Trae Stewart & Haiyan Bai  
University of Central Florida, USA

community service self-efficacy and summer service-learning: comparative analyses among academically talented youth

Abstract

This article presents findings from a pre-/post-comparative study of the levels of community service self-efficacy of academically-talented adolescents enrolled in a summer academic camp. Students required to complete community service activities as part of their social science-based community service-learning class are compared to students in humanities and science courses, which did not include a civic education component. Findings revealed significant overtime changes in community service self-efficacy scores for students who participated in the service-learning program as compared to those who did not complete a service-learning experience.

Service-learning, an experiential pedagogy connecting academic coursework to student volunteer activities that address a local community need, has been offered as a solution to how to continuously provide developmentally appropriate educational opportunities that challenge the critical mindedness and problem-solving abilities of schools’ arguably most astute learners. Lewis (1996) contends service-learning is particularly beneficial to gifted students because it allows them authentic opportunities to make use of their talents to solve real-world problems, for which society desperately seeks novel approaches and, better still, achievable solutions.

Systemically-grounded social issues are not so easily remedied; they require more sustained attention by dedicated problem-solvers. For this reason, it is imperative that gifted service-learners see themselves as efficacious to address community needs through civic participation. Extensive research has shown that self-efficacy is a key predictor of intentions and choice, as well as the persistence to complete a task (Bandura, 1977c; Gist, 1987; Gist & Mitchell, 1992; Sadri & Robertson, 1993). A sense of self-efficacy towards service can therefore help predict the development of student intention and willingness to be a socially responsible and actively engaged citizen.
Unfortunately, research on service-learning and self-efficacy is scant and utilizes a general self-efficacy measure which gravely reduces the reliability of these findings when trying to extrapolate them to a domain-specific sense of efficacy (e.g., community service). While a community service self-efficacy measure exists, the few studies that have explicitly examined service-learning using this scale have neglected to include K-12 academically talented students.

Given the lack of research on community service self-efficacy, service-learning on academically talented youth, and the role that service-learning can play in connecting problem-solvers to real-life problems, there is an evident need for studies that examine the relationship between academically talented learners' participation in service-learning and their community service self-efficacy. This article compares the changes in community service self-efficacy of academically talented youth enrolled in residential summer service-learning vs. non-service-learning courses.

**Review of Relevant Literature**

**Self-Efficacy & Service-Learning**


Service-learning participation has been found to increase general self-efficacy, particularly in high school students (Billig, 2000; Crosman, 1989; Furco 2003; Ikeda, 1999; Marks, 1994; McMahon, 1998; Morgan & Streb, 1999; Shaffer, 1993). Findings have been corroborated across diverse student groups; students with emotional and behavioral disorders (Frey, 2003), Catholic undergraduates (Bernacki & Jaeger, 2008), undergraduate sociology students (Kendrick, 1996), Bonners Scholars (Keen & Keen, 1998), youth enrolled in afterschool programs (Eccles & Gootman, 2002), graduate social work students (Williams, King, & Koob, 2002), and racially and socioeconomically diverse groups of middle school students (Scales, Blyth, Berkas, & Kielsmeier, 2000) have all reported increased senses of self-efficacy after participating in service-learning.

**Community Service Self-Efficacy**

Reeb (2006) explains that a student's level of self-efficacy for community service would correlate to his/her likelihood to pursue service-learning opportunities and levels of effort and perseverance in the associated activities. Yet, there has been a relative dearth of research that examines community service self-efficacy (Reeb, Katsuyama, Sammon, & Yoder, 1998). For this reason, Reeb et al. (1998) created the Community Service Self-Efficacy Scale (CSSES) to meet the needs of a psychometrically sound instrument in the research of service-learning. Since its creation, few studies have examined community service self-efficacy simultaneous to enrollment or following participation in a service-learning course.

Simons and Cleary (2006) surveyed 140 undergraduates enrolled in an educational psychology course at a private teaching university who were engaged in service-learning in an elementary school, afterschool, or community-learning program.
Although one measure utilized was the GSSES, the authors offer no mention of community service self-efficacy except when discussing findings among all the five psychosocial measures in general.

Stewart (2008) used psychosocial student development theory to frame 119 first-year undergraduate honors students' completion of service-learning hours in underserved schools. Paired samples t-tests showed that student community service self-efficacy was significantly increased after taking the service-learning course. Gender, number of previously completed non-required service hours, and religious activity were significantly correlated to the measures. Due to the lack of a control group, the results could not be attributed causally to service-learning participation.

Service-Learning and Academically Talented Learners

While there have been several position papers in support of service opportunities for gifted and talented youth (e.g., Bernal, 2003; Higgins & Boone, 2003; Karnes & Chauvin, 1986; Lewis, 1996), limited empirical research exists. Key findings from the available studies on service-learning and academically talented learners are available below.

- Terry (2000) found service-learning to be a useful methodology to develop leadership skills in gifted children.
- Delisle & Galbraith (2002) and Sayler (1997) found that service-learning methods help to stimulate the emotional and social needs of gifted children.
- Webster and Worrell's (2008) examination of participation rates in, and attitudes toward, service in community settings in a sample of 936 academically talented adolescents indicated that about 50% of the participants participated in both classroom-sponsored and organization-sponsored service activities, with female students reporting higher rates than male students. Socioeconomic status was hypothesized to be a strong predictor of service involvement.
- Webster, Stewart, and Bai (in press) found that academically talented students enrolled in a summer service-learning course reported significantly lower social dominance orientations than their non-service-learning peers after three weeks.
- Stewart (2009) aimed to determine if 119 first-year undergraduate honors students experienced significant changes in their social dominance orientation after completing required service-learning projects in Title 1 elementary schools. Paired-samples t-tests and ANOVA found no significant changes between the pre- and post-social dominance orientation means in general and between gender and ethnic groups.
- Terry (2003) examined gifted adolescents' participation in a service-learning project. Using a case study design, the author identified several themes relevant to program success: instructional methodology, student development, attitudes, empowerment, commitment, and effects of celebration.
- Terry and Bohnenberger (2003) concluded that service-learning can infuse the qualities of “caring” in gifted service-learners.
- Wade and Putnam (1995) concluded that gifted students' interest and involvement are decreased by participation in less challenging leadership activities.
- Lee, Olszewski-Kubilius, Donahue, and Weimholt (2008, 2007) found that 230 gifted students enrolled in a three-week residential leadership program reported that the coursework combined with
hands-on experiences enhanced their awareness of civic issues, increased their motivation to engage in social issues in their communities, allowed them to gain a new understanding and respect for diversity, and enhanced civic responsibility after their participation. Significant differences were not found for civic behaviors and leadership skills, however.

Research Questions

The current study aimed to address the aforementioned limitations by comparing the overtime changes in community service self-efficacy of academically talented youth enrolled in a residential summer service-learning and non-service-learning courses. Two research questions guided the study:

1. Are there significant changes between pretest and posttest community service self-efficacy mean scores within service-learning and non-service-learning courses?
2. Are there any significant differences of the changes in the community service self-efficacy scores between service-learning and non-service-learning students?

Methods

Design & Context of the Study

Given that public schools have been notably unresponsive to the cognitive, affective, and social developmental needs of students with advanced capabilities (Cline & Schwartz, 1998), enrichment programs targeting the gifted and talented have been increasingly offered by nonprofit organizations and foundations during spring and summer breaks. Gifted and talented students are invited to attend a summer camps where they attend classes for approximately seven hours a day and have structured residential extracurricular activities in the afternoons and weekends.

A pretest-posttest comparison group research design was employed with academically-talented adolescents enrolled in a summer academic camp to determine the effectiveness of the community service-learning activities through testing the differences of the overtime changes in students’ confidence in making significant contribution to community through service between the treatment group and the comparison group and explore the overtime changes within each groups. Students in the social science service-learning (SERV) class was selected as the treatment group, and Etymology and Cognitive Psychology (NONSERV) classes were randomly selected from all other non-service-learning classes. All of the students had similar characteristics and they attended the same activities in the summer camp except the class in which they enrolled.

Participants

Participants consisted of 59 adolescents enrolled in three-week intensive academic courses at a residential summer program for academically-talented youth. Participants came from the three aforementioned classes: Service-Learning (n = 30; 50.8%), Neuroscience (n = 17; 28.8%), and Etymology (n = 12; 20.4%). Females (n = 38; 64.6%) were represented more than males (n = 21; 35.4%). Students reported an average age of 14.22 years, ranging from 12 to 16 years.

Students who self-identified ethnically as Asian/Asian-American (n = 28, 47.5%) made up the largest single ethnic group. Caucasians/Whites was the second most
represented group (n = 19, 32.2%). All other ethnic groups were less than 10% of the sample (e.g., Black/African Americans = 6.8%; Latino/Hispanic/Chicano = 1.7%; Sub-Continent Indian = 5.1%; Biracial/Multiracial = 5.1%; Other = 1.7%). Table 1 summarizes these demographics.

Instrument and Procedures

The Community Service Self-Efficacy Scale (CSSES; Reeb, Katsuyama, Sammon, & Yoder, 1998) consists of 10 items that assess student confidence in making significant contribution to community through service. CSSES questions are rated on a 10-point range (1 = Quite Uncertain, 10 = Certain). High scores show high community service self-efficacy. Exploratory and confirmatory factor analytic procedures reveal one-factor solution, consistent with unidimensionality, and coefficient alphas above .90 (Reeb et al., 1998).

Table 1: Participant Demographics by Course, Gender, and Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>Service-Learning</th>
<th>Etymology</th>
<th>Neuroscience</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n*</td>
<td>30 (50.8%)</td>
<td>12 (20.4%)</td>
<td>17 (28.8%)</td>
<td>59 (100%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9 (30.0%)</td>
<td>4 (33.3%)</td>
<td>8 (47.1%)</td>
<td>21 (35.6%)</td>
</tr>
<tr>
<td>Female</td>
<td>21 (70.0%)</td>
<td>8 (66.7%)</td>
<td>9 (52.9%)</td>
<td>38 (64.4%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Asian-American</td>
<td>12 (40.0%)</td>
<td>8 (66.7%)</td>
<td>8 (47.1%)</td>
<td>28 (47.5%)</td>
</tr>
<tr>
<td>Caucasians/White</td>
<td>10 (33.3%)</td>
<td>1 (8.3%)</td>
<td>8 (47.1%)</td>
<td>19 (32.2%)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>3 (10.0%)</td>
<td>1 (8.3%)</td>
<td>-</td>
<td>4 (6.8%)</td>
</tr>
<tr>
<td>Latino/Hispanic/Chicano</td>
<td>1 (3.3%)</td>
<td>-</td>
<td>-</td>
<td>1 (1.7%)</td>
</tr>
<tr>
<td>Sub-Continent Indian</td>
<td>3 (10.0%)</td>
<td>-</td>
<td>-</td>
<td>3 (5.1%)</td>
</tr>
<tr>
<td>Biracial/Multiracial</td>
<td>-</td>
<td>2 (16.7%)</td>
<td>1 (5.9%)</td>
<td>3 (5.1%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (3.3%)</td>
<td>-</td>
<td>-</td>
<td>1 (1.7%)</td>
</tr>
</tbody>
</table>

Note. * Average age = 14.22 years, ranging from 12 to 16 years.
meetings of their three-week intense classes. Surveys were distributed and collected by instructors. Results were not connected to the instructor evaluations of students or student evaluations of instructional teams.

Data Analysis

Descriptive statistics were used to describe the demographic data. Paired-sample t-tests were conducted for the preliminary testing of the significance of pre- and post-survey aggregate means to explore the answer for research question one. Considering the study’s small sample size (n=59), the modern statistical analysis technique "bootstrap" was employed to cross validate the conventional paired sample t-tests so as to provide more valid and accurate statistical inferences. The bootstrap method allows methodologists to construct empirical sampling distributions to solve for the uncertainty of small sample distributions (Bai & Pan, 2008; Efron & Tibshirani, 1986). Bootstrap procedures were also conducted to test interaction effects between demographic variables before we selected to use t-test. Finding no significant factor effects, both conventional and non-parametric bootstrap t-tests were conducted on the service-learning (SERV) and non-service-learning (NONSEV) group. The significance of the over time changes within each group were further confirmed.

To explore the differences in the student community service self-efficacy between the SERV group and NONSERV group, we first compared both the pretest and posttest scores between the two groups. Secondly, we tested the group differences on the over time changes in the community service self-efficacy scores through both conventional independent sample t-test and the bootstrap nonparametric t-test. The comparison on the change scores enabled us to control the differences of the pretest scores to confirm the differences between the two groups after the treatment period.

Results

Question #1

Both groups had an increase in their community service self-efficacy after attending the summer camp with the service-learners reporting a larger increase than the non-service-learners. The SERV group scored 81.17 on the pretest and 90.70 on the posttest, an increase of 9.53 points. NONSERV students had a community service self-efficacy pretest mean score of 77.17 and 78.62 on the posttest, resulting in an increase of 1.45 points. Traditional paired sample t-test results revealed that the posttest scores were significantly higher than the pretest scores for SERV students (t = -5.86, p < .001). No significant changes were found between the posttest and pretest scores for the NONSERV group (t = -.80, p = .431) (Table 2).

Results from the small samples were verified through bootstrap analyses. Non-parametric bootstrap results with 200, 250, 500, and 1000 bootstrap replications (see Table 2) echoed the conventional t-tests, revealing statistically significant differences in the overtime changes for the SERV group (p < .001), and the over time changes in the NONSERV group (p = .42) remained statistically insignificant (see Table 3).

Question #2

 Significant differences in the overtime changes between the two groups was tested by first computing the differences between posttest scores and pretest scores for each group; then the traditional independent sample t-tests and bootstrap non-parametric

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Table 2: Paired Samples Means and Significances

<table>
<thead>
<tr>
<th>Class</th>
<th>n</th>
<th>Pre-score(^a)</th>
<th>Post-score(^b)</th>
<th>Paired Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>SERV</td>
<td>30</td>
<td>81.17</td>
<td>14.20</td>
<td>90.70</td>
</tr>
<tr>
<td>NONSERV</td>
<td>29</td>
<td>77.17</td>
<td>11.00</td>
<td>78.62</td>
</tr>
</tbody>
</table>

Note. *p < .001, 2-tailed

Table 3: Bootstrap Results for Pretest and Posttest Mean Differences within Groups

<table>
<thead>
<tr>
<th>Class</th>
<th>Bootstrap replications</th>
<th>Bootstrap Mean Diff</th>
<th>Bootstrap SD</th>
<th>Bootstrap SE</th>
<th>Non-Parametric Bootstrap p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERV</td>
<td>250</td>
<td>9.51</td>
<td>1.59</td>
<td>.10</td>
<td>.001*</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>9.58</td>
<td>1.52</td>
<td>.07</td>
<td>.001*</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>9.65</td>
<td>1.62</td>
<td>.05</td>
<td>.001*</td>
</tr>
<tr>
<td>NONSERV</td>
<td>250</td>
<td>1.45</td>
<td>1.82</td>
<td>.11</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>500</td>
<td>1.40</td>
<td>1.83</td>
<td>.08</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>1.36</td>
<td>1.89</td>
<td>.06</td>
<td>.47</td>
</tr>
</tbody>
</table>

Note. *p < .001, 2-tailed

Table 4: Independent Sample t-test Results and the Bootstrap Non-parametric t-test Results

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Mean Difference (a-b)</th>
<th>SE</th>
<th>df</th>
<th>t</th>
<th>p-value</th>
<th>Bootstrap p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERV* vs NONSERV*</td>
<td>Pretest</td>
<td>3.99</td>
<td>3.32</td>
<td>57</td>
<td>.233</td>
<td>.351</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>12.08</td>
<td>3.40</td>
<td>57</td>
<td>.001*</td>
<td>.001*</td>
</tr>
</tbody>
</table>

Note. *p < .005, 2-tailed

Table 5: Bootstrap Results and Pairwise Comparison Results of t-test controlling for Pretest scores

<table>
<thead>
<tr>
<th>Contrast</th>
<th>Mean Difference (a-b)</th>
<th>SE</th>
<th>df</th>
<th>t</th>
<th>p-value</th>
<th>Bootstrap p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERV* vs NONSERV*</td>
<td></td>
<td>8.09</td>
<td>2.43</td>
<td>57</td>
<td>.002*</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

Note. *p < .005, 2-tailed
t-tests were conducted (see Table 4). The traditional independent sample t-tests revealed significant differences between the SERV group and the NONSERV group on the over time change scores ($t = 3.33, p = .002$). The bootstrap non-parametric t-tests cross-validated the t-test results that the over-time changes between the two groups were significant (bootstrap $p < .001$) (see Table 5). The SERV group reported a CSSE score 8.9 points higher than their NONSERV peers.

**Discussion**

This study examined the impact that participation in a three-week service-learning course would have on academically-talented students' levels of community service self-efficacy, as compared to non-service-learning peers. Analyses revealed significant group differences on student community service self-efficacy after only three weeks. With the use of the comparison group, results suggest that the service-learning course can increase academically-talented students' community service self-efficacy.

Even though we found that the students attending the service-learning class had higher initial scores in community service self-efficacy than the students who did not take the service-learning class, results revealed that the differences were not statistically significant; however, we found evident significant differences between the posttest scores discovered by both traditional and modern statistical methods. Comparing within group differences also suggested the same conclusion. We found the posttest scores in community service self-efficacy significantly increased in the service-learning group from the pretest scores, but their non-service-learning peers only had a slight increase in their posttest scores after the summer camp which was not statistically significant. Assuming that the participants for the treatment and comparison groups shared the same basic characteristics, varying only by the course in which they were enrolled, results strongly suggest the positive effects of the service-learning course as a treatment on improving student community service self-efficacy.

SERV students' more significant increase in CSSE was not surprising. However, the results cannot be tied causally to the service-learning treatment itself. By sampling from the comparison group with students with the same characteristics, using more accurate outcome measures, and cross-validating analytic procedures does add to the literature about the potential of service-learning to build one's sense of an ability to make a difference, particularly through volunteering. These findings are additionally important because they show that students that self-select into service-learning classes are not necessary limited by an incoming score ceiling effect, as evidenced by controlling for pre-test scores. Whereas previous studies have argued this possibility (Reeb et al., 1998), assumptions of this effect might have been limited to the service-learning variable, but discounted the role that age and developmental period might play.

Lastly, previous research examining the effects of service-learning on high school students' civic engagement and associated elements of quality (Billig, Root, & Jesse, 2005) found that service-learning activities between one-to-two months and a semester in duration would result in the highest academic and civic impacts, respectively. This study's findings suggest that service-learning might more quickly impact psychosocial variables. The service-learning context studied here required approximately
20 hours of direct service. However, any time spent in the community (e.g., community mapping, using public transportation) also could impact a student's development of a community sense of self-efficacy.

Limitations and Future Research

Several limitations were present in this study. First, the study's analyses are based on small samples. The use of bootstrap can significantly reduce the problems that the small sample created to provide more reliable statistical inference through constructing the empirical distributions in the test for significance. Regardless, replication of the study using classes with higher enrollment would be beneficial in determining the broader impact of service-learning on community service self-efficacy in academically-talented adolescents.

Second, student participants self-selected into classes. Future studies would benefit from a random assignment of students into classes. The difficulty in this procedure should be acknowledged, however, especially for summer enrichment programs where students' families/benefactors are paying for their matriculation into particular classes after acceptance.

Finally, this study inferred its findings from statistical data over a brief period of time. Outcomes from students' participation are limited to the measures selected and analyses completed. Trying to account for individual psychologies is difficult to capture in a scale. Qualitative data as well as a longer time period for the service-learning class may help to address these and other aforementioned limitations while providing insight into how students were actually affected by their participation in the SERV course.

References


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Higgins, K., & Boone, R., 2003 Beyond the boundaries of school: Transition considerations in gifted education. *Intervention in School and Clinic, 38*, 138-144.


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**Remember Me**

Dark clouds are smouldering into red  
The torn fields of France  
Mangled bodies lie draped in mud  
I scream into the mist but nothing replies  
Only a bullet whizzing towards me  
Now I am the mangled body draped in mud.  
Remember me ---

*Bonnie Breeze*  
Oakwood Technology College