

Benefits of Career and Technical Student Organizations' on Female and Racial Minority Students' Psychosocial and Achievement Outcomes

Steven R. Aragon

Texas State University – San Marcos

Corinne Alfeld

FHI 360

David M. Hansen

University of Kansas

Abstract

The purpose of this study was to determine to what extent do CTSOs affect student psychosocial and achievement outcomes (above and beyond stand-alone CTE programs) when controlling for gender and race. Using a cross-sectional descriptive research design, a total of 5,677 students from 10 states were surveyed regarding their high school experiences. Students were recruited from CTSO, CTE, and non-CTE (general education) classrooms. Within the boundaries of the research design, results reveal that the CTSO and CTE experiences do provide benefits above those offered through general education alone. Furthermore, this study found that girls tend to receive more of the benefits of the CTSO and CTE experience compared to boys. Finally, the study offers reason to believe that students of color do benefit more from a CTE experience compared to their White counterparts, albeit this benefit is small.

Keywords: Motivation, Engagement, Aspirations, Career Self-Efficacy, Civic Responsibility

Introduction

Even in the era of *No Child Left Behind*, the dropout rate in American high schools remains on average at 30% and for certain minority groups (American Indian, Hispanic, and Black) it is as high as 45% (Swanson, 2004). Research on high school dropouts shows that lack of engagement with the school, both socially and academically, and lack of personal relationships with adults are among the top reasons for student dropout (Arroyo, Rhoad, & Drew, 1999; National Research Council, 2004; Somers & Piliawsky, 2004). Efforts at reducing the dropout rate have included early interventions, mentoring, alternative schooling, after-school programs, and individualized instruction (Arroyo et al., 1999; Smink & Schargel, 2004).

Recent research has shown that career and technical education (CTE) can also play a role in dropout prevention. According to Levesque (2003), more than 95% of high school students participate in some form of career and technical education (CTE), including CTE coursework, work-based learning (WBL), and career pathways. These kinds of courses are where most of the middle- and lower-achieving students are found and where dropout reduction efforts should be targeted (Stone & Aliaga, 2003). Recent studies have found that CTE students are taking more

math and science and higher levels of math and science than their general track counterparts (Silverberg, Warner, Fong, & Goodwin, 2004; Stone & Aliaga, 2003), and that students who take a certain ratio (3:4) of CTE to academic courses have a lower likelihood of dropout (Plank, 2001; Plank, Deluca, & Estacion, 2005).

Many CTE programs also include Career and Technical Student Organizations (CTSOs) targeted towards more intense involvement in a particular field (e.g., business and marketing; health) (Scott & Sarkees-Wircenski, 2004). There are currently eight CTSOs at the secondary level recognized by the U.S. Department of Education serving over 1.5 million students in a variety of programs (Cahill & Brady, 1996). Formerly referred to as vocational student organizations (VSOs), CTSOs have been a part of CTE since the passage of the Smith-Hughes Act of 1917. Over the course of the last 88 years, CTSOs have developed numerous activities such as skills contests, community service, and leadership development to improve the members' leadership, career and technical knowledge and skills, personal characteristics, and employability skills. CTSOs are generally comprised of chapters at the local level with chapter advisors and sponsors, and with administrative and financial assistance from state advisors in state departments of education (Gordon, 2003).

Some of the characteristics identified by CTSO members include teamwork, decision-making, competition, leadership community awareness, career awareness, and personal and social development (Brown, 2002; Collins, 1977; Gordon, 2003; Stagg & Stuller, 1999; Talbert, Larke, & Jones, 1999). Many elements of CTSOs are thought to have positive effects on students (Brown, 2002). Until recently, however, little research existed to support the claims of these organizations of the benefits to their members. For the purposes of this study, we focus on what CTSOs add to CTE above and beyond the usual emphases of CTE, which include career pathways or career academies, tech prep, and work-based learning activities (e.g., cooperative education, job shadowing, mentoring, school-based enterprise, and internship/apprenticeship). All of these CTE-related activities are thought to help students form career identities and give them the professional and work skills they need to launch their careers. Because all CTE programs offer these activities, whether or not they offer a CTSO, this study examines the benefits provided by distinctive organizational elements of CTSOs focusing specifically on female and racial minority students.

Background

The Theoretical Model of the Effect of CTSOs on High School Students (Alfeld, et al., 2007) posits that CTSOs provide four distinctive types of experiences for participating high school students including: (1) leadership development, (2) professional development, (3) competitions, and (4) community service. These *organizational elements* of CTSOs, in turn, are believed to impact important high school psychosocial (academic motivation, academic engagement, civic responsibility) and achievement (career self-efficacy, grades, employability skills, educational aspirations) outcomes as identified in previous education research with the latter set of variables indicating potential post high school success. It is suggested that CTSOs produce beneficial effects on students by reinforcing the learning that took place in the CTE course, and by providing an opportunity to put this learning into practice.

Organizational Elements of CTSOs

Within CTSOs, there are many opportunities for students' *leadership development*, including becoming an officer at the local, regional, or national level. In a study of past FFA participation in the role of community leadership development, Brannon, Holley and Key (1989) found that former FFA members had an impact on the development and success of community leaders. Dormody and Seevers (1994) found that three variables—achievement expectancy, participation in FFA leadership activities and gender—were significant in predicting the leadership life skill development of members. A follow-up study by Wingenbach and Kahler (1997) supported these findings.

Competitive events serve to test both technical and non-technical job-related competencies. Many of these events integrate academic knowledge into industry-developed problem scenarios. Preparation for the competitive events provides hands-on experience in different trade, technical and leadership fields; develops job-related technical skills and competencies; offers recognition to participants, and services to ensure business and industry involvement in career and technical education programs. In fact, contests are often run with the help of industry, trade associations, and labor organizations, and test competencies are set and judged by persons from industry. Blakely, et al. (1993), in a study of the perceived value of FFA contests by students and adults, found that students listed teamwork, responsibility for a project, learning an area of knowledge, competing with others, talking in front of people, learning a specific skill and learning to win in descending order of value.

It is generally assumed that both the content of the CTE program and the skills and experiences acquired in CTSOs contribute to *professional development* (the acquisition of knowledge and competencies that will be useful for future work in the profession). Most CTSOs provide structured professional development activities for their members, including guest speakers, workshops, and conferences. There has been little research on this aspect of CTSOs but one study found that SkillsUSA members' perceptions of their level of personal/professional development increased as their participation in SkillsUSA increased (Gordon, Yocke, & Bess, 1995).

Finally, many CTSO members engage in some form of *community involvement*, such as volunteering in community service activities, but this element of the CTSO experience has been the most ignored in research studies, and much evidence that is presented is anecdotal.

Student Psychosocial and Achievement Outcomes

Academic motivation is a predictor of educational persistence (Wigfield & Eccles, 2002). Contexts that motivate students to learn are those (1) that offer interesting, challenging, and meaningful tasks and activities; (2) where teachers help students develop effective learning and problem-solving strategies, foster an environment that rewards effort without punishing mistakes, and provide feedback about progress; and (3) where both teachers and peers support learning and have mutual respect for each other (Perry, Turner, & Meyer, 2006).

A comprehensive review of the classroom *engagement* literature concluded that peer learning communities, authentic instruction, and classrooms that support autonomy (among other factors) can facilitate students' academic engagement (Fredricks, Blumenfeld, & Paris, 2004). According to the developers of the National Survey of Student Engagement (NSSE, 2004, 2005, 2006), the time and energy students devote to educationally purposeful activities are the best predictors of their learning and personal development. The National Academy of Sciences, in

the report, *Breaking Ranks II* (NASS, 2004), suggests that engaging youth and fostering achievement include providing opportunities to use school learning in improving both their own lives and others lives in their communities. Due to their co-curricular nature, CTSOs offer students the opportunity to apply knowledge and skills from their academic lessons directly to real world situations, which is what Newmann, Secada, and Wehlage (1995) describe in their guidelines for authentic learning.

While there has been a revival of the research on *civic engagement/responsibility* in recent years, there is not yet a single definition of it in the literature. Other terms include citizenship, service learning, political attitudes, patriotism, community service, social responsibility, and volunteering. In a review of research articles on service learning, Billig (2002) demonstrated that it produces measurable increases in students' academic achievement, personal and social development, civic responsibility, and career awareness. Camino and Zeldin (2002) documented the importance of responsibility and leadership that community service can provide, and Stott and Jackson (2005) found that students who engaged in service learning reported improvement in personal awareness, social skills, learning skills, career interest, and character education.

Self-efficacy is a person's belief in his/her competency to perform well and has been linked empirically to persistence and achievement behaviors (Bandura, 1986, 1989; Schunk, 1989, 1991). Self-efficacy beliefs are expectations for performance (Graham & Weiner, 1996) and are usually measured using scales that focus on specific situations and tasks (Betz & Hackett, 2006). Individuals with high self-efficacy have been shown to exert more effort in the face of difficulty and to persist longer (Pintrich & Schunk, 1996). Self-efficacy for finding and pursuing a career pathway for oneself is a valued outcome of high school CTE (ACTE, 2008). Through various activities in a career-related domain, CTSOs may help students develop skills and confidence for successful and satisfactory job-seeking.

Grades in school are one of the most important indicators of student success and potential for further achievement. Grade point average (GPA) serves as an indicator of both achievement and school performance (Hallfors et al., 2002). Colleges rely on high school student applicants' grade point averages (GPA) to predict their ability to complete postsecondary education, and employers use applicant's GPA to judge applicants' likely success on the job. "Students with low bonds to teachers, achievement-oriented peers, and the academic institution will come to school without homework and unprepared for tests, result in a low GPA" (Hallfors et al., 2002, p. 206).

Employability Skills include workplace basics such as knowing how to learn; reading, writing, and computation; communicating effectively; creative thinking and problem-solving; personal management; group effectiveness; and influencing others (NCCVSO, 1990). Employers report that employees who have a better understanding of workplace skills are more prepared for changes in workplace requirements (Wills, 1995). The federal government has taken steps towards officially identifying these skills (e.g. forming the Secretary's Commission on Achieving Necessary Skills (SCANS), U.S. Department of Labor, 1992; National Skill Standards Board (NSSB) established by Congress in 1994, Bailey & Merritt, 1995).

Researchers have demonstrated that *educational aspirations* are shaped by forces in students' family, peer, and school environments. Decades of prior research has shown that family background factors play the largest role in determining education attainment (Erikson & Goldthorpe, 1993), but aside from demographic characteristics, students psychosocial and behavioral variables have also been shown to affect educational achievement and future plans

(Eccles et al., 1983). Although extracurricular activities have not been found to affect grades or college aspirations (Hunt, 2005), experience in a career-oriented activity such as a CTSO may influence an individual's educational goals.

CTSO Research

In a large scale, comprehensive study examining the immediate and long-term benefits of participation in CTSOs, we (Alfeld, et al., 2007) found CTSO students started out and ended up with higher levels of academic engagement, civic engagement, career self-efficacy, and employability skills than CTE-only students (they also reported higher levels of participation in extracurricular activities, work, and volunteering). Additionally, the scores of the CTSO students on each of these measures did not increase as much over the academic year in comparison to students in general education classes (e.g., English, social studies); the gap between the groups simply narrowed. We concluded it appeared that students who were drawn to participate in CTSOs were "good students" to begin with. This self-selection bias has been noted in other studies of activity participation (e.g., Hansen, Larson, & Dworkin, 2003; McIntosh, Metz, & Youniss, 2005). However we did find evidence that the benefits of CTSOs can be enhanced the more a student participates, and the effects for academic engagement are particularly strong. We conclude that this may mean that positive outcomes for individual students could be enhanced by participating in CTSOs at high levels, particularly in competitive events, which were found to have effects on the most outcomes.

Current Study

While our previous research has found that CTSOs do have beneficial effects on the experience of high schools students, it is unknown what these effects look like when controlling for gender and race. We were able to find two relatively current research studies suggesting race (Sherrod, 2006) and gender (Jenkins, 2005) differences influence students' development of civic knowledge, behaviors, and attitudes within a service-learning environment. We were unable to find studies that had examined the remaining student outcome variables of the CTSO Theoretical Model within service-learning environments when controlling for gender and/or race. Therefore, the purpose of this study was to determine to what extent do CTSOs affect student psychosocial and achievement outcomes (above and beyond stand-alone CTE programs) when controlling for gender and race. Because CTSOs are co-curricular rather than extracurricular, CTE students who participate in CTSOs may have some added advantages over students in CTE programs alone. This study was designed to address the following questions.

1. What is the relationship between the demographic variables of gender and racial identity with academic motivation, academic engagement, educational aspirations, career self-efficacy, and sense of civic responsibility?
2. What is the relationship between the demographic variables of gender and racial identity with academic motivation, academic engagement, educational aspirations, career self-efficacy, and sense of civic responsibility between CTSO, CTE, and General Education (non-CTE) students?
3. Do females or males in CTSO's have higher academic motivation, academic engagement, educational aspirations, career self-efficacy, and sense of civic responsibility compared to females and males in CTE or General Education (non-CTE)?

4. Do Non-White students in CTSO's have higher academic motivation, academic engagement, educational aspirations, career self-efficacy, and sense of civic responsibility compared to White students in CTE or General Education (non-CTE)?

Methods

Research Design

This study utilized a cross-sectional, descriptive research design as the goal of the study was to describe the benefits of the CTSO experience at one point in time across students with varying experiences. Descriptive research builds the foundation for discovering cause-and-effect relationships through the use of experimental research designs. Furthermore it generates knowledge about opinions, attitudes, and practices that help to “shape educational policy and initiatives to improve existing conditions” (Gall, Gall, & Borg, 2003, p. 290). The cross-sectional component allowed for a simulated longitudinal research design utilizing data collected from different age groups and different stages of development.

Participants

CTSO students were recruited with the help of national CTSO organization representatives and CTE students were recruited with the help of state CTE directors. The organization representatives and state directors identified teachers believed to have interest in participating in the study. From these lists, CTSO and CTE teachers were initially contacted by phone by a member of the research team. During this initial conversation, the purpose of the study was explained and the teachers' interest in participating in the study was ascertained. For those teachers agreeing to participate in the study, they received additional research materials as described in the procedures section below. During our recruitment phase, we ensured that the CTE-only classrooms did not have a CTSO at their school so that the voluntary nature of CTSO membership did not confound the results. The students were recruited from Ohio, Illinois, Oklahoma, Kentucky, Tennessee, Missouri, Georgia, California, Texas, and Minnesota based on these being the states known for their reputable CTSO and CTE programs. The goal of the recruitment procedures was to include approximately 20 students from each CTSO or CTE within the selected school.

Additionally we sought to recruit an additional 20 students from a non-CTE (referred to as “general”) classroom at each of the CTSO or CTE schools to serve as controls. CTSO and CTE teachers were asked to find (1) another teacher in their school who taught a non-CTE course such as English or social students who would also agree to take part in the study as a comparison classroom, and (2) someone in the school such as a counselor to act as a “liaison” – a neutral third party who would administer the surveys in both the CTE (with and without a CTSO) and general classrooms. Comparison classrooms were primarily academic subjects but not necessarily high-level ones; the important criterion was that they were not a CTE class.¹

¹ All students were asked not to take the survey again if they had taken it in another class so that the samples were independent.

There were 90 CTSO and 25 CTE classrooms that participated, and 91 general classes from the CTSO and CTE schools that participated. Each of the eight CTSOs was studied in at least 2 states. Table 1 shows the total number of classrooms in each CTE area included in the study.

Table 1

Classroom Sample

Organization	Total		
	CTSO	CTE	General
BPA	6	2	8
DECA	16	1	12
FBLA	13	13	19
FCCLA	8	2	10
FFA	17	0	13
HOSA	13	0	10
SkillsUSA	13	7	15
TSA	4	0	4
TOTAL	90	25	91

The final sample for the study included 5,677 students from the 206 classrooms. Fifty-five percent of the sample was female. By grade, the sample was 39.2% senior, 39.8% junior, 15.9% sophomore, and 5.1% freshmen. The ethnicity of this sample was 61.5% White, European American, 8.1% Black, African American, 8.3% Hispanic, 2.5% Asian, Pacific Islander, 1.3% American Indian, 2.9% indicated multiple ethnicities. One hundred and sixty seven students (or 15.4% of the sample) failed to specify their ethnicity. We attribute most of this omission to the fact this demographic item was marked “optional” in order to be compliant with Institutional Review Board (IRB) requirements. Due to the small number of participants in various ethnic categories along with the exploratory nature of this study, the final sample was divided into “White” (75%) and “Non-White” (25%).

Instrumentation

Data were collected through the use of self-report surveys. A total of 9 surveys were developed – 1 for the general classroom students and 1 for each of the 8 CTSO/CTE classrooms. CTSO and CTE students completed the same survey with CTE students being directed to skip those questions pertaining to CTSO participation. All students were asked the same set of questions regarding their high school experiences. Further, because there were eight different CTSOs, the wording of the CTSO-specific questions differed slightly due to different terminology for activities in each of the organizations. It should be noted that the surveys contained more constructs than were examined for this study; some because no association was found between them and any of the other variables, and some that will be used in future analyses and reporting. Each of the constructs measured for this study are described below.

CTSO Participation. Information about students’ participation in the CTSO was assessed using items from Connors and Swan’s (2001) Youth Participation in Leadership Activities Questionnaire. There were eight items asking about students’ type of participation (e.g. elected leader, committee member) at various levels (e.g., local, regional, national). Students not

participating in a particular CTSO were directed to skip those items. Students were also asked about their participation in other organized activities (e.g., sports, 4-H).

Academic Motivation. Academic motivation refers to students' motivational orientation for learning. Academic motivation was assessed using the college student version of the Motivated Strategies for Learning Questionnaire (MSLQ; University of Michigan). Consisting of a total of 10 items, this scale had an alpha coefficient of .86. Examples of items include: "I put forth a great deal of effort when doing my school work" and "I place high value on learning."

Academic Engagement. This scale identified the various activities in which students were engaged during the school year. Academic engagement was assessed using items from the High School Survey of Student Engagement (HSSSE; Indiana University). Two of the seven items include: "Prepared two or more drafts of a paper or assignment before turning it in" and "Worked with other students on projects or assignments outside of class." This scale had an alpha coefficient of .73.

Educational Aspirations. Students' educational aspirations were measured in the traditional way by asking the students how far they expect to go in school (e.g., NELS:88; Mortimer, 2003).

Career Self-Efficacy. This scale assesses students' beliefs about their abilities to secure a job. Betz, Klein, and Taylor's (1996) measure of career self-efficacy was used. Items ask students about their level of confidence to "Accurately assess [their] abilities" and "Decide what [they] value most in an occupation." Containing a total of 13 items, this scale had an alpha coefficient of .89.

Additionally, certainty of job choice, used in group comparisons, was measured with the second of two items: "Do you know what you would like to be when you are 30?" and "How certain are you about this choice?" (1-5 scale) from the Michigan Study of Adolescent Life Transitions (MSALT, Eccles, Barber, & Jocefowicz, 1999).

Civic Responsibility. Civic responsibility was measured by eight items focusing on the extent to which students felt it was their responsibility to give back to and become involved with their community. Items were taken from the Civic Responsibility Survey for K-12 Students Engaged in Service-Learning developed at the University of California, Berkeley (Furco, Muller, & Ammon, 1998). Examples of items include: "It is my responsibility to help improve the community" and "I feel I have the power to make a difference in the community." The alpha coefficient for the civic responsibility scale was .89.

Procedures

A CTSO *or* a CTE classroom *and* a General Education classroom were recruited from each of the selected schools. An adult "liaison" was also recruited at each school to administer the surveys. Two weeks prior to the administration date, letters were sent to the parents of prospective students explaining the purpose and procedures of the study. Parents could choose to exempt their child from the study by returning a form attached to the letter. If no form was returned, a student could then give his or her assent to participate on the date of the scheduled administration. A \$5 Walmart gift card was given to each student that completed the survey.²

² Due to school regulations, we could not compensate all students with cash. Walmart was chosen because it was the most ubiquitous chain across all of our research sites that offered the most individual choice of compensation (as opposed to a food-only chain such as McDonald's).

Data Analysis

Linear regression procedures were used to evaluate 1) the contribution of gender and minority status to each of the five outcomes *and* 2) the contribution of the classroom type to the outcomes, controlling for gender and minority status. Dependent variables included academic motivation, academic engagement, educational aspirations, career self-efficacy, and sense of civic responsibility. Dummy codes for gender and minority status were entered in Step 1. For the classroom type, two dummy code variables were created, one comparing CTSO's to General Education, and one comparing CTSO's to CTE's. In Step 2, the classroom type contrasts were entered along with gender and minority status. For the models evaluating the interaction effects, gender, minority status, and the classroom type contrast were entered in Step 1. Step 2 included these variables along with the addition of the interaction terms.

The total variance accounted for by each of the five outcomes was first evaluated. The Adjusted R-square statistic indicated the significance and strength of the association of variables in Steps 1 and 2 with the outcomes. The R-squared statistic for Step 1 of each model indicated the variance accounted for by the gender and minority status. The R-square change statistic for Step 2 of each model indicated the amount of variance explained by the addition of the classroom type contrasts. For each step that was significant, the Beta coefficients were evaluated to determine where the differences occurred. Unstandardized beta coefficients used to evaluate effect size within a scale because they represent the scale's original metric. Standardized regression coefficients were also used in order to compare effect sizes across the scales because not all scales used the same metric.

Results

Differences in Outcomes across Gender and Minority Status

Analyses for research question one evaluated differences in mean scores on academic motivation, academic engagement, career self-efficacy, sense of civic responsibility, and educational aspirations by student gender and minority status. Results for these analyses appear in Step 1 of Table 2. There were statistically significant gender differences on all five scales and statistically significant differences on two of the scales for student minority status ($p < .01$). The variance explained by gender and minority status in Step 1 ranged from 1.6% to 4.3%.

The direction of the difference for gender on the five scales was consistent. The unstandardized beta coefficients (columns with B) indicated that females had statistically significant higher mean scores on all scales compared to males. For example, the coefficient for academic motivation indicated that girls have a mean score that is .194 scale points higher than boys. The magnitude of the difference was also consistent, $\beta = .120$ to $.175$.

For minority status, there were statistically significant differences on the scales for academic motivation and educational aspirations, $B = -.136$ and $B = -.359$. These coefficients indicated that Non-White students (coded as '0') had statistically significant higher mean scores on these two scales compared to White students (coded as '1').

Table 2

Differences in Outcome Means among Classroom types Controlling for Gender and Minority Status

Variables Entered	Academic Motivation			Academic Engagement			Career Self Efficacy			Civic Responsibility			Educational Aspirations		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Step 1															
Female (1)	.194**	.016	.175	.158	.015	.148	.161**	.018	.127	.290**	.030	.138	.454**	.055	.120
White (1)	-.136**	.018	-.109	.001	.017	.001	-.001	.020	-.001	.006	.034	.003	-.359**	.061	-.085
Step 2															
Female (1)	.188**	.016	.169	.155**	.015	.145	.159*	.018	.125	.286**	.030	.136	.476**	.053	.126
White (1)	-.131**	.018	-.105	.003	.017	.002	.003	.020	.002	.015	.034	.006	-.346**	.060	-.082
CTSO (1) vs. Gen Ed (0)	.168**	.017	.151	.077**	.016	.072	.035	.019	.028	.051	.031	.024	-.889**	.055	-.238
CTSO (1) vs. CTE (0)	.096**	.031	.048	.037	.029	.019	.071*	.035	.031	.169**	.057	.044	.164	.101	.024
Step 1															
R ²	.043**			.021**			.016**			.019**			.022**		
Step 2															
R ² Change	.021**			.005**			.001*			.002**			.061**		
Total Adjusted R ²	.063			.026			.016			.020			.082		

Note. ~ $p < .10$, * $p < .05$, ** $p < .01$

Differences in Outcomes by Classroom Type

Analyses for research question two compared mean differences between students in CTSO, CTE, and General Education classrooms on academic motivation, academic engagement, career self-efficacy, sense of civic responsibility, and educational aspirations, controlling for the affects of gender and minority status. Results of these analyses appear in Step 2 of Table 3. Two dummy code variables were computed to compare students in a CTSO to students in general education classrooms and to students in a CTE classroom. The R-square change statistic indicates the proportion of variance that the additional variables explain in the outcomes after controlling for gender and minority status. For each of the five scales, the addition of the two CTSO comparisons dummy codes explained a statistically significant proportion of the variance that was unexplained by gender and minority status.

CTSO—Gen Ed Comparison. The results comparing students in a CTSO to students in a general education classroom indicated statistically significant differences between the groups on academic motivation, academic engagement, and educational aspirations. Students in a CTSO had a statistically significant higher mean score on academic motivation and engagement compared to students in a general classroom, $B = .168$ and $B = .077$, respectively. This suggests that students in a CTSO experience a higher level of academic motivation and engagement than students in a general education classroom. Students in a CTSO, while higher on academic motivation and engagement, had statistically significant lower mean scores on college aspirations, $B = -.889$, compared to general education students. There were no statistically significant differences between CTSO and general education students on career self-efficacy or civic responsibility.

CTSO—CTE Comparisons. There were statistically significant differences between CTSO and CTE students on academic motivation, career self-efficacy, and civic responsibility. For each of these three scales, students in a CTSO reported higher mean scores compared to students in a CTE classroom, $B = .096$, $B = .071$, and $B = .169$. The magnitude of the differences was greatest for academic motivation and civic responsibility. There were no difference between CTSO and CTE students on academic engagement or educational aspirations.

Differences in Outcomes by Classroom type—Gender Interactions

The results thus far indicate that student gender, racial identity, and educational classroom are associated with differences on academic motivation, academic engagement, career self-efficacy, sense of civic responsibility, and educational aspirations. These differences also suggest the possibility of an interaction between these three independent variables. To address this possibility, research question three evaluated if students' gender and classroom together affected mean scores. Interaction terms were computed by multiplying the classroom variable by the gender variable. A statistically significant interaction would indicate that gender and classroom together have a unique affect on the outcomes. Analyses for this question were conducted separately for the CTSO—General Education comparison (Table 3) and the CTSO—CTE comparison (Table 4).

There were two statistically significant gender by classroom interactions. Comparison of CTSO and general education classrooms (Table 4) indicated that students scores on academic motivation differed depending on gender in a classroom, $B = .055$, $p < .001$.

Table 3
Differences in Outcome Means between CTSO and Gen Ed Students by Gender and Minority Status

Variables Entered	Academic Motivation		Academic Engagement		Career Self Efficacy		Civic Responsibility		Educational Aspirations	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Step 1										
Female (1)	.180**	.017	.147**	.016	.150**	.019	.264**	.031	.465**	.055
White (1)	-.131**	.019	.014	.017	.011	.021	.021	.034	-.355**	.061
CTSO (1) vs. Gen Ed (0)	.168**	.017	.077**	.016	.036	.019	.052	.031	-.889**	.055
Step 2										
Female (1)	.074*	.037	.109**	.035	.081*	.041	.264**	.068	.656**	.120
White (1)	-.141**	.041	-.032	.038	.011	.046	-.032	.076	-.127	.134
CTSO (1) vs. Gen Ed (0)	.099**	.037	.020	.035	-.006	.042	.014	.069	-.602**	.123
CTSO_Gen X Female	.055**	.017	.020	.016	.035	.019	-.000	.031	-.101	.056
CTSO_Gen X White	.006	.019	.024	.017	.001	.021	.027	.035	-.119~	.061
Step 1										
R ²	.064**		.025**		.014**		.016**		.076**	
Step 2										
R ² Change	.002**		.001		.001		.000		.002*	
Total Adjusted R ²	.066		.025		.015		.016		.077	

Note. ~ $p < .10$, * $p < .05$, ** $p < .01$

Table 4
Differences in Outcome Means between CTSO and CTE Students by Gender and Minority Status

Variables Entered	Academic Motivation		Academic Engagement		Career Self Efficacy		Civic Responsibility		Educational Aspirations	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Step 1										
Female (1)	.244**	.024	.181**	.022	.200**	.025	.308**	.043	.393	.078
White (1)	-.124**	.027	.014	.025	-.004	.029	.036	.048	-.452	.088
CTSO (1) vs. CTE (0)	.092**	.033	.037	.030	.067	.035	.171**	.058	.155	.106
Step 2										
Female (1)	.350	.185	.396*	.172	.402*	.196	1.064**	.329	1.088**	.603
White (1)	-.122	.261	-.715**	.242	-.511	.277	-.355	.463	.440**	.851
CTSO (1) vs. CTE (0)	.112	.090	-.135	.084	-.043	.095	.197	.160	.543	.293
CTSO_CTE X Female	-.037	.065	-.076	.060	-.071	.069	-.267*	.115	-.245	.211
CTSO_CTE X White	-.001	.090	.252**	.083	.175	.095	.135	.159	-.308	.292
Step 1										
R ² square	.058**		.026**		.025**		.024**		.023**	
Step 2										
R ² Change	.000		.004**		.002		.002*		.001	
Total Adjusted R ²	.058		.029		.027		.025		.024	

Note. ~ $p < .10$, * $p < .05$, ** $p < .01$

CTSO Value to Female & Minority Students

An ANOVA procedure was conducted to allow for multiple comparisons, using Bonferroni adjustments. The results of this analyses (not shown), indicate that girls in a CTSO had a higher mean academic motivation compared to girls in a general education, or boys in either a CTSO or general education classroom, $p < .001$. Boys in a CTSO had a higher mean academic motivation than boys in general education, $p < .001$.

Comparison of CTSO and CTE classrooms (Table 4) indicated that scores on civic responsibility differed depending on the gender and classroom a student was in, $B = -.267$. Results of the Bonferroni contrasts indicated that girls in a CTSO had a statistically significant higher mean score on civic responsibility compared to boys in either classroom, but not compared to girls in a CTE. Boys in a CTSO had a statistically significant higher mean compared to boys in a CTE, but had a lower mean compared to girls in either classroom.

Differences in Outcomes by Classroom—Minority Status Interaction

Following the same procedure used to address question three, analyses were conducted to compare the affects of minority status by classroom on the mean scale scores (question 4). As with gender, interaction terms were computed by multiplying the minority status and classroom variables. Results of this analyses comparing CTSO to general education and to CTE classroom appear in Tables 3 and 4. There was only one statistically significant minority by classroom interaction, $p < .01$. Analyses comparing CTSO with CTE classrooms indicated that academic engagement statistically significant differed depending on minority status and classroom, $B = .252$, $p < .01$. Results of the Bonferroni contrasts indicated that Non-White CTE students have a statistically significant higher mean compared to White CTE students. No other significant differences were detected.

Conclusions and Discussion

The purpose of the study was to determine if significant differences in academic motivation, academic engagement, career self-efficacy, civic responsibility, and educational aspirations existed for female and minority students (compared to their male and White peers) who participated in a CTSO. The study was conducted using a non-experimental cross-sectional survey design to assess students' experiences in the four organizational components of a CTSO. These included competitive events, leadership development, professional development, and civic engagement/community service. The following conclusions can be drawn.

Differences among Gender and Minority Students

Females reported statistically significant higher levels of academic motivation, academic engagement, career self-efficacy, civic responsibility and educational aspirations compared to male students. This finding is consistent with the literature on student disengagement. Female students tend to be more engaged in school compared to their male counterparts, which can lead to better academic progress (McMillian, 2003; Pellerin, 2005; Sinclair, Christenson, & Thurlow, 2005).

Students of color reported statistically significant higher levels of academic motivation and educational aspirations compared to the White students. This finding runs counter to the student engagement literature that finds students of color tend to disengage from educational activities at higher rates than White students. To date, the majority of the literature speaks only of African-American and Hispanic students. Engagement increases when the student of color is also male. It appears that the present study may be uncovering these same patterns of student disengagement across these three classroom types. It should be noted that due to the small numbers of students of color in the sample, all were placed into the single category of “Non-White” for the purposes of analysis. It is possible that this finding may not apply for each individual racial group.

Differences in CTSO’s Compared to General Education and CTE

Students who participated in a CTSO had higher levels of academic motivation and academic engagement compared to students in a general education classroom. Students in CTSO’s also had higher levels of academic motivation, career self-efficacy, and civic responsibility than CTE students. These findings are consistent with other research that shows

CTE education can play a role in dropout prevention (Plank, 2001; Plank, et al., 2005) and promote personal and social development (Brown, 2002; Collins, 1977; Gordon, 2003; Stagg & Stuller, 1999; Talbert, Larke, & Jones, 1999). The present findings go beyond past research, however, to suggest that CTSO’s provide an additional impetus, over CTE only education, for students to remain academically motivated and engaged.

Findings that CTSO students had lower educational aspirations compared to students in a general education classroom were not surprising; other studies have found this trend. One possible explanation for this is that CTSOs teach skills related to jobs and careers that presently do not demand a full four-year degree. Employers are also increasingly hiring workers with certifications that can be earned with an Associates degree (Carter, 2005). Thus, the lower educational aspirations of students in this study may reflect this trend.

Differences in Outcomes by Classroom type—Gender Interactions

Girls in a CTSO. The findings suggest that CTSO experiences were different depending on the gender and minority status of the student. First, girls who participated in a CTSO reported higher levels of academic motivation compared to students in general education. Girls in a CTSO also had a higher level of civic engagement compared to boys in either a CTSO or General Education classroom, but these girls were not higher compared to girls in a CTE. This finding suggests that girls in a CTSO may benefit more from of participation, especially compared to boys.

Boys in a CTSO. Boys in a CTSO reported greater engagement than boys in General Education classroom (but not compared to boys in a CTE) and greater civic engagement than boys in a CTE. It is important to note that boys in CTSO did not have higher academic engagement or civic engagement than girls in any classrooms.

Differences in Outcomes by Classroom Type—Minority Status Interactions

There was only one significant interaction between minority status and classroom type. Students of color in a CTE (not CTSO) classroom had a higher mean for academic engagement

compared to their White counterparts. This finding is difficult to interpret, given a general lack of findings for the other outcomes. Much of this might be attributable to the small numbers of students of color available for comparison.

Summary and Directions for Future Research

Within the boundaries of the research design, this study suggests that CTSO, as well as CTE, experiences do provide benefits above those offered through general education alone. Furthermore, this study suggests that girls tend to receive more of the benefits of the CTSO and CTE curricula compared to boys. Finally, the study offers reason to believe that students of color do benefit more from a CTE classroom compared to their White counterparts, albeit this benefit is small. It is important to remember that the CTE classroom, whether it is alone or in conjunction with a CTSO, offers different benefits for different students.

The findings indicate direction for future research. First, replication of the study's findings with more diverse youth is needed. Second, the findings suggest that CTSO's are adept at retaining (or increasing) students' academic engagement and motivation. Research is needed into how CTSOs impact motivation and engagement.

A third area of research suggested by this study is towards a further understanding of how and why CTSOs (and CTE to a lesser degree) benefit girls and boys differently. Although boys who participate in a form of CTE do appear to receive more benefits over boys in general education alone, those benefits are not as great when compared to girls. The question then becomes whether the CTE experience (alone or in conjunction with a CTSO) can be modified in such a way where the benefits for boys can be more comparable to those for the girls. Part of this question is also answered by better understanding the profiles of who participates in CTSOs/CTE and why.

Finally, future research should provide more attention to the potential benefits of CTE/CTSOs for students of color. Students of color comprised one-fourth of the total sample used in this study. However, the results still suggest some benefits to Non-White students. Although this study found benefits only for Non-White CTE students, it should not be assumed that these same students would not benefit from a CTSO experience. It is likely that the size of the sample was too small to detect these differences. As additional data are collected on students of color, it will be possible to examine more within and between group differences.

References

- Alfeld, C., Stone, III, J. R., Aragon, S. R., Hansen, D. M., Zirkle, C., Connors, J., . . . Woo, H. (2007). *Looking inside the black box: The value added by career and technical students organizations (CTSOs) to students' high school experience*. Minneapolis: National Research Center for Career and Technical Education, University of Minnesota.
- Arroyo, A. A., Rhoad, R., & Drew, P. (1999). Meeting diverse student needs in urban schools: Research-based recommendations for school personnel. *Preventing School Failure, 43*(4), 145-153. doi:10.1080/10459889909604990
- Association for Career and Technical Education (ACTE). (2008). *What's Career and Technical Education?* Retrieved August 13, 2008, from http://www.acteonline.org/career_tech/index.cfm.

- Bailey, T., & Merritt, D. (1995). *Making sense of industry-based skill standards*. Berkeley, CA: National Center for Research in Vocational Education. (MDS-777).
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44, 1175-1184. doi:10.1037/0003-066X.44.9.1175
- Betz, N. E., & Hackett, G. (2006). Career Self-Efficacy Theory: Back to the future. *Journal of Career Assessment*, 14(1), 3-11. doi:10.1177/1069072705281347
- Betz, N. E., Klein, K.L. & Taylor, K.M. (1996). Evaluation of the Short Form of the Career Decision-Making Self-Efficacy Scale. *Journal of Career Assessment*, 4(1), 47-57 Win 1996. doi:10.1177/106907279600400103
- Blakely, M., Holschuh, M., Seefeldt, B, Shinn, G., Smith, E., & Vaughn, P. (1993). Perceived value of FFA contests and awards by students and other adult groups. *Proceedings of the 20th Annual National Agricultural Education Research Meeting*, 20, 355-360.
- Brannon, T., Holley, C.W., & Key, J.P. (1989). Impact of vocational agriculture/FFA on community leadership. *Journal of Agricultural Education*, 30 (3), 37-45. doi:10.5032/jae.1989.03037
- Brown, B.L. (2002). *CTE Student Organizations*. ERIC Digest No. 235.
- Cahill, J. & Brady, K. (1996) Sweetening the deal. *Techniques*, 7 (3), 26-29.
- Camino, L., & Zeldin, S. (2002). From periphery to center: Pathways for youth civic engagement in the day-to-day life of communities. *Applied Developmental Science*, 6(4), 213-220. doi:10.1207/S1532480XADS0604_8
- Carter, S. D. (2005). The growth of supply and demand of occupational-based training and certification in the United States, 1990-2003. *Human Resource Development Quarterly*, 16(1), 33-54. doi:10.1002/hrdq.1123
- Collins, D. (1977). *An assessment of benefits derived from membership in vocational student organization in the vocational, technical, and adult education system*. Menomonie, WI: Center for Vocational, Technical and Adult Education - University of Wisconsin-Stout. (ERIC Document Reproduction Service No. ED145234)
- Connors, J. & Swan, B. (2001). *Youth Participation in Leadership Activities Questionnaire*. Unpublished document, Ohio State University.
- Dormody, T., & Seevers, B. (1994). *FFA participation and youth leadership life skills development: A tri-state study*. Paper presented at the American Vocational Association Convention Dallas, TX. ERIC Document Reproduction Service No. ED378390)
- Eccles (Parsons), J., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., et al. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement/achievement motive: Myth and reality* (pp. 75-146). San Francisco: W. H. Freeman.
- Eccles, J. S., Barber, B., & Jozefowicz, D. (1999). Linking gender to education, occupation, and recreational choices: Applying the Eccles et al. model of achievement-related choices. In W. B. Swann, J. H. Langlois, & L. A. Gilbert (Ed.), *Sexism and stereotypes in modern society: The gender science of Janet Taylor Spence* (pp 153-192). Washington, DC: APA Press.

- Erikson, R., & Goldthorpe, J. H. (1993). *Community programs to promote youth development*. Washington, DC: National Research Council and the Institute of Medicine's Committee on Community-Level Programs for Youth.
- Fredricks, J. A., Blumenfeld, P.C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59-109. doi:10.3102/00346543074001059
- Furco, A., Muller, P., & Ammon, M. S. (1998). *Civic responsibility survey for K-12 students engaged in service learning* (revised ed). University of California, Berkeley: Service-Learning Research & Development Center.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction* (7th ed.). Boston: Allyn and Bacon.
- Gordon, H. (2003). *The history and growth of vocational education in America*. Prospect Heights, IL: Waveland.
- Gordon, R., Yocke, R.J., & Bess, A. (1995). *Relationship between student participation in VICA and their mastery of personal development skills*. ERIC Document Reproduction Service No. ED386602)
- Graham, S., & Weiner, B. (1996). Theories and principles of motivation. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of Educational Psychology* (pp. 63-84). New York: MacMillan Library Reference.
- Hallfors, D., Vevea, J. L., Iritani, B., Cho, H., Khatapoush, S., & Saxe, L. (2002). Truancy, grade point average, and sexual activity: A meta-analysis of risk indicators for youth substance use. *Journal of School Health*, 72(5), 205-211. doi:10.1111/j.1746-1561.2002.tb06548.x
- Hansen, D., Larson, R., & Dworkin, J. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. *Journal of Research on Adolescence*, 13(1), 25-56. doi:10.1111/1532-7795.1301006
- Hunt, D. H. (2005). Fighting "senioritis." *Chronicle of Higher Education*, 49(42), A30-A31.
- Jenkins, K. (2005). Gender and civic engagement: Secondary analysis of survey data. *Working Paper 41: The Center for Information and Research on Civic Learning and Engagement*.
- Levesque, K. (2003). *Public high school graduates who participated in vocational-technical education: 1982-1998* (NCES 2003-024). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.
- McIntosh, H., Metz, E., & Youniss, J. (2005). Community services and identity formation in adolescents. In J. L. Mahoney, R. W. Larson, & J. S. Eccles (Eds.), *Organized activities as contexts of development: Extracurricular activities, after school and community programs* (pp.331-352). Mahwah, NJ: Lawrence Erlbaum.
- McMillian, M. (2003). Is no child left behind 'wise schooling' for African American male students? *High School Journal*, 87(2), 25-33. doi:10.1353/hsj.2003.0025
- Mortimer, J. T. (2003). *Working and growing up in America*. Cambridge, MA: Harvard University Press.
- National Association of Secondary School Principals (NASS). (2004). *Breaking ranks II: Strategies for leading high school reform*. Reston, VA: Author.

- National Coordinating Council for Vocational Student Organizations (NCCVSO). (1990). *Vocational student organizations: A reference guide for the national association of state directors of vocational technical education consortium*. Washington, DC: Author.
- National Educational Longitudinal Study of 1988 (NELS:88). U.S. Department of Education, National Center for Education Statistics (NCES). Retrieved 3/27/04 from <http://nces.ed.gov/surveys/nels88/questionnaires.asp>
- National Research Council and the Institute of Medicine. (2004). *Engaging schools: Fostering high school students' motivation to learn*. Committee on Increasing high School Students' Engagement and Motivation to Learn. Board on Children, Youth, and Families, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.
- National Skills Standards Act of 1994.
- National Survey of Student Engagement (NSSE). (2004). *Student engagement: Pathways to collegiate success*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- National Survey of Student Engagement (NSSE). (2005). *Exploring different dimensions of student engagement: 2005 annual survey results*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- National Survey of Student Engagement (NSSE). (2006). *Engaged learning: Fostering success for all students: Annual report 2006*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- Newmann, F. M., Secada, W. G., & Wehlage, G. G. (1995). *A guide to authentic instruction and assessment: Vision, standards and scoring*. Madison: University of Wisconsin-Madison, Wisconsin Center for Education Research.
- Pellerin, L. A. (2005). Student disengagement and the socialization styles of high schools. *Social Forces*, 84(2), 1159-1179. doi:10.1353/sof.2006.0027
- Perry, N. E., Turner, J. C., & Meyer, D. K. (2006). Classrooms as contexts for motivating learning. In P.A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (pp. 327-348). Mahwah, NJ: Lawrence Erlbaum.
- Pintrich, P. R., & Schunk, D. H. (1996). *Motivation in education*. Englewood Cliffs, NJ: Merrill.
- Plank, S. (2001). *Career and technical education in the balance: An analysis of high school persistence, academic achievement, and postsecondary destinations*. St. Paul, MN: National Research Center for Career and Technical Education.
- Plank, S., Deluca, S., & Estacion, A. (2005). *Dropping out of high school and the place of career and technical education: A survival analysis of surviving high school*. St. Paul, MN: National Research Center for Career and Technical Education.
- Schunk, D. (1989). Self-efficacy and achievement behaviors. *Educational Psychology Review*, 1, 173-208. doi:10.1007/BF01320134
- Schunk, D. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, 26, 207-232.
- Scott, J., & Sarkees-Wircenski, M. (2004). *Overview of career and technical education*. Homewood, IL: American Technical Publishers.

- Sherrod, L. R. (2006). Youth activism and civic engagement. In L. R. Sherrod (Ed.), *Youth activism: An international encyclopedia* (Vol. 1, pp. 2-10). Westport, CT: Greenwood Press.
- Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). *National assessment of vocational education: Final report to Congress*. Washington, DC: U.S. Department of Education, Office of the Under Secretary, Policy, and Program Studies Service.
- Sinclair, M. F., Christenson, S. L., & Thurlow, M. L. (2005). Promoting school completion of urban secondary youth with emotional or behavior disabilities. *Exceptional Children*, 71(4), 456-482.
- Smink, J. & Schargel, F. P. (2004). *Helping students graduate: A strategic approach to dropout prevention*. NY: Eye on Education.
- Somers, C. L., & Piliawsky, M. (2004). Drop-out prevention among urban, African American adolescents: Program evaluation and program implications. *Preventing School Failure*, 48(3), 17-22.
- Stagg, B., & Stuller, B. (1999). Will FFA be part of agricultural education in 20 years? *Agricultural Education Magazine*, 71 (5), 2-19.
- Stone, J. R. & Aliaga, O. (2003). *Career and Technical Education, Career Pathways, and Work-Based Learning: Changes in Participation 1997-1999*. National Dissemination Center for Career and Technical Education.
- Stott, K. A., & Jackson, A. P. (2005). Using service learning to achieve middle school comprehensive guidance goals. *Professional School Counseling*, 9(2), 156-159.
- Swanson, C. B. (2004). *Who Graduates? Who doesn't? A statistical report of public high school graduation, Class of 2001*. Washington, DC: The Urban Institute.
<http://www.urban.org/url.cfm?ID=410934>
- Talbert, B., Larke, A, Jr., & Jones, W. A. (1999). Using a student organization to increase participation and success of minorities in agriculture disciplines. *Peabody Journal of Education*, 74(2), 90-104. doi:10.1207/s15327930pje7402_8
- U.S. Department of Labor (1992). *Learning a living: A blueprint for high performance, The Secretary's Commission on Achieving Necessary Skills*. Washington DC: U.S. Government Printing Office.
- Wigfield, A., & Eccles, J. S. (2002). The development of competence beliefs, expectancies for success, and the achievement values from childhood through adolescence. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 92-122). Orlando, FL: Academic Press.
- Wills, J. L. (1995). *Voluntary skill standards and certification: A primer*. Washington, DC: Department of Education, Employment and Training Administration.
- Wingenbach, G. J., & Kahler, A. A. (1997). Youth leadership development: How much do we know? *Proceedings of the 24th Annual National Agricultural Education Research Meeting*, 24, 449-455.