

Sports Participation Among Academically Gifted Adolescents: Relationship to the Multidimensional Self-Concept

Anne N. Rinn
University of Houston—Downtown

Steven R. Winger
Western Kentucky University

This study compares academically gifted students who engage in sports to academically gifted students who do not engage in sports on measures of the multidimensional self-concept. Participants include 264 gifted adolescents who had completed the 6th through 10th grade during the previous academic year. Sports participation was measured by asking participants whether or not they participated in organized sports. Multiple facets of self-concept were measured using the Self-Description Questionnaire II (Marsh, 1990). Results indicate gifted adolescents who engage in sports have higher physical abilities self-concepts than those who do not engage in sports. No grade level or gender interactions were found. Conclusions and implications are discussed.

Numerous researchers have demonstrated the physical and mental advantages of participation in sports for children, adolescents, and adults (see Doan & Scherman, 1987; Folkins & Sime, 1981; Lox, Martin, & Petruzzello, 2003), although adults are studied far more frequently than children and adolescents (Field, Diego, & Sanders, 2001). When researching children and adolescents, improved physical fitness and other health-related outcomes are often examined (e.g., Siegel, 2006), but researchers also investigate the relationships between sports participation and various psychological outcomes, including body image, levels of stress, depression, and global self-concept (Calfas & Taylor, 1994; Crews, Lochbaum, & Landers, 2004; North, McCullagh, & Tran, 1990; Stryer, Toñler, & Lapchick,

Anne N. Rinn is Assistant Professor of Psychology at University of Houston—Downtown. Steven R. Winger is an Associate Professor of Psychology at Western Kentucky University where he teaches educational psychology, sport psychology, and the psychology of motivation and emotion.

Journal for the Education of the Gifted. Vol. 31, No. 1, 2007, pp. 35–56. Copyright ©2007 Prufrock Press Inc., <http://www.prufrock.com>

1998). Researchers recognize the importance of such psychological constructs for a healthy lifestyle, and recognize the importance of regular participation in sports or other physical activities in helping to promote and/or maintain such a lifestyle.

In looking at rates of sports participation among national samples of adolescents, research suggests adolescents are regularly participating in sports. Specifically, research suggests somewhere between 54.6% (Videon, 2002) and 55.5% (McNeal, 1998) of adolescents participate in sports. Research regarding the rates of sports participation among academically gifted adolescents is very scarce, and most research is embedded within studies of extracurricular activities. For example, Olszewski-Kubilius and Lee (2004) surveyed 247 gifted adolescents regarding their participation rates in extracurricular and outside-of-school activities. Sports involvement was the most popular activity among all students, as approximately 72% of the adolescents indicated they participated in sports. Similarly, in a study of two cohorts totaling more than 1,000 gifted adolescents, Bucknavage and Worrell (2005) examined students' participation rates in nine areas of extracurricular activities, including band, academic clubs, student government, and athletics. Both males and females had the highest rates of participation in athletics. More than half of each sample of gifted adolescents participated in some form of athletics. The findings of Olszewski-Kubilius and Lee and Bucknavage and Worrell suggest gifted adolescents are engaging in sports at a rate that is at least on par with average-ability adolescents, if not higher.

In relation to sports involvement, researchers sometimes examine the relationship between sports participation and self-concept, or "a person's perceptions of him- or herself . . . formed through experience with and interpretations of one's environment" (Marsh & Shavelson, 1985, p. 107). Self-concept is multifaceted and hierarchically arranged such that one's self-perceptions in different domains contribute to an overall sense of self, or a global self-concept (Shavelson, Hubner, & Stanton, 1976). Self-concept is considered an important construct because a high self-concept is likely tied to other important constructs, such as motivation (Dai, 2001), and various educational outcomes, including academic achievement (Hansford & Hattie, 1982) and aspirations (Marsh & O'Neill, 1984; Rinn, in press). A low self-concept

may be related to depression, inactivity, and poor perceived health (Park, 2003), among other outcomes.

Relative to adolescents of other academic ability levels, less is known about the relationship between participating in sports and the multidimensional self-concepts of academically gifted adolescents. In the following review of the literature, we first explore the relationship between participating in sports and self-concept among adolescents of all ability levels; then we explore the relationship between sports participation and self-concept among academically gifted adolescents; and finally, we explore two factors that may affect that relationship, namely gender and grade level.

Sports Participation and Self-Concept Among Adolescents

Most researchers in the fields of gifted education and sports psychology now examine self-concept with a theoretical understanding that self-concept is multifaceted and hierarchically structured, as previously mentioned (Fox & Corbin, 1989; Shavelson et al., 1976). Many studies have shown that adolescents who exercise regularly have higher self-perceptions in various domains than those adolescents who do not exercise regularly. However, most research still focuses on the domains of general self-esteem and/or physical ability self-concept. For example, adolescents who exercise likely have higher general self-esteem (Delaney & Lee, 1995; Jaffee & Manzer, 1992) and a higher physical ability self-concept (Jackson & Marsh, 1986) than adolescents who do not exercise. Studies of the relationships between sports participation and other domains of self-concept among adolescents are very scarce.

We cannot say, though, that participation in sports or physical activities necessarily *causes* a higher self-concept in any given domain. Indeed, a high self-concept may affect one's persistence in a physical activity context or even one's performance in sports. Marsh, Chanal, and Sarrazin (2006) examined a reciprocal effects model of gymnastics self-concept and gymnastics skills with a sample of 376 adolescents. They found self-concepts and performances were both determinants and consequences of one another, such that Time 1

gymnastics self-concept was related to Time 2 gymnastics performance and Time 1 gymnastics performance was related to Time 1 gymnastics self-concept. It is noteworthy to remember, then, that the relationship between self-concept and performance and/or participation is likely reciprocal and not causal.

Sports Participation and Self-Concept Among Academically Gifted Adolescents

Ference (1999) examined the relationships between informal exercise, team sports, and multiple domains of self-concept in a study of 44 gifted females, 23 gifted males, 138 nongifted females, and 100 nongifted males, all of whom were in the 8th grade. For gifted females, in particular, participation in team sports was positively related to feelings of social acceptance ($r = 0.37, p < 0.05$) and athletic competence ($r = 0.60, p < 0.001$). No other significant correlations were found between measures of informal exercise and domains of self-concept or team sports and domains of self-concept for either gifted males or gifted females. However, both gifted and nongifted students experienced higher perceptions of social acceptance, athletic competence, scholastic competence, physical appearance, and global self-worth if they participated in team sports.

Gender Differences Among Adolescents

Gender differences typically exist when examining the rates of sports participation among adolescents, as well as when examining the self-concepts of adolescents. Among average-ability adolescents, differences between males and females are typically reported when considering participation in sports and/or physical activity. Most researchers indicate that adolescent males are more likely to be interested in, and involved with, sports and/or physical activities than adolescent females (e.g., Evans, Schweingruber, & Stevenson, 2002; McNeal, 1998; Worrell & Bucknavage, 2004). Gifted adolescents may also differ by gender with regard to participation rates in sports. For example, Dauber and Benbow (1990) found, among gifted chil-

dren, males were more likely to spend time engaged in sports than females. Bucknavage and Worrell (2005) reported the same findings among gifted adolescents. However, Olszewski-Kubilius and Lee (2004) did not find any gender differences in the rates of sports participation among gifted adolescents in their study.

Regarding gender differences in the self-concepts of adolescents, differences typically exist among average-ability adolescents (Meece, 2002), but that discussion is lengthy and is beyond the scope of this paper. Concerning gifted adolescents, much research has examined gender differences in the multidimensional self-concepts of gifted students. To illustrate, some studies report no gender differences with regard to the social self-concepts of gifted students (e.g., Kelly & Jordan, 1990; Pyryt & Mendaglio, 1994), and others report significant gender differences (e.g., Leroux, 1988), such that females usually have higher social self-concepts than males (Worrell, Roth, & Gabelko, 1998). Regarding academic self-concept, most researchers report no gender differences (e.g., Chan, 1988; Kelly & Jordan, 1990), but a recent meta-analysis indicated gifted males had higher academic self-concepts than gifted females (Pyryt & Richwein, 2000). Gifted males have also been found to have higher global and athletic self-concept scores than gifted females (Worrell et al., 1998). Essentially, findings regarding gender differences in the self-concepts of gifted adolescents continue to be mixed. Some researchers even argue these differences are small and lack meaning (e.g., Crain & Bracken, 1994). However, given that the current research deals with an area that is stereotypically masculine (Evans et al., 2002), gender differences in self-concept should be examined.

Grade Level Differences Among Adolescents

In addition to gender differences, there are probable grade level differences with regard to sports participation levels and self-concepts among adolescents. Physical activity levels and sports participation typically decline throughout adolescence (Fredricks et al., 2002; Kirkcaldy, Shephard, & Siefen, 2002), particularly for females (Jaffee & Manzer, 1992). In their 1991 report, the Athletic Footwear Association (as cited in Jaffee & Manzer, 1992) reported sports

participation declined considerably among 13- to 18-year-olds. However, in their study of gifted adolescents in grades 6 through 11, Bucknavage and Worrell (2005) reported no significant differences across grade levels with regard to athletic participation.

Self-concept scores also tend to decline during the early to middle adolescent years, at which point the self-concept either plateaus or increases before adulthood (Sonstroem, 1998). Further, the American Association of University Women (as cited in Jaffee & Manzer, 1992) indicates adolescent females may experience an even greater decrease in self-esteem and/or self-concept than adolescent males throughout adolescence. Research examining gifted adolescents typically indicates grade level is not significantly related to any facet of self-concept (Hoge & Renzulli, 1993; Worrell et al., 1998). Some researchers have contradicted this finding though. For example, Klein and Zehms (1996) found significant grade-level differences in a sample of gifted students, such that gifted girls' total self-concept scores significantly declined from grades 3 to 5 to 8. Again, though, these findings may be small and lack practical significance (see Crain & Bracken, 1994). However, grade level is included as an independent variable because of the relationship between grade level and sports participation and the potential relationship between grade level and self-concept.

The Current Study

The purpose of the current study is to compare academically gifted students who engage in sports to academically gifted students who do not engage in sports on measures of the multidimensional self-concept. Specifically, 11 facets of self-concept will be examined, including academic, social, physical, and general facets. Gender and grade level will also be measured as potential moderators.

Although researchers have examined the role of physical involvement on the self-concepts of students with learning disabilities (e.g., Shapiro & Ulrich, 2002), students with mental retardation (e.g., Ulrich & Collier, 1990), and students of average ability levels (e.g., Yin & Moore, 2004), the relationship between participating in sports and the multidimensional self-concepts of gifted adolescents has been given scarce attention in the research literature (FERENCE, 1999).

Therefore, this study will assist researchers in understanding the relationship between sports participation and the multidimensional self-concept among gifted adolescents, while also taking into account the adolescents' genders and grade levels. Gender and grade level will be included as independent variables because they both likely affect sports participation. Although the findings associated with the relationships between gender and grade level and self-concept are mixed, they are noteworthy in the current study given their association with sports participation. The current study is an exploratory study. Thus, no specific hypotheses were formed. Rather, we examined whether or not gender, grade level, and sports participation were related to the multidimensional self-concept.

Method

Participants

Participants were recruited from two summer programs for gifted students held at a comprehensive university in the South. These particular summer programs have been in operation for more than 20 years. The first summer program is a 2-week, largely residential program for gifted students entering the 7th, 8th, or 9th grades the following school year. To qualify for participation in this summer program, students must (a) show high interest and/or achievement in one or more content areas; (b) be eligible for services as a gifted child or have an IQ score of 125 or above; (c) score at or above the 90th percentile on the total battery, or at or above the 95th percentile on the total mathematics or language/reading section, of the most recent achievement test or have scored at the proficient or distinguished level on performance assessment measures; and (d) be nominated by a teacher, counselor, or principal. This summer program involves 6 hours of class per day, 5 days a week, for 2 weeks. Students have a variety of courses from which to choose (e.g., economics, geometry, musical history), and they enroll in four courses. Students also engage in various social activities (e.g., board games, athletic activities, a talent show) after class each day and on weekends.

The second summer camp is a 3-week residential program for gifted students entering the 8th, 9th, 10th, or 11th grades the following school year. To qualify for participation in this summer program, students must have been eligible to attend talent search summer programs (e.g., through the Duke Talent Identification Program) within the past 4 years. This summer program involves 6 hours of class and 1 hour of study hall per day, 5 days a week, for 3 weeks. The students have a variety of courses from which to choose (e.g., humanities, psychology, mathematics), and they enroll in only one course. Similar to the other summer program, the students also engage in various social activities after class each day and on weekends.

A total of 264 gifted adolescents participated in this study, out of a possible 415 adolescents who were attending the camps. Of these, 136 of the participants were male and 128 were female. The mean age of the participants was 13.6 ($SD = 1.29$), with a range from 10 to 16; 13.3% of participants had just completed 6th grade, 30.7% completed 7th grade, 26.9% completed 8th grade, 16.7% completed 9th grade, 12.1% completed 10th grade, and 0.4% did not indicate a grade level. Approximately 84% of the participants were White.

Materials

Demographic Information. Participants were given a demographic questionnaire to assess gender and age, among other information. Other data were gathered from participants' applications for summer camp participation, including ethnic background and grade level.

Participation in Sports. As part of a larger survey regarding participation in physical activities and sports participation, participants were asked, "Do you participate in organized sports (e.g., school, YMCA, church league)?" They could respond either "yes" or "no."

Self-Concept. The Self Description Questionnaire II (SDQ-II) was designed to measure the self-concepts of young adolescents and is theoretically based on the notion that self-concept is multidimensional and hierarchically structured (Marsh, 1990; Shavelson et al., 1976). The SDQ-II measures self-concept in the following areas: mathematics, verbal, physical abilities, physical appearance, same-sex

peer relations, opposite-sex peer relations, parent relations, emotional stability, honesty-trustworthiness, general academic, and general self. The SDQ-II includes 102 self-report items to which participants answer on a 6-point Likert scale with responses ranging from 1 (*false*) to 6 (*true*). High scores indicate higher levels of self-concept. Extensive support for the reliability and validity of the SDQ-II has been reported in other research (see Gilman, Laughlin, & Huebner, 1999; Plucker, Taylor, Callahan, & Tomchin, 1997). Details regarding the subscales of the SDQ-II can be found in Table 1.

Procedure

Parental consent was obtained prior to the start of the summer program. Adolescents whose parents gave consent were invited to take part in the study, but they were given the option to decline participation. Data were gathered at a single session during the first week of each summer program.

Results

One-hundred and seventy-two adolescents indicated they participate in sports (65.2%), and 92 adolescents indicated they do not participate in sports (34.8%). The means and standard deviations of each dependent variable can be seen in Table 2. A correlation matrix of all of the variables of interest, along with their coefficient alphas, can be found in Table 3. Although several of the dependent variables for this study were found to be somewhat intercorrelated, a MANOVA approach was not used because the dependent variables were not correlated beyond a moderate level.

A series of three-way factorial analyses of variance (ANOVAs) were utilized to examine differences between those gifted adolescents who participate in sports and those gifted adolescents who do not participate in sports on measures of self-concept in the following areas: mathematics, verbal, physical abilities, physical appearance, same-sex peer relations, opposite-sex peer relations, parent relations, emotional stability, honesty-trustworthiness, general academic, and general self. Specifically, we examined whether each dependent vari-

Table 1
**Information From the Normative Sample Regarding
 the Self Description Questionnaire II**

| Subscales | Subscale Description | Reliability Estimate | Range of Factor Loadings |
|-----------------------------|---|----------------------|--------------------------|
| Mathematics | Ability, enjoyment, and interest in math and reasoning. | 0.90 | 0.72–0.80 |
| Verbal | Ability, enjoyment, and interest in English and reading. | 0.86 | 0.53–0.75 |
| Physical Abilities | Skills and interest in physical activities and sports. | 0.85 | 0.67–0.78 |
| Physical Appearance | Physical attractiveness. | 0.91 | 0.68–0.76 |
| Same-Sex Peer Relations | Interactions with peers of the same sex. | 0.86 | 0.57–0.68 |
| Opposite-Sex Peer Relations | Interactions with peers of the opposite sex. | 0.90 | 0.69–0.78 |
| Parent Relations | Interactions with parents. | 0.87 | 0.68–0.77 |
| Emotional Stability | Emotional well-being and freedom from emotional dysfunction. | 0.83 | 0.57–0.66 |
| Honesty/ Trustworthiness | Truthfulness and dependability. | 0.84 | 0.61–0.71 |
| General Academic | Interests and abilities in school-work. | 0.87 | 0.48–0.64 |
| General Self | Feelings of self-worth, self-confidence, and self-satisfaction. | 0.88 | 0.49–0.64 |

Note. Marsh (1990) uses item pairs in factor analysis, such that the 8 or 10 items from each subscale of the SDQ-II are divided into 4 or 5 item pairs. For more information, see Marsh and O'Neill (1984).

Table 2
Means, Standard Deviations, and Effect Size Differences
of Variables of Interest (N = 264)

| Subscale Scores | Sports | Nonsports | Partial η^2 |
|-----------------------------|--------------------|--------------------|------------------|
| | Participants | Participants | |
| | Mean (<i>SD</i>) | Mean (<i>SD</i>) | |
| Mathematics | 4.82 (1.12) | 4.66 (1.07) | |
| Verbal | 4.79 (1.00) | 4.78 (1.04) | |
| Physical Abilities** | 4.71 (1.04) | 3.06 (1.11) | 0.32 |
| Physical Appearance* | 4.24 (1.05) | 3.91 (1.16) | 0.02 |
| Same-Sex Peer Relations** | 4.66 (0.82) | 4.45 (0.91) | 0.03 |
| Opposite-Sex Peer Relations | 4.03 (0.99) | 3.90 (0.90) | |
| Parent Relations | 4.94 (1.00) | 4.66 (1.20) | |
| Emotional Stability** | 4.04 (1.02) | 3.59 (1.09) | 0.04 |
| Honesty/ Trustworthiness | 4.96 (0.85) | 4.71 (0.83) | |
| General Academic | 5.44 (0.65) | 5.37 (0.60) | |
| General Self** | 5.25 (0.73) | 4.93 (0.92) | 0.04 |

Note. Partial η^2 is provided where there is a significant difference between those adolescents who participate in sports and those who do not.

* $p < 0.05$. ** $p < 0.01$.

able was affected by the adolescent's gender (male, female); grade level (6th, 7th, 8th, 9th, 10th); and/or sports participation status (participation, no participation).

Results of the series of factorial ANOVAs suggested no significant differences between gifted adolescents who engaged in sports and gifted adolescents who did not engage in sports on the following subscale scores: general school, parent relations, and honesty-trustworthiness. Significant findings were found for each of the following subscale scores and will be discussed separately: physical abilities,

Table 3
Correlations and Coefficient Alphas of Variables of Interest (N = 264)

| Grade | SSR | OSR | PA | PR | ES | M | GS | GSelf | HT | V | PAb |
|-------|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|------|-----|
| I | | | | | | | | | | | |
| SSR | .25** | | | | | | | | | | |
| | 0.82 ^a , | | | | | | | | | | |
| | 0.67 ^b | | | | | | | | | | |
| OSR | .49** | .776 ^a , | | | | | | | | | |
| | | 0.69 ^b | | | | | | | | | |
| PA | .43** | .34** | .93 | | | | | | | | |
| PR | .33** | .09 | .42** | .91 | | | | | | | |
| ES | .49** | .31** | .45** | .40** | .85 | | | | | | |
| M | .14* | -.04 | .15* | .23** | .18* | .92 | | | | | |
| GS | .32** | .13* | .26** | .41** | .32* | .43** | .85 | | | | |
| GSelf | .48** | .23** | .67** | .59** | .52** | .33** | .60** | .91 | | | |
| HT | .14* | -.08 | .11 | .49** | .14* | .32** | .47** | .38** | .87 | | |
| V | .22** | .23** | .12* | .16* | .07 | -.07 | .43** | .26** | .22** | .88 | |
| PAb | .34** | .19** | .41** | .25* | .33** | .13* | .20** | .36** | .17** | -.00 | .93 |

Note. SSR = Same-Sex Peer Relations subscale; OSR = Opposite-Sex Peer Relations subscale; PA = Physical Appearance subscale; PR = Parent Relations subscale; ES = Emotional Stability subscale; M = Mathematics subscale; GS = General School subscale; GSelf = General Self subscale; HT = Honesty-Trustworthiness subscale; V = Verbal subscale; PAb = Physical Abilities subscale. Coefficient alphas listed on the diagonal.
 * $p < 0.05$. ** $p < 0.01$ for ^a males and ^b females.

physical appearance, emotional stability, general self, and same-sex peer relations. These differences can be seen in detail in Table 2. In addition, significant main effects for grade level were found for the same-sex peer relations and opposite-sex peer relations subscale scores, and a significant main effect for gender was found for the verbal and emotional stability subscale scores. We encourage the reader to pay particular attention to the effect sizes provided, as these may give a greater indication of the meaningfulness of the findings than the significance levels.

Physical Abilities Subscale Scores

Regarding the physical abilities self-concept, there was a main effect for participation in sports, $F(1, 240) = 115.08, p < 0.01$, partial $\eta^2 = 0.32$. Gifted adolescents who engage in sports had higher physical abilities self-concept scores ($M = 4.72, SD = 1.04$) than gifted adolescents who do not ($M = 3.06, SD = 1.11$). The Bonferroni adjustment indicates this finding is not significant ($p > 0.004$) but remains practically significant because of the measure of effect size. No other significant main effects or interactions were found.

Physical Appearance Subscale Scores

Regarding the physical appearance self-concept, there was a main effect for participation in sports, $F(1, 237) = 4.53, p < 0.05$, partial $\eta^2 = 0.02$. Gifted adolescents who engage in sports had higher physical appearance self-concept scores ($M = 4.24, SD = 1.05$) than gifted adolescents who do not ($M = 3.91, SD = 1.16$). The Bonferroni adjustment indicates this finding is not significant ($p > 0.004$) and are not likely practically significant because of the measure of effect size. No other significant main effects or interactions were found.

Emotional Stability Subscale Scores

Regarding the emotional stability self-concept, there was a main effect for participation in sports, $F(1, 242) = 10.59, p < 0.01$, partial $\eta^2 = 0.04$. Gifted adolescents who engage in sports had higher emotional stability self-concept scores ($M = 4.05, SD = 1.02$) than gifted

adolescents who do not ($M = 3.59, SD = 1.09$). There was also a main effect for gender, $F(1, 242) = 5.65, p < 0.05$, partial $\eta^2 = 0.02$. Males had higher emotional stability self-concept scores ($M = 4.07, SD = 1.11$) than females ($M = 3.70, SD = 0.98$). The Bonferroni adjustment indicates these findings are not significant ($p > 0.004$) and are not likely practically significant because of the measures of effect size. No other significant main effects or interactions were found.

General Self Subscale Scores

Regarding the general self-concept, there was a main effect for participation in sports, $F(1, 241) = 9.51, p < 0.01$, partial $\eta^2 = 0.04$.¹ Gifted adolescents who engage in sports had higher general self-concept scores ($M = 5.25, SD = 0.73$) than gifted adolescents who do not ($M = 4.93, SD = 0.92$). The Bonferroni adjustment indicates this finding is not significant ($p > 0.004$) and are not likely practically significant because of the measure of effect size. No other significant main effects or interactions were found.

Same-Sex Peer Relations Subscale Scores

Regarding the same-sex peer relations self-concept, the assumption for homogeneity of variance was violated, as Levene's Test for Equality of Variance indicated $F(19, 240) = 3.10, p < 0.01$. Because the group sizes are unequal, the following results should be interpreted with caution. There was a main effect for participation in sports, $F(1, 240) = 7.01, p < 0.01$, partial $\eta^2 = 0.03$. Gifted adolescents who engage in sports had higher same-sex peer relations self-concept scores ($M = 4.67, SD = 0.82$) than gifted adolescents who do not ($M = 4.45, SD = 0.91$). There was also a main effect for grade level, $F(4, 240) = 3.81, p < 0.01$, partial $\eta^2 = 0.06$. A Tukey HSD post-hoc test revealed significant differences between the same-sex peer relations self-concept scores of 6th graders ($M = 4.23, SD = 0.36$) and 10th graders ($M = 5.01, SD = 0.64$) and between 7th graders ($M = 4.47, SD = 0.87$) and 10th graders ($M = 5.01, SD = 0.64$). The Bonferroni adjustment indicates these findings are not significant ($p > 0.004$) and are not likely practically significant because of the measures of effect size.

Opposite-Sex Peer Relations Subscale Scores

Regarding the opposite-sex peer relations self-concept, there was a main effect for grade level, $F(4, 238) = 8.16, p < 0.01$, partial $\eta^2 = 0.12$.¹ A Tukey HSD post-hoc test revealed significant differences between the opposite-sex peer relations self-concept scores of 6th graders and 9th graders, between 6th graders and 10th graders, between 7th graders and 9th graders, between 7th graders and 10th graders, between 8th graders and 9th graders, and between 8th graders and 10th graders. The means and standard deviations of participants' scores separated by grade level are as follows: 6th graders ($M = 3.48, SD = 0.39$), 7th graders ($M = 3.75, SD = 0.80$), 8th graders ($M = 3.95, SD = 0.96$), 9th graders ($M = 4.45, SD = 1.17$), 10th graders ($M = 4.51, SD = 0.95$). The Bonferroni adjustment indicates this finding is not significant ($p > 0.004$) and is not likely practically significant because of the measure of effect size. No other significant main effects or interactions were found.

Verbal Subscale Scores

Regarding the verbal self-concept, there was a main effect for gender, $F(1, 242) = 9.35, p < 0.01$, partial $\eta^2 = 0.04$.¹ Females had higher verbal self-concept scores ($M = 5.04, SD = 0.87$) than males ($M = 4.56, SD = 1.08$). The Bonferroni adjustment indicates this finding is not significant ($p > 0.004$) and is not likely practically significant because of the measure of effect size. No other significant main effects or interactions were found.

Discussion

The purpose of this study was to compare academically gifted adolescents who engage in sports to academically gifted students who do not engage in sports on 11 measures of the multidimensional self-concept while also examining gender and grade level as potential moderators. Results from this study indicate academically gifted adolescents who engage in sports experience higher physical abilities, physical appearance, emotional stability, general self, and same-sex

peer relations self-concepts than those who do not engage in sports. However, the Bonferroni adjustment indicates the only meaningful difference occurs for the physical abilities self-concept. Further, neither gender nor grade level moderated any of these effects, which is consistent with previous literature (e.g., Crain & Bracken, 1994; Haggar, Biddle, & Wang, 2005; Wilgenbusch & Merrell, 1999). Because the focus of this study was on sports participation and because any main effects found for gender and grade level are very small and not practically meaningful, these main effects will not be discussed here.

The findings that indicate adolescents who engage in sports have higher physical abilities self-concepts and general self-concepts than adolescents who do not engage in sports are consistent with previous research findings (FERENCE, 1999; JACKSON & MARSH, 1986). Although adolescents who already have high physical abilities and general self-concepts may be more inclined to participate in sports, participating in sports may also serve to enhance self-concepts in these domains. It is noteworthy to mention that no gender differences were found with regard to the physical abilities self-concept, which is inconsistent with most research that reports males have higher physical abilities self-concepts than females (e.g., Haggar et al., 2005; Todd, 2003).

Findings regarding the physical appearance, emotional stability, general self, and same-sex peer relations self-concepts of gifted adolescents who engaged in sports or did not engage in sports were not significant after the Bonferroni adjustment and had very little practical significance as determined by measures of effect size. Participating in sports may be somewhat associated with feeling good about your appearance, a higher perceived rate of emotional well-being, higher perceived same-sex peer relations, and higher beliefs about the self in general. Gifted adolescents may experience an enhanced self-concept in multiple domains if they participate in sports. Although we cannot say participating in sports *causes* an increase in self-concept, we can say there is a significant relationship between participating in sports and experiencing higher physical abilities self-concept, at the very least. However, much more research needs to be conducted to determine the true nature of these relationships.

Limitations and Directions for Future Research

Replicating this study with numerous samples of gifted adolescents from varying types of summer programs and/or other programs is necessary before generalization from this study can occur. Also, as the sample from the current study lacks diversity (84% of participants are White), future research should include groups of racially and ethnically diverse adolescents, as well as groups of adolescents from varying parts of the country. Further, findings from the current study may not be unique to gifted adolescents and may also apply to average-ability adolescents and others. Comparison groups of adolescents of varying ability levels would be useful to determine whether or not the relationship between sports participation and enhanced self-concept in multiple domains is exclusive to gifted adolescents.

A further limitation of this research is the reliance on a single indicator to measure sports participation. Asking participants whether or not they participate in organized sports is not illustrative of the type of sports participation (e.g., recreational league vs. varsity high school level), duration and frequency of sports participation, or motivation for sports participation. Future research should examine whether these issues play a significant role in the self-concept development of gifted adolescents in relation to sports participation. As sports participation likely decreases throughout adolescence (Fredricks et al., 2002; Kirkcaldy et al., 2002), it may be useful for educators to understand the potential role various types of team sports could play in the social and emotional development of gifted adolescents, particularly if those roles were positive. As adolescence can be a troublesome time for some gifted adolescents (Schultz & Delisle, 2003), sports participation could be an outlet that allows gifted young people the opportunity to alleviate some stress and/or form friendships. The relationships between sports participation, self-concept in multiple domains, and other constructs (e.g., academic performance, motivation, depression) should be given more attention in the gifted education literature to enhance our understanding of the academic, social, and emotional development of gifted adolescents.

References

- Bucknavage, L. B., & Worrell, F. C. (2005). A study of academically talented students' participation in extracurricular activities. *Journal of Secondary Gifted Education, 16*, 74–86.
- Calfas, K. J., & Taylor, W. C. (1994). Effects of physical activity on psychological variables in adolescents. *Pediatric Exercise Science, 6*, 406–423.
- Chan, L. K. S. (1988). The perceived competence of intellectually talented students. *Gifted Child Quarterly, 32*, 310–314.
- Crain, R. M., & Bracken, B. A. (1994). Age, race, and gender differences in child and adolescent self-concept: Evidence from a behavioral acquisition, context-dependent model. *School Psychology Review, 23*, 496–511.
- Crews, D. J., Lochbaum, M. R., & Landers, D. M. (2004). Aerobic physical activity effects on psychological well-being in low-income Hispanic children. *Perceptual and Motor Skills, 98*, 319–324.
- Dai, D. Y. (2001). A comparison of gender differences in academic self-concept and motivation between high-ability Chinese adolescents. *Journal of Secondary Gifted Education, 13*, 22–32.
- Dauber, S. L., & Benbow, C. P. (1990). Aspects of personality and peer relations of extremely talented adolescents. *Gifted Child Quarterly, 34*, 10–15.
- Delaney, W., & Lee, C. (1995). Self-esteem and sex roles among male and female high school students: Their relationship to physical activity. *Australian Psychologist, 30*(2), 84–87.
- Doan, R. E., & Scherman, A. (1987). The therapeutic effect of physical fitness on measures of personality: A literature review. *Journal of Counseling and Development, 66*, 28–36.
- Evans, M. E., Schweingruber, H., & Stevenson, H. W. (2002). Gender differences in interest and knowledge acquisition: The United States, Taiwan, and Japan. *Sex Roles, 47*, 153–167.
- Ference, R. A. (1999). The role of physical activity in the development of self-perceptions and identity in gifted adolescent females (Doctoral dissertation, University of Georgia, 1999). *Dissertation Abstracts International, 60*, 3908.

- Field, T., Diego, M., & Sanders, C. E. (2001). Exercise is positively related to adolescents' relationships and academics. *Adolescence*, 36(141), 105–110.
- Folkins, C. H., & Sime, W. E. (1981). Physical fitness training and mental health. *American Psychologist*, 36, 373–389.
- Fox, K. R., & Corbin, C. B. (1989). The physical self-perception profile: Development and preliminary validation. *Journal of Sport and Exercise Psychology*, 11, 408–430.
- Fredricks, J. A., Alfeld-Liro, C. J., Hruda, L. Z., Eccles, J. S., Patrick, H., & Ryan, A. M. (2002). A qualitative exploration of adolescents' commitment to athletics and the arts. *Journal of Adolescent Research*, 17, 68–97.
- Gilman, R., Laughlin, J. E., & Huebner, E. S. (1999). Validation of the Self-Description Questionnaire-II with an American sample. *School Psychology International*, 20, 300–307.
- Glass, G. V., & Hopkins, K. D. (1996). *Statistical methods in education and psychology* (3rd ed.). Boston: Allyn & Bacon.
- Haggar, M. S., Biddle, S. J. H., & Wang, C. K. J. (2005). Physical self-concept in adolescence: Generalizability of a multidimensional, hierarchical model across gender and grade. *Educational and Psychological Measurement*, 65, 297–322.
- Hansford, B. C., & Hattie, J. A. (1982). The relationship between self and achievement/ performance measures. *Review of Educational Research*, 52, 123–142.
- Hoge, R. D., & Renzulli, J. S. (1993). Exploring the link between giftedness and self-concept. *Review of Educational Research*, 63, 449–465.
- Jackson, S. A., & Marsh, H. W. (1986). Athletic or antisocial? The female sport experience. *Journal of Sport Psychology*, 8, 198–211.
- Jaffee, L., & Manzer, R. (1992). Girls' perspectives: Physical activity and self-esteem. *Melpomene Journal*, 11(3), 14–23.
- Kelly, K. R., & Jordan, L. K. (1990). Effects of academic achievement and gender on academic and social self-concept: A replication study. *Journal of Counseling and Development*, 69, 173–177.
- Kirkcaldy, B. D., Shephard, R. J., & Siefen, R. G. (2002). The relationship between physical activity and self-image and problem behaviour among adolescents. *Social Psychiatry and Psychiatric Epidemiology*, 37, 544–560.

- Klein, A. G., & Zehms, D. (1996). Self-concept and gifted girls: A cross sectional study of intellectually gifted females in grades 3, 5, 8. *Roeper Review*, 19, 30–35.
- Leroux, J. A. (1988). Voices from the classroom: Academic and social self-concepts of gifted adolescents. *Journal for the Education of the Gifted*, 11, 3–18.
- Lox, C. L., Martin, K. A., & Petruzzello, S. J. (2003). *The psychology of exercise: Integrating theory and practice*. Scottsdale, AZ: Holcomb Hathaway.
- Marsh, H. W. (1990). *Self Description Questionnaire (SDQ) II: Manual*. New South Wales, Australia: University of Western Sydney.
- Marsh, H. W., Chanal, J. P., & Sarrazin, P. G. (2006). Self-belief does make a difference: A reciprocal effects model of the causal ordering of physical self-concept and gymnastics performance. *Journal of Sports Sciences*, 24(1), 101–111.
- Marsh, H. W., & O'Neill, R. (1984). Self Description Questionnaire III: The construct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement*, 21, 153–174.
- Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist*, 20(3), 107–123.
- McNeal, R. B., Jr. (1998). High school extracurricular activities: Closed structures and stratifying patterns of participation. *Journal of Educational Research*, 91, 183–191.
- Meece, J. L. (2002). *Child and adolescent development for educators* (2nd ed.). Boston: McGraw Hill.
- North, T. C., McCullagh, P., & Tran, Z. V. (1990). Effect of exercise on depression. *Exercise & Sport Sciences Reviews*, 18, 379–415.
- Olszewski-Kubilius, P., & Lee, S. (2004). The role of participation in in-school and outside-of-school activities in the talent development of gifted students. *Journal of Secondary Gifted Education*, 15, 107–123.
- Park, J. (2003). Adolescent self-concept and health into adulthood. *Health Reports/ Statistics Canada*, 14(Suppl.), 41–52.
- Plucker, J. A., Taylor, J. W., V, Callahan, C. M., & Tomchin, E. M. (1997). Mirror, mirror, on the wall: Reliability and validity evidence for the Self-Description Questionnaire II with gifted

- students. *Educational and Psychological Measurement*, 57, 704–713.
- Pyryt, M. C., & Mendaglio, S. (1994). The multidimensional self-concept: A comparison of gifted and average-ability adolescents. *Journal for the Education of the Gifted*, 17, 299–305.
- Pyryt, M. C., & Richwein, M. (2000, May). *Self-concept comparisons between gifted males and females: A meta-analysis review*. Paper presented at the 5th Wallace National Research Symposium on Talent Development, Iowa City, IA.
- Rinn, A. N. (in press). Effects of programmatic selectivity on the academic achievement, academic self-concepts, and aspirations of gifted college students. *Gifted Child Quarterly*.
- Schultz, R. A., & Delisle, J. R. (2003). Gifted adolescents. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed., pp. 483–492). Boston: Allyn & Bacon.
- Shapiro, D. R., & Ulrich, D. A. (2002). Expectancies, values, and perceptions of physical competence of children with and without learning disabilities. *Adapted Physical Activity Quarterly*, 19, 318–333.
- Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research*, 46, 407–441.
- Siegel, D. (2006). The effects of physical activity on the health and well-being of youths. *Journal of Physical Education, Recreation, & Dance*, 77(1), 11.
- Sonstroem, R. J. (1998). Physical self-concept: Assessment and external validity. *Exercise and Sport Sciences Reviews*, 26, 133–164.
- Stryer, B. K., Tofler, I. R., & Lapchick, R. (1998). A developmental overview of child and youth sports in society. *Child and Adolescent Psychiatric Clinics of North America*, 7, 697–724.
- Todd, K. A. (2003). Student athletes' perceptions of self. *Adolescence*, 38(152), 659–667.
- Ulrich, D. A., & Collier, D. H. (1990). Perceived physical competence in children with mental retardation: Modification of a pictorial scale. *Adapted Physical Activity Quarterly*, 7, 338–354.
- Videon, T. M. (2002). Who plays and who benefits: Gender, interscholastic athletics, and academic outcomes. *Sociological Perspectives*, 45, 415–444.

- Wilgenbusch, T., & Merrell, K. W. (1999). Gender differences in self-concept among children and adolescents: A meta-analysis of multidimensional studies. *School Psychology Quarterly, 14*, 101–120.
- Worrell, F. C., & Bucknavage, L. B. (2004). Participation in extra-curricular activities by students attending assisted and prestige schools in Trinidad. *Caribbean Curriculum, 11*, 129–147.
- Worrell, F. C., Roth, D. A., & Gabelko, N. H. (1998). Age and gender differences in the self-concepts of academically talented students. *Journal of Secondary Gifted Education, 9*, 157–162.
- Yin, Z., & Moore, J. B. (2004). Re-examining the role of interscholastic sport participation in education. *Psychological Reports, 94*, 1447–1454.

Author Note

The authors greatly appreciate the assistance and support of Dr. Julia Link Roberts, Center for Gifted Studies, Western Kentucky University. Research for this article was supported by a Faculty Scholarship administered by Western Kentucky University. Correspondence concerning this article should be addressed to Anne N. Rinn, Ph.D., Department of Social Sciences, University of Houston—Downtown, Suite South 625, 1 Main Street, Houston, TX 77054. E-mail: RinnA@uhd.edu.

End Note

1 Levene's Test for Equality of Variance indicated the assumption for homogeneity of variance was violated (Glass & Hopkins, 1996). However, the Welch *F* procedure still indicates a main effect.