

# **Factors Associated with Enrollment in Agricultural Science and Membership in the FFA in Texas**

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Beginning with A Nation at Risk in 1983, numerous reports were issued throughout the 1980s calling for educational reform in the United States. These reports resulted in sweeping educational reforms enacted by state legislatures nationwide. In Texas, significant educational changes were initiated in 1984 by House Bill 72. One of the outcomes of this bill was major reform in secondary agricultural education. In 1988, the traditional program of Vo-Ag I, II, III, and IV was phased out and replaced with twenty-three, semester-length courses. These courses were designed to reflect a diversified and changing agricultural industry. In addition to the course changes, requirements for Supervised Agricultural Experience Programs (SAEP) were changed.

December, 1988 enrollment figures for secondary students enrolled in Agricultural Science programs in Texas revealed an increase of 29% over the previous year's enrollment. This amounted to an increase of approximately 10,000 students. FFA membership increased by 13% or approximately 3,000 students (Domangue, 1989). In light of what is known about why students enroll in secondary agricultural education and in light of such a drastic increase in enrollment in Texas, were there "new" reasons why students enrolled in the new semester courses in Texas? Did students enroll because of ease of scheduling? Did they enroll because of the "new curriculum"? What was the demographic make-up of these students? Was the new program attracting "nontraditional" students? What motivated so many additional students to enroll but not to join the FFA? In addition, what were the students' perceptions of the requirements for SAEP? This study sought to answer these and other questions.

## **Theoretical Base**

An understanding of the behavior of high school students is founded in adolescent psychology. Horrocks (1976) stated that "Human behavior occurs either as a product of an individual and his environment or as the result of a physiological intrapersonal reaction" (p. 188). Some major external factors that influence adolescent behavior are the high school (Newman & Newman, 1979), the family (Lloyd, 1985), and the peer group (Thornburg, 1982). Internally, the adolescent is influenced by the drive to resolve identity, seek emancipation from parents, seek economic independence, establish group and heterosexual relationships, develop intellectually, and develop and establish values. The physical changes associated with adolescence also produce a great deal of internal stress (Horrocks, 1976).

Several factors related to enrollment in programs of vocational agriculture have been identified. They include future value or future plans (Gilbertson, Rathbun, & Sabol, 1975; Pruckno & Miller, 1985; Brandy, 1986; Scanlon & Yoder, 1989), interest in agriculture or vocational agriculture (Pruckno & Miller, 1985; Brandy, 1986), influence of significant others (Flores, 1989; Scanlon & Yoder, 1989), and academic average, parental occupation, and student residence (Scanlon & Yoder, 1989). Reasons for enrollment cited by students include to show at fairs, to meet the science requirements (Gilbertson, et al., 1975), to be a better citizen, and to improve relations with others (Scanlon & Yoder, 1989).

Students join the FFA to participate in project activities, to show at fairs (Gilbertson, et al., 1975). to learn about agriculture and leadership, to participate in activities (Paulson, 1981). and for leadership development, interpersonal skill development, and career exploration (Scanlon & Yoder, 1989).

### **Purpose and Objectives**

The purpose of this study was to examine relationships among selected characteristics of agricultural science students in Texas, their reasons for enrolling in agricultural science classes, their reasons for joining the FFA, their reasons for not joining the **FFA**, and their perceptions concerning the requirements for SAEP. The following objectives were identified to accomplish this purpose.

Determine selected personal and situational characteristics (e.g., age, gender, ethnicity, place of residence, year of enrollment) of students enrolled in agricultural science programs in secondary schools in Texas..

Determine if relationships existed among selected personal and situational characteristics and the year respondents first enrolled in agriculture.

Analyze the underlying constructs that exist in students' responses to statements about their reasons for enrollment in agriscience, their reasons for joining or not joining the FFA, and their perceptions of the requirements for SAEP in Texas.

Determine if differences existed among the students' reasons for enrolling in agricultural science, reasons for joining the FFA or not joining the FFA, and perceptions of SAEP when subjects were grouped by the aforementioned personal and situational characteristics.

### **Procedures**

The population for this study was all secondary students enrolled in agricultural science in Texas in the fall, 1989. This number was approximately 67,000 students. Cluster sampling was used with the agricultural science program as the cluster. A random sample of thirty-five schools was selected to participate, with an expected sample size of 2,380 agricultural science students.

The instrument consisted of five parts. Part I was designed to gather demographic and situational information from the respondents. Parts II, III, IV, and V were designed to determine the reasons for enrollment, perceptions of SAEP, reasons for joining the FFA, and reasons for not joining the FFA. respectively. These parts consisted of statements to which the students responded using a five-point, Likert-type scale of 1=Strongly Agree, 2=Agree, 3=Unsure/No Opinion, 4=Disagree, 5=Strongly Disagree.

The original bank of items for the instrument was compiled from instruments developed by Flores (1989). Scanlon and Yoder (1989). and Paulson (1981). A pilot test of the instrument was conducted with 243 students in three agricultural science programs not included in the study. The pilot test generated additional reasons (not included in the original instrument) as to why students enroll in agricultural science courses, why they join or do not join the FFA, and their opinions regarding the new requirements for SAEP). The statements and comments from the students in the pilot study, along with additional refinement by the researchers, faculty, and doctoral students in the Department of Agricultural Education at Texas A&M University and the state staff in Agricultural

Education at the Texas Education Agency, resulted in the addition of 15 items to the questionnaire.

During the week of November 6-10, 1989, packets of research materials were mailed to the 34 (of 35) teachers agreeing to participate in the study. Teachers were instructed to administer the questionnaire to each student in the program. Thirty-one schools completed and returned the scantron sheets. The final sample size was 1697 students.

Objective One was accomplished by computing means, frequencies, and percentages on the demographic items. Objective Two was accomplished by conducting crosstabulations on selected demographic variables and computing Cramer's V statistic. Objective Three was accomplished by factor analyzing the items comprising the reasons for enrollment, reasons for joining, reasons for not joining, and perceptions of SAEP. Means and standard deviations were calculated and reported. Objective Four was accomplished by conducting analysis of variance of the factors of enrollment, joining, nonjoining, and perceptions of SAEP. Subjects were grouped through use of the demographic variables.

## Findings

### Findings Related to Objective One.

A majority of the respondents were 16 or 17 years old (52%), male (77%), and Anglo (71%). Twenty-three percent lived on a farm or ranch, thirty-one percent lived in the country but not on a farm or ranch, and twenty-seven percent lived in a town with a population less than 5,000. Forty-three percent were new to the program and seventy-one percent were FFA members.

### Findings Related to Objective Two.

The variable of interest in Objective Two was the year respondents first enrolled in agriculture. This was examined by conducting crosstabulations to determine if year of first enrollment in agricultural science was associated with selected demographic variables. Conventions used for describing measures of relationship were defined by Davis (1971). A coefficient of .70 or higher was considered a very strong relationship. A coefficient of .50 to .69 was considered a substantial relationship; .30 to .49 was considered a moderate relationship; .10 to .29 was considered a low relationship; and .01 to .09 was considered a negligible relationship.

The results of the crosstabulations of the variable "Year of First Enrollment" by selected demographic variables are found in Table 1. A negligible relationship was discovered between the year respondents first enrolled in agriculture (1986-87, 87-88, 88-89, or 89-90) and their ethnicity. A low relationship was found between the year of first enrollment and gender, residence, and type of SAEP conducted. A higher percentage of recent enrollees (compared to "old" enrollees) were females, lived in cities with populations between 5,000 and 50,000, and had SAEPs consisting of applied activities or no SAEP. A lower percentage lived on farms and ranches. It should be noted that students enrolled in the beginning semester course in agriculture are not required to conduct a SAEP. This would account for the high percentage of new enrollees not conducting a SAEP.

A moderate relationship was found between year of first enrollment and status of FFA membership. A higher percentage of new enrollees had not been FFA members in the past. A relatively high Cramer's V would be expected considering that new enrollees could not have been members in the past. The largest percentage of nonmembers was found in the 1989-90 enrollees (enrollees after the curriculum changes).

Table 1. Results of Crosstabulations of “Year of First Enrollment” by Selected Demographic Variables

Variable	Cramer's V	Chi-square	Probability
Gender	.10	16.36	.001
Ethnicity	.07	24.32	.018
Residence	.11	56.56	<.0001
FFA Membership Status	.46	1052.39	<.0001
Type of SAEP Conducted	.14	100.75	<.0001

### Findings Related to Objective Three

The items concerning enrollment, joining or nonjoining, and perceptions of SAEP were factor analyzed (varimax rotation). Items were placed in factors based on factor loadings. For an individual item, the factor on which that item loaded highest became the “home” for that item. All items loaded greater than .30. The resulting factors (and items comprising the factors) were submitted to a professional psychologist for assistance in identifying names for the factors (Hughes, Personal Communication, May 1, 1990). Scales were developed by grouping the items resulting from the factor analysis. The scales (factors), their means, standard deviations, and Cronbach's alphas (internal consistency of the scales) are displayed in Table 2.

Table 2. Means, Standard Deviations, and Cronbach Alphas of the Scales Measuring Influences on Enrollment, FFA Membership, FFA Nonmembership, and Perception of SAEP.

Rank	Factor	Mean	SD	Cronbach's Alpha
<u>Influences on Enrollment</u>				
1.	Class Characteristics	2.00	.70	.57
2.	Identity Enhancement	2.06	.72	.83
3.	Agricultural Interest	2.22	.87	.74
4.	Instrumental/Practical	2.33	.69	.60
5.	Significant Others	3.28	.85	.80
6.	Circumstantial/Disavowance	3.50	.90	.58
<u>Influences on FFA Membership</u>				
1.	Identity Enhancement	2.11	.68	.87
2.	Organizational Activities	2.39	.73	.80
<u>Influences on FFA Nonmembership</u>				
1.	Pragmatics	3.15	.88	.46
2.	Ego-Dystonic/Isolation	3.46	.81	.87
3.	Negative Image	3.81	.79	.74
<u>Perception of SAEP</u>				
1.	Perception of SAEP	2.57	.73	.87

Note: 1=Strongly Agree, 2=Agree, 3=Unsure/No Opinion, 4=Disagree, 5=Strongly Disagree.

The factor “Class Characteristics” was composed of items concerned mainly with students' perceptions of what they would be doing in the class. “Identity Enhancement” consisted of items that indicated a positive effect on the adolescent developmental task of identity resolution. This includes perceived future value, relationships with adults (the teacher), perceived present value (classes are fun), and internal needs such as respect, acceptance, and belongingness. “Agricultural Interest” included items that indicated an intrinsic interest in agriculture on the part of the student. “Instrumental/Practical”

included items indicating that the class was used as an instrument for other purposes or that they enrolled for other practical reasons. "Significant Others" included items indicating that the student enrolled because of outside influence of other people. "Circumstantial/Disavowance" included items indicating that the student enrolled because of reasons beyond their control; in other words, they disavowed responsibility for being in the class. Reasons for this included being put in the class by the people who do the scheduling or enrolling because it was the only elective available.

The procedure resulted in two factors measuring membership in the FFA: "Identity Enhancement" and "Organizational Activities." "Identity Enhancement" consisted of items similar to those found in the enrollment factor "Identity Enhancement." In other words, students may have joined the FFA or enrolled in agricultural science for reasons of "identity enhancement." "Organizational Activities" included, items indicating the students joined because of activities offered by the FFA in which they could participate.

The factor analysis procedure resulted in three factors influencing nonmembership in the FFA. "Pragmatics" consisted of items of a factual or practical nature that prevented students from joining. "Ego-Dystonic/Isolation" consisted of items indicating a student's personal sense of isolation relative to the FFA. This is the opposite of identity enhancement. The student does not identify with the FFA and does not see the FFA as contributing to any portion of the task of identity development. "Negative Image" consisted of items indicating a negative image of the FFA either held internally by the student or projected externally by other people to the student.

The factor analysis procedure resulted in only one factor for the area of SAEP: "Perception of SAEP." This included items concerning various aspects of the new requirements for SAEP in Texas.

#### Findings Related to Objective Four

Objective Four was accomplished by conducting analysis of variance. Independent variables used were age, gender, ethnicity, place of residence, and year of first enrollment. Dependent variables used were the scales resulting from the factor analysis measuring influences on enrollment, membership and nonmembership, and perception of SAEP). Differences in means at the .01 level were considered practically different. Where significant differences were detected, Scheffe's post hoc procedure was used to detect between which groups the differences occurred.

Older students enrolled because of the influence of significant others more so than did younger students. Males enrolled because of class characteristics more often than did females. Similarly, males were influenced more to be nonmembers of the FFA by a perceived negative image of the FFA than were females.

Blacks disagreed less than Hispanics and Anglos that they enrolled because of circumstantial/disavowance reasons. It is interesting to note that Hispanics did not differ from Anglos in any of the ANOVAs conducted using ethnicity as a variable.

Students who lived on farms and ranches agreed more than all other groups with all factors of enrollment (except Circumstantial/Disavowance), FFA membership, and SAEP. They differed on all factors except "Class Characteristics" and "Circumstantial/Disavowance." from those who lived in the country but not on a farm or ranch.

Students who enrolled for the first time the fall of 1989 agreed less than all other "first enrollment" groups on all factors of enrollment except

"Circumstantial/Disavowance." Those who were enrolled the longest agreed more than recent enrollees that they enrolled because of "Instrumental/Practical" reasons.

FFA members agreed more than nonFFA members on all factors of enrollment except "Circumstantial/Disavowance." No differences existed between these two groups in regards to perception of SAEP.

No other significant differences were found.

### **Conclusions and Recommendations**

Even with massive changes in secondary agricultural education in Texas, enrollment is still mainly white (71%) and male (77%). Of the agriscience enrollees, only 29% were minorities and only 23% were female. Considering that agricultural educators "value serving all populations" (National Summit on Agricultural Education, 1989) and that total secondary enrollment in Texas is approximately 50% males and 50% females, and 48% minorities, professionals in agricultural education in Texas must plan and implement strategies to recruit and retain ethnic minorities, females, and urban students.

Overall, students enroll in programs of agricultural science in Texas because of characteristics of the class and because it enhances their identity as a person. They join the FFA mainly because it, too, enhances their identity as a person. To a lesser degree, they join to become involved in its activities. Modifications to existing semester courses, addition of new courses, and modifications to the FFA should address the interest and identity concerns of a diverse student population. Confirmatory factor analysis should be conducted to confirm or refute the "presence" of the constructs identified in this study.

Because the focal point of enrollment in agriculture classes and membership in the FFA is at the local level, an instrument should be developed for use by the local agriscience program. This instrument could be used together with interest inventories to assist the instructor in program planning.

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