



Correlates of long-term participation in a physical activity-based positive youth development program for low-income youth: Sustained involvement and psychosocial outcomes



Sarah Ullrich-French^{a,*}, Meghan H. McDonough^b

^a Department of Educational Leadership & Counseling Psychology, Physical Education Building, PO Box 641410, Washington State University, Pullman, WA 99164-1410, USA

^b Department of Health & Kinesiology, 800 W. Stadium Ave., Purdue University, West Lafayette, IN 47907, USA

A B S T R A C T

Keywords:

Physical activity
Self-perceptions
Leader support
Weight status

This study examined correlates of long-term participation in a positive youth development (PYD) program. Low-income youth ($N = 215$) age 8–13 of diverse ethnicity participating in a summer physical activity-based PYD program completed questionnaires at the beginning and end of the program (year 1) and at the beginning of year 2. Those with lower BMI and higher attendance and leader support perceptions were more likely to return to the program the following year. Self-worth and leader support perceptions at time 2 were higher for returners compared to non-returners. Among returners, hope increased from year 1 to year 2 and increases in global self-worth across the first year were maintained over one year. Social support is linked to continued PYD participation. Returners had increased and/or sustained positive perceptions of self-worth and hope. Programs are encouraged to foster staff-participant relationships and self-worth, and minimize barriers associated with weight status.

Published by Elsevier Ltd on behalf of The Foundation for Professionals in Services for Adolescents.

Positive youth development (PYD) programs aim to enhance youths' lives by providing opportunities for building strengths and resources (Holt, 2008). The PYD approach is grounded in developmental systems theory (Ford & Lerner, 1992), and assumes that youth have the potential for positive change (e.g., Benson, Scales, Hamilton, & Sesma, 2006). PYD programs focus on developing personal and social assets rather than on reducing deficits or minimizing problem behavior (Lerner et al., 2005). Specifically, they are designed to build physical, intellectual, emotional, and social resources (NRCIM, 2002). These resources are especially important to low-income youth who are disadvantaged in many ways, which leads to fewer resources and often results in lower academic performance and physical health (Kroenke, 2007; Votruba-Drzal, 2006), and limited access to health-promoting resources, such as physical activity opportunities (Goodman, Slap, & Huang, 2003; Yang, Lynch, Schulenberg, Diez Roux, & Raghunathan, 2008). This population can particularly benefit from safe, supervised, and structured opportunities for skill building across multiple domains (Holt, Sehn, Spence, Newton, & Ball, 2012).

The literature on PYD in physical activity includes both traditional organized youth sport programs that may or may not integrate developmental goals, and instructional programs that are designed specifically to promote PYD and incorporate physical activity as a means to achieve those goals (Holt, 2008). Physical activity is a useful foundation for PYD as it can, if appropriately structured, address multiple components of well-being for at-risk groups. Physical activity helps prevent overweight and obesity and reduces the health risks associated with inactivity such as cardiorespiratory and metabolic

* Corresponding author. Tel.: +1 509 335 6858; fax: +1 509 335 4594.

E-mail addresses: sullrich@wsu.edu (S. Ullrich-French), mcdonough@purdue.edu (M.H. McDonough).

disease, anxiety, and depression (Physical Activity Guidelines Advisory Committee, 2008). Physical activity is positively related to academic achievement (Coe, Pivarnik, Womack, Reeves, & Malina, 2006), cognitive functioning (Ellemborg, 2010) and physical and global self-worth (Crocker, Kowalski, & Hadd, 2008). Furthermore, physical activity settings provide a rich social context because they are involved, interactive, emotional, and can provide pro-social opportunities for conflict resolution, cooperation, team building, goal setting, and leadership (Fraser-Thomas, Côté, & Deakin, 2005; Hellison, Martinek, & Walsh, 2008; Holt, 2008). However, physical activity programs, particularly activities that emphasize interpersonal comparison can also lead to negative outcomes including lower moral reasoning, endorsement of aggressive behaviors, and delinquency (Gardner, Roth, & Brooks-Gunn, 2009; Weiss, Smith, & Stuntz, 2008). Given the range of rules, structure, leadership, and organization across different physical activity programs, experiences and outcomes vary considerably, and attending to factors that mediate these effects is important (Jones, Dunn, Holt, Sullivan, & Bloom, 2011). Prior research suggests that care is needed to structure the social environment to facilitate positive psychosocial outcomes (Danish, Forneris, Hodge, & Heke, 2004; Gould & Carson, 2010; Gould, Flett, & Lauer, 2012; Larson, Hansen, & Moneta, 2006) and evidence about how best to do so is lacking (Benson et al., 2006; Petitpas, Cornelius, Van Raalte, & Jones, 2005).

PYD theoretical underpinnings suggest that social relationships, sociocultural factors, and individual characteristics influence development (Bronfenbrenner & Morris, 1998). Specifically, human development is thought to result from a person's reciprocal interactions in their context, which includes the microsystem (participants within a particular physical domain), mesosystem (participants' interpersonal interactions others such as program staff and peers), exosystem (how interactions between other people, such as program staff and parents, affect the child), and macrosystem (larger social forces such as culture; Bronfenbrenner, 1977). Within the larger context of a PYD program, interpersonal relationships at the mesosystem level play a pivotal role in person–context interactions, and therefore in outcomes related to youth functioning (e.g., Bowlby, 1988; Sullivan, 1953) by fostering motivational, achievement, developmental, and well-being outcomes (e.g., Eccles et al., 1983; Gano-Overway et al., 2009; Harter, 1999). Therefore, building positive, supportive relationships with non-family adults and peers, and fostering a sense of belonging are key aspects that determine developmental outcomes (Bronfenbrenner & Morris, 1998). Positive adult–youth relationships, and having adult leaders establish a supportive and caring climate are associated with positive outcomes (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Gano-Overway et al., 2009; Gould & Carson, 2010; Gould et al., 2012). Individual characteristics such as self-perceptions, competencies, and hope (beliefs in capacity to initiate and sustain successful pathways toward a goal) are also associated with adaptive outcomes (Catalano et al., 2004; Coatsworth & Conroy, 2009). However, little is known about how peer and adult relationships within instructional physical activity-based PYD programs for low-income youth predict developmental outcomes such as hope and self-esteem over the long term, and whether those relationships support long-term participation.

The Purdue Athletes Life Success (PALS) program is a 4-week summer PYD program specifically designed to address environmental barriers to healthy living and build personal and social assets. The underlying philosophy of the program is to provide youth with a sense of hope and possibility while fostering healthy, active living. Participants who qualify for free or reduced lunch are invited to participate at no cost. The program takes place on a university campus in part to increase perceived access to continued education. Barriers to participation are addressed by providing transportation and appropriate clothing and equipment. Participants are given breakfast, lunch, and a snack at the end of the day. Participants are assigned to age-specific 'teams' that consist of 10–12 participants, with one adult leader assigned to lead the team for the entire program. The team concept is designed to foster social relationships with the leader and within the team participants. Leaders are selected to represent the diversity of the participants as well as for their enthusiasm and interest in the program's goals. Leaders are drawn primarily from the university study body.

Across 6 h of direct contact per day for 20 days, participants engage in a breadth of activities including sports and physical activities (e.g., swimming, fitness, cooperative games, sharbade, basketball, soccer, judo, and volleyball), art instruction, computers and writing, health education, and service learning. Each day, teams rotate through four physical activity stations and a classroom-type station. Although some physical activities were traditional sports (e.g., basketball) all physical activities included instruction and skill improvement goals and an emphasis on personal improvement and cooperation over competition. The program has a character development and social skills curriculum specifically designed to foster positive social relationships. The program is structured around weekly themes (i.e., respect, caring, responsibility, and trust), and staff integrate these themes into all their lesson plans and day-to-day activities with the children. Lesson plans and implementation were guided by a physical education pedagogy professor.

Prior to the program, staff participate in three days of intensive training workshops that provide classroom instruction, role playing experiences, discussion, and practical help for integrating weekly concepts into activity modules (e.g., how to set goals and teach participants to set goals; example ice-breaker activities to promote inclusion and social integration; time and resources for working on lesson plans with the guidance of a physical education pedagogy professor). Topics covered directly promote the program goals and philosophy by teaching staff strategies for enhancing interpersonal relationships, emotional support, motivation, cooperative and mastery learning, conflict resolution, and character development. Games, activities, and resources are provided to staff on how to apply and incorporate the weekly themes and the social skills curriculum into their daily routines, all of which are aimed to enhance hope and healthy, active living. Staff members also track their progress on implementing the character development and social skills curriculum during the program with activity logs completed at the end of each week, and there is a dedicated staff member employed to support other staff in implementing the character development and social skills curriculum. More than 70% of the total program time (including meal times) is dedicated to physical activity, and therefore physical activity is considered the primary avenue of instruction.

The amount of change that can be realized in a relatively short time period has been questioned, but there is evidence of positive impacts within brief PYD interventions (e.g., Brunelle, Danish, & Forneris, 2007; Kirschman, Roberts, Shadlow, & Pelly, 2010). Indeed, previous research with this program (Ullrich-French, McDonough, & Smith, 2012) has found that social and physical competence and physical and global self-worth significantly increase over the course of the program, and that physical competence, social competence, and support from program staff positively predict changes in physical self-worth, global self-worth, attraction to physical activity, and hope. That work supported short-term changes, but the ultimate aims of PYD programs are to promote lasting change. Therefore, the purpose of this study was to examine how psychosocial variables predict and correlate with long-term participation in a physical activity-based PYD program for low-income youth. Based on theory, program goals, and extending past work, study constructs representing social and self-perceptions, attraction to physical activity, and hope were examined. Body Mass Index (BMI) was included as a covariate because weight status has been linked with physical activity and sport participation (Delva, Johnston, & O'Malley, 2007; Elkins, Cohen, Koralewicz, & Taylor, 2004; Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010; Vierling, Standage, & Treasure, 2007). Additionally, we expected that attendance would be an important variable to account for the analyses as those who attend more should have a more opportunity to build relationships and would have different experiences compared to those who attended less frequently. By including these covariates we aim to examine the role of social relationships and experiences over and above these factors. We hypothesized that: (1) social relationships with peers and staff and social and physical self-perceptions would positively predict returning to the program the following year; (2) returners would have more positive social experiences and self-perceptions in year 1 than non-returners; and (3) for those who return, physical self-worth, global self-worth, attraction to physical activity, and hope would increase during the program. We also examined if changes in these variables would be maintained at 1-year follow-up, extending previous research by examining the longer-term pattern of change in these variables.

Method

Participants

Participants in this study were part of a larger two-year program evaluation study which included all participants. In that study, all youth who attended were invited to complete questionnaires at the beginning and end of the program in both years. Participants for the current study were drawn from that larger sample if (1) they completed questionnaires at both the beginning and end of the first year and (2) they were eligible to attend in the second year (i.e., younger than 14 in the first year). 260 participants completed questionnaires at the beginning of the first year (time 1), and 215 of those also completed questionnaires at the end of the first year (time 2). Thus, the sample for the current study consisted of those 215 (104 female, 111 male) youth.¹ Participants ranged in age from 8 to 13 years ($M = 11.16$, $SD = 1.22$) at time 1 and represented diverse ethnic backgrounds (39% Hispanic, 33% White, 16% Black, 8% Multi-racial, 3% Asian, 1% American Indian). Youth in the program must qualify for the free or reduced lunch program, and therefore are of low socioeconomic status. Participants had an average BMI of 22.59 kg/m^2 ($SD = 5.43$), with 42.5% classified as healthy weight, 20.5% classified overweight, and 36.9% classified obese, based on CDC guidelines (Kuczmarski et al., 2002). The average number of years of past program participation was less than 1 ($M = .79$, $SD = 1.09$).

Measures

Leader support

Cox and Williams' (2008) adapted version of Goodenow's (1993) Psychological Sense of School Membership Scale was used to measure perceived support from the child's group leader. Cox and Williams' scale assessed the extent to which students feel supported by teachers in physical education and the items were further adapted in the present study to capture participants' perceived support by their group leader. The subscale contains six items using a five-point Likert scale ranging from 1 (*not at all true of me*) to 5 (*very true of me*). Reliability and validity of scores on the original and adapted measure has been provided in education, sport, physical education settings (Allen, 2006; Cox & Williams, 2008; Goodenow, 1993). Additionally, this measure performed well (e.g., expected associations supporting the validity of the measure) in a different sample from the PALS program (Ullrich-French et al., 2012). Internal consistency reliability ranged from $\alpha = .74$ to $.81$ (see Table 1).

Social competence, physical competence, and global self-worth

The social and physical competence and global self-worth subscales from Harter's (1985) Self-Perception Profile for Children were used. Each subscale has six items utilizing a four-point structured alternative response set. This format asks participants to choose which of two statements is more like them, and then indicate whether that statement is *really true* or *sort of true* for them. Higher scores represent more positive self-perceptions. There is extensive evidence for the validity and reliability of these subscales in research with youth (e.g., Harter, 1985). Internal consistency values for scores ranged from $\alpha = .73$ to $.85$ (see Table 1).

¹ A MANOVA was used to examine whether those who completed time 2 assessments differed from those who only completed time 1 assessments revealed no differences for time 1 constructs (Pillai's Trace = .04, $F(9, 246) = 1.12$, $p > .05$).

Table 1

Means, standard deviations, and internal consistency reliability for time 1, time 2, and time 3. Correlations time 1 and time 2.

Time 1	Time 2									
	1	2	3	4	5	6	7	8	9	
1 Global self-worth	.67**	.84**	.63**	.60**	.60**	.39**	.35**	-.18**	.16*	
2 Physical self-worth	.78**	.75**	.72**	.62**	.66**	.41**	.35**	-.26**	.13	
3 Physical comp	.58**	.60**	.69**	.51**	.71**	.30**	.41**	-.21**	.08	
4 Social comp	.51**	.47**	.46**	.64**	.52**	.35**	.36**	-.09	-.01	
5 Attraction to physical activity	.57**	.60**	.65**	.46**	.75**	.40**	.49**	-.28**	.05	
6 Leader support	.24**	.24**	.15*	.14	.21**	.61**	.51**	-.10	.19**	
7 Hope	.44**	.38**	.40**	.29**	.40**	.46**	.68**	-.14**	.05	
8 BMI	-.14*	-.26**	-.06	-.13	-.23**	-.03	-.07	.88**	-.18**	
9. Returning status ^a	.17*	.21**	.10	.05	.09	.09	.09	-.18**	-	
Scale range	1–4	1–4	1–4	1–4	1–4	1–5	1–6	-	0–1	
T1 (N = 211)	M (SD)	3.10 (.74)	3.02 (.73)	2.89 (.70)	2.86 (.71)	3.04 (.58)	4.07 (.86)	4.40 (1.08)	22.59 (5.43)	-
	α	.81	.82	.75	.73	.85	.74	.85	-	-
T2 (N = 215)	M (SD)	3.16 (.75)	3.12 (.76)	2.98 (.74)	2.97 (.74)	3.03 (.61)	4.02 (.88)	4.36 (1.16)	-	-
	α	.85	.87	.81	.77	.88	.77	.90	-	-
T3 (N = 78)	M (SD)	3.27 (.69)	3.28 (.70)	3.07 (.68)	3.06 (.68)	3.14 (.62)	4.01 (.88)	4.79 (1.03)	22.36 (5.08)	-
	α	.85	.85	.80	.78	.91	.81	.89	-	-

Notes. * $p < .05$, ** $p < .01$. Time 1 ($N = 211$) below the diagonal. Time 2 ($N = 215$, BMI correlations $N = 214$) above the diagonal. Time 1 and time 2 intraclass correlations appear in bold on the diagram (BMI intraclass correlation is time 1 and time 3).

^a Point biserial correlation.

Physical self-worth

The physical self-worth subscale of Whitehead's (1995) Children's Physical Self-Perception Profile was used to measure participants' global evaluations of themselves physically. Whitehead adapted Fox and Corbin's (1989) original measure to for use with children. The subscale contains six items using the four-point structured alternative response described above. Evidence for reliability and construct and concurrent validity of scores on this scale has been demonstrated with seventh- and eighth-grade junior high school students (Whitehead, 1995). Internal consistency of this scale was $\alpha = .82$ –.87 (see Table 1).

Attraction to physical activity

We used the 15-item version of Brustad's (1993) Children's Attraction to Physical Activity (CAPA) scale used by Paxton, Estabrooks, and Dziewaltowski (2004). Each item is rated on the four-point structured alternative response described above. Psychometric support has been demonstrated for the reliability and validity of scores on the original CAPA (Brustad, 1993) and for the 15-item version (Paxton et al., 2004). Internal consistency reliability of scores ranged from $\alpha = .85$ to .91 (see Table 1).

Hope

The Children's Hope Scale (Snyder et al., 1997) was used to assess dispositional belief in the ability to find routes to goals and to initiate and sustain efforts to achieve goals. The six item scale used a six-point response set ranging from (1) none of the time to (6) all of the time with higher scores indicating greater hope. This measure was developed for children ages 8–16 years and psychometric evidence supports validity and reliability with this age group (Snyder et al., 1997). Internal consistency ranged from $\alpha = .85$ to .90 (see Table 1).

Procedures

After receiving IRB approval, data collection was coordinated with the program directors. Demographic variables (BMI, age, gender, ethnicity, attendance, and number of prior years at the program) were obtained from program records. Questionnaires were administered during program time at three time points: the second day (time 1) and third-to-last day (time 2) of the four-week program, and the second day of the program the following year (time 3). Youth who were absent when questionnaires were administered could complete it the following day. A researcher or trained assistant explained the purpose and procedures of the study, communicated that participation was voluntary, and completed assent procedures. The questionnaire took approximately 15–30 min. Trained research assistants were available to answer questions and read items to those with reading difficulties. Upon completion, participants were thanked and returned to regular activities.

Data analysis

Data were screened for missing values and to assess distributional properties. Internal consistency reliabilities, means, and standard deviations were calculated. Logistic regression was used to examine predictors of returning to the program one year later. Returning status was the dependent variable, and predictors were added in two steps. In step one, BMI at time 1 and program attendance was entered as covariates. In step two, time 2 values of social competence, leader support, global self-

worth, physical self-worth, perceived competence, attraction to physical activity, and hope were entered. To examine if those who returned differed from those who did not return, a MANCOVA was conducted. Returning status was the fixed factor, BMI and attendance were the covariates and the dependent variables were time 2 social competence, leader support, global self-worth, physical self-worth, perceived competence, attraction to physical activity, and hope. MANCOVA on time 1 variables was also conducted to account for differences prior to program experience. A repeated measures MANOVA was conducted to examine change across the three time points for returning participants on variables that represent key program outcomes (global self-worth, physical self-worth, perceived competence, attraction to physical activity, and hope). In all analyses, physical competence perceptions were included due to the physical activity context and given prior evidence that physical competence has a moderate to strong association with social acceptance and all of the psychological outcome variables (Fox & Corbin, 1989; Harter, 1985; Paxton et al., 2004; Snyder et al., 1997).

Results

There was negligible missing data (i.e., 7 cases with a single item missing); therefore, person mean substitution was used to impute missing data (Hawthorne & Elliott, 2005). One person was missing data on BMI, a single item measure, so listwise deletion was used in analyses involving BMI. All variables were approximately univariate normal based on guidelines outlined by Tabachnick and Fidell (2007). Descriptive statistics appear in Table 1. All variables had mean scores that were moderate to high relative to their response scales. There were 89 participants (42%) who had attended prior to time 1.² The average attendance in year 1 was 17 out of 20 days (SD = 4.00). 78 Participants returned at time 3 and 137 did not. Roughly equivalent numbers of males ($n = 42$) and females ($n = 36$) returned.

Hypothesis 1: who is more likely to return?

Logistic regression predicting returning status was significant at Step 1 ($\chi^2(2) = 24.70, p < .01$) and at step 2 ($\chi^2(7) = 14.40, p < .05$). In the full model ($\chi^2(9) = 39.10, p < .01$) the significant variables were BMI, attendance, and leader support. Global self-worth was not significant but with coefficients (B and Wald) similar or higher to significant predictors and the highest effect size (odds ratio) we interpret this variable, however, with due caution (see Table 2). Those with lower BMI at time 1 and higher attendance, global self-worth, and perceptions of leader support at time 2 were more likely to return to the program. Potential gender differences were explored, demonstrating non-significant difference in returning status by gender ($\chi^2(1) = .24, p > .05$).

Hypothesis 2: how do returners differ from non-returners?

A MANCOVA comparing returners to non-returners at time 1 on all variables was conducted. BMI was included as a covariate given its significance in the logistic regression and because it is not a program related perception. There was a significant effect for BMI (Pillai's Trace = .11, $F(7, 201) = 3.63, p < .01, \eta_p^2 = .11$) where returners had lower average BMI than non-returners. The multivariate effect for returning status was not significant (Pillai's Trace = .04, $F(7, 201) = 1.20, p > .05, \eta_p^2 = .04$), indicating that returners and non-returners did not differ on the psychosocial constructs at time 1.

A MANCOVA tested whether returners differed from non-returners at time 2 with BMI and attendance included as covariates. There was a significant covariate effect for BMI (Pillai's Trace = .10, $F(7, 202) = 3.01, p < .01, \eta_p^2 = .10$), but not for attendance (Pillai's Trace = .06, $F(7, 202) = 1.77, p > .05, \eta_p^2 = .06$). The multivariate effect for returning status (Pillai's Trace = .07, $F(7, 202) = 2.03, p = .05, \eta_p^2 = .07$) falls short of statistical significance, the effect size is consistent with other significant effects and suggests that these groups had different program related perceptions after controlling for BMI and attendance. Follow-up univariate analyses identified higher scores for returners than non-returners at time 2 for global self-worth and leader support ($p < .05$). All effect sizes were small and should be interpreted with caution (see Table 3). A repeated measures MANOVA revealed no time effects (Pillai's Trace = .06, $F(7, 202) = 1.84, p > .05, \eta_p^2 = .06$) nor a time by returning status interaction (Pillai's Trace = .03, $F(7, 202) = 1.03, p > .05, \eta_p^2 = .03$).

Hypothesis 3: what is the pattern of change for returners?

A repeated measures MANOVA was conducted to examine change across the three time points on physical competence, global self-worth, physical self-worth, attraction to physical activity, and hope for returners. There was a significant multivariate time effect (Wilks' $\lambda = .78, F(10, 300) = 3.89, p < .01, \eta_p^2 = .12$). Follow-up univariate analyses and pairwise comparisons of estimated marginal means were conducted (see Table 4). Global self-worth increased from time 1 to time 2, and then remained similarly high at time 3. Perceptions of hope were similar from time 1 to time 2 and then increased from time 2 to time 3. Analyses including potential moderators (i.e., age, gender, BMI, previous program experience) of the time effect yielded no significant interactions. Of note, is that BMI percentile did not change significantly from time 1 to time 3.

² Previous years of participation was explored as a covariate in all analyses, but either failed to have a significant effect or did not change the interpretation of results. We did not include this variable in order to maximize statistical power. Please contact the first author for details on these analyses.

Table 2
Logistic regression final model predicting returners.

Final model	B	S.E.	Wald	p	Odds ratio
BMI	-.09	.03	7.37	.01	.91
Attendance	.40	.11	12.34	.00	1.49
Global self-worth	.76	.40	3.68	.06	2.15
Physical self-worth	-.15	.46	.10	.75	.87
Physical comp	.16	.37	.20	.66	1.18
Social comp	-.35	.29	1.49	.22	.71
Attraction to PA	-.62	.43	2.19	.14	.53
Leader support	.53	.23	5.31	.02	1.70
Hope	-.12	.17	.51	.48	.88

Note. $N = 212$ due to missing data on BMI and attendance for 3 non-returners.

Discussion

This study considered continued participation and longer-term impacts of participation in a summer physical activity-based PYD program for low-income youth. We found that 36% of participants eligible to return came back one year later. Previous research has suggested that youth development programs often face retention challenges (Anderson-Butcher, 2005). In addition to providing support to overcome tangible barriers such as program cost and transportation, in order to increase participation it is essential to understand the factors that may support continuation choices. The results of this study revealed that those who were more likely to return had lower BMI and higher attendance and perceived leader support. Analyses ruled out that returning participants differed from non-returners systematically on psychosocial variables at time 1, suggesting that aspects of the program contribute to the likelihood of long-term participation. For returners, global self-worth and perceptions of hope showed increases across the three time points. These results further support potential positive long-term impacts of PYD programs. Though programs of longer duration or greater involvement are expected to provide more positive outcomes (Fredricks & Eccles, 2006), there is no clear consensus on an optimal “dosage” for PYD-type programs (Vandell, Pierce, & Dadisman, 2005). This study demonstrates long-term change is possible in a relatively brief PYD program.

In support of both conceptual (e.g., Benson et al., 2006) and empirical (e.g., Gano-Overway et al., 2009) expectations, leader support appears to be a contributing factor to continuing participation over and above factors of BMI and attendance. This finding is consistent with previous research documenting that a positive adult relationship is a crucial element facilitating positive youth development (Catalano et al., 2004; Gano-Overway et al., 2009). The finding also supports ecological systems theory, in that supportive interactions with significant others were linked to the outcome of continued engagement in the program. Research with low-income youth specifically showed that autonomy support from teachers and parents predicts physical activity behavior and motivation (Vierling et al., 2007). Furthermore, the literature on physical education teacher support suggests that positive perceptions of the teacher–student relationship such as teacher caring, interest in the student, and encouragement to work together are associated with more positive perceptions, affect, and more self-determined motivation (Cox & Williams, 2008; Standage, Duda, & Ntoumanis, 2005). In the youth sport context, coaches who utilize a positive orientation have lower attrition rates on their teams compared to coaches who do not use this approach (Barnett, Smoll, & Smith, 1992). This study now provides an additional link of leader support to adherence or longer-term participation in a PYD program.

The physical education, physical activity, and sport literatures further suggest peer relationships play a salient role in motivation and participation (Smith & McDonough, 2008; Ullrich-French & Smith, 2009), even supporting positive outcomes when teacher support is low (Cox & Ullrich-French, 2010). Prior research with the same PYD program examined in this study found social competence to be relevant to this context showing increases in social competence across the program (Ullrich-French et al., 2012). In the present study social competence, which was peer referenced, did not associate with returning status, suggesting that in this context adult support (i.e., leader support) may be more closely aligned with returning than peer relationships. Given the consistent support for the importance of peer relationships in predicting outcomes, including

Table 3
MANCOVA comparing program returners and non-returners.

Time 2	F	p	η_p^2	Returners ($n = 78$) M (SD)	Non-returners ($n = 134$) M (SD)
Global self-worth	4.04	.046	.02	3.32 (.68)	3.06 (.78)
Physical self-worth	1.52	.219	.01	3.25 (.64)	3.03 (.82)
Physical comp	.13	.718	.00	3.05 (.65)	2.93 (.78)
Social comp	.02	.901	.00	2.96 (.75)	2.97 (.73)
Attraction to PA	.05	.829	.00	3.07 (.61)	2.99 (.61)
Leader support	5.31	.022	.03	4.24 (.74)	3.88 (.94)
Hope	.00	.979	.00	4.43 (1.14)	4.29 (1.17)

Note. BMI and attendance controlled for. $N = 212$ (3 cases missing BMI or attendance data were excluded from this analysis).

Table 4
Repeated measures MANOVA for returners ($N = 78$).

	<i>F</i>	<i>p</i>	η_p^2	Time 1 (pre 2008)	Time 2 (post 2008)	Time 3 (pre 2009)
Global self-worth	10.76	.00	.12	3.00 (.48) ^a	3.32 (.68) ^b	3.27 (.69) ^b
Physical self-worth	0.29	.75	.00	3.23 (.61) ^a	3.25 (.64) ^a	3.28 (.70) ^a
Attraction to PA	.79	.46	.01	3.11 (.58) ^a	3.07 (.61) ^a	3.14 (.62) ^a
Physical competence	.92	.40	.00	2.99 (.65) ^a	3.05 (.65) ^a	3.07 (.68) ^a
Hope	5.67	.00	.07	4.52 (1.06) ^{ab}	4.43 (1.14) ^a	4.79 (1.04) ^b

Notes. * $p < .05$, ** $p < .01$. Unique subscripts note significant differences.

associations with increased global self-worth, attraction to physical activity, and hope in this program (Ullrich-French et al., 2012), peers cannot be discounted as important social influences in the PYD context. But the relationship with a supportive adult may be more important for returning to the program, possibly due to the role that the leaders play in structuring the youths' overall experience, or the somewhat unique opportunity to build a relationship with an adult other than a family member or teacher. Further examination of the mechanisms behind the association between leader support and continued participation is warranted.

The relationship between BMI and returning to the program the second year is concerning, as it suggests that low-income youth who are overweight and obese may be at risk in multiple ways. Previous research on physical activity rates has shown that (1) higher BMI is associated with lower physical activity (Delva et al., 2007), (2) lower socioeconomic status predicts lower physical activity (Stalsberg & Pedersen, 2010), and (3) lower socioeconomic status is related to higher BMI (e.g., Delva et al., 2007). Furthermore, research exploring physical activity patterns among low-income youth specifically has documented that higher BMI is associated with lower physical activity behavior (Kitzman-Ulrich et al., 2010; Vierling et al., 2007) and lower rates of sport participation (Elkins et al., 2004). This relationship is especially problematic given that physical activity is one means by which overweight and obesity could be addressed among children and adolescents (Delva et al., 2007). The current study builds on this research by documenting that youth are less likely to return to a physical activity-based PYD program if they have a higher BMI: even in a program designed to provide opportunities for activity, positive social relationships, and life skills for underserved youth.

It has been suggested that the relationship between BMI and physical activity participation may be due to increased body-related barriers and perceived athletic coordination related to overweight and obesity (e.g., Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010). Prior research has shown, however, that BMI is not strongly correlated with body perceptions and physical competence (e.g., Crocker, Sabiston, Kowalski, McDonough, & Kowalski, 2006), suggesting that the BMI-participation link is not likely due to physical self-perceptions. Consistent with that assertion, perceived competence and physical self-worth were not predictors of returning status in the current study, even when analyses were run without BMI in the model. It should also be noted that while significant, the effect size of BMI on returning status was modest, suggesting that there are other critical predictors of continued program participation. Further research is needed to examine the mechanisms by which BMI leads to not returning to a sport-based PYD program for low-income youth, and ways in which this phenomenon can be circumvented.

Participants who returned showed increases in global self-worth during their first year in the program that were maintained when they returned the second year. Furthermore, there was a borderline association where those who had higher global self-worth at the end of their first year had an increased likelihood of returning. The effect sizes of these associations were small, and the lack of a control group precludes attributing the changes definitively to program participation. But these findings provide preliminary evidence that this relatively short program may have effects on global self-perceptions that may be maintained long-term, and linked to future participation. These findings are consistent with research on competence motivation theory, which suggests that global self-worth is an important contributor to motivated behavior and global well-being (e.g., Harter, 1999; Weiss, 2000). Experiences that support perceptions of competence and social support should promote global self-worth, which in turn should lead to motivated behavior and well-being. The global self-worth-motivated behavior link is supported by the finding that higher global self-worth was marginally greater among returners. Furthermore, the finding that gains in global self-worth were maintained among those who returned suggests that participation may contribute to well-being that is sustained and has the potential to transfer beyond the program itself. More research is needed in this area to explore the causal pathways of these effects.

The finding that hope increased from time 1 to time 3 among those who returned is also promising. Similar to global self-worth, hope is a global perception that is associated with less distress, and well-being, global satisfaction, academic achievement, and participation in extracurricular activities (Gilman, Dooley, & Florell, 2006; Valle, Huebner, & Suldo, 2006). The finding that hope increased from time 1 to 3 is therefore an important change, as changes in this global perception may impact participants' lives beyond the program and this is part of the underlying philosophy of the program. The staff training emphasizes the program goals and provides examples for how participants can start to identify and pursue possible pathways to success, or hope. We do note that with the small effect size of the change in hope, the lack of a control group, and the lack of a significant increase between time 1 and 2, it is too early to determine whether participation in the program caused the observed increases in hope or whether these are developmental increases. Prior longitudinal research with youth age 10–18, however, has found that hope tends to be quite stable across a 1-year time span, with no systematic increases found (Valle

et al., 2006). Furthermore, a study with a 6-week summer dance camp for inner-city youth documented significant positive changes in hope from pre- to post-program, although this study also did not have a control group for comparison (Kirschman et al., 2010). This raises the possibility that physical activity-focused PYD programs, such as this one, may contribute to increased hope.

Several limitations of the current study warrant note. First, the findings do not address the decision process of youth to continue participation. We did not specifically ask participants why they did or did not continue participation. Although we included only those who would be age-eligible for continued participation, there are a variety of other reasons why some youth may not have continued, including moving, parent or guardian influences, and becoming ineligible for the free and reduced lunch program. Controlling for other factors such as these would increase power to detect effects of psychosocial variables. This study provides some initial insight, however, into some of the systematic factors in the perceptions of the youth that could play a role in continued participation. A second limitation is that we do not have information on other activities that the participants were involved in across the one year follow-up time period (e.g., sport participation, after-school programs). It is possible that other interventions could impact or moderate the impact of the PALS program or the impact of these constructs in general (Zarratt et al., 2009). In the future it will be helpful to identify other explanatory factors in changes in outcomes of interest. Finally, it should be noted that the sample was a self-selecting group. Therefore, these findings may not generalize to youth who do not participate in a PYD program in the first place. It is possible that even in PYD programs targeting at-risk youth, kids who initiate and continue participation may have advantages that lead to them being more comfortable and confident in that setting, and therefore self-select into the program. However, we were able to confirm the returners did not differ from non-returners at the beginning of the program on any of the psychosocial variables measured. Furthermore, the focus of this study was on correlates of long-term participation for those youth already part of the program. This purpose therefore does not rely on a control group, rather it relies on a better understanding of elements within those already participating that help explain long-term participation.

Practical implications of this study include structuring programs to increase daily attendance, promote positive relationships with staff, and improve sensitivity toward and barriers for overweight or obese participants. Programs should emphasize the vital role that program leaders play in connecting in meaningful ways to youth, and provide training for staff to effectively support participants. A recent study trained physical education teachers to provide autonomy support, structure, and interpersonal involvement found positive effects for students (Tessier, Sarrazin, & Ntoumanis, 2010). The program examined in the current study aimed to intentionally structure the environment and train program staff to foster positive social relationships and connections. Such systematic efforts to provide support from adult staff appears to be a valuable endeavor for keeping youth participating in PYD programs and affecting psychosocial outcomes. Another important practical implication for PYD programs in a physical context is to carefully consider ways to be sensitive to and minimize barriers for those who are not at a healthy weight status. While more research is needed to develop specific recommendations, it might be helpful, for example, to place emphasis on cooperation rather than competition to help downplay attention toward individuals and improve inclusion and positive experiences.

Conclusions

This research is unique in its examination of the long-term associations between social relationships, self-perceptions, hope, attraction to physical activity, BMI and program participation in a physical activity-based PYD program for low-income youth. The results support the value of social support in facilitating positive outcomes, such as continued participation. Specifically, we found support for adult-based support perceptions. Our work also suggests that physical activity-based PYD programs need to be particularly sensitive to weight status and self-worth as potentially crucial components to continued participation. It is hoped that future research will continue to provide PYD programs with guidance to enhance existing programs and encourage new programs for at-risk youth.

Acknowledgments

We thank Dr. William Harper and Dr. Bonnie Blankenship and the PALS staff for their support and facilitation of data collection for this study, and the PALS participants involved in this study for their enthusiastic participation. We would also like to thank the graduate and undergraduate students who assisted with data collection, entry, and management: Amanda Reynolds, Jaclyn Poliseo, Allison Riley, Jonathan DeFreese, Travis Dorsch, Thomaseo Burton, Jessica Seaman, Leigh Schanfein, Mila Sugovic, Felicia Trembath, Stephanie Firebaugh, Amanda Bates, Christopher Kapp, Jarryn Robinson, Nick Ullrich, Kaitlyn White, Lisa Hunt, and Matt Herber. This study was supported by a Purdue University Clifford Kinley Trust Grant.

References

- Allen, J. B. (2006). The perceived belonging in sport scale: examining validity. *Psychology of Sport and Exercise*, 7, 387–405.
- Anderson-Butcher, D. (2005). Recruitment and retention in youth development programming. *The Prevention Researcher*, 12, 3–6.
- Barnett, N. P., Smoll, F. L., & Smith, R. E. (1992). Effects of enhancing coach–athlete relationships on youth sport attrition. *The Sport Psychologist*, 6, 111–127.
- Benson, P. L., Scales, P. C., Hamilton, S. F., & Sesma, A., Jr. (2006). Positive youth development: theory, research, and applications. In R. M. Lerner (Ed.), *Theoretical models of human development* (6th ed.). *Handbook of child psychology, Vol. 1* (pp. 894–941). New Jersey: Wiley.
- Bowlby, J. (1988). *A secure base. Parent–child attachment and healthy human development*. New York: Basic Books, Inc.

- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32, 513–531.
- Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon, & R. M. Lerner (Eds.), *Theoretical models of human development* (5th ed.). *Handbook of child psychology, Vol. 1* (pp. 993–1028). New York: Wiley.
- Brunelle, J., Danish, S. J., & Forneris, T. (2007). The impact of a sport-based life skill program on adolescent prosocial values. *Applied Developmental Science*, 11, 43–55.
- Brustad, R. J. (1993). Who will go out and play? Parental and psychological influences on children's attraction to physical activity. *Pediatric Exercise Science*, 5, 210–223.
- Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: research findings on evaluations of positive youth development programs. *Annals of the American Academy of Political and Social Science*, 591, 98–124.
- Coatsworth, J. D., & Conroy, D. E. (2009). The effects of autonomy-supportive coaching, need satisfaction, and self-perceptions on initiative and identity in youth swimmers. *Developmental Psychology*, 45, 320–328.
- Coe, D. P., Pivarnik, J. M., Womack, C. J., Reeves, M. J., & Malina, R. M. (2006). Effect of physical education and activity levels on academic achievement in children. *Medicine & Science in Sports & Exercise*, 38, 1515–1519.
- Cox, A. E., & Ullrich-French, S. (2010). The motivational relevance of peer and teacher relationship profiles in physical education. *Psychology of Sport and Exercise*, 11, 337–344.
- Cox, A. E., & Williams, L. (2008). The roles of perceived teacher support, motivational climate, and psychological need satisfaction in students' physical education motivation. *Journal of Sport & Exercise Psychology*, 30, 222–239.
- Crocker, P. R. E., Kowalski, K. C., & Hadd, V. (2008). The role of the self. In A. L. Smith, & S. J. H. Biddle (Eds.), *Youth physical activity and sedentary behavior: Challenges and solutions* (pp. 215–237). Champaign, IL: Human Kinetics.
- Crocker, P. R. E., Sabiston, C. M., Kowalski, K. C., McDonough, M. H., & Kowalski, N. P. (2006). Longitudinal assessment of the relationship between physical self-concept and health-related behavior and emotion in adolescent girls. *Journal of Applied Sport Psychology*, 18, 185–200.
- Danish, S. J., Forneris, T., Hodge, K., & Heke, I. (2004). Enhancing youth development through sport. *World Leisure*, 46, 38–49.
- Delva, J., Johnston, L. D., & O'Malley, P. M. (2007). The epidemiology of overweight and related lifestyle behaviors: racial/ethnic and socioeconomic status differences among American youth. *American Journal of Preventive Medicine*, 33, S178–S186.
- Eccles (Parsons), J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., et al. (1983). Expectancies, values and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation* (pp. 75–146). San Francisco, CA: W. H. Freeman.
- Elkins, W. L., Cohen, D. A., Koralewicz, L. M., & Taylor, S. N. (2004). After school activities, overweight, and obesity among inner city youth. *Journal of Adolescence*, 27, 181–189.
- Elleberg, D. (2010). The effect of acute physical exercise on cognitive function during development. *Psychology of Sport & Exercise*, 11, 122–127.
- Ford, D. H., & Lerner, R. M. (1992). *Developmental systems theory: An integrative approach*. Newbury Park, CA: Sage.
- Fox, K. R., & Corbin, C. B. (1989). The physical self-perception profile: development and preliminary validation. *Journal of Sport & Exercise Psychology*, 11, 408–430.
- Fraser-Thomas, J. L., Côté, J., & Deakin, J. (2005). Youth sport programs: an avenue to foster positive youth development. *Physical Education and Sport Pedagogy*, 10, 19–40.
- Fredricks, J. A., & Eccles, J. S. (2006). Is extracurricular participation associated with beneficial outcomes? Concurrent and longitudinal relations. *Developmental Psychology*, 42, 698–713.
- Gano-Overway, L. A., Newton, M., Magyar, T. M., Fry, M. D., Kim, M. S., & Guivernau, M. R. (2009). Influence of caring youth sport contexts on efficacy-related beliefs and social behaviors. *Developmental Psychology*, 45, 329–340.
- Gardner, M., Roth, J., & Brooks-Gunn, J. (2009). Sports participation and juvenile delinquency: the role of peer context among adolescent boys and girls with varied histories of problem behavior. *Developmental Psychology*, 45, 341–353.
- Gilman, R., Dooley, J., & Florell, D. (2006). Relative levels of hope and their relationship with academic and psychological indicators among adolescents. *Journal of Social and Clinical Psychology*, 25, 166–178.
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: scale development and educational correlates. *Psychology in the Schools*, 30, 79–90.
- Goodman, E., Slap, G. B., & Huang, B. (2003). The public health impact of socioeconomic status on adolescent depression and obesity. *American Journal of Public Health*, 93, 1844–1850.
- Gould, D., & Carson, S. (2010). The relationship between perceived coaching behaviors and developmental benefits of high school sports participation. *The Hellenic Journal of Psychology*, 7, 298–314.
- Gould, D., Flett, M. R., & Lauer, L. (2012). The relationship between psychosocial developmental and the sports climate experienced by underserved youth. *Psychology of Sport & Exercise*, 13, 80–87.
- Harter, S. (1985). *Self-perception profile for children*. Unpublished manual. University of Denver, Denver, CO.
- Harter, S. (1999). *The construction of the self*. New York: The Guilford Press.
- Hawthorne, G., & Elliott, P. (2005). Imputing cross-sectional missing data: comparison of common techniques. *Australian and New Zealand Journal of Psychiatry*, 39, 583–590.
- Hellison, D., Martinek, T., & Walsh, D. (2008). Sport and responsible leadership among youth. In N. L. Holt (Ed.), *Positive youth development through sport* (pp. 49–60). New York: Routledge.
- Holt, N. L. (2008). Introduction: positive youth development through sport. In N. L. Holt (Ed.), *Positive youth development through sport*. New York: Routledge.
- Holt, N. L., Sehn, Z. L., Spence, J. C., Newton, A. S., & Ball, G. D. C. (2012). Physical education and sport programs at an inner city school: exploring possibilities for positive youth development. *Physical Education and Sport Pedagogy*, 17, 97–113.
- Jones, M. I., Dunn, J. G. H., Holt, N. L., Sullivan, P. J., & Bloom, G. A. (2011). Exploring the '5Cs' of positive youth development in sport. *Journal of Sport Behavior*, 34, 250–267.
- Kirschman, K. J. B., Roberts, M. C., Shadlow, J. O., & Pelley, T. J. (2010). An evaluation of hope following a summer camp for inner-city youth. *Child & Youth Care Forum*, 39, 385–396.
- Kitzman-Ullrich, H., Wilson, D. K., Van Horn, M. L., & Lawman, H. G. (2010). Relationship of body mass index and psychosocial factors on physical activity in underserved adolescent boys and girls. *Health Psychology*, 29, 506–513.
- Kroenke, C. (2007). Socioeconomic status and health: youth development and neomaterialist and psychosocial mechanisms. *Social Science & Medicine*, 66, 31–42.
- Kuczmariski, R. J., Ogden, C. L., Guo, S. S., Grummer-Strawn, L. M., Flegal, K. M., Mei, Z., et al. (2002). 2000 CDC growth charts for the United States: methods and development. National Center for Health Statistics. *Vital Health Statistics*, 11(246).
- Larson, R. W., Hansen, D. M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology*, 42, 849–863.
- Lerner, R. M., Lerner, J. V., Almerigi, J. B., Theokas, C., Phelps, E., Naudeau, S., et al. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth-grade adolescents: findings from the first wave of the 4-H study of positive youth development. *Journal of Early Adolescence*, 25, 17–71.
- National Research Council and Institute of Medicine (NRCIM). (2002). In J. Eccles, & J. A. Gootman (Eds.), *Community programs to promote youth development: Committee on community-level programs for youth*. Washington, DC: National Academy Press, [Division of Behavioral and Social Sciences and Education, Board on Children, Youth, and Families].
- Paxton, R. J., Estabrooks, P. A., & Dziewaltowski, D. (2004). Attraction to physical activity mediates the relationship between perceived competence and physical activity in youth. *Research Quarterly for Exercise and Sport*, 75, 107–111.

- Petipras, A. J., Cornelius, A. E., Van Raalte, J. L., & Jones, T. (2005). A framework for planning youth sport programs that foster psychosocial development. *The Sport Psychologist*, 19, 63–80.
- Physical Activity Guidelines Advisory Committee. (2008). *Physical activity guidelines advisory committee report, 2008*. Washington, DC: U.S. Department of Health and Human Services.
- Smith, A. L., & McDonough, M. H. (2008). Peers. In A. L. Smith, & S. J. H. Biddle (Eds.), *Youth physical activity and sedentary behavior: Challenges and solutions* (pp. 295–320). Champaign, IL: Human Kinetics.
- Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., Danovsky, M., et al. (1997). The development and validation of the children's hope scale. *Journal of Pediatric Psychology*, 22, 399–421.
- Stalsberg, R., & Pedersen, A. V. (2010). Effects of socioeconomic status on the physical activity in adolescents: a systematic review of the evidence. *Scandinavian Journal of Medicine & Science in Sports*, 20, 368–383.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, 75, 411–433.
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. New York: Norton.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education, Inc.
- Tessier, D., Sarrazin, P., & Ntoumanis, N. (2010). The effect of an intervention to improve newly qualified teachers' interpersonal style, students motivation and psychological need satisfaction in sport-based physical education. *Contemporary Educational Psychology*, 35, 242–253.
- Ullrich-French, S., McDonough, M. H., & Smith, A. L. (2012). Change in social connection predicts change in psychological outcomes in a physical activity-based youth development setting. *Research Quarterly for Exercise and Sport*, 83, 431–441.
- Ullrich-French, S., & Smith, A. L. (2009). Social and motivational predictors of continued youth soccer participation. *Psychology of Sport and Exercise*, 10, 87–95.
- Valle, M. F., Huebner, E. S., & Suldo, S. M. (2006). An analysis of hope as a psychological strength. *Journal of School Psychology*, 44, 393–406.
- Vandell, D., Pierce, K., & Dadisman, K. (2005). Out-of-school settings as a developmental context for children and youth. In R. Kail (Ed.), *Advances in child development and behavior*, Vol. 33 (pp. 43–77). New York, NY: Elsevier.
- Vierling, K. K., Standage, M., & Treasure, D. C. (2007). Predicting attitudes and physical activity in an "at-risk" minority youth sample: a test of self-determination theory. *Psychology of Sport and Exercise*, 8, 795–817.
- Votruba-Drzal, E. (2006). Economic disparities in middle childhood development: does income matter? *Developmental Psychology*, 42, 1154–1167.
- Weiss, M. R. (2000). Motivating kids in physical activity. *The President's Council on Physical Fitness and Sports Research Digest*, 3, 1–6, 8.
- Weiss, M. R., Smith, A. L., & Stuntz, C. P. (2008). Moral development in sport and physical activity. In T. S. Horn (Ed.), *Advances in sport psychology* (3rd ed.) (pp. 187–210). Champaign, IL: Human Kinetics.
- Whitehead, J. R. (1995). A study of children's physical self-perceptions using an adapted physical self-perception profile questionnaire. *Pediatric Exercise Science*, 7, 132–151.
- Yang, S., Lynch, J., Schulenberg, J., Diez Roux, A. V., & Raghunathan, T. (2008). Emergence of socioeconomic inequalities in smoking and overweight and obesity in early adulthood: the national longitudinal study of adolescent health. *American Journal of Public Health*, 98, 468–477.
- Zarratt, N., Fay, K., Li, Y., Carrano, J., Phelps, E., & Lerner, R. M. (2009). More than child's play: variable- and pattern-centered approaches for examining effects of sports participation on youth development. *Developmental Psychology*, 45, 368–383.