Social Responsibility among Low-Income Youth in Physical Activity-Based Positive Youth Development Programs: Scale Development and Associations with Social Relationships

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Relationships with peers and adults are expected to foster social responsibility in physical activity-based positive youth development programs. Low-income youth ($N = 479$) were surveyed pre- and post-program. Psychometric properties of a new social responsibility scale were supported. Belonging predicted changes in social responsibility, and leader emotional support moderated the autonomy support- and belonging-social responsibility associations. Those with higher leader emotional support had a stronger positive association between autonomy support and social responsibility. Those with lower leader emotional support had a stronger positive association between belonging and social responsibility. Positive social relationships with peers and staff may facilitate social responsibility.

Positive youth development (PYD) is a philosophy of child and adolescent development that holds that all people have strengths and the potential for positive change (Benson, Scales,

Hamilton, & Sesma, 2006; Damon, 2004; Holt, 2008). PYD programs are structured to build assets such as self-esteem, competence, and prosocial behavior rather than focus on reducing deficits such as antisocial behavior (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Damon, 2004). PYD is grounded in developmental systems theory (Ford & Lerner, 1992) and based on the ideas that positive outcomes may be facilitated by social contexts that provide resources and opportunities for initiative and achievement.

PYD programs have particular potential to promote positive outcomes in low-income populations who tend to have limited material and social resources, limited access to physical activity, lower academic achievement, and greater incidence of health problems, overweight and obesity, and depression (e.g., Goodman, Slap, & Huang, 2003; Kroenke, 2008; Votruba-Drzal, 2006; Yang, Lynch, Schulenberg, Diez Roux, & Raghunathan, 2008). Beyond reducing risks, well-designed, theoretically grounded physical activity-based PYD programs can provide opportunities for developing skills, competence, and social relationships because they are interactive and emotionally and socially involved (Danish, Forneris, Hodge, & Heke, 2004; Hellison, Martinek, & Walsh, 2008; Fraser-Thomas, Côté, & Deakin, 2005; Weiss, Smith, & Stuntz, 2008).

Social responsibility is a goal of many physical activity-based PYD programs (e.g., Brunelle, Danish, & Forneris, 2007; Hellison, 2011). Social responsibility refers to attitudes and initiative to respect the rights of others, being a responsible citizen, and avoiding violent and destructive behaviors (Ford, Wentzel, Wood, Stevens, & Siesfeld, 1989). Hellison's (2011) personal and social responsibility model is an applied model of physical activity-based PYD, and has been influential in the development of PYD programs for underserved youth. Hellison's model suggests that physical activity programs can foster personal and social responsibility by (a) genuinely caring about, respecting, and listening to youth; (b) gradually shifting power and decision-making from staff to youth; and (c) integrating life skills and character lessons into physical activities (Hellison, 2000). Although the third principle deals mainly with curricular design and implementation, the first two principles suggest social relationship mechanisms are pertinent to developing social responsibility.

Having opportunities to develop positive social relationships with both adults and peers in PYD programs are thought to contribute to positive outcomes such as social responsibility (Benson et al., 2006). There is a growing body of evidence suggesting that a positive relationship between youth and program staff and having a caring climate in physical activity-based PYD programs predict emotional regulation, empathic self-efficacy, and prosocial behavior (Catalano et al., 2004; Gano-Overway, et al, 2009). Previous research with physical activity-based summer day camps for low-income youth demonstrates that social acceptance by peers, social support from program staff, and physical competence predict changes in physical self-worth, global self-worth and attraction to physical activity (Ullrich-French, McDonough, & Smith, 2012). Furthermore, social support from program staff predicts returning to the program the following year, suggesting additional long-term effects (Ullrich-French & McDonough, in press).

In addition to the PYD literature implying that positive social relationships promote positive outcomes, self-determination theory (SDT) provides a useful framework for examining how social relationships may interact in predicting positive outcomes such as social responsibility (Deci & Ryan, 1991; Ryan & Deci 2002). SDT implies that autonomy support from people in a position of authority, and meaningful, caring involvement with others in the social context may interact to predict positive outcomes (Mageau & Vallerand, 2003). Autonomy support refers to the ways in which people in a position of authority encourage volition and voice among people under their care, make efforts to see their perspectives, and provide information and choice (Williams & Deci, 1996). According to SDT, autonomy support is a critical antecedent of

basic psychological needs to feel competent, autonomous, and socially related, or connected. The construct of autonomy support largely reflects Hellison's (2000) second principle of social responsibility development, gradually shifting power and decision-making from staff to youth. Relationships that are autonomy supportive, in contrast to controlling, better meet an individual's needs for competence, autonomy, and relatedness, and, thus, predict more self-determined motivation, prosocial behavior, and physical activity behavior (Amorose & Anderson-Butcher, 2007; Gagné, 2003; Mageau & Vallerand, 2003; Vierling, Standage, & Treasure, 2007).

Hellison's (2000) model implies that in addition to autonomy support, having genuinely caring, respectful, and attentive relationships with program staff should also promote social responsibility. In SDT, such close, emotionally supportive relationships are termed involved (Grolnick & Ryan, 1989). Involvement has been found to predict positive outcomes in both educational and physical activity contexts such as enjoyment, self-determined motivation, participation, competence, achievement and adjustment (e.g., Grolnick & Ryan, 1989; Mageau & Vallerand, 2003). Furthermore, in order for autonomy support to be optimally adaptive, the SDT literature implies that it should occur within an involved (emotionally supportive) relationship (Mageau & Vallerand, 2003). If youth are given autonomy support but do not feel that they have a close, emotionally supportive relationship with staff, they may not feel cared for. Conversely, if the relationship is close and emotionally supportive, but not autonomy supportive, it may feel controlling. Therefore, social responsibility is expected to be best facilitated when youth experience an emotionally supportive relationship within an autonomy supportive context. However, there is little empirical evidence about the main and interactive effects of autonomy support and emotional support from program staff in the PYD literature.

Finally, it is important to consider that relationships with peers in the PYD context may also play a role in developing social responsibility. Physical activity provides a setting for conflict resolution, cooperation, teambuilding, leadership, and other interactions with peers (Fraser-Thomas et al., 2005; Hellison et al., 2008) and these interactions may provide opportunities to develop social responsibility. However, having a high-quality relationship with those peers may have a greater effect on social responsibility than simply having the opportunity to interact with them. Sullivan's (1953) interpersonal theory of psychiatry proposed that interacting and developing a sense of friendship and belonging with peers is important for youth to develop a sense of self in relation to others; an understanding of authority, competition, and cooperation; and to fulfill needs for intimacy and validation. Indeed, peer relationships have been shown to predict a variety of motivational and well-being outcomes (Eccles et al., 1983; Gano-Overway et al., 2009; Harter, 1999; Riley & Smith, 2011). Therefore, it is expected that having a sense of belonging (engagement, commitment to, and connectedness) with both peers and staff within PYD programs would best facilitate social responsibility.

The purpose of this project was to examine whether perceptions of belonging in the program, emotional support from program leaders, and autonomy support afforded by program staff, and the interactions among these three variables, predicted changes in social responsibility among participants in physical activity-based PYD programs for low income youth. We hypothesized that (a) belonging, emotional support, and autonomy support would positively predict changes in social responsibility; and (b) leader emotional support would moderate the association between autonomy support, belonging, and social responsibility. Specifically, we hypothesized that (a) the association between autonomy support and social responsibility would be positive and stronger when leader support was higher; and (b) the association between belonging and social responsibility would be positive and stronger when leader emotional support was higher. Although there is not sufficient theoretical and empirical evidence to generate specific hypotheses, we also conducted an exploratory analysis examining whether

the two-way interaction between autonomy support and belonging, and the three-way interaction among belonging, leader emotional support, and autonomy support predicted change in social responsibility.

METHOD

Participants

This study used data collected from two separate, larger studies about social relationships, self-perceptions, motivation, and psychosocial outcomes in physical activity-based PYD summer camps for low-income youth in the Midwestern United States (Anderson-Butcher, Wade-Mdivanian, Riley, & Davis, 2010; Ullrich-French & McDonough, in press). Both programs assessed autonomy support, leader emotional support, belonging, and social responsibility using identical measures among participants 10 years and older in Program A, and all participants in Program B, which comprised the data used for the current study. Both programs were former National Youth Sport Program camps. The National Youth Sport Program was a federally funded summer sport camp program for income-qualifying youth that operated across the United States from 1986–2006 when federal funding was cut. Several programs, including these two, have continued to operate with local funding.

Sample A consisted of 272 youth (137 boys, 135 girls) between the ages of 10–14 ($M_{age} =$ 11.31, $SD_{age} = 1.22$). Participants came from an array of ethnic backgrounds (41.4% Hispanic, 34.7% White, 9.7% Black, 7.5% multi-racial, and 6.7% Asian). To be invited to the camp, youth had to qualify for the U.S. Department of Agriculture free and reduced lunch program. Children are eligible for this program if their family's household before-tax income does not exceed 1.85 times the federal income poverty guidelines based on household size. For a family of four, the maximum eligible annual income was $37,000. Average attendance was 16.98 out of 20 days, with 64% of the participants attending 17 or more days (85.0% of the program). Program A had 58 staff members, including 24 group leaders.

Sample B were 438 youth (257 boys, 179 girls, 2 did not report gender) between the ages of 9–16 ($M_{age} = 12.09$, $SD_{age} = 1.57$). Participants had a variety of ethnic backgrounds (77.4% Black, 12.3% multi-racial, 2.7% Native American, 1.4% White, 1.1% Asian, 3.7% other, and 1.4% unreported). There was no income requirement for Sample B, but youth were recruited from neighborhoods with an average household income below the median value for the city, and 60.3% were on the free and reduced lunch program. Participants attended an average of 14.38 out of 19 days, with 70.1% attending 17 or more days. Program B had 61 staff members, including 24 group leaders.

Measures

Belonging

Belonging was measured using Anderson-Butcher and Conroy's (2002) measure of belonging in youth development programs. This measure captures engagement in, commitment to, and connectedness to peers and staff in the program. An example item is, "I am accepted at [program name]." The five-item measure employs a 5-point Likert scale ranging from 1 (*not at all true*) and 5 (*really true*). This measure was developed with an ethnically diverse sample of 9 to18-year-olds involved in PYD programs, and there is evidence of acceptable factorial, convergent, and predictive validity of scores (Anderson-Butcher & Conroy, 2002).

Leader Emotional Support

Participants' perceived emotional support from their group leader in the program was assessed using Cox and Williams' (2008) adapted version of the teacher support subscale of Goodenow's (1993) Psychological Sense of School Membership Scale. Items were adapted to query youths' perceptions of emotional support from their group leader. An example item is, "I can talk to my [program] team leader if I have a problem." The six items are measured on a 5-point Likert scale ranging from 1 (*not at all true of me*) to 5 (*very true of me*). Psychometric evidence supporting the original and adapted measures has been documented in education, sport, physical education, and PYD settings (Allen, 2006; Cox & Williams, 2008; Goodenow, 1993; Ullrich-French et al., 2012).

Autonomy Support

Autonomy support from program staff was assessed using Standage, Duda, and Ntoumanis' (2005) adaptation of the Learning Climate Questionnaire (Williams & Deci, 1996) for the physical education context. For this study, the scale was modified to ask participants about autonomy support from program staff. An example item is, "I feel that the [program name] staff provides me with choices and options." The questionnaire contains 15 items on a 7-point Likert scale ranging from 1 (*strongly disagree*) and 7 (*strongly agree*). The measure was designed to assess the degree to which staff take participants' perspectives, acknowledge their emotions, provide information and choice, and minimize pressure or controlling behaviors (Williams & Deci, 1996). Evidence for the reliability and validity of this measure has been documented with secondary school (Standage et al., 2005) and college-age students (Williams & Deci, 1996).

Social Responsibility

Social responsibility was measured using the Community and Youth Collaborative Institute (CAYCI) Social Sports Experiences Scale (Anderson-Butcher et al., 2010). This tool was originally developed for use in a sports-based youth development program to assess participants' perceptions of acting respectfully, responsibly, fairly, and cooperatively with others in sports activities. Most of the physical activities provided in these PYD programs were sport-based, so this scale was well-suited to assess social responsibility in that context. It was developed based on conceptualizations of competence to engage in pro-social behaviors, and the initiative to respect others, be a responsible citizen, and avoid destructive behaviors (Ford et al., 1989; Masten & Coatsworth, 1998). Items were initially developed upon examining other available scales for related constructs such as social competence (e.g., Gresham, Sugai, & Horner, 2001; Katz, McClellan, Fuller, & Walz, 1995), exploring the literature on the personal and social responsibility model (Hellison, 2000; 2011), and gathering input from youth development leaders in the field. Once items were written, two faculty members with expertise in survey research, scale construction, positive youth development, and youth sport examined the items for readability and face validity, as suggested by DeVellis (2003). Suggestions from the experts included minor language changes to more clearly indicate that these items refer to sport settings. Following expert review a PYD staff person also reviewed the measure for readability and face validity, and did not suggest any further changes.

In this study, the eight items (see Table 1) were used to assess participants' perceptions of acting respectfully, responsibly, fairly, and cooperatively with others in sports activities. The measure was scored on a 5-point Likert scale ranging from 1 (*not at all true*) and 5 (*really true*). An example item is, "I take responsibility for my actions when playing sports." Initial internal consistency reliability was $\alpha = .85$. Further psychometric properties for this instrument have not been established previously. Because this is a new scale, in addition

Table 1

Descriptive Statistics, Correlations among the Social Sports Experiences Scale Items, and Completely Standardized Factor Loadings and Uniquenesses from the CFA Model ($N = 479$)

Item	1	2	3	4	5	6	7	8
1. I respect others when playing sports.	—							
2. I work well with my group members when playing sports.	.47	—						
3. I control my temper when playing sports.	.38	.40	—					
4. I play sports fairly even when an adult is not around.	.40	.38	.35	—				
5. In sports, I am good at working together with my team members.	.44	.56	.42	.38	—			
6. I take responsibility for my actions when playing sports.	.48	.38	.31	.36	.48	—		
7. I act responsibly when playing sports.	.47	.38	.40	.44	.45	.57	—	
8. I cooperate with others when playing sports.	.32	.46	.36	.31	.43	.34	.40	—
M	4.20	4.19	3.90	4.12	4.21	4.26	4.28	4.33
SD	.97	.94	1.18	1.01	.96	.96	.90	.83
Loading	.66	.68	.57	.57	.72	.66	.69	.58
Uniqueness	.56	.54	.67	.67	.49	.56	.52	.67

Notes. All correlations are significant ($p < .01$). All parameter estimates are significant ($p < .05$). Overall model fit: Satorra-Bentler Scaled $\chi^2 = 45.47$, $df = 20$, $p < .01$; Root Mean Square Error of Approximation = .05 (90% CI = .03–.07, p value for RMSEA test of close fit = .42), Standardized Root Mean Square Residual = .04; Comparative Fit Index = .99, Tucker-Lewis Index = .98.

to reliability, investigations of the factorial validity and factorial invariance across gender, program sites, and over time were examined using confirmatory factor analysis prior to using it in the main analyses.

Procedures

For Sample A, the study received exempt status from the host institution review board because data collection was carried out as part of the program activities for program evaluation purposes. Of the 272 youth who were 10 years and older and participating in that program, none declined to participate, but 74 were absent at the first ($n = 8$) or second ($n = 66$) data collection. Participants who missed a data collection had significantly lower attendance ($M = 9.93$ days, $SD = 4.52$ vs. $M = 16.88$ days, $SD = 2.53$; $F[1, 269] = 254.06$, $p < .01$) and were older ($M = 11.58$ years, $SD = 1.26$ vs. $M = 11.22$ years, $SD = 1.19$; $F[1, 268] = 4.83$, $p = .03$) than those who were present for both data collections. Subsequent analyses were conducted with the $N = 198$ participants who completed both time 1 and time 2 questionnaires.

For Sample B, a total of 589 youth (age 10 and older by August 31st of the year the program took place) initially registered for the program, however, only 438 received parent/guardian consent to participate in the study and attended the camp on at least one of the days where data were collected. Of these 438 youth, 151 were absent for either the first ($n = 23$) or second ($n = 128$) data collection. Participants who missed either data collection tended to have significantly lower attendance ($M = 9.43$ days, $SD = 4.70$) than those who were present for both data collections ($M = 16.73$, $SD = 2.14$; $F[1, 436] = 500.86$, $p < .01$). Those missing a data collection were also significantly older in age ($M = 12.33$ years, $SD = 1.48$ vs. $M = 11.98$ years, $SD = 1.61$; $F[1, 433] = 4.60$, $p < .05$). Subsequent analyses were conducted with the $N = 287$ participants who had data from both time points.

Both programs ran on weekdays, with one 4-day-long weekend mid-program for a total of 20 days of instructional time across 30 calendar days. Questionnaires were completed during program time 27–28 days apart: on the second (Time 1) and third-to-last (Sample A) or second-to-last (Sample B; Time 2) day of the program. Social responsibility was measured at both time points, and belonging, leader emotional support, and autonomy support were measured at Time 2. Participants who were absent on the day of data collection completed questionnaires the following day. A researcher explained the purpose and procedures to the participants, and informed them that participation was voluntary. Questionnaires took approximately 15–40 min to complete. Trained research assistants were available to answer questions and read questions to participants who had difficulties reading.

Data Analysis

Data were screened for missing values and distributional properties. Internal consistencies were calculated for all measures. Group differences between the two programs were examined using one-way ANOVA. Because the social responsibility measure was newly developed in the present study, a confirmatory factor analysis (CFA) using LISREL 8.71 (Scientific Software International) was conducted to test its hypothesized 1-factor structure. Fit of the CFA model was considered good based on the following criteria: Satorra-Bentler Scaled χ^2 (S-B χ^2) non-significant at $p < .05$; root mean square error of approximation (RMSEA) $\leq.06$, 90% CI $\leq.60$; test of close fit (CFit) non-significant at $p < .05$; standardized root mean square residual (SRMR) $\leq.08$; comparative fit index (CFI) $\geq.95$; and Tucker-Lewis index (TLI) $\geq.95$ (Hu & Bentler, 1999). Factor invariance was also tested across program, gender, age, and time (longitudinal factor analysis) using multi-group CFA procedures (Marsh, 1994; Vandenberg & Lance, 2000). Specifically, we first tested a baseline model with the eight items loaded on the same latent factor across groups to test configural invariance. Next we tested for metric invariance by constraining the factor loading to be invariant across groups. This is typically considered the minimal criterion for establishing measurement invariance across groups (Marsh, 1994). Finally, we tested complete invariance by constraining the factor loadings, item uniquenesses, and the factor variance to be equal across groups. The progressively constrained models were compared to the baseline model using a Satorra-Bentler Scaled Difference in χ^2 Test (SDCS; see Brown, 2006) and changes in CFI. A non-significant reduction in χ^2 and a change in CFI $\leq.01$ (Cheung & Rensvold, 1999) would indicate that the proposed invariance constraints were tenable.

The steps involved in establishing measurement invariance across time using the LFA were similar to those testing for measurement invariance across groups. We tested a baseline model (Model$_{Baseline}$) with no invariance constraints, metric invariance across time by constraining the factor loading to be invariant across the measurement occasions (Model$_{FL\ invariance}$), and a complete invariance across time model (Model$_{complete\ invariance}$). The uniquenesses for corresponding items were permitted to covary over time in each of the models tested. The same SDCS and changes in CFI criteria used in the multi-group confirmatory factor analyses were used to examine invariance between the increasingly restrictive models.

Descriptive statistics and correlations were calculated for all variables. Hierarchical regression and procedures recommended for testing interactions (Cohen, Cohen, West, & Aiken, 2003) were used to test the hypotheses that belonging, autonomy support, leader emotional support, would predict social responsibility, and that leader support would be a moderator of the autonomy support-social responsibility and belonging-social responsibility associations. Social responsibility at Time 2 was the dependent variable and social responsibility at Time 1 was entered in the first step to control for initial values. Controlling for social responsibility

at time 1 allows the results to be interpreted in terms of predicting individual change in social responsibility (Zumbo, 1999). Age, gender, attendance, and program membership were entered in Step 2 as covariates to control for possible effects of cognitive development, gender socialization, amount of program exposure, and differences in program content. Belonging, autonomy support, and leader emotional support were centered, and entered in Step 3 to test the main effects. To test the interactions, each two-way product term between the centered belonging, autonomy support, and leader emotional support variables was entered in Step 4. The three-way interaction was entered in Step 5. Any interaction terms found to be significant were graphed using high and low scores for each term created at one standard deviation above and below the mean. The simple slopes were tested for significance to facilitate the interpretation of significant interactions (Aiken & West, 1991).

RESULTS

Preliminary Analyses

Data were screened for missing values. Six participants were missing data on all the items for one or more variables, and were therefore excluded from the analyses. These participants attended camp less frequently ($M = 13.17$, $SD = 5.00$ versus $M = 16.86$, $SD = 2.23$; $F[1,482] = 15.64$, $p < .01$), and were younger ($M = 10.00$, $SD = .71$ versus $M = 11.69$, $SD = 1.50$; $F[1,480] = 6.40$, $p = .01$) than participants without missing data. In 25 additional cases, a participant was missing a single item on a given measure, and missing data was imputed using person mean substitution. Therefore, all further analyses were conducted with $N = 479$. More sophisticated methods (e.g., full information maximum likelihood estimation [FIML]) are available for dealing with missing data. However, person mean substitution performs well in cases where the quantity of missing data is minimal (Downey & King, 1998), and allowed the use of regular regression techniques to test the main hypotheses rather than structural equation modeling, which would complicate the analysis and interpretation of results, particularly those of the moderation hypotheses. We tested all hypotheses using both regular regression with the listwise deletion/person mean substitution solution to missing data, and with structural equation modeling using FIML and found no differences in the results. Therefore the results of the regression approach are reported here.

Data were screened for normality and extreme cases. Univariate skewness and kurtosis values were approximately normal (see Table 2). The items on the social responsibility scale exhibited significant ($p < .01$) multivariate skewness and kurtosis, however, so we employed robust maximum likelihood estimation procedures when conducting the CFA tests (Finney & DiStefano, 2006). Furthermore, nine cases were identified as univariate (z-scores > 3.29) and/or multivariate outliers (Mahalanobis distance $\chi^2 p < .001$; Tabachnick & Fidell, 2007). Analyses run with and without outliers included did not lead to different interpretations of the findings, and therefore outliers were retained for all analyses reported here.

Descriptive statistics, internal consistency reliabilities, and correlations can be found in Table 2. Mean scores on all variables were in the middle to high region of the possible scale range. Correlations among all variables were positive and significant. The correlation between Time 1 and Time 2 social responsibility indicated moderate stability over time (intraclass correlation = .62). The correlations among autonomy support, leader emotional support, and belonging indicated moderate associations. Mean differences between participants in the two programs were tested, and Sample A had significantly higher scores on all variables except Time 1 social responsibility (see Table 3).

Table 2
Descriptive Statistics, Internal Consistency, and Correlations

Variable	1	2	3	4	5
1. Belonging	—				
2. Leader emotional support	.61*	—			
3. Autonomy support	.73*	.68*	—		
4. Time 1 social responsibility	.45*	.39*	.43*	—	
5. Time 2 social responsibility	.60*	.46*	.53*	.62*+	—
M	4.05	3.79	4.95	4.19	4.12
SD	.95	.89	1.44	.67	.80
Skewness	−.93	−.44	−.41	−.73	−1.02
Kurtosis	.22	−.47	−.55	−.06	.88
α	.90	.76	.95	.85	.91
Scale range	1–5	1–5	1–7	1–5	1–5

*$p < .01$
+ Intraclass correlation coefficient

Factorial Validity and Invariance of the Social Sports Experiences Scale

The CFA of the Social Sports Experiences Scale generally supported the hypothesized one-factor model, S-Bχ^2 = 45.47, df = 20, $p < .01$; RMSEA = .05 (90% CI = .03–.07, CFit = .42, SRMR = .04; CFI = .99, TLI = .98), with the exception of the CFit index, which had a $p < .05$. All items loaded significantly with completely standardized coefficients ranging from .57–.72 (see Table 1). Results from the invariance tests are found in Table 4. There was evidence of complete invariance across the two programs and gender, and support for configural and metric invariance across age and time. These findings support the factorial validity of the Social Sports Experiences Scale.

Main Analyses: Belonging, Leader Emotional Support, and Autonomy Support Predicting Social Responsibility

A hierarchical multiple regression was conducted to test whether belonging, leader emotional support, autonomy support, and all two-way and three-way interactions significantly predict changes in social responsibility. Results are shown in Table 5. In Step 1 Time 1 social responsibility significantly predicted 40% of the variance in Time 2 social responsibility. Age, gender, attendance, and program location were initially included in the second step to test whether they acted as covariates, however, age, gender, and attendance were not significant

Table 3
One-way ANOVAs of Group Differences Between Sample A and Sample B ($N = 479$)

	Sample A		Sample B		Group Effect		
Variable	M	SD	M	SD	F	P	Partial η^2
Belonging	4.27	.95	3.90	.92	18.41	<.01	.04
Leader Emotional Support	3.98	.89	3.67	.88	14.30	<.01	.03
Autonomy Support	5.39	1.43	4.64	1.36	33.03	<.01	.07
Social Responsibility T1	4.27	.72	4.14	.64	4.03	.05	.01
Social Responsibility T2	4.29	.75	4.01	.82	13.65	<.01	.03

Table 4
Summary of Overall Model Fit From Measurement Invariance Tests Across Groups and Time for the Sports Social Experiences Scale

Model	S-B χ^2(df)	RMSEA (90% CI)	CFit	SRMR	CFI	TLI	SDCS (df difference)
Program Location Invariance							
Model Baseline	82.15 (40)*	.07 (.05–.09)	.09	.07	.98	.97	—
Model FL invariance	90.27 (47)*	.06 (.04–.08)	.14	.07	.98	.98	6.15 (7)
Model complete invariance	104.69 (56)*	.06 (.04–.08)	.16	.12	.98	.98	14.10 (9)
Gender Invariance							
Model Baseline	74.36 (40)*	.06 (.04–.08)	.20	.06	.99	.98	—
Model FL invariance	85.11 (47)*	.06 (.04–.08)	.23	.07	.98	.98	9.99 (7)
Model complete invariance	90.89 (56)*	.05 (.03–.07)	.44	.08	.98	.98	6.71 (9)
Age Group Invariance							
Model Baseline	61.15 (40)*	.05 (.02–.07)	.55	.05	.99	.99	—
Model FL invariance	67.02 (47)*	.04 (.01–.06)	.69	.06	.99	.99	4.51 (7)
Model complete invariance	94.47 (56)*	.05 (.03–.07)	.35	.08	.98	.98	27.32 (9)*
Time Invariance - Longitudinal Factor Analysis							
Model Baseline	148.56 (95)*	.03 (.02–.05)	.99	.04	.99	.99	—
Model FL invariance	160.15 (102)*	.04 (.02–.04)	1.00	.05	.99	.99	11.64 (7)
Model complete invariance	196.00 (111)*	.04 (.03–.05)	.97	.09	.99	.99	50.06 (9)*

Notes. S-B χ^2 = Satorra-Bentler Scaled χ^2; RMSEA = root mean square error of approximation; CI = RMSEA confidence interval; CFit = p value for RMSEA test of close fit; SRMR = standardized root mean square residual; CFI = comparative fit index; TLI = Tucker-Lewis Index; SDCS = Satorra-Bentler Scaled Difference in χ^2 Test.
*$p < .05$

covariates so they were excluded from the final model. Program location was a significant covariate and was retained in subsequent steps. In Step 3, the addition of the social relationship variables accounted for a significant ($p < .01$) incremental increase in variance explained ($\Delta R^2 = .12$), with belonging being a significant ($p < .01$) positive predictor. In Step 4, the addition of the 2-way interactions explained significant ($p < .05$) additional variance. Specifically, the interactions between leader emotional support and autonomy support, and leader emotional support and belonging were significant ($\Delta R^2 = .01$). These two interactions were graphed and the resulting simple slopes were tested for significance (see Figures 1a and 1b). For the leader emotional support by autonomy support interaction, when leaders were more emotionally supportive, there was a positive relationship ($p < .05$) between autonomy support and social responsibility but no significant relationship when leader emotional support was lower. For the leader emotional support by belonging interaction, when leaders were less emotionally supportive there was a positive relationship ($p < .01$) between belonging and social responsibility, but the relationship was not significant when leader emotional support was higher. The three-way interaction was not significant.

DISCUSSION

This study supports the contention that social relationships with peers and adults positively predict changes in social responsibility in physical activity-based PYD programs for low-income youth. The findings provide initial evidence that participants' sense of belonging in such programs is the primary predictor of changes in social responsibility across the

Table 5
Hierarchical Multiple Regression Predicting Social Responsibility ($N = 479$)

											β			
Step	F	df	R^2	ΔR^2	SR T1	PRGM	BEL	AS	LS	BEL X AS	BEL X LS	AS X LS	BEL X AS X LS
1	319.98**	1,477	.40		.63**								
2	167.75**	2,476	.41	.01**	.62**	.11**							
3	109.15**	5,473	.54	.12**	.44**	.04	.34**	.06	.03				
4	69.99**	8,470	.54	.01*	.44**	.03	.30*	.10	.04	.04	–.13*	.14*	
5	62.24	9,469	.54	.00	.44**	.03	.30*	.11*	.06	.02	–.15*	.14*	–.05

Notes. Dependent variable is time 2 social responsibility. SR T1 = time 1 social responsibility, PRGM = Program, BEL = belonging, AS = autonomy support, LS = leader emotional support. $^*p < .05$. $^{**}p < .01$.
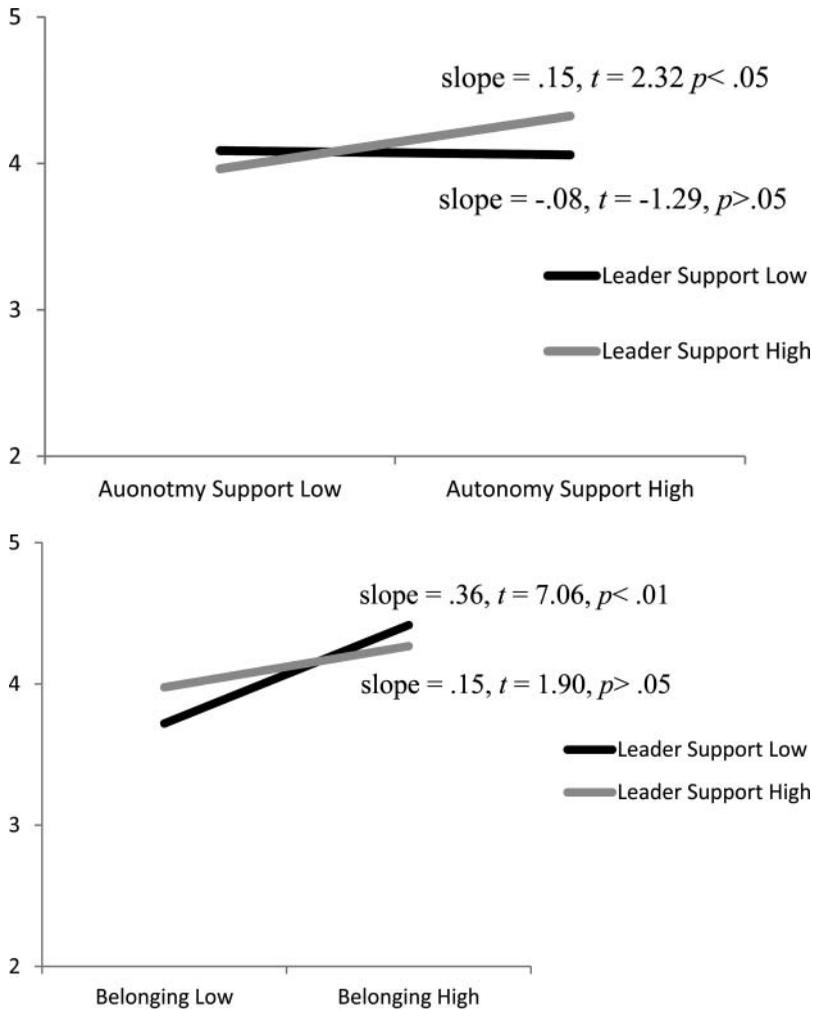
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Figure 1. a. Autonomy Support by Leader Emotional Support Interaction Predicting Social Re-
sponsibility. b. Belonging by Leader Emotional Support Interaction Predicting Social Responsibil-
ity

programs. Consistent with self-determination theory, having staff members who are both au-
tonomy supportive and emotionally supportive also predicts changes in social responsibility
over and above the effects of belonging. Contrary to our hypotheses, for participants who
experience lower emotional support from program staff, belonging is a stronger predictor of
changes in social responsibility. Furthermore, the Social Sports Experiences Scale developed
for this study was found to be reliable and exhibit adequate factorial validity across program
locations, gender, age, and time, and is therefore a promising new measurement tool.

   The positive associations between social relationships, particularly belonging, and changes
in social responsibility were consistent with previous research. Some caution is needed in
interpreting this main effect, as the significant interaction between belonging and leader

support suggests that the effect of belonging on changes in social responsibility varies as a function of leader support. However, these findings support self-determination theory and empirical work in PYD that high quality social relationships play a role in promoting adaptive outcomes among youth (Benson et al., 2006; Catalano et al., 2004; Mageau & Vallerand, 2003). Although research on social responsibility in PYD programs is sparse, one study showed that social responsibility can increase among adolescents in physical activity-based PYD programs as short as one week (Brunelle et al., 2007). Social relationships with peers and adult staff members have been associated with prosocial goal pursuit and social responsibility among middle-school students (Wentzel, 1998) but there is little work examining these associations in PYD programs. This finding is consistent, however, with practical experiences documented by Hellison (2011) regarding his decades of work promoting social responsibility through physical activity-based PYD programs for low-income youth.

The finding that autonomy support did not have a significant main effect on changes in social responsibility was unexpected, as theory implies and prior research in sport has found that both emotionally and autonomy supportive relationships with coaches and physical education teachers are associated with positive psychosocial outcomes (e.g., Gagné, Ryan, & Bargmann, 2003; Mageau & Vallerand, 2003; Standage et al., 2005). The lack of support for this association with social responsibility may be at least partially accounted for by the strong associations among autonomy support, belonging, and leader emotional support. Bivariate correlations showed that both autonomy support and leader emotional support had strong associations with social responsibility, but they were not significant in the regression analyses when belonging was included. Although these three social relationship variables are conceptually distinct in many respects, they do overlap. For example, the belonging measure assessed perceptions of connection and engagement with other people in the program, including both staff and peers, and supportive leaders likely play a substantial role in fostering a sense of belonging. Similarly, although autonomy support focuses primarily on how leaders foster a sense of control and volition among youth, it does include concepts that overlap with leader emotional support and belonging, such as acknowledging youths' emotions. As a result, it is likely best to interpret these results as implying that belonging may subsume participants' perceptions of relationships with both leaders and peers, and that both may be important in creating a sense of belonging and predicting change in social responsibility.

The interaction between leader emotional support and autonomy support implies that for program staff, being both emotionally supportive and fostering autonomy among youth may be important for optimizing outcomes. Although of low magnitude, this interaction was consistent with self-determination theory. It implies that being involved, caring, and emotionally supportive may have a stronger association with optimal outcomes if it is coupled with support for volition and voice (Mageau & Vallerand, 2003). There are few examples of empirical work testing the combined contribution of autonomy support and emotional support on adaptive outcomes in the physical activity literature, so the finding that the combination of higher autonomy support and emotional support predicts greater change in social responsibility is an important contribution of this work. However, contrary to our hypothesis, belonging was associated with greater changes in social responsibility when leader emotional support is lower, not higher as we expected. This finding implies that for participants who have a highly emotionally supportive relationship with their leader, belonging may play a reduced role in predicting social responsibility. This interaction provides some indication that leader emotional support provides a unique contribution to the prediction of social responsibility. Although belonging is a major force for these adolescents, the emotional support derived from the leader relationship could provide something added to the general sense of belonging and, thus, facilitate increased social responsibility. There is also overlap in the concepts

addressed in some of the items in the belonging, leader emotional support, and autonomy support measures. This overlap among the predictor variables may affect the stability of these findings, and further research replicating this work, and developing more distinctive assessments of peer and leader relationships is needed to tease apart the relative importance of these variables.

The non-experimental correlational design, the high correlations among the predictor variables, and the association between missing data and attendance and age are limitations of the current study. The lack of experimental design precludes drawing conclusions about causal associations between relationships in PYD programs and social responsibility. This problem is typical of much PYD research, and inherent in work with community-based programs that will not or cannot limit participation in order to satisfy conditions of random assignment or the creation of a control group (Brunelle et al., 2007). The strong correlations among the social relationship variables makes it difficult to partial out their relative contribution to the prediction of social responsibility, and, thus, replication of this analysis in future studies is needed to examine the stability of these findings. Part of this problem is the lack of validated measurements that are theoretically based and designed to compare distinct constructs. Finally, given that participants with missing data on at least one variable were excluded from the analyses, the associations between missing data and other variables in the dataset suggest the results may disproportionately capture the experiences of participants who are younger and attend programs more regularly. The association with attendance is not surprising given that recruitment for the study and questionnaires were completed during program time. It does, however, highlight the need to explore what happens for youth who attend sporadically, reasons for their absence, and how they may be better retained in PYD programs, as spending more time in programs that provide developmental opportunities is associated with benefits (see Larson & Verma, 1999 for a review). Furthermore, although effect sizes were fairly small, a review of the PYD literature found that variance explained by main effects tend to range from 10–20%, and by interactions from 2–5% (Benson et al., 2006). Given that we further limited effect sizes by controlling for initial values of social responsibility, these findings may be considered meaningful.

This study provides evidence about associations between social connections formed in PYD programs and changes in social responsibility, and presents a new, psychometrically sound tool to assess social responsibility in this population. It goes beyond cross-sectional designs to look at change in social responsibility, and demonstrated that the findings generalized across two independent programs. In addition to providing evidence of the value of forming close, supportive bonds with peers and staff in physical activity-based PYD programs, these findings provide support for the contention from self-determination theory that relationships with staff that both provide emotional support and support for autonomy may offer them opportunities to develop key psychosocial assets such as social responsibility. From an applied perspective, these findings suggest that training program staff to provide both autonomy and emotional support, as well as to facilitate positive peer relationships and belonging within programs may help maximize the effect that physical activity-based PYD programs may have on social responsibility. Strategies such as involving participants in decisions, providing choices and options, and creating meaningful leadership opportunities may foster autonomy support. Techniques such as listening attentively, providing positive and constructive feedback, and demonstrating genuine interest in participants may help staff build emotionally supportive relationships with youth. Future research is needed to further test the validity of the Social Sports Experiences Scale, and to find clever ways to test the causal nature of hypothesized mechanisms without disrupting the mission of community PYD programs. These social connections may be a key for building assets like social responsibility in youth.

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