

An Investigation of Missouri Secondary Agriculture Teachers' Perceptions of Interorganizational Cooperative Behavior

Billy R. McKim, Extension Project Specialist
Texas A & M University

Robert M. Torres, Professor & Department Head
University of Arizona

Amy R. Smith, Assistant Professor
South Dakota State University

Interorganizational teams have the potential to accomplish more than the sum of individual efforts of members working independently, provided that members share similar goals and tasks. Thus, an interorganizational team consisting of organizations that share similar roots and educational and outreach objectives would seem logical. Subjects of this study were randomly selected secondary agriculture teachers (n = 140) in Missouri. Factors that teachers perceived as important to cooperation and the perceived affect the factors had on relationships with 4-H youth development personnel were investigated guided by the modified team performance and training framework (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995). Mean weighted discrepancy scores were calculated to determine deficiencies between the perceived and desired levels of cooperative activities, as perceived by secondary agriculture teachers. Results indicated that interorganizational behavior was indeed desirable to secondary agriculture teachers. However, despite their desire to cooperate, the perceived level of cooperation was considerably lower than the desired level of cooperation.

Keywords: interorganizational, cooperation, agriculture teachers, 4-H youth development personnel

Introduction

An effective team is comprised of members who are interdependent in their pursuit of common goals and tasks; hence, teams usually accomplish more than the sum of individual efforts of members working independently (Bass, 2008). Teams composed of organizations benefit in a similar fashion, given that the members in both organizations share similar goals and tasks (Johnson & Johnson, 2009). Effective organizations must serve the interests of their constituents and stakeholders from whom they draw their charter and resources; if organizations do not, they will suffer from a loss of resources and support (Tjosvold, 1990).

Within the arena of agricultural education, there are a number of organizations considered to be members of Team Ag Ed ("Team Ag Ed,"

n.d.). Specifically, the following organizations are recognized as Team Ag Ed members: American Association for Agricultural Education (AAAE), Agricultural Education Supervisors, AgrowKnowledge, Association for Career and Technical Education (ACTE), National Association of Agricultural Educators (NAAE), National FFA Alumni, Collegiate FFA, National FFA Foundation, National FFA Organization, National Farm & Ranch Business Management Education Association, Inc. (NFRBMEA Inc.), National Postsecondary Agriculture Student Organization (PAS), National Young Farmer Educational Association (NYFEA), The National Council for Agricultural Education, and U.S. Department of Education ("Team Ag Ed," n.d.). Certainly, among these organizations, there is a great deal of cooperation and collaboration in effort to

provide agricultural education related opportunities and “promote local program success” (“Team Ag Ed,” n.d.). However, upon review of the Team Ag Ed model, one organization appears to be absent. One might wonder, where does the Cooperative Extension Service and 4-H Youth Development fit?

Without a doubt, secondary agricultural education programs and the 4-H programs offered through the Cooperative Extension Service draw their charters from similar roots. The Smith-Lever Act of 1914 and the Smith-Hughes Act of 1917 were each national initiatives that addressed the need for educating rural people in agriculture (Lemons, 1958). Education in the community and the school are closely related (Hamlin, 1949); the school cooperates with the agencies of the community, but remains a separate organization. Similarities also exist between the organizations’ role “in providing knowledge, skills, and competencies that relate to agriculture” (Schroeder & Moss, 1984, p. 4). More recently, National Program Standards developed by Team Ag Ed have recognized the value of school and community partnerships (“Agricultural Education’s Major Initiatives,” 2007) which certainly could extend to include partnerships between secondary agriculture (education in the school) and Cooperative Extension Service initiatives (education in the community).

While the policies and goals of secondary agricultural education programs and the Extension service are similar, the organizations have historically encountered challenges in cooperating with one another. To be effective, organizations must be mindful of their goal and cooperate to accomplish the goal. Without a goal, outcome, or reward, interdependence is unlikely; thereby diminishing any reason to cooperate (Johnson & Johnson, 2009).

Previous attempts to develop memoranda of understanding between secondary agricultural education programs and the Extension service may be viewed as goals of cooperation; however, on state and national levels, these efforts were not successful (Hamlin, 1949). In a report on the nature of memoranda of understanding between Extension services and

State Departments of Vocational Education, Rogers (as cited in Lemons, 1958; Omar, 1963) noted the existence of 17 memoranda. Most formal agreements and understandings have outlined what individual states determined to be appropriate responsibilities of agriculture teachers and Extension personnel. Furthermore, many state-developed agreements have determined youth eligibility for membership in 4-H and FFA and restrictions limiting or allowing membership in both educational organizations.

Theoretical Framework

One specific theoretical framework pertaining to cooperation by secondary agriculture teachers does not exist; thus, this study was guided by the modified team performance and training framework developed by Cannon-Bowers, Tannenbaum, Salas, and Volpe (1995). “A team is a set of interpersonal interactions structured to achieve established goals” (Johnson & Johnson, 2009, p. 526). Arguably, because of the similar roots and shared educational and outreach initiatives, secondary agriculture teachers and 4-H youth development personnel can be viewed as members of the same team. To describe potential team training requirements needed to facilitate cooperation between secondary agriculture teachers and 4-H youth development personnel, this particular framework was deemed appropriate.

The modified team performance and training framework (Figure 1) was based upon the premise that to establish appropriate training procedures, one must first identify the team’s task and work characteristics, and determine competency requirements (Cannon-Bowers et al., 1995). Johnston, Smith-Jentsch, and Cannon-Bowers (1997) proposed that to improve the effectiveness of an organization, collecting outcome data alone is not adequate; identifying unique situational conditions is also necessary. Moreover, “...the goal should not be to train people to make the right decision in a given scenario, but to learn to make the right decision” (p. 313).

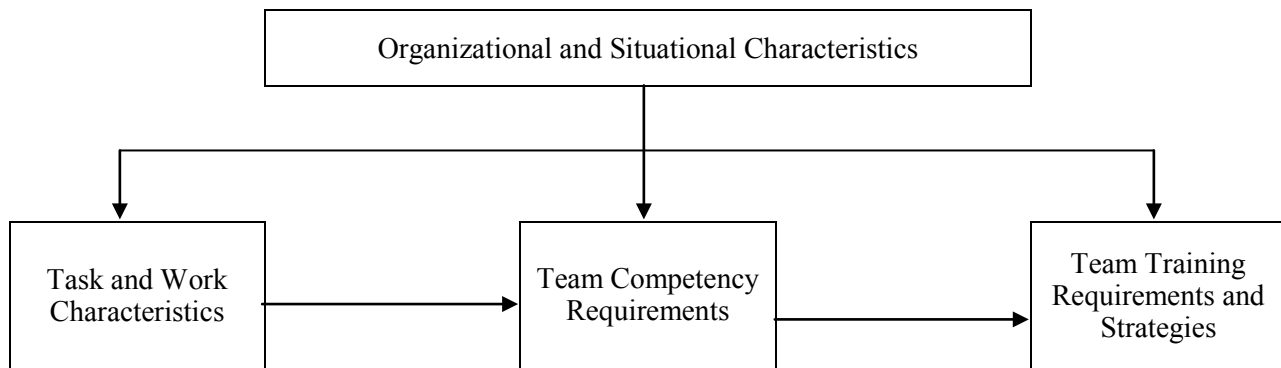


Figure 1. Relationships among Organizational and Situational Characteristics, Task Characteristics, Team Competency Requirements, and Team Training Requirements and Strategies (Cannon–Bowers, Tannenbaum, Salas, & Volpe, 1995).

Specifically, the aforementioned framework consists of four primary components, one of which is of particular interest to this study. The *team competency requirements* component addresses the teamwork skills, team–relevant knowledge, and team attitudes (Cannon–Bowers et al., 1995). Ultimately, if members of a team have the appropriate team competency requirements for the context or setting, increased performance and effectiveness will result (Cannon–Bowers et al., 1995). If not, the final component of the model, *team training requirements and strategies*, becomes increasingly important as additional training based on the team competencies needed is required for success (Cannon–Bowers et al., 1995).

As a component of a larger study, this study sought to identify secondary agriculture teachers' team competency toward cooperating with 4–H youth development personnel. Based upon the findings from this study, recommendations for training and professional development for both groups may contribute to more collaborative, effective teamwork between the two.

Related Research

Lemons' (1958) Tennessee study investigated perceptions of cooperation between vocational agriculture teachers and county agents, noting that a majority of vocational agriculture teachers and county agents perceived their working relationships with one another as

good or excellent. In Louisiana, Buddle (1981) conducted a study of cooperative relationships between county Extension agents and teachers of vocational agriculture and suggested that similarity or differences in their programs, and initiative in contacting one another were among the most influential factors. In Schroeder and Moss' (1984) study of agriculture teachers and Extension agents in North Carolina, no single factor was reported to hinder cooperation. However, differences existed between perceived appropriateness and actual occurrence of cooperative activities. Diatta and Luft (1986) reported nearly opposite findings among secondary vocational agriculture teachers and county agents in South Dakota.

Several studies were conducted regarding cooperation between secondary agriculture educators and Extension agents in Florida (Grage, Ricketts, & Place, 2002; Grage, Place, & Ricketts, 2004; Ricketts & Place, 2005). In a qualitative study, Grage et al. (2002) noted that effective collaborative relationships were occurring, which allowed secondary agriculture educators and Extension faculty to accomplish essential outcomes. When secondary agriculture educators and Extension faculty relied on one another's strengths, their effectiveness and efficiency increased (Grage et al., 2002). Ricketts and Place noted mutual respect toward one another and communication efforts as having a positive influence on cooperative relationships.

Possible barriers to cooperative relationships, including time constraints,

programmatically differences, and inequitable resources were identified by Bruce and Ricketts (2007) in their study in Pennsylvania. Grage et al. (2002) suggested that imperfect relationships, insufficient awareness of each other's profession, and participant biases regarding cooperation also hindered cooperation. Competition was identified as having positive and negative aspects when present in a cooperative relationship (Grage et al., 2002). Similar findings were iterated by Grage et al., as well as Ricketts and Place who additionally noted the importance of the two organizations sharing resources and having open communication.

Bruce and Ricketts (2008) explored the concept of "co-opetition" as a potential solution to the lack of cooperation among secondary agriculture teachers and 4-H youth development personnel. Through co-opetition, a term coined by the business and management sector, two traditionally competitive organizations can simultaneously cooperate and compete with one another (Bruce & Ricketts, 2008). How could an attitude of co-opetition be fostered between the two groups of interest?

Purpose and Research Objectives

Each of the previously noted studies reported specific activities or factors that contributed to or hindered cooperative relationships. Though the number of studies conducted on cooperative relationships between secondary agriculture teachers and 4-H youth development personnel have been numerous, disagreement exists regarding what influences the level and extent of cooperative behavior. The mere existence of cooperative agreements and memoranda would indicate that individual states and the federal government have acknowledged that cooperation between secondary agriculture teachers and 4-H youth development personnel is important and must be clarified. Thus, this study sought to explore the cooperative nature between secondary agriculture teachers and 4-H youth development personnel, as perceived by secondary agriculture teachers. The following research objectives guided the study:

1. Describe factors that secondary agriculture teachers perceive as important toward cooperative relationships with 4-H youth

development personnel and their perceived influence on cooperative relationships.

2. Describe and prioritize perceived and desired levels of participation on cooperative activities.
3. Describe and prioritize perceived levels of importance regarding activities/factors that influence cooperative behaviors.

Procedures

The population for this non-experimental quantitative study was secondary agriculture teachers in Missouri during the spring of 2008. The 2007-2008 Missouri Agricultural Education Directory, included a total of 414 secondary agriculture teachers. In accordance with the recommendations of Krejcie and Morgan (1970), a sample size of 210 teachers was identified.

The data collection instruments developed by Omar (1963), Smith (1966), and Schroeder and Moss (1984) were consulted during the development of the five-sectioned questionnaire used in this study. Three sections were used to address the research objectives of this study. The first section consisted of a double-matrix containing 12 statements representing a sampling of youth development activities. The nature of the double-matrix allowed subjects to respond to each statement twice; regarding the perceived current frequency and desired frequency of the activity. The second section consisted of a double-matrix containing seven statements representing a sampling of factors related to professional relationships between secondary agriculture teachers and 4-H youth development personnel. Subjects were asked to respond to each statement twice; first regarding the perceived importance of factors to each subject, and secondly, regarding the perceived effect that the factor had on the subjects' relationship with secondary agriculture teachers. Section three also used a double-matrix which consisted of 13 statements which sought to determine the perceived influence that each activity or factor had on the level of cooperation. Using a five-point Likert-type scale, each subject was asked to indicate the perceived level of *what is* and *what should be* with regard to how each activity or factor influences their professional relationship with 4-H youth development personnel.

A mixed-mode design, as referenced by Dillman (2007), was implemented. Subjects were first provided with a mail questionnaire, followed by an electronic questionnaire in the sequence order suggested by Converse, Wolfe, Huang, and Oswald (2008). Content and face validity of the data collection instrument were determined by a panel of eight experts; whom were either faculty members from the University of Missouri Department of Agricultural Education, secondary agriculture teachers, or representatives of the University of Missouri Extension Service. Unimode construction principles (Dillman, 2007) were followed when creating the electronic version of the

questionnaire to reduce the possibility of inconsistencies in responses due to the mixed-mode data collection approach.

A pilot test was conducted to determine the reliability estimates of the sections within the questionnaire when administered to individuals with similar characteristics of secondary agriculture teachers in the sample. In this case, 100 secondary agriculture teachers, not selected to comprise the sample, were included in the pilot group Cronbach's alpha coefficients (see Table 1) were calculated for each of the subscales (importance, influence, perceived, desired, what is, what should be), resulting in coefficients ranging from .83 to .93 ($n = 42$).

Table 1
Reliability Estimates for Secondary Agriculture Teacher Questionnaire ($n = 42$)

Subsection	Cronbach's α Coefficient	
	"What Is"	"What Should Be"
1 & 2	.93	.90
3	.91	.83

A mixed-mode data collection design was implemented for this study, guided by Dillman (2007). Subjects were provided with a mail questionnaire, followed by an electronic questionnaire in the sequence suggested by Converse, Wolfe, Huang, and Oswald (2008). Providing subjects with the option of choosing which mode of responding was suggested to have little effect on responses (Converse, et al., 2008). A response rate of 65% ($n = 136$) was obtained.

Procedures for handling non-response error were followed as outlined in Miller and Smith (1983). Respondent and non-respondent data were compared using an independent samples t -test to compare the variables of interest—*what is* and *what should be* for each subsection. No significant differences ($p > .05$) were found between respondent and non-respondent data; therefore, the non-respondent data were pooled with respondent data, yielding a final response rate of 69% ($n = 143$).

To determine where discrepancies existed for objectives two and three, two ratings had to be taken into account simultaneously; hence, the Borich (1980) needs assessment model was utilized to determine the discrepancy for each cooperative activity. A discrepancy score was determined by taking the desired level of

participation in cooperative activities (*what should be*) minus the perceived level of participation in cooperative activities (*what is*) for each respondent on each activity. A weighted discrepancy score was then calculated by multiplying each discrepancy score by the associated mean desired level of participation in cooperative activities rating of the activity. Lastly, a mean weighted discrepancy score (MWDS) was calculated by taking the sum of the weighted discrepancy scores for each activity and dividing it by the number of respondents in each group. To prioritize the activities in need of attention, items were ranked from high to low based on the MWDS.

Findings

Research objective one sought to describe factors that secondary agriculture teachers perceived as being important toward cooperative relationships and the perceived influence on cooperative relationships. Secondary agriculture teachers were asked how important each factor was and what influence they perceived each factor to have on his/her professional relationship. Mode was used as a more conservative descriptor of central tendency to order the factors as perceived by secondary

agriculture teachers which are summarized in Table 2.

Table 2
Secondary Agriculture Teacher's Perceived Importance and Influence of Factors of Cooperation (n = 140)

Factor	Importance			Influence		
	<i>M</i>	<i>SD</i>	Mode	<i>M</i>	<i>SD</i>	Mode
Mutual respect of efforts	4.33	0.84	5	4.10	1.01	5
Personality of the Extension faculty or staff member	4.03	1.01	5	3.72	1.14	5
Success of the Extension faculty or staff member	3.52	1.08	3	3.64	0.91	4
Frequency of interaction	3.31	0.91	3	3.57	0.92	3
Views passed down from county or state administrators	3.08	1.01	3	3.23	0.80	3
Similarity of age	2.11	1.09	1	3.14	0.64	3
Belief that 4-H and FFA are always in competition with one another	1.89	1.01	1	2.51	1.04	3

Note. Importance Scale: 1 = Not at All Important; 3 = Some; 5 = Very Much Important. Influence Scale: 1 = Very Negative; 2 = Slightly Negative; 3 = Neutral; 4 = Slightly Positive; 5 = Very Positive

Research objective two sought to describe and prioritize perceived and desired levels of participation on cooperative activities. Differences between perceived and desired levels of secondary agriculture teachers'

participation in 12 cooperative activities are summarized in Table 3 and ordered by priority level based on the MWDS for each item. Mode was included for each item as a secondary and more conservative indicator of central tendency.

Table 3
 Secondary Agriculture Teacher's Difference of Perceived and Desired Level of Participation in Activities
 (n = 140)

Rank	Activity	MWDS	What Is			What Should Be		
			M	SD	Mode	M	SD	Mode
1	Discuss advancements in instructional materials available for teaching educational programs in agriculture	5.18	2.01	1.10	1	3.50	0.88	4
2	Serve as consultants to each other's advisory committee	5.13	1.96	1.19	1	3.45	0.98	4
3	Coordinate efforts for training similar competitive teams	5.01	2.07	1.20	1	3.51	0.92	4
4	Share responsibility for publicity concerning educational programs in agriculture in the county	4.66	2.35	1.24	3	3.64	0.73	4
5	Conduct joint demonstrations, workshops, or county field days	4.30	2.18	1.09	2	3.44	0.80	3
6	Identify common educational objectives of Extension and high school agriculture programs	4.29	2.16	1.06	2	3.41	0.80	3
7	Coordinate efforts toward similar goals related to youth	4.27	2.74	1.25	3	3.86	0.77	4
8	Consult each other's special abilities and knowledge in problem situations	4.14	2.60	1.25	1	3.71	0.80	4
9	Discuss community needs pertaining to agriculture	4.12	2.44	1.10	2	3.60	0.67	4
10	Discuss space and facilities available for conducting education programs in agriculture	3.95	2.11	1.12	1	3.31	0.91	3
11	Exchange or forward e-mail messages which might be beneficial to the other's program	3.83	2.62	1.27	3	3.67	0.83	4
12	Discuss fundraising activities	2.51	1.53	0.85	1	2.53	1.08	3

Note: Perceived and Desired Scale: 1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Frequently; 5 = Always

Research objective three sought to describe and prioritize perceived levels of importance regarding activities/factors that influence cooperative behaviors. Activity/factor items were analyzed to determine the differences of *what is* and *what should be* and were ranked from high to low (see Table 4) based on the MWDS for each item. The mean score for *what should be* was higher than *what is* for 12 of the

13 activity/factor items. Additionally, secondary agriculture teachers perceived *what is* for all activity/factor items as less than very important. One negative discrepancy is reported, similarity or difference in our age (MWDS = -0.02), which would indicate that the level of *what is* was low and the level of *what should be* was lower.

Table 4
 Secondary Agriculture Teacher's Difference of Perceived "What Is" and "What Should Be" Regarding the Importance of Activities/Factors (n = 140)

Rank	Activity	MWDS	What Is			What Should Be		
			M	SD	Mode	M	SD	Mode
1	Coordination of efforts for training similar competitive teams (i.e. livestock judging)	4.38	2.56	1.20	3	3.72	0.93	4
2	Consulting each other's knowledge or special abilities in problem situations	4.31	2.94	1.21	3	4.02	0.70	4
3	Plan events so that they are not in competition with one another	3.63	3.01	1.31	3	3.92	1.01	4
4	Having the Extension agent be a guest presenter in a class or at an FFA meeting	3.53	2.74	1.15	3	3.69	0.82	4
5	Initiative in contacting one another	3.46	2.94	1.20	3	3.84	0.88	4
6	Willingness to serve a portion or all of the county	3.02	3.24	1.19	3	3.98	0.87	4
7	Similarity in program goals	2.98	2.88	1.07	3	3.69	0.86	3
8	Compatibility of personality	1.72	3.17	1.09	3	3.66	0.97	4
9	Degree of personal friendship	0.98	2.83	1.15	3	3.14	1.12	3
10	Differences of program structure (4-H & FFA)	0.73	2.59	1.04	3	2.86	1.09	3
11	Tenure at present location	0.21	2.36	1.12	3	2.46	1.15	3
12	Variation in total years experience	0.15	2.34	0.99	3	2.41	1.05	3
13	Similarity or difference in our age	-0.02	2.18	1.12	3	2.17	1.11	3

Note: What Is and What Should Be Scale: 1 = Not at All Important; 3 = Some; 5 = Very Much Important

Conclusions/Implications/Recommendations

Secondary agriculture teachers' cooperative relationships are most influenced by a mutual respect of efforts and the personality of the Extension faculty or staff member with whom they are interacting. These findings support those of Grage et al. (2002) who suggested agriculture educators and Extension faculty desired cooperative interdisciplinary relationships, emphasizing mutual respect and communication. Successful cooperation in agricultural activities depends largely on the attitude and reaction of the personnel involved (Ball, 1938). Although secondary agriculture teachers are not able to change the personality of 4-H youth development personnel, they can attempt to establish mutual respect with and for their counterparts. Deutsch (2003) noted that "...helping people to develop a respect for themselves and their interests enables them to see their conflicts in a reasonable proportion and facilitates their constructive confrontation" (p.

27). The question remains, which organization will have to give respect first in order for the other group to reciprocate, in an effort to eventually establish mutual respect? Further study may be justified to determine how to best establish a mutually respectful relationship between secondary agriculture teachers and 4-H youth development personnel. By analyzing collaborative, effective relationships between members of these two organizations, insight may be gained as to how such relationships can be developed.

Secondary agriculture teachers perceived frequency of interaction as having little or no influence and only some importance on their cooperative relationships. For cooperation to be successful, ongoing and frequent interaction of the parties expecting to cooperate must occur (Axelrod, 1984, 1997). A key element of a successful cooperative relationship could be found in the phrase "you scratch my back, I'll scratch yours." How can "back scratching" occur if only one group is present to scratch?

Opportunities for interaction should be created and promoted to interested parties in effort to encourage involvement and cooperation.

The second research objective sought to describe and prioritize perceived and desired levels of participation on cooperative activities. The three highest priority items, discussing instructional materials, serving on each other's advisory committee, and coordinating efforts for training similar competitive teams, could potentially be resolved through increased communication. Deficiencies may be linked to the secondary agriculture teachers' perception that frequency of interaction had little or no influence and only some importance to cooperative relationships. These findings varied from those of Schroeder and Moss (1984) which would indicate that further research should be conducted to determine if there is any correlation between the highest deficiencies and the perceived importance of communication and interaction.

The third research objective sought to describe and prioritize perceived levels of importance regarding activities/factors that influence cooperative behaviors. Secondary agriculture teachers perceived activity/factor items as having neutral to no importance; however, they indicated that 12 of 13 activity/factor items should be more important than what they are, with the exception of discuss fundraising activities. The indication that little importance is placed on cooperative activities/factors may lead one to question if secondary agriculture teachers and 4-H youth development personnel are making an honest effort to cooperate.

Items noting coordinating efforts for training similar competitive teams and conducting joint demonstrations, workshops, or county field days, were the areas requiring the greatest amount of attention. Both are related to youth development activities; more specifically activities related to 4-H and FFA. These observations further support Grage et al. (2004), Ricketts and Place (2005), and Bruce and Ricketts (2007) who noted the importance of sharing resources and open communication. The concept of co-opetition (Bruce & Ricketts, 2008) also seems particularly relevant to these items. Though typically, many 4-H and FFA youth development activities are viewed from a competitive standpoint, if a more cooperative

competitive mentality was embraced, available resources would be more efficiently utilized and even greater number of youth could benefit. Administrators of both organizations must also support joint endeavors so that secondary agriculture teachers and 4-H youth development personnel are truly able to function as a team.

Secondary agriculture teachers, in many cases, recognized differences between *what is* and *what should be*. The highest MWDS were related to integrating resources of 4-H youth development personnel with those of secondary agriculture educators. Inequitable resources were noted by Bruce and Ricketts (2007) as possible barriers to cooperation. Although a desire to increase the importance of interaction between 4-H youth development personnel and secondary agriculture teachers is evident, barriers exist that are preventing secondary agriculture teachers from increasing their interaction. As Bruce and Ricketts suggested, such barriers must be overcome in the interest of efficiency which will eventually yield a reward such as a reduced work load or time saved for all of those who are involved.

A suggestion offered by Cannon-Bowers et al. (1995) was to develop shared situational awareness, or a common understanding of the situation. This could be accomplished by a joint advisory committee, as suggested by Stimson (1920). Stimson suggested that conferences or committees were necessary to coordinate efforts of the federally funded agencies providing agriculture education in order to avoid overlapping and overlooking. "Good teamwork could hardly be expected in the absence of such conferences" (p. 359). Conferences and similar joint activities could certainly increase the awareness of secondary agriculture teachers and 4-H youth development personnel regarding one another's programs, though arguably, an understanding and appreciation of each organization should also be fostered consistently by the institutions that prepare individuals for careers in these areas. If additional efforts were made to educate those pursuing careers in secondary agriculture and 4-H youth development about opportunities for collaboration, it seems logical that program graduates would then be more likely to seek such interaction.

One item yielded a negative MWDS, which may seem counterintuitive. However, if one

were to consider the item similarity or difference in our age (MWSO = -0.02), the negative score would indicate that secondary agriculture teachers realized that the age of their counterpart should be less important than what it was. Arguably, the influence of factors that possess a negative connotation could be reduced with the appropriate undergraduate and in-service training. Training, based on the team competencies needed is required for success (Cannon-Bowers et al., 1995); therefore, comparing the needs of secondary agriculture teachers and 4-H youth development personnel would allow individuals charged with designing undergraduate and in-service training the needed insight to identify possible cooperative activities. However, as previously noted, the goal should not be to "...train people to make the right decision in a given scenario, but to learn to make the right decision" (Johnston et al. 1997, p. 313). Therefore, undergraduate and in-service training should incorporate the results from periodic needs assessments.

The highest discrepancy items were related to coordination and consultation, both of which require communication. In order for cooperation between secondary agriculture teachers and 4-H youth development personnel to be successful, the members of both organizations will have to be persistent in their efforts toward open communication and frequent interaction. Items with the highest discrepancy scores were also closely related to the youth development aspects of the secondary agriculture teachers' profession rather than the semantics of program structures and the compatibility of attitudes. As leaders in agricultural education, Team Ag Ed has a unique opportunity to lead by example in identifying compatible areas between secondary agricultural education and 4-H youth development programs; thereby, developing school and community partnerships ("Agricultural Education's Major Initiatives," 2007) to "provide knowledge, skills, and competencies that relate to agriculture" (Schroeder & Moss,

1984, p. 4). To accomplish this task, Team Ag Ed should consider expanding their team to include non-formal education counterparts; thus creating a more holistic agricultural education team.

Integrating resources available in the community, such as farms, greenhouses, and agriculture-related businesses, to supplement the curriculum and use as potential laboratories (Bender et al., 1972) would seem intuitive to professions operating under budgetary restraints. Because administrators must frequently be mindful of budgetary items, they should consider the efficiency that interorganizational cooperation offers their organization, such as saved time and reduced workload (Bruce & Ricketts, 2007). The premise that cooperation is efficient is further substantiated by Johnson and Johnson (2009) who noted that the most productive group is the one that cooperates. It may be appropriate for state administrators to distribute mutually beneficial information through the channels of the list-serves, which may further inform secondary agriculture teachers of potential opportunities to cooperate with 4-H youth development personnel.

Many of the aforementioned recommendations will require organizational leaders and administrators to invest time and effort in facilitating change to promote cooperation between the organizations. To do so, state administrators must be mindful that change will require both organizations to frequently evaluate joint goals to determine where adjustments are needed. Moreover, both secondary agriculture teachers and 4-H youth development personnel must possess the appropriate team competency requirements for the context or setting to increase performance and effectiveness (Cannon-Bowers et al., 1995). Arguably, this may only occur if all team members concentrate on the performance of the interorganizational team toward accomplishing a shared set of goals (Bass, 2008).

References

- Agricultural Education's Major Initiatives. (2007). In *State of the Union on Agricultural Education in 2005-06*. Retrieved from http://www.ffa.org/documents/aged_annualreport.pdf
- Axelrod, R. (1984). *The evolution of cooperation*. New York, NY: Basic Books, Inc.

- Axelrod, R. (1997). *The complexity of cooperation: Agent-based models of competition and collaboration*. Princeton, NJ: Princeton University Press.
- Ball, C. R. (1938). *Federal, state, and local administrative relationships in agriculture*. (Vol. 1). Berkeley, CA: University of California Press.
- Bass, B. M. (2008). *The Bass handbook of leadership: theory, research, and managerial applications*. (4th ed.). New York, NY: Free Press.
- Bender, R. E., Cunningham, C. J., McCormick, R. W., Wolf, W. H., & Woodin, R. J. (1972). *Adult education in agriculture*. Columbus, OH: Charles E. Merrill Publishing Company.
- Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*, 31(3), 39–42.
- Bruce, J. A., & Ricketts, K. G. (2007, September). *Exploring cooperation among secondary agriculture educators and Extension educators – A qualitative analysis*. Paper presented at the American Association for Agricultural Education, North Central Agricultural Education Research Conference, Columbia, MO.
- Bruce, J. A., & Ricketts, K. G. (2008). Where's all the teamwork gone? A qualitative analysis of cooperation between members of two interdisciplinary teams. *Journal of Leadership Education*, 7(1), 65–73. Retrieved from http://www.fhsu.edu/jole/issues/JOLE_7_1.pdf
- Buddle, D. A., Sr. (1981). *Cooperative relationships of county Extension agents and teachers of vocational agriculture in Louisiana* (Unpublished doctoral dissertation). Louisiana State University, Baton Rouge, LA.
- Cannon-Bowers, J. A., Tannebaum, S.I., Salas, E., & Volpe C. E. (1995). In R. A. Guzzo, & E. Salas (Eds.), *Team effectiveness and decision making in organizations* (pp. 333–380). San Francisco, CA: Jossey-Bass
- Converse, P. D., Wolfe, E. W., Huang, X., & Oswald, F. (2008). Response rates for mixed-mode surveys using mail and e-mail/web. *American Journal of Evaluation*, 29(1), 99–107. doi: [10.1177/1098214007313228](https://doi.org/10.1177/1098214007313228)
- Deutsch, M. (2003). Cooperation and conflict. In M. A. West, D. Tjosvold & K. G. Smith (Eds.), *International handbook of organizational teamwork and cooperative working* (pp. 9–43). West Sussex, England: John Wiley and Sons.
- Diatta, S., & Luft, V. D. (1986). Cooperation between North Dakota secondary vocational agriculture teachers and county agents in carrying out selected activities and programs. *The Journal of the American Association of Teacher Educators in Agriculture*, 27(1), 7–12. doi: [10.5032/jaatea.1986.01007](https://doi.org/10.5032/jaatea.1986.01007)
- Dillman, D. A. (2007). *Mail and internet Surveys: The tailored design method* (2nd ed.). Hoboken, NJ: John Wiley and Sons, Inc.
- Grage, K. D., Place, N. T., & Ricketts, J. C. (2004). Exploring cooperation between secondary agriculture educators and livestock Extension agents: a case study. *Journal of Extension*, 42(6). Retrieved from <http://www.joe.org/joe/2004december/rb2007.shtml>

- Grage, K. D., Ricketts, J. C., & Place, N. T. (2002, December). *Exploring cooperation and collaboration between secondary agricultural educators and Extension faculty in the state of Florida*. Paper presented at the 29th National Agricultural Education Research Conference, Las Vegas, NV.
- Hamlin, H. M. (1949). *Agricultural education in community schools*. Danville, IL: Interstate Printing Company.
- Johnson, D. W., & Johnson, F. P. (2009). *Joining together* (10th ed.). Columbus, OH: Pearson.
- Johnston, J.H., Smith–Jentsch, K.A., & Cannon–Bowers, J.A. (1997). Performance measurement tools for enhancing team decision–making training (pp. 311–330). In M. T. Brannick, Salas, E., & Prince, C. (Eds.). *Team Performance Assessment and Measurement*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607–610.
- Lemons, J. R. (1958). *A Study of the Working Relationships of the Agricultural Extension Service and the Vocational Agriculture Program in East Tennessee*. (Unpublished doctoral dissertation). University of Tennessee, Knoxville, Tennessee.
- Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension*, 21(5), 43–50.
- Omar, A. M. M. (1963). *Working relationships of county Extension agents and teachers of vocational agriculture in Michigan* (Unpublished doctoral dissertation). Michigan State University, East Lansing, MI.
- Ricketts, K. G., & Place, N. T. (2005). Cooperation between secondary agriculture educators and Extension agents. *Journal of Extension*, 43(6). Retrieved from <http://www.joe.org/joe/2005december/a2006p.shtml>
- Schroeder, M., & Moss, J. W. (1984). *The cooperative relationship between vocational agriculture teachers and Extension agents*. ED 285029 (p. 11). Washington, DC: U.S. Government Printing Office.
- Smith, W. L. (1966). *An examination of the cooperative cognition between vocational agriculture instructors and county extension Agents in planning and conducting the adult prospectus of instruction in Oklahoma*. (Unpublished master's thesis). Oklahoma State University, Stillwater, OK.
- Stimson, R. W. (1920). *Vocational Agricultural Education: By Home Projects*. New York, NY: The MacMillan Company.
- Team Ag Ed. (n.d.). *In agricultural education national headquarters*. Retrieved from <http://www.teamaged.org/>.
- Tjosvold, D. (1990). *Team organization: An enduring competitive advantage*. New York, NY: John Wiley and Sons.

BILLY R. MCKIM is an Extension Project Specialist in the Department of Agricultural Leadership, Education, and Communications at Texas A&M University, 2116 TAMU, College Station, TX 77843-2116, BMcKim@aged.tamu.edu.

ROBERT M. TORRES is a Professor & Department Head in the Department of Agricultural Education at the University of Arizona, 205 Old FCS Building, Tucson Arizona, AZ, 85721, rtorres@CALS.arizona.edu

AMY R. SMITH is an Assistant Professor of Agricultural Education in the Department of Teaching, Learning, and Leadership at South Dakota State University, Box 507, 102 Wenona, Brookings, SD 57007, Amy.R.Smith@sdstate.edu.