

Australian Students' Perceptions of Agricultural Careers

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Concern has grown among leaders in the American agricultural community that they will face shortages of qualified workers in the future. Coulter, Stanton, & Goecker (1986) anticipated about a 10% deficit of new college graduates with agricultural expertise through 1990. Now that the nineties have arrived and after several years of declining student enrollment in their agriculture programs, state universities and land grant colleges are beginning to experience an increase at the bachelors level (FAEIS, 1990). Enrollments, however, continue to decline in masters and doctoral programs (RICOP, 1990) and also in agriculture programs at the secondary school level. (NFFAC, 1989).

Mallory & Sommer (1986) suggest that these enrollment declines can be related to negative perceptions of careers in agriculture among high school students, as high school students were unaware of the range of career opportunities in agriculture and equated agriculture with farming alone. Orthel, Sorensen, Lierman & Riesenber (1989) reached a similar conclusion--"The students perceive agriculture as farming and ranching only (p. 10)." Both studies point to the limited perception high school students have of what constitutes the agricultural industry.

In contrast, Australian agriculture does not seem to have a shortage or oversupply of qualified workers in agricultural fields (OECD, 1987) and enrollments in their secondary school agriculture programs have slightly increased, particularly in the large state of Queensland (Dekkers, Laeter, & Malone, 1986). Australian agriculture differs from the U.S., being composed of predominantly family owned ranches with little dependence on migrant labor. Lack of water across most of the continent is the major limitation to agriculture (DFAT, 1990) and the average farm size is "heavily weighted by a relatively small number of enormous properties situated mostly in pastoral and more arid regions with low to very low carrying capacity" (Swann, 1987). Furthermore, the Australian agricultural manufacturing and handling sector is not as well developed as in the U.S. (Furze, 1989).

Objectives

One possibility is that the availability of qualified agricultural workers in Australia relative to the U.S. can be related to a more positive view of agricultural careers among secondary school students. The overall aim of this project was to assess Australian students' images of a career in agriculture, determine the effect of agriculture programs in secondary schools on students' interest in pursuing a career in agriculture, and compare the results with those obtained from American students.

Research Questions

Was there more interest in pursuing an agricultural career among students at 11th and 12th grade schools offering an agriculture program than at an equivalent school which did not offer an agriculture program?

Did experience in agricultural courses at the 9th and 10th grade level increase a students' subsequent interest in a career in agriculture irrespective of whether an

agriculture program was offered at the school they attended at the 11th and 12th grade level?

Did the combination of taking both agricultural classes in 9th and 10th grade and attending an 11th and 12th grade school with an agriculture program increase student interest in pursuing an agricultural career relative to either activity along?

Was there a more favorable attitude toward agricultural careers among the group of Australian secondary students than the group of U.S. secondary students tested?

Method

Sample

The survey was administered in Canberra, Australia where high school is made up of 7th through 10th grades and "college" consists of the 11th and 12th grades. The survey was administered to 321 students in the 11th and 12th grade at three colleges in Canberra. Approximately 15% of the students at each school were sampled. Only one questionnaire had to be discarded due to lack of cooperation. Two colleges offered agricultural classes while the third did not. Participation ranged between 95 and 125 students at each college and included both students who had taken agricultural classes and those who had not

The questionnaire was distributed in chemistry, English, and agriculture classes during regularly scheduled class periods. The investigator introduced the survey in one of the colleges, while the regular classroom teachers instructed their students from a prepared script in the other two schools.

Instrument

This study instrument was based upon the questionnaire used and tested by Mallory & Sommer (1986) to evaluate California high school students' attitudes toward careers in agriculture. Several questions were adapted into a form appropriate for Australian students, e.g. "Have you ever lived on a farm or ranch?" was changed because the Australian work for ranch is station. Topics covered in the 27-item survey included: previous agricultural course work, attitudes toward a variety of agricultural majors, perceptions of a career in agriculture, future educational plans, possible career paths, values related to a career choice, and demographic information.

Results

Sample characteristics

Of the 320 students surveyed, 42% were female and 58% were male. Approximately 80% were born in Australia, slightly over a third had lived on a farm or ranch, and of these 72% reported they liked the experience very much. There were 46% of the students with at least one parent who had worked in some aspect of agriculture. Three-quarters of the students thought it was very or somewhat likely that they would attend a tertiary institution after graduation. Following their education, 38% of the students wanted to live in a large city (more than 250,000 inhabitants), 31% in a medium-sized city (25,000-250,000), and 15% of the students said they wanted to live in a small town, farm, or ranch (station) after graduation.

Career Issues

The students were asked to rate the importance of eight items in choosing a career. Factors rated as most important to students in making a career choice were providing a

stable and secure future, ability to use special talents, and use of creativity. Table 1 reveals factors lowest in importance in making a career choice were being one's own boss and holding a respected position in the community.

When asked what type of work they would like to do after they finished their education, 34% selected a professional career, 23% wanted to work in business or industry, 17% in government or public service, and 7% in farming or ranching. No one wanted to work solely as a homemaker.

Students rated a career in agriculture according to the same job characteristics previously used in the career choice question. In this format, career characteristics were rated as "very true," "partly true," or "false" as they fit an agricultural career. Table 1 revealed the highest rating for a career in agriculture was making a contribution to society, followed by using special skills, and being your own boss. The least appropriate descriptors for an agricultural career were making lots of money, use of creativity, respect in the community and a secure future.

Table 1. Canberra 11th and 12th Grade Students' and California High School Students' Ranking of Job Characteristics as Related to Career Choice and to Agriculture

| | How important are these factors in your choice of a career? | | | | How well does each phrase describe a career in agriculture? | | | |
|-----------------------------------|---|-------|------------|-------|---|-------|------------|-------|
| | Canberra | | California | | Canberra | | California | |
| | Rank | Mean* | Rank | Mean* | Rank | Mean* | Rank | Mean* |
| A stable and secure future | 1 | 2.7 | 1 | 2.85 | 5 | 1.96 | 8 | 1.82 |
| Use of special skills | 2 | 2.47 | 4 | 2.49 | 2 | 2.36 | 4 | 2.07 |
| Permits creativity or originality | 3 | 2.38 | 5 | 2.41 | 7 | 1.91 | 6 | 1.89 |
| Earn lots of money | 4.5 | 2.33 | 2 | 2.55 | 8 | 1.78 | 7 | 1.88 |
| Opportunity to work with people | 4.5 | 2.33 | 3 | 2.51 | 4 | 2.16 | 3 | 2.29 |
| Make a contribution to society | 6 | 2.30 | 7 | 2.33 | 1 | 2.42 | 1 | 2.53 |
| Respected position in community | 7 | 1.99 | 6 | 2.32 | 6 | 1.95 | 5 | 2.05 |
| You can be your own boss | 8 | 1.92 | 8 | 1.92 | 3 | 2.31 | 2 | 2.39 |

Canberra: Rho between career choice and description of agricultural career = -.14 NS

California: Rho between career choice and description of agricultural career = -.76,

p<.05.

* Scale: Very important (3), Somewhat important (2), Not important (1).

**Scale: Very true (3), Partly true (2), False (1).

There was a nonsignificant, slightly negative relationship between those criteria students felt important in their own career choices and the degree to which those same

factors characterized a career in agriculture ($Rho = -.14$, NS). This indicated careers in agriculture were not offering what the students perceived to be important in their own career choices. Perhaps most significant was that a stable and secure future was the most important factor in the students' own career choice, but fifth lowest out of eight in their ratings of an agricultural career.

On bipolar adjective scales, a career in agriculture was considered outdoor, hard work, healthy, natural, and independent (Figure 1). The students were next asked to rate a series of specific agricultural careers (e.g. plant science, forestry, etc.) along five-point scales as to whether they were interesting or exciting. None of the career choices received average ratings in the very or moderately exciting categories. The highest rated agricultural careers (animal science or forestry, and environmental management), fell between moderately and slightly exciting in the students' ratings.

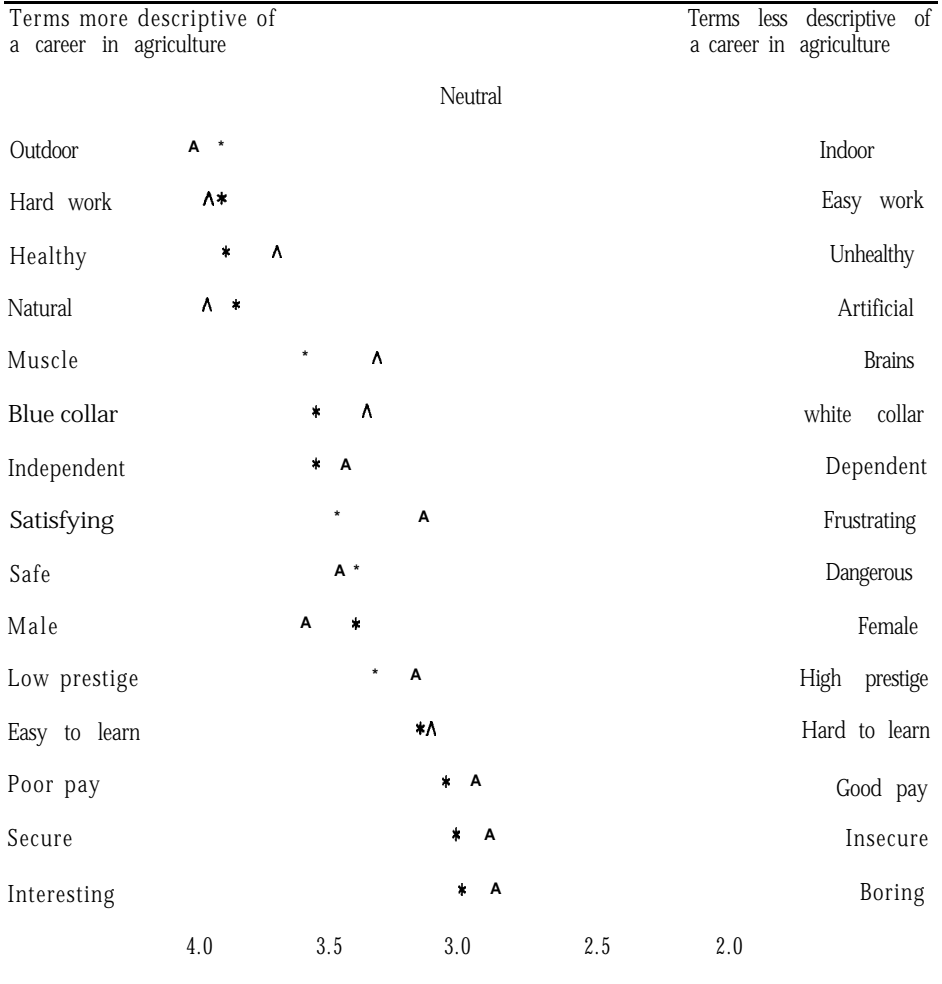


Figure 1. Impressions of a Career in Agriculture from Canberra (*) Students and California (^) Students.

There were 13% of the 320 students who expected to work in agriculture. About a third (31%) of the students had taken agricultural courses at the 9th and 10th grade level and 24% during the 11th and 12th grade. For two-thirds of the students, no one had suggested that they attend a school with an agriculture program after graduation. Of the remaining one-third, fathers, mothers, and then teachers most often suggested students attend a tertiary institution with an agriculture program.

Question 1

Was there more interest in pursuing an agricultural career among students at 11th and 12th grade schools offering an agriculture program than at an equivalent school which did not offer an agriculture program? This was tested by comparing the amount of interest in an agricultural career among students in Schools 2 and 3 which offered agricultural courses, and School 1 which did not. The survey showed that 16% of students in Schools 2 and 3 expressed an interest in working in agriculture compared to 5% in School 1 [$\chi^2(2, N = 317) = 7.71, p < .05$].

Question 2

Did experience in agriculture courses at the 9th and 10th grade level increase a students' subsequent interest in a career in agriculture irrespective of whether an agriculture program was offered at the school they attended at the 11th and 12th grade level? This was tested by comparing students at all three schools who had taken courses in agriculture in the 9th and 10th grade with students who had not taken any agricultural courses. Of the students who had taken an agriculture class at the 9th and 10th grade level, 23% thought that they would work in agriculture at some time in the future, compared to only 8% of the students who had not taken an agricultural class [$\chi^2(2, N = 315) = 13.67, p < .01$].

Question 3

Did the combination of taking both agricultural classes in 9th and 10th grade and attending an 11th and 12th grade school with an agriculture program increase student interest in pursuing an agricultural career relative to either activity alone? This question relates to an interaction between previous courses and present experience. Of those students who had taken an agricultural class in the 9th and 10th grade and were presently attending an 11th and 12th grade school with an agriculture program, 31.7% expressed interest in pursuing an agricultural career. At the bottom end were those students who had not taken an agricultural class in the 9th and 10th grade and were not attending an 11th and 12th grade school offering an agriculture program. Of this group, only 3.1% thought that they would work in an agricultural career. Somewhere in the middle and not significantly different from each other, were students who had either (a) taken at least one agricultural course in the 9th and 10th grade, but were not attending an 11th and 12th grade school with an agriculture program or (b) attended an 11th and 12th grade school that offered an agriculture program, but had not previously taken agricultural courses. Of the former 10.3% thought they would work in agriculture as compared with 8.6% of the latter group. The overall Chi-square for the four groups was significant, [$\chi^2(3, N = 315) = 26.23, p < .001$].

Question 4

Was there a more favorable attitude toward agricultural careers among the group of Australian secondary students than the group of U.S. secondary students tested? This question was explained in terms of less negative attitudes, but was not reflected in increased numbers of students interested in pursuing an agricultural career. Approximately

13% of the both Canberra and California students thought they would at sometime work in agriculture. However, fewer Canberra students definitely thought they would not work in agriculture (49.2%) as compared to 60% of California students. Furthermore, more Canberra students were undecided as to whether they would ever work in agriculture (38.2%) than California students (27%) [$X^2(N = 857) = 11.27, p < .01$]. There was no relationship between the factors Canberra students' thought were important when making a career choice and the characteristics they thought described a career in agriculture ($Rho = -.14, NS$). in contrast, to the negative correlation ($Rho = -.76, p < .05$), between career objectives and perceptions of a career in agriculture among the California students surveyed by Mallory and Sommer. Furthermore, in the adjective scales, Canberra students saw a career in agriculture in a more positive light than the California students. Specifically, Canberra students considered a career in agriculture to be more healthy, interesting, satisfying, and secure than did California students (Table 1 and Figure 1). When Canberra students were asked to rate a series of specific agricultural careers, none of the ratings averaged in the very or moderately exciting categories. The same pattern occurred with the California students in that the highest rated agricultural career also fell between moderately and slightly exciting. However, the Canberra students did have a higher average rating than did the California students.

Differences between schools

Since several of the questions examined differences between Schools 2 and 3 which offered agriculture programs and School 1 that did not, it is important to see if the students in the three schools differed demographically, specifically in relation to farm background. There was no significant difference between the students at the three schools in regard to their gender, history of agricultural courses at the 9th and 10th grade level, whether they were born in Australia, their perceived 11th and 12th grade rank, and what type of tertiary institution they thought they would attend. The differences among the parents of the students at the three schools were not significant in regards to their education level, whether they were born in Australia, and how the students' parents felt about their children pursuing a course of study in agriculture at the tertiary level. Among those factors in which the schools differed (whether the students had ever lived on a farm, whether their parents had worked in an aspect of agriculture, the type of tertiary institution the students thought they would attend, and whether the students thought they would complete their tertiary education) there was no clear pattern of differences. There were as many differences between Schools 1 and 2 as between 2 and 3 and 1 and 3.

Conclusions and Recommendations

There seems to be widespread agreement among researchers that American secondary students have a negative perception of agricultural careers and lack awareness of the range of career opportunities in agriculture (ACTP, 1989; Mallory et al, 1986; Orthel et al, 1989). The results of the present study clearly show that for Canberra students the experience of taking agricultural courses at the 9th and 10th grade and attending schools with agriculture programs, significantly increased their interest in agricultural careers. This finding points to the importance of exposing students to agricultural courses at least by the 9th and 10th grade. While to our knowledge no studies have directly addressed this question in the U.S., results from other studies also indicate that providing students with more exposure to the agriculture industry by the 9th and 10th grade is likely to affect their attitudes and career choices. For example, in 1988 the American College Testing Program reported that the majority of secondary students made their college major or career choices during the 11 th grade. Further, their choices were most influenced by contact with people working in the career the students have an interest in, followed by parents, and high school teachers. Students who had not been involved in agriculture relied on the media for information about agricultural careers, whereas students who had been involved in agriculture utilized people working in the agricultural profession, 4-H, and FFA programs

(ACTP, 1988). Taken together these studies suggest that it would be beneficial to: increase or enhance agriculture programs at the 9th and 10th grade level; work toward modifying the media's representation of agriculture and agricultural careers; emphasize direct student contact with people in agricultural careers, 4-H, and FFA; and institute these changes prior to the time students enter the 11th grade.

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