UNDERSTANDING THE IMPACT OF A SUMMER SERVICE-LEARNING PROGRAM ON THE SOCIAL DOMINANCE ORIENTATION OF GIFTED ADOLESCENTS

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Abstract: *Using bootstrap methodology, this article presents findings from a pre-/post-comparative study that investigated the levels of social dominance in academically-talented adolescents enrolled in a summer academic camp. Students completed community service activities as part of their social science-based community service-learning course. These students were then compared to students in humanities and science courses who did not complete the civic education component. Findings suggested that a statistically significant difference existed in the social dominance orientation (SDO) between the students who participated in service-learning and the students who did not.*

Keywords: *Gifted; academically-talented adolescents; service-learning; social dominance*

I. Introduction

Schools have faced substantial hurdles in identifying and educating gifted students who are academically talented and who exhibit high levels of academic achievement (Gallagher, 2003). As schools have been subjected to sanctions based on students' performance on high-stakes standardized tests, the unique needs of gifted students who showcase high levels of self-motivation, above average scores on norm-referenced assessments, and who generally make good grades have been increasingly ignored (Colangelo & Davis, 2003). Consequently, gifted and talented students, who exhibit the traits of an ideal student, may become disenchanted with learning as a result of their unique social and emotional development being neglected (Silverman, 1993; Torrance & Safter, 1999).

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High levels of cognitive development may impact the social and affective development of gifted students from all cultural backgrounds. Educational milieus appear to reflect a larger anti-intellectual social culture (Colangelo & Davis, 2003) that tends to frame giftedness as an abnormality; this perceived abnormality might lead sensitive youth to be ashamed of their talent. These youth may experience difficulties in finding compatible friends, which can result in pressure to underachieve academically in order to seem "normal" (Renzulli, 2003; Rimm, 2002, 2003; Schultz & Delisle, 2003). A fear of social alienation within schools parallels the societal exclusion of youth from participating in adult-centered civic activities. Students who are denied the opportunities to receive positive reinforcement associated with these types of activities may become insensitive to the immediate problems affecting American society (Barber, 1992).

A healthy identity is developed by opportunities to engage in experiences that increase self-confidence, self-reliance, and self-understanding. Students must explore and demonstrate their abilities, receive supportive feedback, and earn reinforcement for their actions (DiCaprio, 1983; Gross, 1991; Harrington & Schine, 1989; Mitchell, 1986). Gifted and talented students need conceptual frameworks to organize and develop their skills in order to have a positive effect on society. Moreover, youth need the opportunity to participate in idealistic and energetic processes essential to strengthening participatory democracy. As a result, gifted and talented youth endure additional and distinct barriers to achieving these developmental milestones; they require developmentally-appropriate educational programming.

The aim of this study was to use bootstrap statistical analyses to present findings from a pre-/post-comparative study of the levels of social dominance orientation in academically-talented adolescents enrolled in a summer enrichment program. Students were required to complete community service activities as part of their social science-based community service-learning class; these students were then compared to students in humanities and the science courses who did not complete a civic education component. Findings are discussed in light of previous literature, including additional research opportunities and limitations present in the current study.

II. Literature Review

Sociological Construct of Social Dominance

Social dominance has been defined as a hierarchical social structure between groups of people. The "top" group, designated because of its ownership and control of the capital most valued by the host culture, assumes a dominant status to subordinate, lower groups. The basic premise of social dominance rests on three tenets: (a) group hierarchies are established to minimize group conflict; (b) ideologies within groups reinforce inequalities; and, (c) ideologies are accepted if they are seemingly true and believable (Sidanius & Pratto, 1999). Once these ideologies become self-truths in a society, it becomes easier for people to reinforce stereotypes and behaviors in regard to the group differences present in everyday life (Lakoff, 2002). As a result of socialized behaviors and attitudes, individuals from one group exert power, privilege, and discrimination against those who they perceive as being of a lower status than themselves.

The individual members of groups that are higher in the social hierarchy (e.g., men vs. women) tend to have a higher Social Dominance Orientation (SDO; Sidanius & Pratto, 1999). Early research has linked SDO to a desire for interpersonal dominance (Pratto, Sidanius, Stallworth, & Malle, 1994); these findings have suggested that the two constructs are independent (Pratto et al., 1994) – thus, indicating that "SDO specifically concerns group-based dominance rather than general or individual equality" (Pratto, 1999, p. 209). However, recent findings have suggested that SDO is related to "interpersonal dominance," "empathy," and "immorality" (Altemeyer, 1998).

Altemeyer (1998) suggested that the desire and use of power was moderately related to SDO. Individuals with higher levels of SDO have a tendency to feel superior and appear more dominant than individuals with lower levels of SDO (Lippa & Arad, 1999). Further, people with higher levels of SDO are more likely to desire social status and greater economic wealth (Pratto, Stallworth, Sidanius, & Siers, 1997; Sidanius & Pratto, 1999). In addition, people with higher levels of SDO are considered to be tough-minded, less concerned with others, show less warmth toward others, and feel less sympathetic than people with lower levels of SDO (Duckitt, 2001; Heaven & Bucci, 2001; Lippa & Arad, 1999; Pratto et al., 1994). Also, it has been demonstrated that the higher people score on SDO, the higher they score on Machiavellianism ($r =$ .54) and psychoticism, and the lower that they tend to score on morality (Altemeyer, 1998; Heaven & Bucci, 2001).

Individuals with high levels of SDO can be observed "expressing the opposing motivational goals of superiority, dominance, or power over others versus egalitarian and altruistic social concern for others" (Duckitt, 2001, p. 50). In support of this claim, researchers have found that SDO is positively related to Schwartz's (1992) self-enhancement value types (i.e., hierarchy of power) and negatively related to self-transcendence value types (i.e., egalitarianism, or social concern; Duriez & van Hiel, 2002). Also, SDO correlates with a set of sociopolitical attitudes that involves favoring what is immediately beneficial to the self, regardless of fairness, or morality (Saucier, 2000). Finally, people with high levels of SDO tend to hold a world-view that is more competitive and marked by a struggle for power, whereas people with low levels of SDO tend to hold a world-view that involves valuing others and cooperation (Duckitt, 2001).

Social Dominance and Gifted Education

A few studies have begun to explore the correlation between behavior, attitude, and academic performance related to social dominance and gifted education (Cross, 2003; Cross & Cross, 2005). Cross and Cross (2005) contend that the social milieus of United States (U.S.) educational system have created a formula for hierarchical groups among young students. The social milieus of the U.S. education system has placed an increased emphasis on the overuse of IQ scores and standardized assessments. These IQ scores and standardized assessments, which are suppose to represent unbiased measurements, often have reflected the underrepresentation of minority youth in gifted education.

The creation of subordinate and dominant groups creates a palette of educational biases among youth and their peers. The classification of students, who are labeled as high achievers, self-disciplined, and competitively motivated, unlike their peers, has created a

system of students who believe they are better than others. By creating this separate system of achievers, the disadvantaged are kept in their place and presumed to be educationally inept.

Empirical work with academically talented youth has revealed that they share a number of common characteristics, such as high motivation and self-esteem, high levels of creativity, and high levels of task commitment (Renzulli, 1978). Among youth and adolescents, social dominance has been associated with indices consistent with social competence (Bost et al., 1998).

Among adolescents, researchers have found that high SDO is related to the maintenance of high self-esteem and the intolerance for others. Studies also have indicated that these youth display group intergroup dominance among themselves and their peers (Ogbu, 1987, 1988; Phinney, Chavira & Williamson, 1992). The central ideologies and beliefs of SDO are commonalities found among most gifted children. Pro-social behaviors and coercive strategies are personality traits that closely relate to dominance and leadership – including, confidence, initiative, and extraversion. The more conservative mindset found among high SDO students has suggested that their willingness to help others is not necessarily an intrinsic value, but rather a characteristic associated with power and control (Pratto et. al., 1999).

Service-Learning and Us-Them Dichotomies

When combined with an educational component and organized to provide concrete opportunities for youth to acquire knowledge and skills and to make a positive contribution, community-based service becomes a method of learning, or service-learning (Alliance for Service-Learning in Education Reform, 1995). In its most basic conceptualization, service-learning blends academic content with meaningful service in a community, and is expected to change the behaviors and attitudes of the learner and the recipient (Bhaerman, 2003). Service-learning tasks are complemented with structured opportunities for the learner to engage in self-reflection, self-discovery, and the acquisition and comprehension of values, skills, and knowledge content (Bhaerman, 2003).

Service-learning activities typically manifest within communities, whether formal or non-formal settings. An unfortunate reality is that the distinction between those in need of assistance and those who provide the assistance are drawn along socioeconomic, age, ethnic, and gender lines (Dunlap, 1998, 2000). After all, the individuals that possess the cultural, linguistic, human, and social capital are often, but not always, in the positions to address a need most quickly. For this reason, social dominance is particularly relevant when discussing service-learning, because of the structure, setting, and context of many service-learning activities. Students are regularly placed in situations that highlight disparities among race, class, gender, and social status. As noted by Fitch (1991) and Dunlap (2000), service-learning activities have been known to reinforce stereotypes among participants. They noted that after service-learning projects, students reported negative feelings and attitudes about the communities and the people with whom they were working. At their worst, such experiences reinforce *us-them* social hierarchies by cementing service providers as "haves" and recipients as "have-nots."

This dichotomy patronizingly ignores the agency of the service recipient and encourages condescending feelings of pity by volunteers – a relationship that maintains dependency via self-aggrandizing power relationships (Strain, 2006). Despite this potentially negative outcome, practitioners and researchers alike have noted that with a balanced agenda of student and community voice, agency and student reciprocity, and reflection, these issues can be critically addressed to help students move beyond the have and have-not mentality (Vang, 2003; Weah, Simmons, & McClellan, 2000).

Many benefits to service-learning, beyond the us-them dichotomies, exist in regard to the reduction of stereotypes and the facilitation of cultural and racial understanding. Service-learning is purported to have a transforming effect on student's perspectives by providing students with the opportunity to interact with people and to enter into situations that allow students to test their predisposition towards others (Eyler & Giles, 1999). Students who engage in service-learning show improvements in racial tolerance and understanding (Barber, et al., 1997; Myers-Lipton, 1996; Rhodes, 1997; Vogelgesang & Astin, 2000), have deficit notions and stereotypical views of others challenged (Boyle-Baise & Kilbane, 2000; Greene & Diehm, 1995; Rauner, 1995; Rhodes, 1997), and increase their knowledge of, sensitivity to, and respect for diversity (Delve, Mintz, & Stewart, 1987; Driscoll, Holland, Gelman & Kerrigan, 1996; Grady, 1998; Greene, 1996; Hones, 1997; Jordan, 1994). Further, studies have shown that students often increase their awareness of inequitable physical environments and resources available to different socioeconomic status (SES) groups (Rauner, 1995), increase their concern regarding multicultural and race-related issues (Dunlap, 1998), and increase their empathy and open-mindedness for others (Eyler, Giles, & Braxton, 1997; Potthoff, Dinsmore, Eifler, Stirtz, Walsh, & Ziebarth, 2000).

Others, however, have found that engagement in service-learning might subvert attempts to reduce stereotypes and facilitate cultural and racial understanding through concretization of previously held negative stereotypes, specifically regarding SES and ethnicity (Grady, 1998) as a reaction to internal struggles with guilt over the realizations of privilege (Dunlap, 1998). For example, Fitch (1991) and Dunlap (2000) found that service-learning experiences reinforced students' negative beliefs about blacks and poverty, race, and class. These findings are unsurprising given that service-learning often takes place in communities of color, while the majority of service providers are white (Dunlap, 1998; Engberg, 2004; Harkavy & Donovan, 2000; Phillpsen, 2003; Rosner-Salazar, 2003).

Social Dominance & Service-Learning with Academically-Talented Populations

Research has suggested that gifted adolescents tend to show higher rates of performance, creativity, artistic abilities, and/or leadership than peers of the same age or environment (Cross, Coleman & Terhaar-Yonkers, 1991; Horowitz, 1987; Webb, Meckstroth & Tolan, 1982). These youth typically display higher rates of self-esteem, self-worth, and self-determination (Buescher, 1985; Coleman & Cross, 2001; Janos, Fung & Robonson, 1985; Torres, 2003). Furthermore, gifted adolescents are known to

have more positive feelings about themselves and display higher degrees of personal freedom (Albard, 1997, 2002; Lehmen & Erwins, 1981; Maddux, Schieber & Bass, 1982; Parker & Stumpf, 1995).

There are, however, negative outcomes associated with the elevated confidence levels of students. Most notable are gifted students' tendency toward egocentrism and unhealthy attitudes toward competition (Parker & Stumpf, 1995, 1998); although, this outcome is not surprising since academically-talented youth tend to constantly receive overt messages of superiority from others. For example, students enrolled in honors and/or gifted and talented programs often are referred to as the schools' "best and brightest," "jewels," and "cream of the crop." High-achieving students often receive instruction in separate classrooms, have an abundant of supplies and materials, and receive instruction from more highly trained and experienced teachers. Low student enrollment in these gifted and talented programs provides further evidence of students' *uniqueness* related to their giftedness.

Students who exhibit giftedness often become impatient with their less-academic peers and tend to gravitate toward other academically-talented youth or adults. They can become isolated within the small groups that accept them, and in which they can maintain top status and avoid identity crises. Privileged individuals are often sheltered within their relative cultural comfort zones and have little access and opportunity to interact with individuals who are different from them. For academically-talented students, their social and affect development does not often parallel their high levels of cognition, which can result in isolation and a "social tunnel vision."

There is limited research that has examined the effects of service-learning on gifted and talented students. Service-learning has been associated with students taking college preparatory classes in high schools (RMC Research, 2003), cognitive gains (Billig & Klute, 2003; Klute & Billig, 2002), and an experiential approach to learning (Pleasants, Stephens, Selph & Pfeiffer, 2004). Lewis (1996) contended that service-learning is particularly beneficial to gifted students, because it allows these students to use their talents to contribute to the needs of society by addressing real-world problems. Terry (2000) found service-learning to be a useful methodology to develop leadership skills in gifted children, while Delisle and Galbraith (2002) and Sayler (1997) found that service-learning helped to stimulate the emotional and social needs of gifted children. 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), however, there is limited empirical research on the topic. Available studies (e.g., Keen & Howard, 2002; Matthews & Menna, 2003; Terry, 2000, 2003) are limited by small samples, less rigorous statistical analyses, and case study methodologies.

III. Context of the Study: Talent Search & Summer Enrichment Programs

Public schools have been notably unresponsive to the cognitive, affective, and social developmental needs of students with advanced capabilities (Cline & Schwartz, 1998). As a result, enrichment programs targeting the gifted and talented students have been

increasingly offered by nonprofit organizations and foundations during the spring and summer breaks. Eligible students are often identified through a national Talent Search program. The most notable programs are the Center for Talent Development (CTD) at Northwestern University, the Center for Talented Youth (CTY) at Johns Hopkins University, and the Talent Identification Program (TIP) at Duke University. Eligible students are invited to attend summer camps where they attend classes for approximately seven hours a day and have structured residential extracurricular activities during the afternoons and weekends. At each site, there can be upwards of 20 different courses offered simultaneously. Some courses are fast-paced high school equivalents in which students can earn credit (e.g., biology, chemistry, individually paced math sequence), while most other courses are for enrichment purposes (e.g., art history, ethics, Shakespeare, logic). This study included three different summer enrichment classes (*Etymology, Cognitive Psychology,* and *Service-Learning*).

Etymology

In the etymology humanity course, students were presented with how the Latin and ancient Greek cultures maintained a vibrant and dynamic presence in the ongoing development of the English language. Equipped with a basic knowledge of Latin and Greek prefixes, bases, and suffixes, students explored the evolution of language, including changes to word meanings, the relation of language to society, and the revival of ancient words in medical and other technical lexicons. Students also used literature to chart the development of modern English from its Indo-European beginnings with particular attention to excerpts from, for example, *Beowulf*, Chaucer, Shakespeare, and Lewis Carroll. Through lectures, group and independent study, readings, and exercises, students increased their vocabularies and reading comprehension, and they gained a more nuanced understanding of language. Students developed the skills necessary to memorize large amounts of material quickly and built a foundation for learning classical and Romance languages.

Cognitive Psychology

In the cognitive psychology science course, students explored how humans organize and process information received from their environment via mental processes. Students examined cognitive processes such as perception, attention, learning and memory, language, and intelligence and creativity. They gained a greater understanding of cognitive psychology by exploring the progression of ideas that led to the Cognitive Revolution during the 1950s, core research methodologies within the discipline, and fundamental neurological structures involved in cognitive processes. Through observational studies, group discussions, and contemporary readings and laboratory findings, students began to perceive human beings as information processors.

Service-Learning

The service-learning social science course provided students with the opportunity to integrate academic study with meaningful community service. Students examined the structure of communities and the different factors (e.g., social, political, economic) that

affect them. Students studied service-learning as a pedagogical reaction to the essentialist accountability movement. Then they examined the primary elements of community by mapping diverse communities in their host city, debated the idea of a good/bad citizen given different community expectations/definitions, learned about adolescent psychosocial development and its connection to civic apathy, and reflected on their own metacognition and critical consciousness. Academic rigor was carried from what the students learned inside the classroom to issues outside of the classroom that directly confronted the community. Service activities included feeding the hungry at a food kitchen, volunteering at a homeless shelter, and sorting donations at a food bank. Students engaged in academic research, small group work, and facilitated reflection to help them gain a deeper understanding and make a difference in addressing the complex social issues faced by members of the community.

IV. Purpose of the Current Study

The link between high achieving adolescents and social dominant behaviors has provided evidence for the need to examine the role that service-learning might play in affecting the social dominance orientation of high-achieving adolescents. The purpose of the present study was to use bootstrap statistical analyses and pre-/post-comparative study of the levels of social dominance orientation in academically-talented adolescents enrolled in a summer service-learning program. To investigate the relationship among high achieving adolescents, social dominant behaviors, and service-learning, two research questions were posed:

1. Are there significant changes between pretest and posttest social dominance mean scores within each of the social science, humanities, and science classes?

2. Are there significant differences in the social dominance pretest scores, posttest scores, or mean score changes between the social science, humanities, and science classes?

V. Method

Participants

The participants consisted of adolescents ($N = 59$) enrolled in a 3-week academic course at a residential summer program for academically-talented youth. Participants from three different classes took part in the study: service-learning ($n = 30$; 50.8%), cognitive psychology ($n = 17$; 28.8%), and etymology ($n = 12$; 20.4%). Participant gender included females ($n = 38$; 64.6%) and males ($n = 21$; 35.4%). Participants' ages ranged from 12 to 16 years old ($M_{age} = 14.22$). The ethnic composition was mixed (Asian/Asian-American, $n = 28$, 47.5%; Caucasians/Whites, $n = 19$, 32.2%; Black/African-American = 6.8%; Latino/Hispanic/Chicano = 1.7%; Sub-Continent Indian = 5.1%; Biracial/Multiracial = 5.1%; Other = 1.7%).

Measure

The Social Dominance Orientation Scale (SDO-Scale; Pratto, Sidanius, Stallworth, & Malle, 1994) consists of 16 items that measure preference toward in-group dominance and superiority over out-groups. SDO questions are rated on a 7-point Likert scale (7 = *Extremely Positive*, 1 = *Extremely Negative*). Low scores show low social dominance. Exploratory and confirmatory factor analyses have indicated that the SDO assesses a single construct (Pratto et al., 1994). Internal consistency estimates for SDO scores were high ranging from .80 to .89 (Pratto et al., 1994). The Cronbach's alpha reliability for the current study sample was a = .89 for the pretest and α = .91 for the posttest.

Procedure & Data Analyses

The participants completed the demographic survey and SDO scale during the first and last meetings of each three-week course. Questionnaires were distributed to the students and then collected by the instructors. It is important to note, the results were not connected to the instructor evaluations of students, or the student evaluations of instructional teams.

The Statistical Program for Social Sciences (SPSS) was employed for the statistical analyses. Descriptive nonparametric statistics were used to describe the demographic data. Paired-sample *t*-tests were conducted for the preliminary testing of the significance of the pre-/post-survey aggregate means. Considering the study's small sample (n = 59), and even smaller number of participants within each sub-group, the modern statistical analysis technique bootstrap was employed alongside conventional paired samples t-tests to provide more valid and accurate results. Bootstrap constructs empirical sampling distributions to solve for the uncertainty of small sample distributions (Bai & Pan, 2008; Efron & Tibshirani, 1986).

Bootstrap procedures were conducted to test interaction effects between demographic variables. Finding no significant factor effects, both conventional and non-parametric bootstrap t-tests were conducted on the service-learners (SERV) and non-service-learning (NONSERV) groups. The Statistical Analysis System v.9.1 (SAS, 2005) was used to conduct the bootstrap analysis; bootstrap replications of 250, 500, and 1000 were performed. For each set, the pretest and posttest scores were then estimated. Finally, to differentiate the pretest differences contributing to the treatment effect, the bootstrap procedure used repeated measure analyses to control for the differences of the pretest scores.

VI. Results

Social dominance pretest and posttest means were calculated for each class (see Table 1). A decrease in the social dominance score is ideal as it denotes a reduction in an individual's feelings of dominance. The results indicated that the mean pretest score for SERV was 34.60, while the mean pretest score for NONSERV was 45.52. The mean difference in pretest scores between the SERV and NONSERV was 10.92. Traditional pairwise comparison *t*-tests revealed a statistically significant difference (t = -3.29, p < .005) between the pretest mean scores for SERV and NONSERV (see Table 2).

Table 1: Paired Samples Means
and Significances

Class	n	Pre-score[a]		Post-score[b]		Paired Differences					
		Mean	SD	Mean	SD	Mean diff (b-a)	SD	SE	Df	T	p
SERV	30	34.60	12.64	32.27	13.46	-2.33	6.38	1.26	29	-2.00	.05*
NONSERV	29	45.52	12.63	47.00	15.40	1.48	8.53	1.58	28	.94	.36

Note. *p < .05, 2-tailed

Table 2: Independent Sample t-test Results and the Bootstrap
Non-parametric t-test Results

Contrast SERV[a] vs. NONSERV[b]	Mean Difference (a-b)	SE	df	t	p-value	Bootstrap p-value
Pretest	-10.92	3.31	57	-3.29	.002*	<.001*
Posttest	-14.73	3.76	57	-3.92	<.001**	<.001*

Note. *p < .005, **p <.001, 2-tailed

The between-group mean posttest differences increased. The mean posttest scores for SERV decreased by 2.33 points (M = 32.27), whereas the mean posttest scores for the NONSERV increased by 1.48 (M = 47.00; see Table 1). The mean difference in posttest scores between the SERV and NONSERV was 14.73. Posttest comparison *t*-tests yielded statistically significant differences between the means of the two groups (t = -3.92, p < .001; see Table 2). The *t*-tests revealed a statistically significant difference (t = -2.00, p < .05) between the pretest and posttest scores for SERV; however, there was no statistically significant difference between the pretest and posttest scores for the NONSERV (p = .36).

Bootstrap analyses were conducted to cross-validate the *t*-test results between SERV and NONSERV. The Bootstrap analysis indicated statistically significant differences in the pre-/posttest means (p = <.001) between SERV and NONSERV (see Table 2); however, no significant interaction effects were noted among gender, ethnicity, and social dominance. The bootstrap results from 250, 500, and 1000 confirmed that marginally significant mean differences between pretest and posttest scores for SERV were present across all three levels (see Table 3).

The bootstrap p-values for the 250 and 500 levels of bootstrap replication were .01 (p = .06) above the minimally accepted significant p-value of .05, while the p-value at 1000 replications was marginally significant .05. However, bootstrap analysis across all three levels revealed no significant difference (p = .40) between the pretest and posttest means for NONSERV.

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

Class	Bootstrap replications	Bootstrap Mean Diff	Bootstrap *SD*	Bootstrap *SE*	Non-Parametric Bootstrap *p*-value
SERV	250	-2.34	1.23	.08	.06
	500	-2.32	1.22	.05	.06
	1000	-2.37	1.15	.04	.05*
NONSERV	250	1.32	1.58	.10	.40
	500	1.31	1.61	.07	.41
	1000	1.29	1.55	.05	.40

Note. *p < .05, 2-tailed

To limit spurious association between service-learning and social dominance, both traditional pairwise t-test and bootstrapping were conducted between SERV and NONSERV while controlling for pretest social dominance scores (see Table 4). Results from both tests were identical, evidencing only a marginally significant chance that the presence of another variable could account for the findings ($p = .06$). However, given the study's small sample size, the statistical power may not be sufficient to test the significance via typical procedures.

Table 4: Bootstrap Results and Pairwise Comparison Results
of t-test controlling for Pretest scores

Contrast	Mean Difference (a-b)	SE	*df*	*t*	*p*-value	Bootstrap *p*-value
SERV[a] vs NONSERV[b]	-3.82	3.31	57	-1.95	.06	.06

Note. *p < .05, 2-tailed

VII. Discussion

The present study examined the impact that participation in a three-week service-learning course had on academically-talented students' levels of social-dominance orientation, as compared to their non-service-learning peers. Since previous research has suggested that service-learning is an effective treatment for the reduction of stereotypic thinking (Boyle-Baise & Kilbane, 2000; Greene & Diehm, 1995; Rauner, 1995; Rhodes, 1997), heightened awareness of diverse populations (Rauner, 1995), and the development of open-mindedness (Eyler, Giles, & Braxton, 1997; Potthoff, Dinsmore, Eifler, Stirtz, Walsh, & Ziebarth, 2000) coupled with gifted students' tendency to experience a "social tunnel vision," we posed that academically talented students' participation in a service-learning course would decrease their SDO. The results of this study suggested that there was a statistically significant difference between SDO and academically-talented students' participation in service-learning. Academically-talented students' SDO significantly decreased after taking part in the

three-week service-learning program, whereas no statistically significant difference was reported between SDO and the academically-talented students who did not participate in service-learning.

Although SDO decreased for the academically-talented students' who engaged in service-learning, what remains unclear is whether or not the decrease in students' SDO can be attributed to the service-learning or to the class itself. The course in which the service-learning was infused centered on discussions of social justice and inequity. However, effective service-learning is not distinct from the content learned in the class—that is, the class content and the service-learning are inextricably linked through reciprocal reinforcement. The reinforcement of the service-learning and class content revealed a significant impact on students' SDO after the three-week experience in service-learning. Previous research that examined the effects of service-learning on high school students' civic engagement has suggested that the highest academic and civic impacts from service-learning have occurred between one-to-two months and/or a semester of service-learning (Billig, Root, & Jesse, 2005). The findings of this study contributed to previous literature on the duration needed for service-learning to have a positive impact on students (Billig, et al., 2005), by extending the lower level parameter of time needed. The three-week service-learning program might more quickly impact the psychosocial variables for academically-talented students.

The short-term involvement in service-learning appears to have had a positive effect on gifted students' SDO; although, a lack of involvement and/or participation in service-learning appears to have had a negative effect on students' SDO (i.e., SDO increased for NONSERV). A probable explanation for the increase in SDO for NONSERV might be related to course self-selection. Students who self-selected might be the result of preferences toward in-group dominance and superiority as opposed to out-groups among academically gifted students. Students may have chosen the summer enrichment programs that highlighted the classes in which they found interesting. SERV students' significantly lower SDO at enrollment, as well as their increase in SDO over the three-week service-learning course, might be expected due to class choice and the types of students typically drawn to activities. Notwithstanding the potential preference of students with an inclination for service-learning/community service, students who participated in the service-learning and learned the associated subject-matter were significantly impacted from the short service-learning experience. Exposure to different experiences and self-refection are important components to perspective-changing regardless of past experiences, SDO level, or intelligence.

There are, however, concerns regarding the increased social dominance over the three-week period for the students who did not take part in service-learning. One objective of these enrichment programs is to gather gifted youth together so that they may broaden their social horizons, step out of their comfort zones, and have support in their inquisitiveness and creativity. Students live in same-sex residence halls, have scheduled extracurricular activities, and are introduced to a culture of acceptance and non-bullying. Although academically-talented youth show greater propensity toward diversity/difference and abstraction of non-concrete ideas and concepts, some students may suffer from strong ego drives and competitive spirits – tendencies that may potentially be exacerbated by feelings of having to maintain status among other smart

youth. Over-inflated egos might drive students to simply think they are better than others, especially those in need of assistance or who are socially marginalized.

The self-selection of enrichment classes might not have challenged particular students to expand beyond their social comfort zones. Although some students will enroll in classes that offer different activities than they would have experienced during their regular academic year, others student use enrichment opportunities to propel themselves further ahead of their peers in the subjects in which they already excel. In the latter cases, students who maintain the top status could develop a sense of superiority that fuels an us-them mentality. Parents, teachers, and program counselors might avoid appeasing high-achieving adolescents' initial choice of classes, and challenge them to expand beyond their academic and social comfort zones.

Limitations of the Study and Opportunities for Future Research

There were several limitations that future research should address. The analyses were based on a small sample. Although, rigorous analytic procedures were used to account for this limitation, a larger sample would be beneficial for determining the broader impact of service-learning on SDO among academically-talented students. In addition, the sample was over-represented by students from Asian and non-Hispanic White backgrounds. The generalizability of this study across diverse populations is limited. Worrell (2007) noted that gifted ethnic minority children often are not recruited for summer and/or after-school enrichment programs. Rather, these youth are encouraged to participate in sports, or nonacademic activities. Further attention should be directed toward the participation of ethnic minorities in service-learning.

Students' participation in service-learning was self-selected. The students who decided to participate may have already had a natural desire and/or inclination to provide service to the community. Future research should investigate the impact of service-learning on SDO via random-selection of sampling of students in service-learning. However, it should be acknowledged that it might be difficult for future research to implement students' random-selection into service-learning programs, especially for summer enrichment programs where students' families/benefactors pay for the students' matriculation into particular classes after accepted. Academically-talented students accepted into the summer enrichment program may have been motivated to perform well by attempting to please their teachers. Students would likely want to score well on multiple-choice items by hypothesis guessing, or selecting what they assume to be the correct answer.

Finally, the findings of this study were inferred from quantitative statistical data. Outcomes from students' participation are limited to the measures selected and analyses completed. Trying to account for individual psychologies is difficult to capture with a scaled instrument. Most scales do not account for thoughts behind answers making it difficult to truly interpret the meanings of certain questions. Qualitative data that examined the students' written self-reflection may have provided further insight behind the students' interpretation and thoughts about the answers selected on the scaled instrument.

VIII. Conclusion

The psychosocial phenomena of social dominance or SDO are complicated and complex elements of an individual's identity. The complex nature of social dominance is further complicated by society's disapproval of conspicuously dominant behaviors and ideologies – thus, creating a tension between an individual's true feelings and what s/he feels is acceptable to communicate. Academically-talented students may experience this conflict first hand between the personality characteristics that make them the schools' "best and brightest," "jewels," and "cream of the crop," and the selfless need and desire to work toward addressing the needs of the community. This study indicated that academically-talented students were able to reduce the us-them dichotomies through participation in short-term service-learning experiences. This service-learning experience was effective in reducing the academically talented students' social dominance orientation or SDO. High achieving students' opportunity to work across and with various populations in the community created a format for change. Perhaps the service-learning format created a chance for these academically-talented students to reflect on their perceptions and attitudes through the direct contact with individuals in the community that provided them with a space to counter and challenge stereotypical beliefs.

List of Acronyms

CTD   = Center for Talent Development

CTY   = Center for Talented Youth

NONSERV   = Non-Service-Learning

SAS   = Statistical Analysis System

SES   = Socioeconomic Status

SDO   = Social Dominance Orientation

SERV   = Service-Learners

SPSS   = Statistical Program for Social Sciences

TIP   = Talent Identification Program

U.S.   = United States

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