

SPORT EDUCATION

Adolescent Sports Participation and Parent Perceptions of Resilience: A Comparative Study

Paul Caldarella, Jason E. Johnson, Ross A. A. Larsen,
Melissa A. Heath, Jared S. Warren

Abstract

Adolescents encounter a variety of challenges and risk factors that can result in adversity or unsafe behaviors often associated with mental health problems. However, the attribute of resilience can potentially buffer the effects of such risk factors. Sports participation, a form of activity available to a large number of adolescents through school and community programs, may foster resilience. This study compared the resilience levels of adolescents who participated in sports (n = 214) with the resilience levels of peers not participating in sports (n = 62), as reported by parents. Structural equation modeling was used to answer the research questions. Adolescents who participated in youth sports had significantly higher levels of parent-reported resilience (self-regulation/responsibility, social competence, and empathy) than adolescents who did not participate. High school sports predicted higher self-regulation/responsibility, while sports sponsored by recreation facilities predicted greater empathy and social competence. Finally, results demonstrated

Paul Caldarella is a professor, Department of Counseling and Special Education, Brigham Young University. Jason E. Johnson is director of Research and Development for Why-Try and was a graduate student at Brigham Young University who was an equal first author of this study. Ross A. A. Larsen is an assistant professor, Instructional Psychology and Technology Department, Brigham Young University. Melissa A. Heath is a professor, Department of Counseling Psychology and Special Education, Brigham Young University. Jared S. Warren is an associate professor, Psychology Department, Brigham Young University. Please send author correspondence to paul_caldarella@byu.edu

a positive relationship between the number of sports played and increased resilience scores. Implications and limitations of this study are included.

Adolescents encounter a variety of challenges and risk factors that can result in high stress or unsafe behaviors (Masten, 2001; Patel, Flisher, Hetrick, & McGorry, 2007). For example, Kann et al. (2016) reported that during the 30 days prior to the survey, 32.8% of high school students nationwide reported that they had consumed alcohol, 21.7% had used marijuana, and 10.8% had smoked cigarettes, and 7.3% had used smokeless tobacco. These students also reported that in the year preceding the survey, 22.6% had been in a physical fight, 20.2% had been bullied on school property, and 8.6% had attempted suicide. Each year approximately 20% of adolescents experience a mental health disorder, the most common being depression and anxiety (World Health Organization, 2012). Adolescence is the developmental period when most mental health disorders that persist into adulthood are first detected (Patel et al., 2007). Clearly adolescents are surrounded by a number of risk factors and may engage in dangerous behaviors negatively affecting their health. In addition to depression, drug/alcohol use, and victimization, research has highlighted the following risk factors in many adolescents' lives: poverty, divorce, minority status, and early sexual activity (Bryan, Schmiege, & Magnan, 2012; Kann et al., 2016).

Risk factors of adolescence coincide with challenges associated with the transition into secondary school. Such transitions are often disruptive and full of complex social issues (Newman, Lohman, Newman, Myers, & Smith, 2000). Knowles, Niven, and Fawkner (2011) noted that the challenges include shifts toward larger class sizes, unfamiliar peer groups, and decreased physical activity levels—changes that can have negative effects on self-esteem, confidence, and perceptions of competence. Witherspoon and Ennett (2011) described the transition to secondary schools as associated with multiple negative outcomes, including statistically significant changes occurring in the following areas: decreased school belonging, decreased participation in activities, diminished aspirations for postsecondary education, and increased school behavior problems. Newman et al. (2000) provided a similar list of negative outcomes occurring with the transition from junior to high school, includ-

ing decreased attendance, declining GPA, increased disciplinary problems, and decreased participation in extracurricular activities. Developmental challenges can cause frustration and anxiety in adolescents, including rapid physical, intellectual, and social changes that come at different rates and times (Young, Caldarella, Richardson, & Young, 2011), combined with the changing social expectations and educational contexts mentioned.

Considering the various risk factors and particular developmental challenges associated with adolescence and secondary school, research in the area of resilience is particularly salient for its potential to offer insight into why some adolescents are able and others unable to meet challenging circumstances. Additionally, research in this area may help educators better understand how to enhance students' resilience. Masten, Best, and Garmezy (1990) defined resilience as "the capacity, processes, or outcomes of successful adaptation in the context of significant threats to function or development" (p. 426). Rutter (2012) similarly defined resilience as "the overcoming of a stress or adversity, or a relatively good outcome despite risk experiences" (p. 336). With enhanced resilience, choice-based risk factors, such as drug use and early sexual activity, might be avoided, and resistance to the risk factors beyond individual control, such as parent divorce and socioeconomic status, might be increased. Because resilience is a complex phenomenon, a closer examination of its associated protective factors is helpful. Alvord and Grados (2005) observed the multivariate nature of resilience, determining that it involves multiple skills that increase an individual's ability to cope, not a single attribute. They narrowed the protective factors associated with resilience to six areas: (1) proactive orientation; (2) self-regulation; (3) proactive parenting; (4) connections and attachments; (5) school achievement, involvement, and special talents; and (6) community. Awareness of these protective factors provides a context for the examination of interventions with the potential to enhance resilience.

Masten (2001) stated that resilience is a common or ordinary phenomenon arising from normal human adaptive processes. Some have noted that youth develop resilience best by observing the behavior of resilient role models such as peers or adults (Aguilar-Vafaie, Roshani, Hassanabadi, Masoudian, & Afruz, 2011). This suggests that most adolescents have the capacity for resilience if they can be

provided assets and environments that help enhance it. Accordingly, interventions can be designed to help enhance adolescent resilience as well as reduce risks and stressors. Noting that this view provides an optimistic outlook for action, Masten called on researchers to further examine how adaptive systems develop and how these systems can work for or against those served. Similarly, Alvord and Grados (2005) called for further research to investigate resilience-based interventions created to benefit youth and to investigate measures to monitor progress in the field. Cohe (2006) also stated, “It is highly recommended that educational leaders intensively examine the benefits of promoting resilience. Programs that promote resilience must be implemented as the nation faces more at-risk students” (p. 72). Researchers have increasingly designed and implemented programs to increase resilience among those at risk (e.g., Alvord & Grados, 2005), but an area that remains somewhat unexplored is the effect of sports participation on adolescent resilience.

It is well known that regular participation in sports and other athletic activities positively affects the physical health of participants, contributing to optimal weight, healthy blood pressure, and cardiovascular health. Additionally, adolescent sports participation has been found to be associated with psychological health and prosocial behavior, as well as an increased likelihood of college attendance (e.g., see Peck, Roeser, Zarrett, & Eccles, 2008). Compared to those not participating in sports, adolescents who participate in sports report fewer mental health difficulties as well as fewer general health, eating, and dietary problems (Steiner, McQuivey, Pavelski, Pitts, & Kraemer, 2000).

While much research has examined the physical and psychological benefits of sports participation, relatively few studies have examined its relation to resilience. Thorpe and Ahmad (2015) described the use of parkour (also known as free running) among youth living in the Middle East, noting the value of the sport for enhancing resilience for coping with the frustrations, fears, anxieties, and pains of living in refugee camps. Hall (2011) interviewed 14 male adolescent sport participants in Australia, requesting that they share insights about ways in which they were personally affected by sports. All participants described the benefits of staying healthy and fit, and most described some form of resilience or psychological health, such

as feeling good and having increased confidence. Studies not limited to the adolescent age group also showed relationships to sports and increased resilience, although other contributing factors were involved. Martin, Byrd, Watts, and Dent (2015) found that resilience was moderately related to both sport engagement and life satisfaction in a U.S. study of wheelchair basketball athletes. Galli and Vealey (2008) interviewed 10 high-level adult athletes in the United States; documented the process of resilience via sports participation; and noted that “a variety of factors worked together to form this process, including personal resources, sociocultural influences, and agitation created by a combination of unpleasant emotions and coping strategies” (p. 328). CoHu (2006) studied the effects of athletic participation on resilience among 155 college students in the United States, finding a significant positive correlation between college-age students’ sports participation and resilience levels, and noting a need for more research, particularly focusing on adolescents.

Extending the limited but promising prior research that has investigated the relationship between sports participation and resilience, we focused on examining this relationship among high school students. This study examined resilience levels of adolescents who participated in sports compared to resilience levels of their peers who did not, focusing on the following research questions: (1) Are parent ratings of resilience higher for adolescents who participate in sports compared to adolescents who do not participate? (2) Does the strength of parent-rated resilience levels of adolescents differ for students on school-sponsored sports teams versus city/recreation sports teams? (3) Is there a positive correlation between the number of sports played by adolescents and their resilience levels as rated by parents?

Method

Setting and Participants

The research was conducted at an average-size high school in Utah with approximately 1,700 students, 35% of whom were of minority descent and 46% of whom were from low-income families (see Table 1). Of the 276 parents who participated, 13% described their children as being from minority backgrounds and 21% described their families as low income.

Table 1
School and Participant Demographics

Demographic information	School %	Participants %
Gender		
Female	48	52
Male	52	48
Ethnicity		
Caucasian/White	66	87
Hispanic	28	6
Pacific Islander	2	2
Asian	2	1
African American/Black	1	<1
American Indian	1	<1
Other/Mixed	-	3
Socioeconomic status		
Low income	46	21
Students by grade		
9th	27	36
10th	26	26
11th	25	21
12th	22	17

Procedures

Institutional review board and school district approval were obtained. The researchers contacted the parents via e-mail using the school's e-mail communication system, which included an online database of e-mail addresses for the students' parents. School administrators had identified this system as the most effective way to contact a high number of the parents. Following survey research recommendations of Gall, Gall, and Borg (2007), we distributed a pre-contact e-mail message requesting parents to participate in a study

being conducted by the researchers in conjunction with their children's high school, explicitly stating that this was completely voluntary and that information would remain anonymous and be stored on password-protected computers. Approximately one week later, we sent a follow-up e-mail, including an informed consent form. The e-mail communications and online surveys were available in Spanish as well as English, as Spanish was the primary language of many families. Parents who consented were directed to an online Qualtrics survey to enter information regarding their child. As an incentive to encourage participation, those who completed the survey were entered into a drawing for one of ten \$50 Visa gift cards.

Measures

Two main types of parent survey information were gathered for this study: (a) basic demographic information including sports participation of the adolescent, reported on a brief five-item questionnaire, and (b) a nationally normed measure used to identify adolescents' resilient behavior. Parents reported their child's resilience data using the Social Emotional Assets and Resilience Scales (Merrell, 2011), parent long form (SEARS-P). The SEARS-P consists of 39 Likert-type items rated on a 4-point scale of *never*, *sometimes*, *often*, or *always*. It is completed by parents to estimate their child's resilience level, appropriate for assessment of students aged 5 to 18. This tool measures youth strengths, assets, and positive adaptive characteristics, including items regarding empathy, peer relationships, personal responsibility, problem-solving ability, self-control, and social competence. Combined, these items form three factors and a total score, identifying levels of resilience and areas of strengths and deficiencies within the resilience context. The SEARS-P was normed with 2,356 parents or guardians of children and adolescents aged 5 to 18 across multiple geographic regions of the United States. Merrell, Felver-Gant, and Tom (2011) provided various reliability and validity evidence for SEARS-P, including exploratory and confirmatory factor analyses. They provided evidence suggesting a three-factor structure (self-regulation/responsibility, social competence, and empathy), convergent validity with other established measures of similar constructs, and the ability of SEARS-P scores to differentiate between students with and without educational disabilities.

Design and Data Analysis

We used a causal-comparative survey design (Gall et al., 2007) to address the research questions. The two sets of data provided the variables analyzed in this study. The information from the demographics questionnaire, which included sports participation data, provided information for the main independent variables of interest. The data making up the SEARS-P resilience ratings provided the information we used to form the dependent variables.

To examine whether the factor structure of the SEARS-P resilience ratings reported in the test manual (Merrell, 2011) could be replicated in the current study and function as dependent variables, we carried out several psychometric analyses suggested by Worthington and Whittaker (2006). First, we completed an exploratory factor analysis (EFA) on approximately half of the data (randomly selected) to determine the number of the factors to extract. Instead of the traditional EFA approach, we ran a parallel analysis, since using the eigenvalues in a traditional EFA to decide how many factors to extract has been shown to be problematic (Warne & Larsen, 2014). Once our parallel analysis had established the number of factors to be extracted, we completed an EFA with the geomin oblique rotation. We employed the Worthington and Whittaker suggestions for retaining items: (a) all items with factor loadings less than .32 were deleted, (b) all items with cross-loadings less than a .15 difference from the item's highest factor loading were deleted, and (c) any factor with fewer than two items was deleted unless the items were highly correlated ($r > .7$). We completed a confirmatory factor analysis (CFA) on the remaining data, allowing the latent variables to freely covary and implementing the recommendations of Worthington and Whittaker. The SEARS-P data were treated as categorical using the weighted least squares estimator (ESTIMATOR=WLSMV in Mplus), as the items were ordinal. We reported the fit statistics and evaluated competing nested models with the chi-square difference test. Worthington and Whittaker also suggested the use of predictive fit indices (i.e., AIC and BIC) for comparison of models; unfortunately, these indices are not available when the weighted least squares estimator is used and thus could not be considered.

Once the SEARS-P instrument had been validated through the steps described, we ran several structural equation models (SEMs) to

answer the three research questions. For Question 1 the dichotomous sports variable was the independent variable of interest (1 = Student is in any sport, 0 = Student is not in any sport). With Question 2, two separate SEMs were run with two dichotomous variables: high school sports (1 = played in a high school sport, 0 = did not play in a high school sport) and recreational sports (1 = played in a recreational sport, 0 = did not play in a recreational sport). Question 3 was also answered with separate SEMs, with the continuous variables of number of high school sports played and number of recreational sports played as the independent variables of interest. In all these SEMs, the independent variable of interest was regressed on the SEARS-P latent variables, which are simultaneously estimated in the SEM framework. Several demographics were included in the models as controls: student gender, student grade, and student age, along with whether the student received free or reduced-price lunch and/or had minority status (1 = is a member of a minority, 0 = is not a member of a minority). As in the EFA and CFA, the weighted least squares estimator (ESTIMATOR=WLSMV in Mplus) was used, as the items for the SEARS-P were treated as categorical. When the main independent variable of interest was categorical (Questions 1 and 2), Cohen's *d* was calculated for effect sizes; otherwise, standardized betas were calculated for effect sizes (Question 3). All the models (EFA, CFA, SEMs) were run in Mplus 7.4, and missing data were handled by the full information maximum likelihood (FIML) method for more trustworthy results than other methods, such as listwise deletion (Little & Rubin, 2014).

Results

This study examined three research questions regarding adolescent sports participation and resilience as reported by parents. Before addressing the research questions, we first examined the psychometric properties of the SEARS-P resilience scores. First, we ran a parallel analysis on approximately one half of the data (randomly selected $n = 144$) in Mplus 7.4 to determine how many factors to extract. The results showed that four of the latent variables would not occur by chance alone. It should be noted that the fourth factor was very close to the 95th percentile of chance factors produced by the parallel analysis and thus had a weaker signal than the preceding three. Second, we ran an EFA with four factors extracted using a geomax

oblique rotation, following the steps outlined in the Design and Data Analysis section for item retention. The correlation of the extracted factors averaged .24, a small but statistically significant ($p < .05$) result, showing that an oblique rotation was appropriate. An item was assigned to the factor with its highest factor loading. Items 11, 15, 21, 26, and 27 were eliminated for either having low factor loadings ($< .32$) or high cross-loadings (difference between cross-loadings $< .15$). Factor 4 had only Items 8 and 18 load onto it but had a correlation of .72, which exceeds the cutoff of .7. Nevertheless, after theoretical consideration, keeping in mind that Factor 4 had the weakest signal according to the parallel analysis, we decided to drop it and instead include Items 8 and 18 on Factor 2. The factors thus formed aligned very closely to the factors extracted in the SEARS-P manual (Merrell, 2011): Factor 1 self-regulation/responsibility, Factor 2 social competence, and Factor 3 empathy. Third, we ran a CFA on the remaining data ($n = 137$) in Mplus 7.4; Table 2 displays the results. The model produced reasonably good statistics on three of the four fit indices (RMSEA = 0.07, CFI = 0.93, TLI = 0.92, WRMR = 1.26) considering the cutoffs used in the literature (RMSEA $< .08$, Browne & Cudeck, 1993; CFI $> .9$ and TLI $> .9$, Wang & Wang, 2012; WRMR < 1.0 , Yu, 2002). As there were only three factors, and allowing the three factors to simply correlate would be mathematically equivalent to having a superfactor, we decided to follow the decisions of the SEARS-P manual (Merrell, 2011) and allow all three factors to correlate rather than form a superfactor.

The first research question examined whether parent ratings of resilience were higher for adolescents who participated in sports compared to adolescents who did not. We conducted a SEM with the three SEARS-P factors as outcomes, whether a student played any sports as the main independent variable of interest, and the covariates discussed in the Method section. Results (Table 3) showed that adolescent sports participants received significantly higher self-regulation/responsibility ratings. Those who played any sport scored 0.47 points higher on the self-regulation/responsibility scale than those who did not play sports, which is a standard deviation increase (ES) of 0.48 (medium effect size) holding all the other covariates constant. Adolescent sports participants also scored significantly higher on the social competence and empathy factors than nonparticipants, with small to medium effect sizes.

Table 2

Factor Loadings From the Final Confirmatory Factor Analysis of the SEARS-P Items Conducted With Approximately Half of the Sample (n = 137, Randomly Selected)

Item	Standardized factor loading
Factor 1: Self-Regulation/Responsibility	
3. Stays calm when there is a problem or argument	0.70**
5. Works on chores and projects independently, without help	0.73**
10. Expresses disagreement with other people without fighting or arguing	0.70**
17. Is good at solving problems	0.75**
20. Makes good decisions	0.77**
23. Stays in control when he/she gets angry	0.67**
25. Thinks before she/he acts	0.62**
28. Is dependable, someone you can rely on	0.84**
29. Thinks of her/his problems in ways that help	0.81**
30. Accepts responsibility when she/he needs to	0.68**
31. Is able to handle problems on her/his own	0.88**
32. Knows how to calm down when stressed or upset	0.81**
33. Knows how to identify and change negative thoughts	0.87**
34. I trust her/him	0.77**
35. Can figure out whether or not negative thoughts are realistic	0.76**
36. Can identify errors in the way he/she thinks about things	0.75**
37. Knows how to set goals for what she/he wants in life	0.68**
38. Is able to handle problems that really bother other kids	0.82**
39. When life is hard, doesn't let things get to him/her	0.68**

Table 2 (cont.)

Item	Standardized factor loading
Factor 2: Social Competence	
7. Other people like to be with her/him	0.82**
8. Is comfortable talking to many different people	0.75**
9. Makes friends easily	0.79**
12. Other kids ask him/her to hang out with them	0.81**
13. People think she/he is fun to be with	0.93**
14. Is well-liked by other people	0.94**
18. Is good at starting conversations	0.83**
Factor 3: Empathy	
1. Feels sorry for other people when bad things happen to them	0.51**
2. Knows when people are upset, even when they say nothing	0.71**
4. Is good at understanding the point of view of other people	0.84**
6. Tries to help others when they need help	0.81**
16. Likes doing things for other people	0.85**
19. Understands how other people feel	0.86**
22. Gives compliments to others	0.72**
24. Cares what happens to other people	0.82**
Items eliminated during EFA (loadings < .32 or cross-loadings < .15)	
11. Is a good listener	
15. Friends come to her/him for help	
21. Is good at settling disagreements of other people	
26. Is comfortable being in large groups	
27. Other people see him/her as a leader	

Note. SEARS-P = Social Emotional Assets and Resilience Scales (Merrell, 2011), Parent Long Form.

** $p < .05$.

The second research question examined whether there was a difference in parent-reported resilience scores of adolescents who participated in high school sports versus non-high school (i.e., recreation or city league) sports within the last year. Two SEMs were conducted: one with high school sports as the independent variable of interest and one with recreational sports as the independent variable of interest. Both models were run with the additional covariates described in the Method section. Results showed that adolescents who participated in recreational sports had significantly higher social competence and empathy scores than those who played high school sports, as represented in Table 3. Self-regulation scores were not higher for adolescents who played high school sports or recreational sports compared to those who played no sports, although the *p* values were close.

The final research question examined the relationship between parent-reported resilience scores and the number of sports in which adolescents had participated over the past year. Two SEMs were conducted, one with the number of high school sports as the main independent variable of interest, the other with the number of recreational sports as the main independent variable of interest. Both models were run with the additional covariates described in the Method section. Table 3 shows the results. The number of recreational sports did not predict higher self-regulation scores, but the number of high school sports did. The beta for the number of high school sports means that for every additional high school sport played, the self-regulation score increased by .21 points. The associated effect size means that for every one standard deviation increase in the number of high school sports played, self-regulation scores increased by 0.17 standard deviations, a small effect. Conversely, both social competence and empathy were predicted by the number of recreational sports played (with small effect sizes) but not by the number of high school sports played.

Discussion

The purpose of this study was to contribute to the limited research regarding adolescent sports participation and resilience. The results of each of the three research questions are addressed below. First, adolescents who participated in youth sports had significantly higher levels of parent-reported self-regulation/responsibility, social

Table 3

Results From Separate Structural Equation Models Used With Approximately Half of the Sample (n = 144, Randomly Selected) Addressing Research Questions 1, 2, and 3

Predictor	Outcomes									
	Self-regulation			Social competence			Empathy			
	B (SE)	p	ES	B (SE)	p	ES	B (SE)	p	ES	
Any sports	Research Question 1									
	0.47 (0.19)	.008	0.48	0.60 (0.33)	.037	0.42	0.22 (0.14)	.050	0.37	
	Research Question 2									
High school sports	0.28 (0.17)	.053	0.29	0.26 (0.27)	.171	0.18	0.06 (0.11)	.288	0.10	
	Recreational sports	0.25 (0.17)	.068	0.26	0.51 (0.27)	.027	0.36	0.27 (0.12)	.009	0.45
Research Question 3										
Number of HS sports	0.21 (0.10)	.018	0.17	0.19 (0.16)	.122	0.11	0.05 (0.07)	.241	0.07	
Number of rec sports	0.12 (0.09)	.090	0.11	0.25 (0.15)	.044	0.15	0.12 (0.06)	.026	0.18	

Note: ES = effect size; HS = high school; Rec = recreational league. Control variables included (a) student gender, (b) student grade, (c) student age, (d) student receipt of free or reduced-price lunch, and (e) student minority status. All *p* values one-sided.

competence, and empathy than adolescents who did not. These results agree with the limited number of studies supporting participation in sports as associated with resilience (Cohu, 2006; Hall, 2011; Martin et al., 2015). Second, results indicated that only high school sports predicted self-regulation. However, for empathy and social competence, the only significant relationship was with recreational sports. Finally, results demonstrated a positive relationship between the number of high school sports played and increased self-regulation/responsibility, as well as between the number of recreational sports played and increased social competence and empathy. The potential resilience benefits gained by playing a higher number of sports could be related to differences between sports involving year-round participation, which would maintain consistent benefits, in contrast to seasonal sports, which are available for only a few months of the year.

Regarding the differences in effect between high school and recreational sports, Hurd and Anderson (2011) described recreational activities as those that individuals engage in during their free time, that they enjoy with less emphasis on winning or losing. They also noted that recreational activities have been used to contribute to society, produce desirable outcomes, and aid in youth development. Such goals may align better with the development of empathy and social competence than the more competitive goals of high school sports, which may focus on the development of skills related to self-regulation and individual responsibility (e.g., attending practice sessions consistently, controlling emotions, and following rules during competition). These findings warrant additional research to determine whether different types of sports participation foster unique types of resilience skills.

Implications

Findings of this study are meaningful not only in terms of their consistency with the limited data on resilience and sports participation (Cohu, 2006; Hall, 2011; Martin et al., 2015) but also in their support of an intervention accessible to a large number of adolescents. The list of protective factors associated with resilience defined by Alvord and Grados (2005), if taken in conjunction with the research provided by Masten (2001) suggesting that most individuals have the capacity for resilience if provided with the proper “assets”

and environments, support the conclusion that most adolescents could have access to protective factors under proper circumstances. By observing the various benefits offered by sports participation, one can understand the likelihood of sports contributing to many of the identified protective factors found by researchers and thus providing youth opportunities for developing resilience. Of particular note, year-round sports provide access to these benefits even during the summer months when youth would not have the benefits of participation in school.

The results suggest that the sports environment may be an important context for fostering youth resilience. Study results become even more important considering that many researchers have noted that adolescence is a critical time to develop, promote, and strengthen resilience, given the unique social, biological, and psychological changes that occur during this developmental stage (Masten, Obradovic, & Burt, 2006; Masten & Tellegen, 2012; Pargas, Brennan, Hammen, & Le Brocque, 2010). As noted by Barnes and Larcus (2015), “The mental toughness that is encouraged by participation in sport no doubt helps students with resilience building and translates into other challenges they face with academics, work, or in their personal lives” (p. 85). The results of this study suggest a broad offering of sports participation opportunities for adolescents. Some types of high school sports participation are limited to varsity teams, with limited access for the majority of students. Given the possibilities for enhanced resilience suggested by this research, as well as the benefits associated with sports participation suggested by previous research (Steiner et al., 2000), much broader school and community offerings through intramural and similar programs are warranted. Schools and communities should consider offering scholarships to adolescents whose low-income families do not have sufficient means to pay the expenses of sports participation (e.g., uniforms, equipment, registration, travel).

Limitations and Directions for Future Research

Despite the promising results of this study, some limitations should be considered. This study demonstrated correlational, not causal, relationships between sports participation and resilience. The sample size was limited to a single high school and participation was voluntary; thus, minority and low-income populations were un-

derrepresented. The response rate was lower than ideal, although it was fairly consistent with other online surveys (Carley-Baxter et al., 2009). Additionally, this study was confined to parent responses and did not include student perspectives. Future studies could attempt stronger research designs, such as randomized controlled studies to evaluate causal relationships, and include adolescent ratings of themselves in addition to ratings by others (i.e., parents, teachers, coaches). To include a broader population of adolescents, future research in this field could study more nationally representative samples. Recognizing the challenges facing specific ethnic and demographic groups, future research should examine sports participation within these groups. Finding how to engage such youth in sports may offer these adolescents coping strategies and the resilience to offset detrimental risk factors associated with maladaptive outcomes. Additionally, future research should investigate sports participation according to socioeconomic status, as poverty and associated risk factors greatly limit opportunities for youth to succeed.

References

- Aguilar-Vafaie, M. E., Roshani, M., Hassanabadi, H., Masoudian, Z., & Afruz, G. A. (2011). Risk and protective factors for residential foster care adolescents. *Children and Youth Services Review, 33*(1), 1–15. <https://doi.org/10.1016/j.childyouth.2010.08.005>
- Alvord, M. K., & Grados, J. J. (2005). Enhancing resilience in children: A proactive approach. *Professional Psychology: Research and Practice, 36*, 238–245. <https://doi.org/10.1037/0735-7028.36.3.238>
- Barnes, A. C., & Larcus, J. (2015). Positive psychology as a framework for leadership development in recreation and sport. *New Directions for Student Leadership, 147*, 77–87. <https://doi.org/10.1002/yd.20145>
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Bryan, A. D., Schmiede, S. J., & Magnan, R. E. (2012). Marijuana use and risky sexual behavior among high-risk adolescents: Trajectories, risk factors, and event-level relationships. *Developmental Psychology, 48*, 1429–1442. <https://doi.org/10.1037/a0027547>

- Carley-Baxter, L. R., Hill, C. A., Roe, D. J., Twiddy, S. E., Baxter, R. K., & Ruppenkamp, J. (2009). Does response rate matter? Journal editors use of survey quality measures in manuscript publication decisions. *Survey Practice*, 2(7), 1–7. <https://doi.org/10.29115/sp-2009-0033>
- Cohu, E. (2006). *Participation in athletics and development of certain traits related to resiliency theory* (Unpublished doctoral dissertation). Union University, Jackson, TN.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson.
- Galli, N., & Vealey, R. S. (2008). “Bouncing back” from adversity: Athletes’ experiences of resilience. *The Sport Psychologist*, 22, 316–335. <https://doi.org/10.1123/tsp.22.3.316>
- Hall, N. (2011). “Give it everything you got”: Resilience for young males through sport. *International Journal of Men’s Health*, 10(1), 65–81. <https://doi.org/10.3149/jmh.1001.65>
- Hurd, A. R., & Anderson, D. M. (2011). *The park and recreation professional’s handbook*. Champaign, IL: Human Kinetics.
- Kann, L., McManus, T., Harris, W. A., Shanklin, S. L., Flint, K. H., Hawkins, J., . . . Zaza, S. (2016). Youth risk behavior surveillance—United States, 2015. *MMWR Surveillance Summaries*, 65(SS-6), 1–174. <https://doi.org/10.15585/mmwr.ss6506a1>
- Knowles, A., Niven, A., & Fawkner, S. (2011). A qualitative examination of factors related to the decrease in physical activity behavior in adolescent girls during the transition from primary to secondary school. *Journal of Physical Activity & Health*, 8, 1084–1091. <https://doi.org/10.1123/jpah.8.8.1084>
- Little, R. J., & Rubin, D. B. (2014). *Statistical analysis with missing data*. New York, NY: John Wiley & Sons.
- Martin, J. J., Byrd, B., Watts, M. L., & Dent, M. (2015). Gritty, hardy, and resilient: Predictors of sport engagement and life satisfaction in wheelchair basketball players. *Journal of Clinical Sport Psychology*, 9, 345–359. <https://doi.org/10.1123/jcsp.2015-0015>
- Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227–238. <https://doi.org/10.1037//0003-066x.56.3.227>
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology*, 2, 425–444. <https://doi.org/10.1017/s0954579400005812>

- Masten, A. S., Obradovic, J., & Burt, K. B. (2006). Resilience in emerging adulthood: Developmental perspectives on continuity and transformation. In J. L. Tanner (Ed.), *Emerging adults in America: Coming of age in the 21st century* (pp. 173–190). Washington, DC: American Psychological Association. <https://doi.org/10.1037/11381-007>
- Masten, A. S., & Tellegen, A. (2012). Resilience in developmental psychopathology: Contributions of the project competence longitudinal study. *Development and Psychopathology*, *24*, 345–361. <https://doi.org/10.1017/s095457941200003x>
- Merrell, K. W. (2011). *Social and Emotional Assets and Resilience Scales (SEARS)*. Lutz, FL: Psychological Assessment Resources.
- Merrell, K. W., Felver-Gant, J. C., & Tom, K. M. (2011). Development and validation of a parent report measure for assessing social-emotional competencies of children and adolescents. *Journal of Child and Family Studies*, *20*, 529–540. <https://doi.org/10.1007/s10826-010-9425-0>
- Newman, B. M., Lohman, B. J., Newman, P. R., Myers, M. C., & Smith, V. L. (2000). Experiences of urban youth navigating the transition to ninth grade. *Youth & Society*, *31*, 387–416. <https://doi.org/10.1177/0044118x00031004001>
- Pargas, R. C. M., Brennan, P. A., Hammen, C., & Le Brocque, R. (2010). Resilience to maternal depression in young adulthood. *Developmental Psychology*, *46*, 805–814. <https://doi.org/10.1037/a0019817>
- Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). The mental health of young people: A global public health challenge. *Lancet*, *369*, 1302–1313. [https://doi.org/10.1016/s0140-6736\(07\)60368-7](https://doi.org/10.1016/s0140-6736(07)60368-7)
- Peck, S. C., Roeser, R. W., Zarrett, N., & Eccles, J. S. (2008). Exploring the roles of extracurricular activity quantity and quality in the educational resilience of vulnerable adolescents: Variable- and pattern-centered approaches. *Journal of Social Issues*, *64*(1), 135–155. <https://doi.org/10.1111/j.1540-4560.2008.00552.x>
- Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology*, *24*, 335–344. <https://doi.org/10.1017/S0954579412000028>
- Steiner, H., McQuivey, R. W., Pavelski, R., Pitts, T., & Kraemer, H. (2000). Adolescents and sports: Risk or benefit? *Clinical Pediatrics*, *39*, 161–166. <https://doi.org/10.1177/000992280003900304>

- Thorpe, H., & Ahmad, N. (2015). Youth, action sports, and political agency in the Middle East: Lessons from a grassroots parkour group in Gaza. *International Review for the Sociology of Sport*, 50, 678–704. <https://doi.org/10.1177/1012690213490521>
- Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus*. West Sussex, United Kingdom: John Wiley.
- Warne, R. T., & Larsen, R. (2014). Evaluating a proposed modification of the Guttman rule for determining the number of factors in an exploratory factor analysis. *Psychological Test and Assessment Modeling*, 56, 104–123.
- Witherspoon, D., & Ennett, S. (2011). Stability and change in rural youths' educational outcomes through the middle and high school years. *Journal of Youth and Adolescence*, 40(9), 1077–1090. <https://doi.org/10.1007/s10964-010-9614-6>
- World Health Organization. (2012). *World health statistics 2012*. Retrieved from http://www.who.int/gho/publications/world_health_statistics/2012/en/
- Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, 34, 806–838. <https://doi.org/10.1177/0011000006288127>
- Young, E. L., Caldarella, P., Richardson, M. J., & Young, K. R. (2011). *Positive behavior support in secondary schools: A practical guide*. New York, NY: Guilford.
- Yu, C. Y. (2002). *Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes* (Unpublished doctoral dissertation). University of California, Los Angeles, CA.