiting young people to agriculture is assessing what they value or what they want in life, and research what they perceive to be the realities of agriculture.

To facilitate an exploration of what high school students currently value and think about agricultural careers, we worked with an intact group of gifted students attending the 2006 Virginia Governor's School for Agriculture (VGSA) held on the campus of Virginia Tech. The 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.

Virginia's gifted student enrichment programming dates back to 1973, when Governor Linwood Holton established the Governor's School for the Gifted Program (Boothe, 1982). In 2001, the VGSA was established as 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.

In order to help characterize values and perceptions of the participants, a suitable instrument had to be either developed or found. A review of the literature eventually led to the Values Scale (VS) by Dorothy D. Nevill and Donald E. Super (1989). The VS evolved from a long history of career and occupational research dating back to the early 1900s. The VS formed the backbone of the pretest and posttest instruments used in this research. Questions were added to the instrument to help compare the students' values with the values they perceived as being supplied by an agricultural career.

The three main research questions addressed in this article were:

1. What were the characteristics of the students attending the 2006 VGSA?
2. What were the career values reported by the participants of the 2006 VGSA and how were the values related to selected variables?
3. What were the perceptions of agricultural careers reported by the 2006 VGSA participants and how were the perceptions related to selected variables?

Methods and Materials

In this study, all students attending the 2006 VGSA were invited to participate ($N = 98$). VGSA attendance is the common characteristic among this population, and since this group is unique unto itself, no comparisons or generalizations were implied. Since every student participated, this was a population study and statistical analysis was not done for the research questions in this particular article. Future article will investigate significant findings among such topics as gifted student influences. The students selected one of six majors. The majors available to the 2006 class were: Agricultural Economics, Agricultural Leadership, Animal Science, Plant Science, Veterinary Medicine, and Natural Resources (Virginia Governor's School for Agriculture, 2006).

The VS instrument (Nevill and Super, 1989) 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 were used to establish the norm for comparison to the VGSA participants.

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The original VS were only available in paper form, but permission was sought and granted by Dorothy Nevill to configure the instrument as an online tool. The staff of the Virginia Tech Center for Assessment and Evaluation of Educational Programs (CAEEP) was employed to complete the online conversion of the instrument. The instrument was offered during the pretest phase only and consisted of 105 questions instead of 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 complete pre and post test instrument can be viewed at <http://scholar.lib.vt.edu/theses/available/etd-11132006-165917/>.

The students were asked to respond to the questions as per the instructions given in the original VS 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 Statistical Program for the Social Sciences (SPSS) following completion of the pretest. Analysis of the VS was done using SPSS and the cross tabulations function. Table 1 matches the 21 scales with the questions of the VS that elicit the data gathered from the instrument.

The students in each major were brought as an intact group to a computer lab 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 informa-

Table 1. Value 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

tion 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 and Super, 1989, p. 8) and are seen in Table 2.

The instrument was piloted with adults utilizing the Agricultural and Natural Resources (ANR) Extension Agents of Virginia Cooperative Extension's Southwest District. 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 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.

Participants were asked to access the questionnaire electronically in either the computer lab or their dorm room. The initial administration (the VS instrument and pretest) was presented to the students during the first weekend of the VGSA

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).

Table 3. Raw Career Value Score and Rank by Gender

Values	Female (n=63)			Male (n=34)		
	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.

Table 4. Raw Career Value Score and Rank by Home Location

Values	Non-farm (n=56)			NF with exp. ^a (n=26)			On-farm (n=14)		
	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.

categories of organization membership: 4-H member, FFA member, member of both 4-H and FFA, and non-members of either organization.

Results and Discussion

There were nearly twice as many females (n=64) as males (n=34) in the study (Table 3). 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).

Home location was categorized as non-farm, non-farm with experience, and students who lived on a farm (Table 4). 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

The 2006 VGSA students were 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 nine 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.

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.

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 SPSS Crosstabs function to compare groups within the population.

The groups that were compared were based on variables of gender, home location, and organization membership. Home location was separated into three categories: 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

Table 5. 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
Landscape architect	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 6. 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	Carhart	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 and 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
New Holland	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
Egglund'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		

We found that "Achievement" was paramount to both females and males. The five highest ranked scales for females were 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 were composed of the same scales (Authority, Cultural Identity, Risk and Physical Prowess).

Our 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.

We 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.

The next variable for which the students' VS results were analyzed was the place of residency or home location of the student. 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.

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 possible explanation might be that as we become more of an information-rich society, there is a leveling of our values as a

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society. Student exposure to information is more uniform; therefore, their thoughts on careers and agriculture are more uniform.

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 and 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 and Super, 1989, p. 33-34). The finding supports recent research that points out that monetary gains are not as important to Millennials (Smola and 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. We interpreted this to mean that students of the 2006 VGSA were interested in helping others and that opportunity to volunteer would be of interest to them.

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. It was interesting to note that while "farmer" was the overwhelming number one career named by VGSA students (Table 5), relatively few students listed a "farm" (denoted in Table 6 as individual farms) as an agricultural business.

Ginzberg et al. (1951) theorized that perceptions of careers became realities of careers. Students were asked to rate how "likely" or "unlikely" each of the 21 values were to be fulfilled by pursuing a career in agriculture. 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.

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 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 values 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). However, we 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.

Summary

Gifted students want to be recognized as an important person in their chosen field of study and work. They are not very interested in what they consider to be risky and physically demanding pursuits. While students involved in this study were less motivated by monetary gain and more interested in public service, there were striking similarities in their values and those expressed by high school students nearly two decades prior.

Student views of agriculture continue to reflect a limited view of agriculture. They perceive agriculture as an industry of low wages and mainly manual labor. It is possible to correct some of these misconceptions by focused, well presented programs. Our finding point out the need to promote agriculture across the spectrum of values so that all students can see themselves as being involved in agriculture either directly or indirectly.

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