

# Activity Involvement as an Ecological Asset: Profiles of Participation and Youth Outcomes

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**Abstract** Prior research has demonstrated that participation in out-of-school time activities is associated with positive and healthy development among adolescents. However, fewer studies have examined how trajectories of participation across multiple activities can impact developmental outcomes. Using data from Wave 3 (approximately Grade 7) through Wave 8 (approximately Grade 12) of the 4-H Study of Positive Youth Development, this study examined patterns of breadth in out-of-school time participation in activities and associated outcomes in positive youth development (PYD), Contribution to self and community, risk behaviors, and depressive symptoms. We assessed 927 students (on average across waves, 65.4 % female) from a relatively racially and ethnically homogeneous sample (about 74 % European American, across waves) with a mean age in Wave 3 of 12.98 years ( $SD = 0.52$ ). The results indicated that high likelihood of participation in activities was consistently associated with fewer negative outcomes and higher scores on PYD and Contribution, as compared to low likelihood of participation in activities. Changes in the breadth of participation (in particular, moving from a high to a low likelihood of participation) were associated with increased substance use, depressive symptoms, and risk behaviors. Limitations of the current study, implications for future research, and applications to youth programs are discussed.

**Keywords** Positive youth development · Out-of-school time activities · Activity participation · Trajectories

## Introduction

The idea that participation in out-of-school time activities is beneficial for young people is well-supported in developmental literature, and such activities (e.g., athletics, academic clubs, performing arts) have been hypothesized to constitute key ecological assets in the lives of youth (e.g., Eccles and Gootman 2002; Lerner et al. 2006; Zarrett et al. 2009). As such, research examining the particular characteristics of out-of-school time contexts (e.g., Reinboth et al. 2004), the processes through which youth engage with these programs (e.g., Mueller et al. 2011), and the impact of participation on youth development (e.g., Mahoney et al. 2009) has been important for improving researchers' understanding of youth participation in out-of-school time activities. Moreover, this research on out-of-school time activities as ecological assets contributes to the ability of developmental scientists to promote positive youth development through the integration of research and practice.

However, given the diverse array of programs and interests among young people, and the varied ways in which participation can take place, more research is needed on the individual and contextual factors associated with beneficial programmatic experiences. In particular, there is currently little research assessing within-time patterns of variation in participation and across-time trajectories of these patterns of participation across multiple activities, and the ways in which these configurations are associated with developmental outcomes. Addressing this aspect of youth participation in out-of-school time activities is

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critical in order to improve our understanding of the interrelationships among individuals and their activity contexts, and to promote the positive development of young people. Therefore, the present research aimed to assess patterns of breadth in youth participation in activities across adolescence (Grades 7–12), and the associations between such patterns and developmental outcomes in later adolescence (Grade 12).

### The Positive Youth Development (PYD) Perspective

The PYD perspective is derived from relational developmental systems theory and from the work of practitioners interested in promoting optimal outcomes for youth through programs and policy (Lerner et al. 2013; Lerner and Overton 2008; Overton and Müller 2013). This relational developmental systems approach to PYD maintains that all youth have strengths, and all contexts have assets. Development occurs as a product of the mutually influential interrelations between diverse individuals and changing contexts, represented as *individual ↔ context relations* (Overton and Müller 2013). When such mutually influential *individual ↔ context relations* are also mutually beneficial, they are called adaptive developmental regulations (Brandstädter 1998). One model of adaptive developmental regulations (the Five Cs model of PYD) posits that when individual strengths are aligned with contextual assets to promote adaptive *individual ↔ context relations*, the positive developmental attributes of Competence, Confidence, Caring, Connection, and Character develop (Lerner et al. 2013). In turn, when these “Five Cs” develop, a sixth “C,” Contribution to self, family, and community, will emerge (Lerner et al. 2006, 2010).

The PYD perspective suggests that identifying and aligning youth strengths with contextual assets is critical for promoting positive outcomes and thriving among youth. A key instantiation may be aligning the strengths of youth with the contextual assets present in out-of-school time activities (Benson et al. 2006, 2011). When youth programs are designed to support the Five Cs, and when youth are engaged in such programs with sufficient intensity and duration (Mahoney et al. 2009), these programs have the potential to have a positive impact on the development of youth. Research on youth development programs suggests that programs that best foster PYD are typically structured to include three key components (labeled the “Big Three” by Lerner 2004): (1) Positive and sustained youth–adult relationships; (2) Skill building; and (3) Opportunities for leadership. Various types of out-of-school time programs for youth, including arts programs, clubs, community service organizations, and athletics, can offer opportunities for PYD. Although out-of-school time activities are not a panacea, programs that include these

three characteristics may be considered ecological assets or resources that contribute to adaptive developmental regulations in that they encourage youth to take an active role in their own development (Larson 2000).

This view of out-of-school time activities as a resource for youth development is based in the relational developmental systems view of adaptive developmental regulations as resulting from mutually-beneficial individual ↔ context relations (Urban et al. 2009). Activity contexts that have these three components, or other beneficial components, thus contribute to adaptive developmental regulations. However, this relationship is not all-or-nothing; as Roth and Brooks-Gunn (2003a, b) show, positive youth development is more likely to result the more that the characteristics identified as the Big Three are present, but these characteristics are not exclusively necessary for PYD. In addition, as discussed below, there is considerable variation in individual outcomes of participation, even when youth are embedded in the same programs. These individual differences reflect the unique nature of the person ↔ context relations that produce individual developmental outcomes.

### Youth Participation in Activities and Positive Youth Development

Prior developmental research on youth participation in activities suggests that involvement in out-of-school time programs can foster positive health and behavioral outcomes among adolescents (Busseri et al. 2006; Zarrett et al. 2009). For example, involvement in activities such as athletics, performing arts groups, youth development programs, and community service has been linked to improved mental health and socioemotional outcomes (Agans and Geldhof 2012; Bartko and Eccles 2003), academic achievement (Anderson-Butcher et al. 2003; Bartko and Eccles 2003), reduced substance use (Anderson-Butcher et al. 2003; Youniss et al. 1997), reduced risk of school drop-out (Bartko and Eccles 2003; McNeal 1995), and enhanced life satisfaction (Gilman 2001). However, there is some mixed evidence about the impact of out-of-school time programs; in addition to positive outcomes, participation in activities has also been associated with negative developmental outcomes, including stress and aggression (Côté et al. 2010), substance use (Barber et al. 2001), and mental health problems (Barber et al. 2001). Thus, there is the potential for both positive and negative development across and within diverse activity contexts, which illustrates the need for a better understanding of the factors that contribute to these varied youth outcomes.

Consistent with the general relational developmental systems perspective, and the more specific PYD model, research indexing mutually influential individual ↔

context interrelations suggests that out-of-school time programs both shape and are shaped by youth (Lerner 2006; Overton 2010; Wimer et al. 2008). Youth activity contexts marked by the Big Three can promote skill development (Busseri et al. 2006) and positive relationships with peers and adults (Lerner et al. 2006). However, youth differ in the activity contexts within which they thrive, or demonstrate positive and healthy functioning (Agans et al. 2013). Thus, it is important to examine the developmental impact of different activity contexts to understand how best to align the contextual characteristics of youth out-of-school time programs with individual characteristics to promote thriving (Agans and Geldhof 2012; Busseri et al. 2006).

### Breadth and Depth of Activity Involvement

Research has explored how adolescents' involvement in a broad range of activities (i.e., breadth of participation) may be associated with developmental outcomes that differ from outcomes associated with more intense and frequent participation in a select few programs (i.e., depth or intensity of participation; Busseri et al. 2006; Zarrett et al. 2009). There has been some debate about whether breadth or depth seems more likely to facilitate positive outcomes. On the one hand, participation in a broad range of activities may help to equip youth with a variety of skills to support their successful growth and adjustment, and facilitate exposure to diverse people and experiences, whereas selection of too few goals may restrict their mental and behavioral repertoire (Busseri et al. 2006; Lerner et al. 2001; Mahoney et al. 2006; Zarrett et al. 2009). In contrast, too much breadth may result in poor outcomes, because youth resources may be spread more thinly across multiple domains (Lerner et al. 2001; Marsh and Kleitman 2002), and overscheduling may also cause stress and isolate youth from family time (Luthar and Latendresse 2005). Breadth and depth, therefore, must be considered as important components of the process of *individual ↔ context relations* among youth and their activity contexts.

Busseri et al. (2006) examined whether changes in activity breadth and intensity among students in Grades 9 and 10 predicted positive development, and found that breadth of involvement was associated with less risk behavior and more favorable interpersonal functioning than intense activity involvement. Mahoney et al. (2006), similarly, explored the developmental impact of breadth of adolescents' participation in activities in their review of relevant research. Youth who participated in a variety of activities over a long period of time demonstrated more favorable health and behavioral outcomes than youth who participated in fewer activities over shorter periods of time (Mahoney et al. 2006). Frequent participation in activities

(i.e., more than 20 hours per week) was also associated with positive indicators, including healthy mental functioning and reduced substance use (Mahoney et al. 2006). However, several risks of high levels of participation in activities were also identified, including less engagement in activities with parents (Mahoney et al. 2006).

Mays et al. (2010) also reported findings demonstrating the developmental benefits of breadth of participation in activities. They found that youth who participated only in sports exhibited a significantly more rapid increase in alcohol use than youth who participated in both sports and non-sport activities, who demonstrated more positive outcomes (Mays et al. 2010). Furthermore, Knifsend and Graham (2012) found a curvilinear relationship between extracurricular activity involvement and school engagement and achievement, such that high school students who participated in activities representing two different domains (e.g., sports and music) showed higher levels of school engagement and had higher GPAs than students who participated in both fewer and more activities. Past research has also examined how patterns of activity involvement and the amount of time engaged in activities are related to developmental outcomes. For example, Zarrett et al. (2009) examined the relationship between patterns of youth participation in activities and developmental outcomes; they found that youth who participated in sports in conjunction with youth development programs had significantly higher scores on positive youth development indicators than sports-only and non-sport youth.

In sum, previous research suggests that participation in activities plays an important role in the development of adolescents (e.g., Benson et al. 2006, 2011). In particular, youth who show variation in activity contexts, or demonstrate a breadth of participation, appear to have an increased likelihood of positive developmental outcomes (e.g., Zarrett et al. 2009). However, more research is needed to explore how different activity contexts interrelate to shape development, and to examine stability and change in participation (Agans and Geldhof 2012). In addition, much of the research on youth activity involvement has tended to focus on sports participation, perhaps in light of this activity's popularity (Balsano et al. 2009; Côté et al. 2010), but more research is needed to examine the longitudinal influence of different combinations of sport and non-sport activities. In keeping with the relational developmental systems perspective that developmental outcomes result from unique and mutually-influential relations among individuals and their many interrelated contexts, we acknowledge that participation in activities is a case where one size does not fit all. Nevertheless, a better understanding of patterns of participation and the relations among these patterns and developmental outcomes can help us better understand the processes involved.

## The Present Study

To explore patterns of activity involvement across the middle school and high school years, and investigate the developmental outcomes associated with these long-term patterns of participation, the present study examined both within- and across-time patterns of breadth in out-of-school time participation in activities. These patterns were examined in relation to associated outcomes in PYD, Contribution to self and community, risk behavior, and depressive symptoms, with depth operationalized as rare versus frequent participation. We assessed the variation in the ways in which young people are involved with the ecological assets of out-of-school time programs over time, and the types of developmental outcomes associated with varied within-time patterns of participation and across-time trajectories of these patterns. The present study therefore, addressed several questions that arise from the current literature: If participation in a wide variety of activities is indeed beneficial for youth development, does such breadth of participation remain adaptive if it is sustained across the high school years, or is it more beneficial for adolescents to begin to reduce the number of activities in which they participate? Furthermore, to what extent is a young person's pattern of participation in out-of-school time activities across adolescence predictive of developmental outcomes at the end of high school?

We have noted that prior research has suggested that developmental outcomes such as PYD and substance use are associated with participation in various types of out-of-school time activities, and that different patterns of participation (both concurrently and across time) may also be associated with different developmental outcomes. The present study therefore aimed to examine patterns of breadth in youth participation in activities across adolescence, and the associations between such patterns and developmental outcomes in later adolescence. We focused on the aggregate patterns in the relationships among participation in broad categories of activities and youth development outcomes in order to gain a better understanding of the role of activity contexts as ecological assets more generally.

## Method

Full details of the 4-H Study of Positive Youth Development have been presented elsewhere (Lerner et al. 2005, 2010). Therefore, we present here only the features of the methods relevant to the present research, which includes data from Waves 3 through 8.

## Procedure

In Waves 1 through 3 of the 4-H Study, data collection from youth was conducted by trained study staff or, at more distant locations, hired assistants. A detailed protocol was used to ensure that data collection was administered uniformly and to ensure the return of all study materials. After Wave 1, youth who were absent on the day of the survey or were from schools or programs that did not allow on-site testing were contacted by e-mail, mail, or phone, and were asked to complete and return the survey to us. Beginning in Wave 5, youth completed the survey online unless they requested a paper survey. Parents completed online or paper surveys. Paper surveys were delivered to their homes by their children or through the mail (in the latter case, return postage was provided).

## Sample

Our sample was drawn from Waves 3, 4, 5, 6, 7, and 8 of the 4-H Study of Positive Youth Development (spanning approximately Grade 7 through Grade 12). Overall, across all eight waves of the study, 7,071 youth (59.9 % female) in 42 states were surveyed, along with 3,173 of their parents. Our sample contained the 927 of these students who were tested two or more times across Waves 3 through 8. This sub-sample is demographically similar to the full 4-H Study sample (e.g., the full sample is 60 % female and 68 % European American, and our sample is 63 % female and 65 % European American), although the large sample size makes for statistically significant differences in the demographic characteristics between our sample and the full 4-H Study sample ( $X^2[2, N = 7,006] = 39.40, p < .001$  for sex;  $X^2[7, N = 3,155] = 37.50, p < .001$  for mother's education; and  $X^2[7, N = 6,850] = 174.94, p < .001$  for race). The full demographic information for participants at each wave is reported in Table 1. Maternal education was used as a proxy for socioeconomic status because it is more accurately reported than income and is highly correlated with SES. On average, mothers in our sample had 14.36 years of education ( $SD = 2.4$ ).

## Measures

### *Participation in Activities*

In each wave of the 4-H Study, participants were asked to indicate how frequently they participated in certain activities (e.g., 4-H clubs, team sports, band, theater, photography, school government, volunteering, religious youth groups). Response options were 0 = *never*, 1 = *once a month or less*, 2 = *a couple times a month*, 3 = *once a week*, 4 = *a few times a week*, and 5 = *every day*. Over 30 different specific

**Table 1** Demographic characteristics of participants at each wave

	Wave 3	Wave 4	Wave 5	Wave 6	Wave 7	Wave 8
<i>N</i>	713	657	567	580	518	401
Gender (% female)	63.3	63.0	63.3	67.2	67.5	68.1
<i>M</i> <sub>Age</sub> (SD)	12.98 (0.51)	14.06 (0.59)	15.05 (0.60)	15.98 (0.77)	17.09 (0.88)	17.99 (0.83)
Grade	90.4 %	92.6 %	91.4 %	79.0 %	69.7 %	75.2 %
	7th Grade	8th Grade	9th Grade	10th Grade	11th grade	12th Grade
European American	70.4 %	71.5 %	64.8 %	74.6 %	80.3 %	80.4 %
Latino/a	8.6 %	8.7 %	12.4 %	8.0 %	4.9 %	6.3 %
African American	8.3 %	9.8 %	9.6 %	8.0 %	4.9 %	4.8 %
Asian American	4.0 %	4.7 %	4.8 %	2.8 %	4.2 %	3.3 %
Multiracial	4.3 %	3.2 %	3.0 %	3.3 %	2.7 %	2.8 %
American Indian	2.0 %	2.0 %	2.8 %	.7 %	2.2 %	2.0 %
Race not provided	24.8 %	33.0 %	39.3 %	38.0 %	56.2 %	57.2 %

activities were assessed at each wave, but for the purpose of this study, these activity items were categorized within seven groups denoting the type of activity: youth development programs, sports, music and other performing arts, visual arts, clubs, service groups, and religious groups. We derived these categories independently, but they also correspond with the categories used by Zarrett et al. (2009) in their analysis of data from the same data set.

Responses to the activity items were re-coded into a dichotomous index of depth of participation. The two categories were minimal participation (participants who indicated that they participated in the activity a couple times a month or less) and frequent participation (participants who indicated that they participated in the activity once a week or more). Each of the seven groups (i.e., youth development programs, sports, music and other performing arts, visual arts, clubs, service groups, and religious groups) thus represented a dichotomization based on the number of activities of a given type in which the participant was engaged at each wave.

#### *Positive Youth Development (PYD)*

A PYD score (ranging from 0 to 100) for each participant was computed at each wave, as the mean of the scores for each of the Five Cs (Competence, Confidence, Connection, Character, and Caring), provided that at least three of the Cs had valid values (Phelps et al. 2009). Higher scores represent higher levels of the Five Cs and, therefore, higher levels of PYD (for further details, see Bowers et al. 2010; Lerner et al. 2005). In the present study, Cronbach's alpha for PYD ranges from .77 to .80, with PYD computed as the mean of five composites, representing each of the below Cs, respectively. The Five Cs comprising the PYD construct contain a total of 78 items derived from existing

instruments with good psychometric properties and used in large-scales studies of adolescents, such as the Profiles of Student Life-Attitudes and Behaviors (PSL-AB; Benson et al. 1998) survey and the Teen Assessment Project (TAP; Small and Rodgers 1995) survey question bank. Full details about these measures of the Five Cs of PYD, as well as details about their construction, and their validity and reliability can be found in Lerner et al. (2005) and Bowers et al. (2010). The Five Cs are operationalized as follows:

**Competence** Competence is a positive view of one's action in domain-specific areas including the social and academic domains (11 items). In the present study, the Cronbach's alpha for Competence in Waves 3–8 ranged from .82 to .87.

**Confidence** Confidence is an internal sense of overall positive self-worth, identity, and feelings about one's physical appearance (16 items). In the present study, the Cronbach's alpha for Confidence in Waves 3–8 ranged from .88 to .93.

**Character** Character involves respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong, and integrity (20 items). In the present study, the Cronbach's alpha for Character in Waves 3–8 ranged from .88 to .90.

**Connection** Connection involves a positive bond with people and institutions that are reflected in healthy, bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship (22 items). In the present study, the Cronbach's alpha for Connection in Waves 3–8 ranged from .89 to .90.



**Caring** Caring reflects the degree of sympathy and empathy participants feel toward others (9 items). In the present study, the Cronbach's alpha for Caring in Waves 3–8 ranged from .84 to .86.

### Contribution

Youth responded to 12 items, which were weighted and summed to create two subscales: action and ideology. The Contribution items, like the items for PYD, are derived from existing instruments with good psychometric properties that have been used in large-scales studies of adolescents, such as the Profiles of Student Life-Attitudes and Behaviors (PSL-AB; Benson et al. 1998) survey and the Teen Assessment Project (TAP; Small and Rodgers 1995) survey question bank). Items from the leadership, service, and helping scales measured the frequency of time youth spent helping others (e.g., friends or neighbors), providing service to their communities, and acting in leadership roles. Together, the leadership, service, and helping subsets comprise the action component of Contribution. The ideology scale measured the extent to which Contribution was an important facet of the participants' identities (e.g., "It is important to me to contribute to my community and society"). The action and ideology components are weighted equally to calculate the Contribution scores. As with the PYD scores, in this study, the Contribution scores range from 0 to 100. In the present study, the Cronbach's alpha for Contribution in Waves 3–8 ranges from .78 to .83.

### Depressive Symptoms

The Center for Epidemiological Studies Depression (CES-D) scale is a widely used 20-item self-report measure of depressive symptomatology (Radloff 1977). Depressive symptoms were conceptualized as feelings of frustration, sadness, demoralization, loneliness, and pessimism about the future (Radloff 1977). Example items include "During the past week I was bothered by things that usually don't bother me" and "During the past week I felt sad." The response format is on a four-point scale, ranging from 0 = *rarely or none of the time (less than 1 day)* to 3 = *most or all of the time (5–7 days)* to indicate how frequently the respondent experienced symptoms during the past week (although the original scale asks about the experience of symptoms over the past two weeks). Items are summed for a total score, with a maximum score of 60, and higher scores are indicative of higher depressive symptomatology—greater frequency and number of symptoms of depression.

The scale has good reliability ( $\alpha = .85$ ; Radloff 1977), and validity (e.g., the CES-D correlates significantly with other measures of mood states such as Profile of Mood States-Short Form and Bradburn Positive and Negative

Affect Scale; Conerly et al. 2002; Radloff 1977; Weissman et al. 1977). The measure has been used extensively with adolescents, and such studies have established this scale's validity and reliability with populations in high school and junior high school (Radloff 1977; Windle et al. 1986). In the present study, scale reliability was high at all eight times of testing; that is, Cronbach's alphas ranged from .87 to .90 across Waves 3–8.

### Risk Behaviors

In the 4-H Study, risk behaviors were conceptualized as the combination of substance use and delinquent behavior. For the purpose of the present study, we tested profiles of participation with risk behaviors as a whole (the sum total of substance use and delinquent behaviors), and also with substance use and delinquent behavior measured as separate constructs. These separate analyses enabled us to examine potential differences in the associations between different types of risk behaviors and profiles of program participation.

In Waves 3–8, we measured indicators of risk behavior with a set of questions derived from items included in the Search Institute's Profiles of Student Life-Attitudes and Behaviors (PSL-AB) scale (Leffert et al. 1998) and the *Monitoring the Future* (2000) questionnaire. Seven items assess the frequency of substance use (e.g., smoked cigarettes, drank alcohol, used marijuana or hashish, used other drugs such as LSD or cocaine, sniffed glue, took steroid pills or shots without a doctor's prescription) in the past year, with steroid use being a new item for Wave 3. The response format ranged from 1 = *never* to 4 = *regularly*. Cronbach's alpha in Waves 3–8 ranged from .75 to .87. Five items assess the frequency of delinquent behaviors (e.g., stolen something, gotten in trouble with the police, hit or beat up someone, damaged property just for fun, carried a weapon). The response format for these items ranged from 1 = *never* to 5 = *five or more times*. The Cronbach's alpha in Waves 3–8 ranged from .56 to .78. When overall risk behaviors were assessed as the composite of substance use and delinquency, Cronbach's alpha in Waves 3–8 ranged from .75 to .88.

## Results

The purpose of this study was to assess patterns of breadth in youth participation in activities across adolescence (Grades 7 to 12), and the associations between such patterns and developmental outcomes in later adolescence (Grade 12). We used Latent Class Analysis (LCA) to identify classes of participation in activities at each wave of data collection. We then used latent transition analysis (LTA) to explore patterns of consistency and inconsistency in class membership across all six waves. We examined differences in outcomes among

classes at each wave, and for each trajectory, using the three-step process available in MPlus Version 7 (Asparouhov and Muthén 2013). This procedure first estimates the latent class model. Second, it finds the most likely latent class membership for each individual (based on the class to which the participant has the highest probability of belonging). Using these probabilities, it computes a classification uncertainty rate (this is the same uncertainty rate used to compute the entropy statistic). Third, it includes the auxiliary variable and treats the most likely class membership as an indicator of latent class membership, with uncertainty rates (i.e., measurement error) prefixed at the probabilities obtained in step two. We also used logistic regression to determine whether demographic differences in sex, race, or maternal education were associated with differences in the LCA and LTA results by saving out the most likely class membership to use as an outcome variable in the logistic regression analyses.

Patterns of Breadth of Youth Participation in Activities

With the goal of exploring patterns of youth participation in activities in detail at each wave, latent class analysis (LCA) was used to identify potential patterns of participation in activities, as indexed by domain of activity (i.e., youth development programs, sports, music, arts, clubs, service activities, and religious activities). LCA is a mixture modeling technique that can be used to detect latent categorical subgroups (Collins and Lanza 2010). Several indices of model fit were used in conjunction with theoretical interpretability to determine the number of classes that best represented the data at each wave (see Table 2). The Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the sample-size adjusted BIC (SaBIC) were compared across classes; lower BIC and AIC values indicate improved model fit. The bootstrap likelihood ratio test (BLRT; McLachlan and Peel 2000)

**Table 2** Model fit statistics for latent class analysis in each wave

Wave	Classes	Model Fit Statistics					
		Entropy	AIC	BIC	SaBIC	LMR <i>p</i> value	BLRT <i>p</i> value
3 (Grade 7)	2	0.473	5211.539	5279.891	5232.263	<0.0001	<0.0001
	3	0.545	5208.786	5313.592	5240.562	0.438	0.267
	4	0.714	5204.503	5345.763	5247.331	0.067	0.235
	5	0.666	5205.969	5383.683	5259.849	0.131	0.667
4 (Grade 8)	2	0.456	4759.521	4826.791	4779.166	<0.0001	<0.0001
	3	0.516	4753.22	4856.367	4783.342	0.311	0.050
	4	0.71	4755.337	4894.360	4795.935	0.178	0.308
5 (Grade 9)	2	0.435	4173.773	4238.799	4191.181	0.050	0.000
	3	0.629	4148.786	4248.492	4175.478	0.2729	0.000
	4	0.595	4145.088	4279.475	4181.065	0.1343	0.03
6 (Grade 10)	2	0.726	4147.877	4316.944	4139.138	0.2107	0.6
	3	0.514	4385.059	4450.427	4402.808	0.000	0.000
	4	0.724	4381.657	4481.887	4408.872	0.1195	0.050
	5	0.731	4387.015	4522.108	4423.695	0.0858	1.000
7 (Grade 11)	2	0.604	4392.061	4562.017	4438.208	0.182	1.000
	2	0.424	3248.591	3308.76	3261.163	0.131	0.000
	3	0.676	3243.026	3335.285	3262.302	0.0374	0.013
	4	0.833	3245.594	3369.943	3271.575	0.2584	0.6
8 (Grade 12)	2	0.594	3249.599	3406.039	3282.285	0.522	1.000
	2	0.367	3208.547	3268.344	3220.748	0.380	0.000
	3	0.689	3185.141	3276.829	3203.85	0.0002	0.000
	4	0.764	3187.421	3311.001	3212.637	0.1843	0.3333
	5	0.793	3191.811	3347.283	3223.534	0.089	0.667

*AIC* Akaike Information Criterion, *BIC* Bayesian Information Criterion, *SaBIC* sample size-adjusted BIC, *LMR* Lo-Mendell-Rubin likelihood ratio test, *BLRT* bootstrapped likelihood ratio test

and the Lo-Mendell-Rubin likelihood test (LMR; Lo et al. 2001) were also used to assess improvement in class solutions (BLRT and LMR were calculated using the method proposed by Asparouhov and Muthén, 2012). Finally, classification quality was assessed by entropy ( $E$ ), an index of the accuracy with which individuals are placed into latent classes based on the posterior probabilities of class membership.

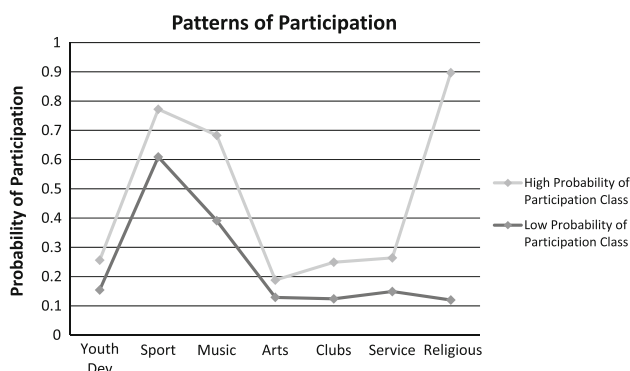
Based on the combined recommendations of these fit indices, as well as our theoretical understanding of patterns of participation as previously described in the literature, a 2-class solution for the LCA was retained at each wave of the study (see Fig. 1). This solution indicated that at each wave there were two distinct groups of participants—one that was highly likely to participate in activities and another that was not as likely to participate in activities, especially in religious groups and performing arts (although they had a higher likelihood of participating in sports and performing arts than in other activities). We recognize that LCA is more frequently used to describe qualitatively different groups and that the two classes that arose from the present analyses are predominantly differentiated by differences in the quantity of their participation in the different types of activities (although there are some qualitative differences in the patterns of participation). However, we wanted to take into account the qualitative differences that did exist between these two classes, and the probabilistic nature of LCA further allowed us to account for the fact that the individuals with low levels of participation overall do in fact participate in some activities. Therefore, LCA was more useful than creating reified groups with dichotomous participation variables.

The 2-class solution we chose was supported by the fit indices at each wave, although at several waves a 3-class solution also had adequate fit. However, the 2-class solution aligned with our conceptual understanding of youth participation patterns, in that youth in one activity are also likely to participate in others (e.g., Denault and Poulin

2009; Zarrett et al. 2009), and the 2-class solution was more consistent across waves than the 3-class solution. Therefore, we used this 2-class LCA solution in the LTA across the six waves of data included in this study.

We then performed an LTA to examine patterns of consistency and inconsistency in membership in these two classes across all six waves, holding the probability of participation constant across waves (e.g., the likelihood of participating in various activities, such as sports, for youth in the high participation profile was the same in all waves). Because the participation probabilities were extremely similar at each wave, we believed we were justified in constraining the model in this way, and comparison of fit indices with an unconstrained model supported this decision. This model had good entropy ( $E = 0.826$ ), and showed participants being grouped into several different patterns. These pattern groups contained two groups with consistent patterns of participation: one with consistent membership in the high-participation class ( $N = 410$ ) and the other with consistent membership in the lower-participation class ( $N = 401$ ). The other groups had inconsistent patterns of participation: moving from high to low participation between Wave 7 and Wave 8 ( $N = 7$ ), moving from high to low participation between Wave 6 and Wave 7 ( $N = 7$ ), moving from high to low participation between Wave 5 and Wave 6 ( $N = 62$ ), moving from high to low participation between Wave 4 and Wave 5 ( $N = 24$ ), moving from high to low participation between Wave 3 and Wave 4 ( $N = 4$ ), moving from low to high participation between Wave 4 and Wave 5 ( $N = 1$ ), and moving from low to high participation between Wave 5 and Wave 6 ( $N = 11$ ). The class probabilities from the LCA at each wave, as well as the longitudinal pattern from the LTA, were then used as observed variables to predict participants' developmental outcomes at Wave 8.

No differences among these classes were found for race, but girls were found to be significantly more likely than boys to be a member of the LTA class that stayed in the high participation group throughout the six waves of the study. Girls were also significantly more likely than boys to be in the LCA high participation group in Waves 4, 5, and 6, although in Waves 3, 7, and 8 these between-group gender differences were not significant. In addition, compared to participants with fewer than 2 years of maternal college education, participants with more than 2 years of maternal college education were more likely to be a member of the LTA class that stayed in the high participation group throughout the six waves of the study. Participants with fewer than 2 years of maternal college education were also more likely than participants with 2 years of maternal college education to be in one of the groups that moved between the high and lower participation groups over the course of the six waves of the study.



**Fig. 1** Item response probabilities for 2-class solution for all waves (response probabilities equal across waves)



Patterns of Participation in Activities as Predictors of Developmental Outcomes

*Within-Wave Differences by Class Membership*

As stated above, we examined differences in outcomes among classes at each wave using the three-step process available in MPlus Version 7 (Asparouhov and Muthén 2013) (See Table 3). In Wave 3 (Grade 7), significant class differences were found for depressive symptoms, PYD, and Contribution, but not for substance use, delinquency, or risk behaviors, such that participants in the high-participation class had lower scores on depressive symptoms, and higher scores on PYD and Contribution than did participants in the lower-participation class. In Wave 4 (Grade 8), Wave 5 (Grade 9), and Wave 7 (Grade 11) a similar pattern was found, with participants in the high-participation class having higher scores on PYD and Contribution than participants in the lower-participation class. However, findings for depressive symptoms were reversed, such that participants in the high-participation class also had higher rates of depressive symptoms than participants in the lower-participation class. No significant differences were found for substance use, delinquency, or risk behaviors. However, in Wave 6 (Grade 10), significant class differences were found for all outcome variables, such that participants in the high-participation class had lower scores on depression, and higher scores on substance use, delinquency, risk behaviors, PYD and Contribution than did participants in the lower-participation class. In Wave 8 (Grade 12), significant class differences were found for depression, risk behaviors, PYD, and Contribution, but not for substance use or delinquency, such that participants in the high-participation class had lower scores on depression and risk behaviors, and higher scores on PYD and Contribution than did participants in the lower-participation class.

*Wave 8 (Grade 12) Differences by LTA Pattern Membership*

Analysis of variance using LTA pattern membership as the grouping variable also showed significant differences in some Wave 8 (Grade 12) outcomes when the data were analyzed according to the different patterns of participation. These patterns were aggregated into two consistent groups (one consistently in the high-participation group and one consistently in the low-participation group) and one group containing all the different patterns of inconsistent participation, due to the small sample sizes in most of the inconsistent groups. In particular, these differences were found for substance use [ $F(2, 382) = 8.01, p < .001$ ], depression [ $F(2, 376) = 4.38, p < .05$ ], risk behaviors [ $F(2, 384) = 6.23, p < .01$ ], PYD [ $F(2, 395) = 4.84, p < .01$ ], and Contribution [ $F(2, 384) = 19.16, p < .001$ ], as well as for the individual Cs of Competence [ $F(2, 389) = 6.91, p < .01$ ] and Connection [ $F(2, 384) = 8.01, p < .001$ ], but not for the individual Cs of Confidence, Caring, or Character, or for delinquency behaviors.

Tukey post hoc tests were performed to determine which patterns contributed to these overall differences. Individuals in the group that stayed in the high-participation class across all six waves (the “consistent high participation” group) reported significantly less substance use (mean difference =  $-1.87, p < .01$ ), lower levels of depression (mean difference =  $-4.56, p < .05$ ), fewer overall risk behaviors (mean difference =  $-1.82, p < .01$ ), and higher levels of Competence (mean difference =  $5.87, p < .05$ ) and Contribution (mean difference =  $7.39, p < .05$ ) than individuals who moved between the high and lower participation classes over the course of the study (the “inconsistent participation” group). Individuals in the consistent high participation group also reported significantly less substance use (mean

**Table 3** Means for outcomes at each wave by LCA class

Wave		Substance Use	Delinquency	Depression	Risk Behaviors	PYD	Contribution
3	High participation	0.28	0.76	6.81***	0.75	83.24***	72.46***
	Lower participation	0.54	0.98	13.63***	1.12	70.16***	51.92***
4	High participation	0.78	1.09	16.75***	1.40	76.62***	63.33***
	lower participation	1.16	1.56	10.33***	2.00	66.37***	47.54***
5	High participation	0.90	0.93	23.17***	1.34	78.98***	71.31***
	lower participation	1.80	1.58	12.88***	2.41	68.28***	49.45***
6	High participation	8.99***	8.20***	9.12***	9.94***	76.25***	62.61***
	Lower participation	0.83***	0.58***	22.74***	1.06***	59.23***	41.26***
7	High participation	1.12	0.68	20.54***	1.31	80.89***	71.75***
	Lower participation	1.51	0.88	10.02***	1.74	71.53***	57.77***
8	High participation	0.33	0.19	7.76***	0.43**	77.34**	73.42***
	Lower participation	0.68	0.29	17.23***	0.67**	70.65**	50.02***

*p* values indicate significant mean differences between classes \**p* < .05, \*\**p* < .01, \*\*\**p* < .001

difference =  $-0.78$ ,  $p < .05$ ), and higher levels of PYD (mean difference =  $3.62$ ,  $p < .01$ ), Competence (mean difference =  $5.21$ ,  $p < .01$ ), Connection (mean difference =  $6.32$ ,  $p < .001$ ), and Contribution (mean difference =  $10.81$ ,  $p < .001$ ) than individuals in the group that stayed in the lower-participation class across all six waves (the “consistent lower participation” group). The only significant difference between the consistent lower participation group and the inconsistent participation group was in overall risk behaviors, where individuals in the consistent lower participation group demonstrated fewer risk behaviors than did individuals in the inconsistent participation group (mean difference =  $-1.31$ ,  $p < .05$ ).

## Discussion

In the contemporary study of adolescent development, out-of-school-time programs are regarded as key ecological resources (or “developmental assets;” Benson et al. 2006; Benson et al. 2011) linked to positive youth development. Mahoney et al. (2009) and Lerner (2004) have explained that these youth development programs provide important opportunities for gaining life skills, establishing and maintaining beneficial intergenerational relationships, and affording occasions for engaging in activities valued by families, peers, and community members. Accordingly, given the purported capacity of out-of-school-time programs to promote thriving within the adolescent period, the present study explored the various ways in which adolescents are involved with the ecological assets represented by out-of-school time programs. Within a frame provided by a relational developmental systems theoretical model, we also explored the types of developmental outcomes associated with various patterns of engagement in these programs.

The relational developmental systems approach to PYD is grounded in the understanding that human development occurs as a result of mutually-influential relations among individuals and their contexts (Lerner et al. 2013; Lerner and Overton 2008). In the present research, we sought to advance this literature examining the ways in which participation in organized activities can provide youth with developmental assets that contribute to positive youth development (e.g., Zarrett et al. 2009) by assessing and linking these configurations of out-of-school-time participation patterns to thriving. Our LCA and follow-up analyses demonstrated that adolescents’ breadth of participation could be categorized into two different groups in the present sample: those with a high probability of participation across several activities, and those with a lower probability of participation. Furthermore, membership in these two classes at each of the six waves was

related to concurrent developmental outcomes, such that participants in the higher-participation group consistently had higher scores on PYD and Contribution, although results for problem behaviors and depression were mixed. In particular, the finding that participants in the high-participation group had higher scores on depressive symptoms than those in the low-participation group in Waves 4, 5, and 6 may be due to the significantly higher number of girls in the high-participation group in these waves. Prior research using the 4-H dataset has shown that, consistent with the literature, girls in this sample tend to have higher scores on depressive symptoms than boys do (Phelps et al. 2007).

These findings support the idea that participation in a wide variety of activities is beneficial for youth development, especially for promoting PYD and Contribution, although it may not be relevant for efforts aimed at reducing the likelihood of substance use and other risk behaviors. As such, practitioners may need to incorporate into their youth development programs efforts to both promote PYD and to prevent risk/problem behaviors. This point, in regard to the need for both promotion and prevention as vital components for youth programming, was made by Phelps et al. (2007) as well, and reflects an understanding within the PYD perspective that although all youth have strengths, there are still risk factors to be addressed.

Our LTA and follow-up analyses demonstrated that, across the 6 years studied, changes in adolescents’ breadth of participation were associated with increased substance use, depression, and risk behaviors, as well as lower levels of Contribution, relative to adolescents who maintain consistently high likelihood of participation in a wide variety of activities. In addition, our analyses showed that consistent membership in the high-participation class was associated with higher levels of PYD and Contribution, as well as lower levels of substance use, at Wave 8 (Grade 12), when compared to individuals with consistent membership in the lower-participation class. The only direct difference observed between individuals who changed their level of participation and those who had consistent membership in the lower-participation class was in the lower level of general risk behaviors among individuals in the consistently lower-participation class.

These findings suggest that breadth of participation does remain adaptive across the high school years, and that different developmental outcomes may be associated with change in breadth of activity participation compared to consistently low levels of breadth across adolescence. Accordingly, a key challenge for practitioners will be to develop strategies (e.g., provide developmentally appropriate challenges and leadership opportunities by, for example, becoming a mentor to younger participants) to

retain broad program participation among youth across the adolescent years. These strategies should be informed by an understanding of what specific contextual and individual characteristics, and what patterns of individual ↔ context relations, result in lower likelihood of participation or inconsistent patterns of participation in out-of-school time activities, and further research will be needed to address these issues more effectively.

Interestingly, when the Five Cs of PYD were analyzed as separate factors, as compared to looking at composite PYD scores, only two of the Cs showed significant differences among the different groups from the LTA: Competence and Connection. As the differences in Connection were observed between the individuals with consistently high participation and the individuals with consistently lower participation, it may be that having and maintaining breadth of activities across adolescence is particularly important for developing connections to other people in one's community. In turn, it is also possible that more community connections may lead youth to maintain broader participation in activities (i.e., the arrow between connection and participation is bidirectional within a relational developmental systems approach to PYD). As such, practitioners may seek to promote a greater network of community connections among youth as a means to maintain their broad participation in programs. Through exposure to a broader network, youth may be exposed to more opportunity to participate, and more sustained relationships with caring and supportive adults.

With Competence, the finding that individuals consistently in the high-participation class tended to score higher than both individuals consistently in the low-participation class and individuals who changed class membership over the course of the study may suggest an important link between consistent participation in a wide variety of activities and the development of self-perceived competence. Conversely, this finding may be a reflection of individuals with higher levels of competence self-selecting into activities, and those with lower levels of competence choosing not to participate or dropping out. This finding also raises important questions concerning whether there may be a need to promote the development of self-perceived competence prior to adolescence. For instance, are youth who show high self-perceived competence prior to Grade 7 more likely to engage in activities prior to and beyond Grade 7? Again, the bidirectional nature of this perceived link between Competence and activity participation may be a means for practitioners to build broader program participation through activities aimed at enhancing a young person's areas of competence. In short, then, these differences in Competence and Connection may in fact represent the underlying source of the observed differences in PYD at Wave 8 among individuals in the consistently high participation group and those

in the consistently lower participation group. In addition, it might be possible that strong self-perceived competence and connections earlier in, and prior to, adolescence may impact higher rates of participation in activities.

Finally, the fact that demographic differences were observed among the groups from the LTA analysis suggests that there may be patterns in individuals' decisions about participation in various activities such that girls, as well as youth from higher-SES families (using maternal education as a proxy for SES), may be more likely to participate in a wide variety of activities than boys or lower-SES youth (Urban et al. 2009, 2010). In addition, the finding that youth from lower-SES families were more likely to move between the high and lower participation groups over the course of the study suggests that the drop out effect that has been noted in the literature (e.g., Fredricks et al. 2002) may be more prevalent among youth from lower-SES backgrounds (Urban et al. 2009, 2010). Furthermore, the fact that no significant differences in race were found suggests that these socioeconomic factors may exist independent of racial or ethnic differences. Socioeconomic differences in participation, drop-out rates, and access to programs are therefore important issues for future research, especially given the current climate of increasing economic hardship.

Although the present study demonstrated that differences in participation patterns, both within and across time, were associated with differences in a variety of developmental outcomes for adolescents, it did not assess the processes through which such differences arise. In accordance with the relational developmental systems and PYD perspectives (e.g., J. Lerner et al. 2013; Lerner and Overton 2008), it is not enough to assume that there are adaptive developmental regulations involved in consistent participation in a variety of activities due to patterns of association among variables. Instead, it is also important to examine what individual ↔ context interrelations produce such patterns of variables, in order to move beyond description and toward application in policy and programs. Future studies will be needed to examine these developmental processes.

In addition, the potential for selection effects, such that individuals with high scores on PYD and Contribution may be more likely to participate in out-of-school time activities, and to continue participating across adolescence, is a considerable limitation of the present study. Endogeneity is a common issue in research about participation in out-of-school-time activities, as adolescents select into activities for diverse and individually-specific reasons. The present study does not allow for inferences about causality, but is rather a description of observed patterns. Future research, therefore, should incorporate methods such as propensity score matching to enable researchers to examine these possible confounding factors. Furthermore, the present

study was not designed to detect the full range of diversity of experiences and outcomes of participation in out-of-school time activities, and used a non-representative sample, which precludes the application of these findings to all youth.

Nevertheless, building on the prior work of Zarrett et al. (2009) and other research on patterns of participation (e.g., Agans and Geldhof 2012), the present study represents an important step in moving toward studies of developmental processes by illustrating the developmental patterns they may produce. Although the LCA results did not produce unequivocally clear fit statistics, our theory-based interpretation of the results can help to provide an initial picture of how various patterns of participation in out-of-school time activities are associated with developmental outcomes. Future research should build on this work, using both qualitative and quantitative data to improve the field's understanding of the processes through which participation in a variety of out-of-school time activities may relate to developmental outcomes across adolescence.

We also recommend that future studies consider examining involvement in particular activity contexts more closely, rather than grouping activities into broad categories by type, and to include more nuanced measures of both breadth and depth. Certainly such analyses would enhance the translational importance of this genre of research; these analyses would enable practitioners involved in specific youth development programs to find specific action steps they might enact to, for instance, build connection and competence among their participants, and to help their program contribute to maintaining broad youth participation. However, although patterns may be clearly seen to exist with the present level of analysis, different information may be gleaned by looking more closely at the ways in which individual youth participate in particular activities. The process of particular *individual* ↔ *context relations* that shape a young person's experience of his or her participation in a given context cannot be understood on the aggregate level. Therefore, in addition to the person-centered approach taken in the present study, additional ideographic studies of participation will be needed.

## Conclusions

Many adolescents participate in out-of-school time activities, often engaging in multiple types of activities. In addition, across adolescence, some youth maintain a consistent pattern of broad or limited participation, whereas others may narrow their involvement to fewer activities. The finding that these patterns of participation in out-of-school time activities are associated with particular patterns of developmental outcomes represents an important step

toward a better understanding of the factors that contribute to young people's positive development. Although further research is needed to explore the processes through which such development takes place, the present study illustrates the importance of out-of-school time activities as an ecological asset supporting PYD among youth.

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