

## JOB SATISFACTION AND RETENTION OF SECONDARY AGRICULTURE TEACHERS

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### Abstract

*The shortage and demand for teachers have been well publicized. This study investigated the extent to which the level of job satisfaction of Missouri secondary agriculture teachers changed from their initial year of teaching to their current employment, either in teaching or industry. A comparison between the job satisfaction of teachers who remained in the profession with those who changed school districts and those who left the profession was conducted. Additionally, the likes and dislikes of the specific responsibilities of a secondary agriculture teacher were investigated. It was concluded that all three groups of teachers were generally satisfied with their first year of teaching. They were also generally satisfied with their current employment position and had relatively the same degree of job satisfaction increase over time from their first teaching position to their current position. Teachers who left the profession were generally as satisfied as those who remained in the profession with regard to the job responsibilities of an agriculture teacher, with the exception of teaching agricultural mechanics and in working with school administrators. The results implied that teachers leaving the profession were relatively satisfied but were leaving the profession for opportunities/job satisfaction aspects that they could not receive through teaching.*

### Introduction/Theoretical Framework

The nation is facing “the worst teacher shortage ever” (NEA, n.d.) and the agricultural education profession has not been immune to the problem. Camp (2000) identified the agriculture teacher shortage problem as early as 1977, and the problem has continued well into its third decade. The reasons underlying the teacher shortage problem are still under investigation. Some researchers have suggested that those agriculture teachers who continue to teach and those who leave the profession have varying levels of job satisfaction (Bennett, Iverson, Rohs, Langone, & Edwards, 2002; Newcomb, Betts & Cano, 1987). Others have identified teacher effectiveness (in the classroom) as a predictor of the level of job satisfaction and that job satisfaction has been linked to teacher retention (Berns, 1990; Grady & Burnett, 1985). However, studies

are lacking that compare the level of job satisfaction of teachers who continue to teach with those who leave the profession, especially with consideration given to the specific responsibilities of a secondary agriculture teacher. Therefore, research is warranted regarding the level of job satisfaction of teachers who continue in the profession and those who leave the profession and their perceived like or dislike for specific responsibilities associated with teaching agriculture at the secondary level.

A variety of attempts and strategies have been employed to address the teacher shortage. Some of these include forgiveness of student loans, special scholarships, tuition reimbursements, emergency and alternative certification programs, and the rehiring of retired teachers. The debate continues to be whether the problem is a problem of recruitment or a problem of retention. Regarding retention, current strategies and programs have not effectively solved the

shortage of qualified agriculture teachers. However, educational researchers have learned that if an individual is not satisfied with his/her job, the likelihood for that individual to remain in the teaching profession is greatly diminished.

Numerous researchers have investigated the teacher retention problem in agricultural education (Bryant, 1980; Cole, 1984; Dillon, 1978; Edwards & Briers, 2001; Flowers & Pepple, 1988; Grady, 1988; Howell & Martin, 1983; Knight, 1978; Moore & Camp, 1979; Reilly & Welton, 1980). Although the problem has been investigated in prior research, a review of the literature indicates that a majority of the studies which identified the reasons why agriculture teachers left the profession were published prior to the 1990s. With the many changes that agricultural education (i.e. increased enrollments, addition of middle school instruction, diversity of subjects taught, etc.) has undergone in the past 13 years, the question arises: Are the reasons teachers leave the profession today different than those cited in studies over a decade ago?

In terms of job satisfaction, researchers have discovered that agriculture teachers were fairly or moderately satisfied with their job (Beavers, Jewell, & Malpiedi, 1987; Bennett, et al., 2002; Cano & Miller, 1992; Flowers & Pebble, 1988; Grady & Burnett, 1985; Newcomb, et al., 1987). Cano and Miller (1992) indicated that knowledge of the level of satisfaction was not enough. They proposed that determining the factors that lead to satisfaction and/or dissatisfaction was required. Satisfier factors investigated were achievement, advancement, recognition, responsibility, and the work itself. Dissatisfier factors investigated were interpersonal relations, policy and administration, salary, supervision, and working conditions.

When agriculture teachers leave the profession, some degree of job dissatisfaction is implied (Jewell, Beavers, Kirby, & Flowers, 1990). One consequence of teacher turnover is the cost to society for the continual training of far more teachers than would appear to be required. Muncrief (1979; cited in Jewell, et al., 1990) stated that since teacher education is a costly

investment, if graduates do not remain in the profession, it would seem beneficial to take steps to increase the tenure of teachers who are both successful and satisfied with teaching. This statement still rings true today.

The issue of secondary teacher job satisfaction and retention has been the focus of research across disciplinary boundaries for several years (Chapman, 1983; Chapman, 1984; Chapman & Green, 1986; Cole, 1984; Knight, 1978; McBride, Munday & Tunnell, 1992; Miller 1974; and Reilly & Welton, 1980). These studies have identified personal characteristics, student concerns, workload, recognition received, salary, and policy-administration as common turnover and job dissatisfaction factors.

Ruhland (2001, p.58) stated, "Turnover is costly to any organization, and it is far more cost effective to retain teachers than to hire. Understanding the factors associated with teacher turnover and retention is the critical first step to developing teacher retention strategies. Turnover focuses on the movement of the individual, not the movement within the organization."

### **Purpose/Objectives**

The primary purpose of this study was to ascertain the change in the level of job satisfaction over time of Missouri secondary agriculture teachers who began teaching full-time in the fall of 1995 through 1999. Secondary purposes were to ascertain if differences existed among those who continued teaching in the same school district, those who changed school districts but continued to teach secondary agriculture full-time, and those who left the profession. Specifically, the study sought to address the following questions:

1. To what extent does the level of job satisfaction of Missouri secondary agriculture teachers (stayers, movers, and leavers) change over time from their first year teaching position to their current employment position?
2. To what extent do Missouri secondary agriculture teachers

(stayers, movers, and leavers) perceive their likes and dislikes of the specific responsibilities of an agriculture teacher during their most recent year of teaching?

### Methods/Procedures

All agriculture teachers in the Missouri served as the population frame for this study. The accessible and purposive sample consisted of 149 teachers who began teaching during the designated five-year period. The 1995-96 through the 2001-02 Missouri Agricultural Education Directories were used to identify teachers who began teaching during the designated five-year period of 1995 to 1999.

The selected teachers were divided into three subgroups, "stayers," "movers," and "leavers." Teachers who began teaching during the five-year time period and remained at the same district through the 2001-2002 school year were classified as "stayers" ( $n = 50$ ). "Movers" were identified as those teachers who began teaching in a selected school district during the five-year time period and moved to at least one different school district, but continued to teach agriculture in a public school, whether in the current state or another state, on a full-time basis during the 2001-2002 school year ( $n = 63$ ). Teachers who began teaching during the five-year period but were no longer teaching secondary agriculture in a public school during the 2001-2002 school year were classified as "Leavers" ( $n = 36$ ).

Survey analysis and ex post facto procedures were used in this repeated measures design. Research questions were tested using the following null hypotheses:

- Ho<sub>1</sub> There is no statistically significant difference between mean scores of job satisfaction (over time) for the respondents.
- Ho<sub>2</sub> There is no statistically significant difference among the mean scores of job satisfaction for the three groups of certified secondary agriculture teachers (leavers, movers, and stayers).

Ho<sub>3</sub> There is no significant interaction between time and the three groups of certified secondary agriculture teachers (leavers, movers, and stayers) on mean job satisfaction scores.

Ho<sub>4</sub> There is no significant difference among the mean scores of like or dislike for the various responsibilities of an agriculture teacher across the three groups of teachers (leavers, movers, and stayers).

An instrument was developed to assess an individual's satisfaction with his/her first year of teaching and his/her current employment, respectively. The instrument consisted of 14 questions rated on a five-point Likert-type scale with responses of strongly disagree to strongly agree. The instrument was based upon the Brayfield-Rothe (1951) Job Satisfaction Inventory, as modified by Warner (1973). To insure the instrument's face and content validity for current conditions and issues, a panel of experts reviewed the instrument. The reported reliability of the instrument, as tested with secondary agriculture teachers was .94 (Cronbach's Alpha) (Cano & Miller, 1992).

The instrument also consisted of a researcher-developed questionnaire evaluating the self-perceived level of like or dislike of specific responsibilities of a secondary agriculture teacher. A five-point Likert-type scale was used for respondents to rate their perceived like and dislike of various responsibilities of an agriculture teacher. Possible responses ranged from "Hate it" to "Really enjoy it." Again, an expert panel assessed face and content validity.

Descriptive statistics were used to first summarize the data. Repeated measures analysis was utilized at an alpha level of .05 to test the null hypotheses. Two main effects (one between and one within variables) and one interaction (time and subgroups) hypotheses were tested. Post hoc testing of least means squared was performed to identify which groups were significantly different.

Multiple analysis of variance (MANOVA), alpha level of .05, was performed on the 26 items regarding the various responsibilities of an agriculture teacher to address the fourth null hypotheses, followed by one-way ANOVA on specific items to identify if there was significant difference among the groups based on retention status. If significance was found among retention groups, post hoc testing of least means squared was performed to identify which groups were significantly different.

### Results/Findings

Overall, 123 of the 149 teachers or former teachers responded yielding an 83% response rate. Of the 123 respondents, 41 (82% response rate) were classified as stayers, 50 (79% response rate) were movers, and 32 (89% response rate) were leavers. No significant difference was found between on-time respondents and late respondents with regard to the levels of job satisfaction with the first year of teaching or between the levels of job satisfaction with the current position of employment, therefore, increasing the generalizability of the results to the accessible sample (Miller & Smith, 1983).

The mean scores of job satisfaction for

the three groups of teachers were similar for the first year of teaching (Table 1). Leavers had the lowest mean score and the greatest variation for first year teaching job satisfaction ( $M = 3.82$ ,  $SD = .72$ ) while movers ( $M = 4.02$ ,  $SD = .60$ ) and stayers ( $M = 4.02$ ,  $SD = .47$ ) reported identical means score for job satisfaction during the first year teaching experience. The mean scores of the three groups of teachers were also similar for the current employment position.

A test of repeated measures was utilized to test null hypotheses one, two, and three. Mean levels of satisfaction for the three groups were similar for both the first year teaching position and for the current employment position. Each group had consistently higher mean levels of job satisfaction for their current employment position than was reported for their first year of teaching. Leavers had the greatest increase in job satisfaction over time, while stayers had the least amount of increase. A significant difference ( $F_{df=1} = 7.295$ ;  $p = .008$ ) was found between the mean levels of first year job satisfaction and the mean levels of current employment position job satisfaction for all respondents (Table 2). Therefore, null hypothesis one that states there is no statistically significant difference between mean scores of job satisfaction (over time) for the respondents was rejected.

Table 1

*Level of Job Satisfaction of Leavers, Movers, and Stayers Over Time*

	<i>n</i>	First Year Teaching		Current Employment		Over Time Average	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Leavers	32	3.82	.72	4.12	.78	3.97	.54
Movers	50	4.02	.60	4.19	.52	4.11	.48
Stayers	41	4.02	.47	4.08	.47	4.05	.39
Total	123	3.97	.60	4.14	.58	4.05	.47

Table 2  
*Repeated Measures of Job Satisfaction*

	<i>df</i>	<i>F</i>	Sig.
Within-Subjects (Time)	1	7.295	.008
Between-Subjects (Status)	2	.796	.454
Interaction (Time*Status)	2	1.063	.349

No significant difference ( $F_{df=2} = .796$ ;  $p = .454$ ) was found among the three groups for mean levels of job satisfaction (Table 2). The three groups had relatively the same amount of increase in their level of job satisfaction. Therefore, null hypothesis two that states there is no statistically significant difference among the mean scores of job satisfaction for the three groups of secondary agriculture teachers (leavers, movers, and stayers) was accepted.

No significant interaction ( $F_{df=2} = 1.063$ ;  $p = .349$ ) was found between job satisfaction over time and retention status among the three groups of teachers (Table 2). Each group's mean scores of job satisfaction were relatively the same at each point in time and there were not noticeable differences among the three groups. Therefore, null hypothesis three that states there is no significant interaction between time and the three groups of secondary agriculture teachers (leavers, movers, and stayers) in their influence on mean job satisfaction scores was also accepted.

Secondary agriculture teachers were asked to rate their level of like or dislike for 26 job responsibilities. The scale utilized was a five-point, Likert-type scale: Hate it = 1, Dislike it = 2, Take it or Leave it = 3, Like it = 4, Really enjoy it = 5. Current and former agriculture teachers were generally satisfied with the various responsibilities of an agriculture teacher.

Ten items ("classroom instruction," "motivating students," "agricultural mechanics laboratory instruction," "greenhouse laboratory instruction," "animal and/or land laboratory instruction," Supervised Agricultural Experience (SAE) visitations," "career development events,"

"FFA leadership activities," "summer program," and "fairs/showing/exhibiting") were rated with an overall (all three groups of teachers) mean level of 'Like' at 4.0 or higher on a 5.0 scale (Table 3).

Five items had a mean level of "Dislike" below 3.0 on the five-point, Likert-type scale: "dealing with administrators," "keeping student records and grades," "completing state reports," "school-wide supervision duties," and "School Improvement Program (SIP) curriculum alignment and documentation."

The majority of respondents (57%) reported not having the opportunity and/or responsibility of working with "Young Farmers and/or adult instruction," indicated by marking "N/A" on their questionnaires and reflected in the low frequency of responses to this item. Several respondents (38%) also reported not having the opportunity and/or responsibility for "greenhouse laboratory instruction" and "animal/land laboratory instruction."

A multiple analysis of variance test (MANOVA) was performed for 23 of the 26 items regarding the job responsibilities of an agriculture teacher. SPSS<sup>®</sup> will not consider subjects with missing data, hence the use of 23 items rather than 26. A significant difference between the groups was found using Wilk's Lambda statistic ( $F_{df=23, 61} = 710.909$ ,  $p_{.05} < .001$ ) thus justifying the performance of one-way analyses of variance on each of the 26 responsibilities of an agriculture teacher. An alpha level of .03 was established for significance testing due to the number of individual one-way ANOVAs performed, in an effort to reduce the cumulative type I error (Keppel, 1991).

Table 3  
*Level of Like and/or Dislike for Responsibilities of an Agriculture Teacher by Retention Status*

Responsibility	Leavers (n = 32)			Movers (n = 50)			Stayers (n = 41)			Total (n = 123)		
	f	M	SD	f	M	SD	f	M	SD	f	M	SD
*Classroom instruction	31	4.35	.55	50	3.92	.72	41	4.24	.54	122	4.14	.65
*Managing students	31	3.81	.83	49	3.33	.97	41	3.76	.77	121	3.60	.89
Motivating students	32	4.31	.82	50	4.16	.93	41	4.20	.81	123	4.21	.86
Plan lessons/ learning	32	3.47	.88	50	3.12	.85	41	3.29	.90	123	3.27	.88
*Ag mechanics lab instruction	32	3.69	1.18	45	4.49	.69	35	4.00	1.14	112	4.11	1.04
Greenhouse lab instruction	23	3.96	1.26	39	4.15	.99	26	4.08	1.23	88	4.08	1.13
Animal/land lab instruction	27	4.56	.58	33	3.97	1.02	28	4.32	.90	88	4.26	.89
Recordbook instruction	32	3.66	1.00	50	3.42	.88	41	3.78	.94	123	3.60	.94
SAE visitations	32	4.25	.88	50	4.30	.74	41	3.78	.83	123	4.24	.80
Career development	32	4.38	.83	50	4.24	.87	41	4.17	.77	123	4.32	.82
*FFA leadership activities	32	4.81	.47	50	4.60	.61	41	4.41	.71	123	4.59	.63
*FFA fundraising	32	3.34	.90	50	2.76	1.04	41	3.17	1.02	123	3.05	1.02
Summer program	31	4.16	.64	50	4.32	.71	41	4.15	.85	122	4.22	.74
Fairs/Showing/ Exhibiting	28	4.21	.92	48	4.25	.91	40	3.93	.92	116	4.13	.92
*YF/adult instruction	15	3.80	1.15	20	3.25	.79	18	2.72	1.32	53	3.23	1.15
Utilize advisory committee	29	3.14	1.03	46	3.26	.68	41	3.02	.85	116	3.15	3.15
Plan courses & curriculum	32	3.59	.98	50	3.26	.78	41	3.22	.82	123	3.33	.86
Maintain community	32	3.69	1.03	50	3.86	.83	41	3.95	.74	123	3.85	.86
*Dealing with administrators	32	2.44	1.13	50	3.22	.95	41	2.78	1.11	123	2.87	1.09
Dealing w/ other faculty/staff	32	3.59	.91	50	3.64	.69	41	3.66	.69	123	3.63	.75

Table 3 Continued

Dealing with parents	31	3.35	1.17	50	3.44	.88	41	3.49	.75	122	3.43	.92
*Keep student records/grades	32	3.03	1.00	50	2.46	.89	41	3.05	.80	123	2.80	.93
*Completing state reports	32	2.81	1.00	50	2.22	.84	41	2.39	.92	123	2.43	.93
*School-wide supervision	32	2.78	.97	44	2.05	.91	35	2.26	1.01	111	2.32	1.00
SIP alignment/Document	29	1.97	.91	46	1.57	.78	41	1.66	.88	116	1.70	.86
“Housekeeping” of program	32	3.41	.71	50	3.16	.96	41	3.20	.93	123	3.24	.89

Scale: Hate it = 1, Dislike it = 2, Take it or Leave it = 3, Like it = 4, Really enjoy it = 5

\*Between group significance ( $p < .03$ )

Significant differences were found among the three groups (leavers, movers, and stayers) for 10 items. Least squared means post hoc analysis indicated the source of the difference (Table 4). Leavers had higher mean levels for 7 of the 10 items. The leavers had the lowest mean levels among the three groups for “agricultural mechanics laboratory instruction” and “dealing with administrators.” Movers had the lowest mean levels for 6 of the 10 items. Movers had the highest mean levels for “agricultural mechanics laboratory

“instruction” and “dealing with administrators.” Stayers had the lowest mean levels for “FFA leadership activities” and “Young Farmer and/or adult instruction.” Due to the significant differences found among the groups of teachers in 10 of the 26 items, null hypothesis four was rejected that states there is no significant difference in the mean scores of like or dislike for the various responsibilities of an agriculture teacher among the three groups of teachers (leavers, movers, and stayers).

Table 4  
Significant Difference Among Groups' Levels of Like or Dislike of Responsibilities

Responsibility	Leavers <sup>a</sup> <i>n</i> = 32		Movers <sup>b</sup> <i>n</i> = 50		Stayers <sup>c</sup> <i>n</i> = 41		<i>F</i>	Sig.
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Classroom instruction	4.35 <sup>b</sup>	.55	3.92 <sup>ac</sup>	.72	4.24 <sup>b</sup>	.54	5.513	.005
Managing students	3.81 <sup>b</sup>	.83	3.33 <sup>ac</sup>	.97	3.76 <sup>b</sup>	.77	3.958	.022
Ag mechanics lab instruction	3.69 <sup>b</sup>	1.18	4.49 <sup>ac</sup>	.69	4.00 <sup>b</sup>	1.14	6.349	.002
FFA leadership activities	4.81 <sup>c</sup>	.47	4.60	.61	4.41 <sup>a</sup>	.71	3.813	.025

Table 4 Continued

FFA fundraising	3.34 <sup>b</sup>	.90	2.76 <sup>a</sup>	1.04	3.17	1.02	3.777	.026
YF/adult instruction	3.80 <sup>c</sup>	1.15	3.25	.79	2.72 <sup>a</sup>	1.32	3.983	.025
Dealing with administrators	2.44 <sup>b</sup>	1.13	3.22 <sup>ac</sup>	.95	2.78 <sup>b</sup>	1.11	5.592	.005
Keep student records/grades	3.03 <sup>b</sup>	1.00	2.46 <sup>ac</sup>	.89	3.05 <sup>b</sup>	.80	6.313	.002
Completing state reports	2.81 <sup>b</sup>	1.00	2.22 <sup>a</sup>	.84	2.39	.92	4.204	.017
School-wide supervision	2.78 <sup>bc</sup>	.97	2.05 <sup>a</sup>	.91	2.26 <sup>a</sup>	1.01	5.537	.005

Scale: Hate it = 1, Dislike it = 2, Take it or Leave it = 3, Like it = 4, Really enjoy it = 5

Group significance between that item's group and: <sup>a</sup>Leaver, <sup>b</sup>Mover, <sup>c</sup>Stayer

### Conclusions/Recommendations/ Implications

Based on the data of this study it can be concluded that the secondary agriculture teachers in this study, whether leavers, movers, and stayers, were generally satisfied with their first year teaching experience. This concurs with previous research, from the sense that agriculture teachers, in general, were fairly or moderately satisfied with their job (Beavers, et al., 1987; Bennett, et al., 2002; Cano & Miller, 1992; Flowers & Pebble, 1988; Grady & Burnett, 1985; Newcomb, Betts & Cano, 1987). They were also generally satisfied with their current employment positions and have relatively the same degree of job satisfaction increase over time. Although there was an overall increase in job satisfaction over time, 60% of all respondents (leavers = 47%, movers = 58%, stayers = 73%) had relatively no change or a decrease in level of job satisfaction from first year teaching position to current employment position.

It may be possible that stayers have reached a plateau in their career at their current position and have become complacent with the "routine." Movers may be more prone to higher levels of job satisfaction because they feel they have achieved a "better" position and feel some

success in moving.

It can be concluded from the data that leavers were as satisfied as movers and stayers with the job responsibilities of a secondary agriculture teacher but, they did not enjoy "agricultural mechanics laboratory instruction" and "dealing with administrators." The open-ended responses of reasons for leaving the profession coincided with the low response rate to "dealing with administrators." On the open-ended response items, "lack of administrative support" was the most frequently reported reason given by leavers, followed closely by family issues. It may also be concluded that leavers enjoyed working with FFA leadership activities. They also enjoyed FFA fundraising and working with adults more than the movers and stayers. Many young people go into the profession of secondary agriculture teaching with the idea that they chose the profession because they wanted to be the FFA Advisor. Many times they are shocked when the reality sets in that there are numerous other responsibilities associated with the profession.

The knowledge and skills associated with FFA fundraising and working with adults closely parallels many agricultural industry jobs. Since nearly half of the leavers ( $n = 14$ ) entered either agricultural

business or production agriculture in a capacity of either sales representatives or managers, it may be that these leavers chose careers that more closely aligned with what they enjoyed doing without having to perform the additional responsibilities of an agriculture teacher.

The agriculture teachers in the current study had positive levels of job satisfaction. This concurs with other studies (Bennett, et al., 2002; Berns, 1990; Cano & Miller, 1992). The data from this study found that the job satisfaction levels of agriculture teachers (movers and stayers) increased over time possibly because they become more mature and accustomed to the responsibilities of the profession. It may also be implied from the data that leavers did not have significantly different first year teaching experiences than those who chose to stay in the profession. Additionally, there are implications that leavers were not more satisfied with their current employment positions than they would have been had they remained in the profession.

It is recommended that leavers be studied in more depth to determine additional influences of their decisions for leaving the profession. If qualitative methods were employed at a point in time immediately after the decision to leave was made, a researcher may be able to paint a clearer picture of the "true" reasons why the teacher is leaving the profession.

The data implies that leavers were relatively satisfied but are leaving for opportunity aspects that they are not receiving through the realms of teaching secondary agriculture. It is recommended that these teachers who have a desire to work closer with agribusiness and/or agricultural production and work with adults, be encouraged to pursue opportunities of teaching agriculture to adults through programs supported by the public school system. This avenue of intervention could potentially aid in the expansion of agriculture education programs and promote agriculture education at all levels.

One limitation of the study was the need for participants to recall their first year teaching job satisfaction, up to seven years after it occurred. It is recommended that job

satisfaction of teachers over time be researched with teachers who have the exact number of years of experience, to identify if relationship exists between the amount of increase in job satisfaction and years of experience. First year teachers should be surveyed at the end of their first year of experience, with regard to job satisfaction and then surveyed annually over the next few years of their career to identify the change in subsequent years.

The "Service Ethic and Teaching" study performed by Miech and Elder (1996) advocated that many beginning teachers are "idealists," meaning they view careers as a means to serve the larger society. Miech and Elder reported that idealists are most likely to be disappointed with their chosen career when it is realized they do not have the profound impact they had expected. It is recommended that this line of study be performed on agriculture teachers to identify possibilities of the idealist mentality among leavers of the secondary agriculture teaching profession.

The 26 items describing the responsibilities of an agriculture teacher should be further investigated to develop an instrument that is valid and reliable at accurately measuring the likes and dislikes of agriculture teachers. Factor analysis requires a larger *N* than was obtainable for this study and to develop effective constructs from these items it would be recommended to test this instrument on a larger scale with the entire state agriculture teacher population. Potentially with refinement and adjustments, these items could be utilized for either self-evaluation of practicing teachers, follow-up surveys for professional development needs or for recruitment of new teachers.

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