

## EXPLORING RELATIONSHIPS OF TEACHERS' SENSE OF EFFICACY IN TWO STUDENT TEACHING PROGRAMS

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### Abstract

*Teacher educators seek to know which personal and environmental factors influence student teachers' confidence and performance. Two university-based agricultural student teaching programs were compared to determine differences in personal factors, environmental factors, and teachers' sense of efficacy. Student teachers entered their student teaching experiences already feeling efficacious, and their sense of efficacy did not change at the end of the student teaching experience. Student teachers' perception of the student teaching experience was related to their sense of efficacy. Student teachers in the two programs were similarly efficacious, yet they were different on four personal and environmental factors. Student teachers are likely influenced by a variety of sources of self-efficacy. Student teachers from Ohio State University taught fewer class preparations and were more involved in agricultural education as high school students. Student teachers from the University of Illinois perceived their principals as being more supportive and their cooperating teachers as being more competent.*

### Introduction and Theoretical Framework

Student teaching is important for preservice teachers' development. Student teachers apply their knowledge and skills through experiences in real teaching situations and learn through unplanned incidents (Borko & Mayfield, 1995). Student teachers can benefit from situated and incidental learning in authentic social context through increased knowledge, opportunities to apply knowledge in new ways and new situations, increased competence, increased self-knowledge, value for life-long learning, improved life skills, and development of self-confidence (Lankard, 1995). Student teachers interact with students in authentic learning environments and are introduced to some of the cultural and interpersonal aspects of work in the teaching profession. A dynamic interplay between the teacher and teaching environment comes to life because beliefs, values, culture and experiences influence how one teaches (Buriak, McNurlen, & Harper, 1996). Teacher

educators attempt to sort out which factors contribute to developing preservice teachers and which factors may undermine their development, especially preservice teachers' confidence in their abilities to teach. The researcher sought to explore the similarities and differences of student teachers' personal and environmental factors, and which factors were related to teachers' sense of efficacy at the end of their student teaching experiences. Student teachers enrolled in two different university-based teacher education programs were compared on personal factors, environmental factors, and teachers' sense of efficacy to see if their interpretation of their student teaching experiences regarding these factors varied between the two programs. Conceptually, the investigation of the student teaching experience based on Bandura's (1986, 1997) social cognitive and self-efficacy theories and personal and environmental factors that may be related to student teacher efficacy were explored (Figure 1).

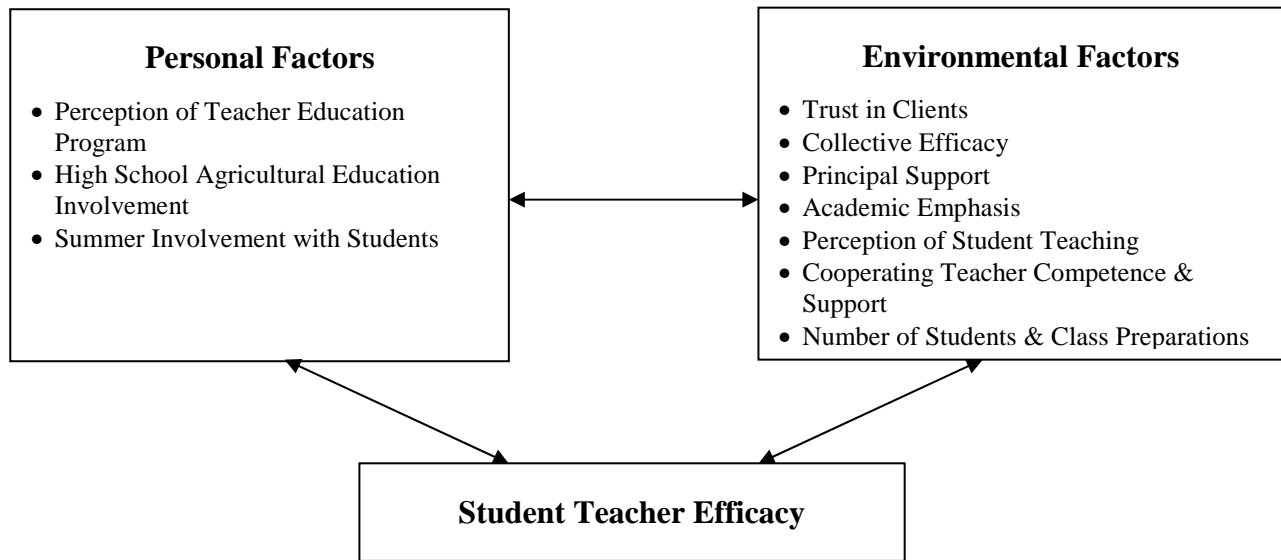


Figure 1. Conceptual framework

The environment influences how student teachers evaluate their abilities to teach. Pajares (2001b) asserted it makes little sense to study the development of individuals in isolated contexts because developing teachers are embedded within several environmental systems. Bandura (1986) posited that human functioning is central to cognitive, vicarious, self-regulatory and self-reflective processes in human adaptation and change. How humans function and perform is viewed as the product of a dynamic interplay of personal, behavioral, and environmental influences (Bandura, 1986). These influences affect each other bidirectionally through a process called reciprocal determinism, which is known as Bandura's model of triadic reciprocity. Bandura's social cognitive theory focuses on how a person cognitively processes and interprets environmental influences to determine how human behavior is influenced by environmental factors. Although powerful, triadic reciprocity makes the social cognitive theory a complex

theory to understand human and social phenomena because of interdependence among factors.

The two teacher education programs were briefly compared (Table 1) to describe environmental factors that help shape preservice teachers' development and to illustrate similarities and differences between the student teaching programs. The teacher education programs were very similar regarding requirements of their student teaching programs.

People possess beliefs, values, cultural resources, and experiences that mediate their cognitive processing of five fundamental human capabilities (Bandura, 1986). People make sense of their experiences, explore their cognitions and self-beliefs, evaluate themselves, and alter their thinking and behavior through self-reflection. Bandura believes that one's own perceptions of efficacy derived from self-reflection is the most powerful of the five fundamental human capabilities.

Table 1  
*Comparison of Student Teacher Programs on Selected Environmental Factors*

Factors	The Ohio State University	University of Illinois
Student teaching requirements	<ul style="list-style-type: none"> <li>• Minimum 2.5 CGPA</li> <li>• Teaching methods course</li> <li>• Placement application</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum 2.5 CGPA</li> <li>• Teaching methods course</li> <li>• Placement application &amp; interview</li> <li>• Co-requisite of Program Planning</li> </ul>
Professional education courses prior to student teaching	<ul style="list-style-type: none"> <li>• Introduction to Ag. Ed. (Foundations &amp; Ed. Psych.)</li> <li>• History or Philosophy of Ed.</li> <li>• Teaching Methods</li> <li>• Program Planning</li> </ul>	<ul style="list-style-type: none"> <li>• Educational Foundations</li> <li>• Educational Psychology</li> <li>• Introduction to Ag. Ed.</li> <li>• Teaching Methods</li> </ul>
Early field experience	<ul style="list-style-type: none"> <li>• 80 hours</li> </ul>	<ul style="list-style-type: none"> <li>• 100 hours</li> </ul>
Selection of teaching centers and cooperating teachers	<ul style="list-style-type: none"> <li>• Input from teacher education faculty and department of education consultants</li> <li>• Minimum 3 years teaching experience</li> </ul>	<ul style="list-style-type: none"> <li>• Approved list of model student teaching centers by agricultural teacher education faculty</li> <li>• Minimum 3 years teaching experience</li> </ul>
Length of student teaching	<ul style="list-style-type: none"> <li>• 10 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• 12 weeks</li> </ul>
No. of university supervisor visits	<ul style="list-style-type: none"> <li>• 3 on-site by the same university supervisor</li> </ul>	<ul style="list-style-type: none"> <li>• 3 on-site rotated among 3 university supervisors</li> </ul>
Time of year	<ul style="list-style-type: none"> <li>• Fall</li> </ul>	<ul style="list-style-type: none"> <li>• Spring</li> </ul>
No. of student teachers per site	<ul style="list-style-type: none"> <li>• One student teacher per site</li> </ul>	<ul style="list-style-type: none"> <li>• One student teacher per site</li> </ul>
No. of sites per student teacher	<ul style="list-style-type: none"> <li>• One site</li> </ul>	<ul style="list-style-type: none"> <li>• One site</li> </ul>

*Note.* CGPA = Cumulative Grade Point Average (4.0 scale)

Self-efficacy theory emerged from Bandura's (1986) social cognitive theory and primarily the human capability of self-reflection. Bandura posits that factors affect human behavior through psychological mechanisms of the self-system because "most external influences operate through cognitive processing" (p. 13). Motivation,

affective states, and actions are based more on what people believe than what is objectively the case (Bandura, 1986). Self-efficacy has been especially prominent in studies of educational constructs related to attributions of success and failure, goal setting, career development, and teaching and teacher education (Pajares, 2001a).

Teacher's sense of efficacy is a type of self-efficacy and a belief-oriented motivation construct. Teacher's sense of efficacy is defined as "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233).

Teacher's sense of efficacy is an important variable in teacher development and how teachers teach (Tschannen-Moran et al., 1998). Teacher's sense of efficacy has been shown to be a powerful construct related to student outcomes such as achievement, motivation, and self-efficacy (Ashton & Webb, 1986; Guskey & Passaro, 1994; Tschannen-Moran et al.). Moreover, teacher sense of efficacy was related to teachers' behavior, effort, goals, aspiration, openness to new ideas, innovation, planning and organization, persistence, resilience, reluctance to use criticism, enthusiasm, willingness to work with difficult students, and commitment to teaching and their careers (Tschannen-Moran et al.).

Researchers are interested in studying teacher beliefs of prospective teachers because teachers' efficacy beliefs are difficult to change once they are established (Woolfolk Hoy, 2000). After reviewing a number of studies, there is evidence of stability and change in student teacher beliefs (Nettle, 1998). Borko and Mayfield (1995) found that student teachers experienced some change, but they did not experience fundamental changes regarding their beliefs about teaching and learning. Nettle concluded that changes after student teaching were influenced by the beliefs held by student teachers before their student teaching experience. Martin (1989) suggested that a high sense of efficacy begins early in teacher education programs. Teacher's sense of efficacy increased throughout the teacher preparation program (Brown & Gibson, 1982; Woolfolk Hoy), when student teachers attempted to manage problems and take risks (Rushton, 2000), and after student teaching (Brown & Gibson; Fortman & Pontius, 2000; Hoy & Woolfolk, 1990).

Few teaching self-efficacy studies have been conducted in agricultural education.

Rodriquez (1997) found that teaching efficacy of student teachers was higher than the teaching efficacy of preservice teachers and novice teachers in agricultural education in Ohio. Since this study was conducted, Rocca and Washburn (2005) found that traditionally and alternatively certified agriculture teachers were similarly efficacious. Moreover, Swan (2005) found that student teachers' sense of efficacy decreased during student teaching, and was related to sense of teacher heart and career intent in agricultural education. Other researchers have investigated student teaching experiences and factors that are important in developing student teachers. Student teaching experiences vary in different states (Borne & Moss, 1990; Kirts & Claycomb, 1981) and were a critical component to the teacher education program. Most student teachers felt positive about their student teaching experiences (Borne & Moss). Teacher factors, such as background and professional preparation, contributed more to teacher effectiveness than student, colleagues, and principal-related factors (Ganser, 1996). Environmental factors can influence student teachers' development. Student teachers' rapport with students and professional preparation was related to career intent (Briers & Byler, 1979). Moreover, the relationship between the cooperating teacher and student teacher was the important element of student teaching (Edwards & Briers, 2000; Harlin, Edwards, & Briers, 2001).

If the success of a local agricultural education program depends on teacher expertise and beliefs (Anderson, 1977), then personal and environmental factors that influence student teachers' sense of efficacy should be studied. When teacher educators know and understand the influences of the student teaching experience on teachers' sense of efficacy, then they may be more effective in developing qualified, competent, and caring agriculture teachers.

### **Purpose and Objectives**

The purpose of this exploratory study was to describe differences and explain selected relationships regarding personal

factors, environmental factors, and student teachers' sense of efficacy of two university-based student teacher programs in agricultural education. Specifically, the objectives of the study were to: (a) describe differences in personal factors and explain relationships between personal factors and student teachers' sense of efficacy between the two teacher education programs; (b) describe differences in environmental factors and explain relationships between environmental factors and student teachers' sense of efficacy between the two teacher education programs; and (c) describe the differences between student teachers' sense of efficacy at the beginning and the end of the student teaching experience of the two teacher education programs, and explain the relationship between student teachers' sense of efficacy at the beginning and the end of the student teaching for the two programs.

### Methods and Procedures

This descriptive study used a non-equivalent control group design (Campbell & Stanley, 1963) to assess sense of efficacy of student teachers enrolled in two university-based teacher education programs in agricultural education. The population for the study consisted of a census of agricultural education student teachers in teacher education at The Ohio State University (OSU) and the University of Illinois (UI) at Urbana-Champaign. There were 23 OSU student teachers and 13 UI student teachers in the accessible population. The naturally occurring, non-manipulated treatment was the student teaching internship in public schools located in the two different states. The student teachers conducted a 10-week student teaching experience at OSU and a 12-week student teaching experience at UI during the 2001-02 school year. The dependent variable was teacher's sense of efficacy and the independent variables were selected personal and environmental factors.

Data were collected through pretest and posttest questionnaires. The pretest questionnaire consisted of five items that measured high school agricultural education enrollment and summer involvement with students, and 24 items that measured

teachers' sense of efficacy using the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). The TSES used Bandura's (1997) 9-point efficacy scale with anchors at (1) nothing; (3) very little; (5) some influence; (7) quite a bit; and (9) a great deal. Tschannen-Moran and Woolfolk Hoy reported that the TSES had construct validity established by factor analysis and reliability ranged from 0.92 to 0.95. The posttest questionnaire consisted of the same 24 teacher's sense efficacy items and 50 items that measured personal and environmental factors. The domains of teacher trust in clients (Hoy & Tschannen-Moran, 1999), collective efficacy (Goddard, 2002), supportive principal behaviors (Hoy, Tarter, & Kottkamp, 2000), and academic emphasis (Hoy, Tarter, & Kottkamp, 2000) were all based on existing instruments with established reliability and validity. Perception domains of teacher education program, student teaching experience, cooperating teacher's competence, and cooperating teacher's support were created by the researcher (Knobloch, 2002) based on Bandura's (1997) self-efficacy theory and Darling-Hammond's (1999) review of effective teacher characteristics. The perception items used a 6-point summated rating scale: (1) strongly disagree, (2) moderately disagree, (3) slightly disagree, (4) slightly agree, (5) moderately agree, and (6) strongly agree. The number of students in the agricultural education program and the number of classroom preparations taught during student teaching were measured at the ratio level.

A panel of teacher education experts in agricultural education established content validity of the questionnaires. Graduate students in agricultural education with student teaching and previous teaching experience established face validity through a field test. The questionnaires were pilot tested with preservice teachers enrolled in undergraduate courses yielding a Cronbach's (1951) alpha of 0.87 for 12 teaching self-efficacy items. The posthoc reliability coefficients verified that the pretest and posttest questionnaires were reliable (perception of teacher education program = .72; high school agricultural education involvement = .98; summer

involvement with students = .58; trust in clients = .80; collective efficacy = .86; supportive principal behaviors = .85; academic emphasis = .81; pretest teachers' sense of efficacy = .95; posttest teachers' sense of efficacy = .94).

The data were collected using Dillman's (2000) tailored design method. Data from OSU participants were collected using a mailed survey technique. The response rate was 96% ( $N = 22$ ) on the pretest and 100% ( $N = 23$ ) on the posttest for OSU participants. Data from UI participants were collected using a mailed survey technique for the pretest and administering the posttest questionnaire in person at a student teaching seminar. The response rate was 92% ( $N = 12$ ) on the pretest and posttest for the UI participants.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Subscales were aggregated into composite scores before analyzing the data. Participants whose responses were incomplete were excluded automatically by SPSS in the data analyses procedures. Domains for personal factors, environmental factors, and teachers' sense of efficacy were summed. Descriptive statistics were used to analyze the data because the study was a census. Therefore, inferential statistics were not used because the assumption of normality was not met, particularly because of the small sample sizes. Population means, population standard deviations, simple linear regression coefficients (Pearson product-moment and Spearman rank order) and effect sizes were calculated and rounded to the nearest 1/100th. Effect sizes were computed using Cohen's (1988)  $d$  and  $r^2$  coefficients and indices. The effect

size decision criteria were established *a priori* at 0.50 for  $d$  and 0.09 for  $r^2$  (Fraenkel & Wallen, 2003).

## Results and Findings

For Objective 1 (Table 2), the student teachers at OSU ( $\mu = 4.62$ ,  $\sigma = .87$ ,  $N = 22$ ) and the UI ( $\mu = 4.75$ ,  $\sigma = 1.36$ ,  $N = 12$ ) had similarly positive perceptions of their teacher education program. Although the effect size was small ( $d = .44$ ), the difference of summer involvement with students might be noticed in the field. The two programs were different on student teachers' high school enrollment in agricultural education (1.05, large effect size). Student teachers at OSU were involved in high school agricultural education, on average, for 3.33 years ( $\sigma = 1.43$ ,  $N = 22$ ) as an agriculture student, including FFA and SAE involvement. Student teachers at the UI were involved in high school agricultural education, on average, for 1.78 years ( $\sigma = 1.54$ ,  $N = 12$ ) as an agriculture student, including FFA and SAE involvement. Fifty-seven percent ( $\sigma = .42$ ,  $N = 22$ ) of the student teachers at OSU were involved with their students the summer prior to student teaching, whereas, 75% ( $\sigma = .40$ ,  $N = 12$ ) of the student teachers at the UI were involved with students during the summer before student teaching. Among the relationships between the personal factors and student teachers' sense of efficacy at the end of the student teaching internship, student teachers at both universities who perceived their teacher education program positively were more efficacious at the end of their student teaching internship ( $r^2 = .17$  &  $.50$ , large effect sizes).

Table 2  
*Personal Factors & Relationships with Teaching Self-Efficacy at the End of Student Teaching*

	Ohio State University	University of Illinois	Effect Size
Perception of Teacher Education Program <sup>a</sup>	$\mu = 4.62$ ( $\sigma = .87$ ) $r = .41$ ( $r^2 = .17$ )	$\mu = 4.75$ ( $\sigma = 1.36$ ) $r = .71$ ( $r^2 = .50$ )	.12 – Trivial
HS Ag. Ed. Involvement <sup>b</sup>	$\mu = 3.33$ ( $\sigma = 1.43$ ) $r = -.04$ ( $r^2 < .01$ )	$\mu = 1.78$ ( $\sigma = 1.54$ ) $r = .14$ ( $r^2 = .02$ )	1.05 – Large
Summer Involvement with Students <sup>c</sup>	$\mu = 0.57$ ( $\sigma = .42$ ) $r = -.08$ ( $r^2 = .01$ )	$\mu = 0.75$ ( $\sigma = .40$ ) $r = .24$ ( $r^2 = .06$ )	.44 – Small

<sup>a</sup> Scale: 1 = Strongly Disagree, 2 = Moderately Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Moderately Agree, 6 = Strongly Agree; <sup>b</sup> Years enrolled; <sup>c</sup> 0 = No, 1 = Yes.

For Objective 2 (Table 3), student teachers at the two universities were similar on six environmental factors: trust in clients, collective efficacy, academic emphasis, perception of student teaching experience, cooperating teacher support, and number of students in agricultural education at the cooperating school. Student teachers at the two universities were different on three environmental factors: supportive principal behaviors, cooperating teacher competence, and number of class preparations. It is noted that the two groups might be noticeably different on collective efficacy in the field because the small effect size was 0.40.

Student teachers at the UI perceived more support from the cooperating school principal ( $\mu = 3.33$ ,  $\sigma = .56$ ,  $N = 12$ ) than the student teachers at the OSU ( $\mu = 2.99$ ,  $\sigma = .54$ ,  $N = 23$ ). The effect size for supportive principal behaviors was a medium effect size of 0.62. Student teachers at the UI perceived their cooperating teachers as being more competent ( $\mu = 5.42$ ,  $\sigma = .90$ ,  $N = 12$ ) than the student teachers at OSU ( $\mu = 4.87$ ,

$\sigma = 1.13$ ,  $N = 15$ ). The effect size for the difference in perceptions of cooperating teacher competence was medium ( $d = .53$ ). Student teachers at the UI taught more class preparations ( $\mu = 4.83$ ,  $\sigma = 1.53$ ,  $N = 12$ ) than student teachers at OSU ( $\mu = 3.50$ ,  $\sigma = 1.71$ ,  $N = 22$ ). The effect size of the difference in the number of class preparations taught was large ( $d = .81$ ).

Student teachers at the UI had five important relationships with teaching self-efficacy at the end of student teaching: trust in clients ( $r^2 = .26$ ); collective efficacy ( $r^2 = .44$ ); academic emphasis ( $r^2 = .56$ ); cooperating teacher competence ( $r^2 = .19$ ); and perception of student teaching experience ( $r^2 = .72$ ). At the completion of student teaching, student teachers at OSU had one relationship with a medium effect size ( $r^2 = .20$ ). Student teachers' perception of their student teaching experience was an important relationship with student teachers' sense of efficacy at the end of student teaching at both universities. Student teachers who perceived their student teaching as positive experiences were more efficacious.

Table 3  
*Environmental Factors & Relationships with Teaching Self-Efficacy*

	Ohio State University	University of Illinois	Effect Size
Trust in Clients <sup>a</sup>	$\mu = 4.38 (\sigma = .53)$ $r = .26 (r^2 = .07)$	$\mu = 4.30 (\sigma = .46)$ $r = .51 (r^2 = .26)$	.16 – Trivial
Collective Efficacy <sup>a</sup>	$\mu = 4.43 (\sigma = .73)$ $r = .10 (r^2 = .01)$	$\mu = 4.13 (\sigma = .80)$ $r = .66 (r^2 = .44)$	.40 – Small
Supportive Principal Behaviors <sup>b</sup>	$\mu = 2.99 (\sigma = .54)$ $r = .20 (r^2 = .04)$	$\mu = 3.33 (\sigma = .56)$ $r = -.20 (r^2 = .04)$	.62 – Medium
Academic Emphasis <sup>b</sup>	$\mu = 2.84 (\sigma = .51)$ $r = .03 (r^2 < .01)$	$\mu = 2.84 (\sigma = .50)$ $r = .75 (r^2 = .56)$	.00 – None
Perception of Student Teaching Experience <sup>a</sup>	$\mu = 5.20 (\sigma = .96)$ $r = .45 (r^2 = .20)$	$\mu = 5.29 (\sigma = 1.41)$ $r = .85 (r^2 = .72)$	.08 – Trivial
Cooperating Teacher Competence <sup>a</sup>	$\mu = 4.87 (\sigma = 1.13)$ $r_s = .23 (r^2 = .05)$	$\mu = 5.42 (\sigma = .90)$ $r_s = .44 (r^2 = .19)$	.53 – Medium
Cooperating Teacher Support <sup>a</sup>	$\mu = 4.80 (\sigma = 1.37)$ $r_s = .08 (r^2 = .01)$	$\mu = 5.17 (\sigma = 1.47)$ $r_s = .28 (r^2 = .08)$	.26 – Small
Number of Students in Agricultural Education Program <sup>c</sup>	$\mu = 89.14 (\sigma = 49.91)$ $r = .19 (r^2 = .04)$	$\mu = 120.63 (\sigma = 148.42)$ $r = .22 (r^2 = .05)$	.33 – Small
Number of Class Preparations Taught <sup>c</sup>	$\mu = 3.50 (\sigma = 1.71)$ $r = .07 (r^2 < .01)$	$\mu = 4.83 (\sigma = 1.53)$ $r = -.17 (r^2 = .03)$	.81 – Large

<sup>a</sup> Scale: 1 = Strongly Disagree, 2 = Moderately Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Moderately Agree, 6 = Strongly Agree; <sup>b</sup> 1 = Rarely Occurs, 2 = Sometimes Occurs, 3 = Often Occurs, 4 = Very Frequently Occurs; <sup>c</sup> Ratio data.

For Objective 3 (Table 4), both groups of student teachers were similarly efficacious at the beginning and end of their student teaching experiences. Further,

student teachers' sense of efficacy during their student teaching experiences did not change. The relationship between pretest teachers' sense of efficacy and posttest



teachers' sense of efficacy for the UI student teachers had a large effect size ( $R^2 = .26$ ). UI student teachers who were efficacious at

the beginning of the student teaching internship were also efficacious at the end of the student teaching internship.

Table 4

*Descriptive Statistics & Relationships Between Pretest and Posttest Teaching Self-Efficacy*

	The Ohio State University	University of Illinois	Effect Size
Pretest Teacher Efficacy	$\mu = 6.92$ ( $\sigma = 1.00$ )	$\mu = 6.89$ ( $\sigma = .87$ )	.03 – Trivial
	$r = .23$ ( $r^2 = .05$ )	$r = .51$ ( $r^2 = .26$ )	
Posttest Teacher Efficacy	$\mu = 7.03$ ( $\sigma = .83$ )	$\mu = 6.94$ ( $\sigma = .91$ )	.11 – Trivial

*Note.* Scale: 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite A Bit, 9 = A Great Deal.

### Conclusions, Recommendations, and Implications

Student teachers at two universities had similar, positive perceptions of their teacher education programs on several personal factors. This conclusion supports Borne and Moss' (1990) study, which found student teachers felt positive about their student teaching experiences. Further, student teachers at Ohio State University had greater involvement in high school agricultural education. Although the student teachers at the University of Illinois were less likely to be enrolled in high school agricultural education, perhaps they compensated their student teaching experience by being more involved with students in summer activities and county fairs. University of Illinois student teachers' perception of their teacher education program was related to their efficacy at the end of student teaching. This finding suggests that student teachers' attitudes may support or inhibit growth in their sense of efficacy, which is aligned with Bandura's (1997) self-efficacy theory.

Regarding environmental factors, student teachers at the two universities were similar on trust in clients, collective efficacy, academic emphasis of schools, perception of student teaching experience, and number of students in the agricultural education program. University of Illinois student teachers taught more class

preparations than OSU student teachers. Although the student teachers at Ohio State University likely had a higher sense of collective efficacy, the student teachers at the University of Illinois felt the principals in their cooperating schools were more supportive and perceived their cooperating teachers as more competent. These environmental factors (principals, cooperating teachers, collective efficacy) likely provided student teachers with vicarious experiences and verbal persuasion (Bandura, 1997).

Regarding teachers' sense of efficacy, student teachers at the two universities were similarly efficacious and reported they had quite a bit of teaching self-efficacy. This finding was similar to the certified agriculture teachers in Rocca and Washburn's (2005) study, and the student teachers' pretest sense of efficacy in Swan's (2005) study. Student teachers at both universities saw no change in their sense of efficacy after their student teaching experiences. This finding did not support other studies that saw an increase in teachers' sense of efficacy after student teaching (Brown & Gibson, 1982; Fortman & Pontius, 2000; Hoy & Woolfolk, 1990). In contrast, Swan's study that found student teachers' efficacy decreased after student teaching in agricultural education. One implication of this finding is that student teachers were already efficacious about

teaching before they started their student teaching experiences (Martin, 1989; Nettle, 1998). This may suggest that student teachers feel that they already know how to teach before their student teaching experiences and their student teaching experiences confirm their self-efficacy beliefs. However, student teachers may also have an inflated efficacy that they can teach, which remains inflated throughout student teaching because of the supportive teaching environment of a cooperating teacher.

Another implication of these findings is that student teachers at two different universities can be similarly efficacious with different personal and environmental factors. Although student teaching experiences vary across states, student teachers likely felt efficacious at both universities because of a combination of various sources of self-efficacy (e.g., positive perceptions of their teacher education programs, trust in students and parents, teaching in schools with academic emphasis, having positive student teaching experiences, teaching less than five class preparations). The student teachers' sense of efficacy at Ohio State University may have been supported more by their involvement in high school agricultural education (Ganser, 1996) and teaching in schools with higher sense of collective efficacy. The student teachers' sense of efficacy at the University of Illinois may have been supported more by their summer involvement with students prior to student teaching, feeling more support from their principals, and perceiving higher competence of their cooperating teachers (Edwards & Briers, 2000; Harlin et al., 2001).

This study surfaced several questions that serve as recommendations for further study. Although there is no causal evidence from this study that these personal and environmental factors influenced student teachers' sense of efficacy, several factors should be further investigated based on the relationships found in this study. As such, student teachers' perceptions of their teacher education program and student teaching experiences were related to their sense of efficacy at the conclusion of their student teaching experiences. Moreover, trust in students and parents, collective efficacy,

academic emphasis, and perception of cooperating teachers' competence should be investigated in future mixed methods studies and other student teaching programs to determine their influence on student teachers' sense of efficacy. The most valuable implication from this study might be how two groups of student teachers can be similarly efficacious, yet one group had seven relationships with medium or larger effect sizes compared to the other group with only two relationships that were practically important. This serves as a reminder that small groups of participants in two different states with fairly similar teacher education programs can yield much different results. Agricultural education researchers should try to collaborate and do comparison studies to collectively determine consistent findings with greater generalizability.

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