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Trajectories of Organized Activity Participation Among Urban Adolescents: Associations with Young Adult Outcomes

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Abstract

Organized activity participation provides opportunities for adolescents to develop assets that may support favorable outcomes in young adulthood. Activity participation may be especially beneficial for marginalized youth as they are likely to face stressors that increase risk of negative outcomes. We used growth mixture modeling (GMM) to identify activity participation trajectories among African American adolescents in an urban, disadvantaged community (Wave 1: mean age=14.86 years, SD=0.64; 49% male, N=681). We also investigated if young adult outcomes differed by trajectory subgroups. Our results suggested a three-class model best fit the data: low, decreasing (74%), moderate, consistent (21%) and moderate, increasing participation subgroups (5%). Adolescents in the increasing subgroup reported higher life satisfaction and lower substance use in young adulthood compared to the decreasing subgroup. Youth who increase participation in activities over time may experience greater opportunities for building assets related to positive development that support health and well-being into young adulthood.

Introduction

Organized activities refer to a broad-range of structured, adult-sponsored activities outside the school curriculum within diverse contexts including school, church and community (Bohnert, Fredricks, & Randall, 2010). Participation in organized activities provides vital opportunities for youth to develop assets that promote positive developmental trajectories (Mueller, Lewin-bizan, & Urban, 2011). Researchers have found that participation is associated with positive outcomes and fewer problem behaviors during adolescence (Eccles & Gootman, 2002). Researchers have also found that the positive effects of participation may extend into emerging adulthood (ages 18–25) (Fredricks & Eccles, 2006), but few have explored if this extends into early adulthood, between the ages of 25 and 40.

Organized activity participation (OAP) may be especially beneficial for youth living in urban, disadvantaged contexts as they likely face stressors that put them at increased risk of negative outcomes (Patton, Woolley, & Hong, 2012). Opportunities to build assets may help offset the negative consequences of risk exposure, in the short and long term (Fredricks & Simpkins, 2012). Most researchers examining longer term effects of OAP have explored

these relationships among primarily White, middle class or nationally representative samples, with some exceptions (see Metzger, Crean, & Forbes-Jones, 2009; Pedersen, 2005). Thus, the long-term effects of participation among youth living in urban, disadvantaged contexts is largely unknown.

Positive youth development (PYD) and the developmental-ecological model provide useful frameworks for examining how participation in organized activities among youth may influence adult outcomes. PYD is a developmental systems based framework that emphasizes the plasticity of human development through interactions between individuals and their environment (Lerner, Lerner, & Benson, 2011). These interactions, called proximal processes, represent key forces shaping development that are influenced by the individual, the context, and the transaction between them over time (Bronfenbrenner & Morris, 2006). The focus of PYD is on supporting proximal processes that help youth build developmental assets (e.g., positive relationships) to support positive and reduce risk of negative outcomes (Lerner, 2005). OAP is one way that youth experience proximal processes that help build assets associated with PYD (Larson et al., 2004). Researchers generally support OAP participation as a way to enhance PYD, but methodological concerns pose challenges to studying long-term outcomes.

Organized Activity Participation (OAP): Methodological Issues

Participation over time—How youth participate in organized activities over time may influence the extent to which youth experience proximal processes that contribute to positive development (Tudge, Mokrova, Hatfield, & Karnik, 2009). Researchers have reported various patterns of activity participation throughout adolescence (Farb & Matjasko, 2012). Some have found that participation generally decreases during the high school years (Denault & Poulin, 2009), while others have found that participation may remain consistent (Zaff, Moore, Papillo, & Williams, 2003) or even increase during adolescence (Mahoney, Cairns, & Farmer, 2003). These different trajectories may have implications on opportunities for building assets and the long-term effects of participation on development. Exploring multiple distinct trajectories of participation may advance our understanding of adolescent participation and its long-term effects.

Measurement—Participation is a multi-dimensional construct that has been conceptualized in many ways, including behavioral and psychological engagement. Researchers have assessed behavioral engagement as intensity (frequency of involvement), breadth (number of activities) and duration (length of time in activities) (Bohnert et al., 2010). The relevance of each type may depend on developmental stage. Youth may participate in fewer activities more intensely later in adolescence; thus, intensity may best capture behavioral engagement at this stage (Denault & Poulin, 2009). Psychological engagement is another dimension of participation influencing long-term outcomes. Psychological engagement includes interest, enjoyment and value/importance ascribed to participation; researchers have found that activities youth consider important may have more beneficial effects on their development than those rated less important (McGuire & Gamble, 2006). Few researchers have incorporated both behavioral and psychological engagement in a single measure assessed over time.

Selection bias—Researchers have examined several factors contributing to selection bias in participation studies. In this context, selection bias is “the idea that adolescents with certain characteristics that are related to better functioning are also selecting into (organized activity) participation” (Farb & Matjasko, 2012, p. 4). Two factors that may be associated with selection bias include self-acceptance and academic achievement. Adolescents who start high school with higher levels of self-acceptance may be more likely to engage in (or select into) organized activities because of the high levels of skill required to participate (Farb & Matjasko, 2012). Academic achievement may also create selection bias. Researchers have found a robust relationship between academic achievement and participation (Roth, Malone, & Brooks-Gunn, 2010). Youth reporting higher levels of activity participation may also be more likely than non-participants to do well in school in the first place. These results suggest that these factors are critical control variables when examining the relationship between participation and adult outcomes.

Sociodemographic/Sample Characteristics—Sociodemographic characteristics may also influence participation trajectories during adolescence. Researchers have found, for example, that parental education is associated with adolescent OAP; adolescents whose parents have higher levels of education are more likely to participate than those whose parents have less education (Linver, Roth, & Brooks-Gunn, 2009). Sex differences in participation may also exist. Some researchers suggest that females generally participate at higher levels than males (except sports) (Eccles, Barber, Stone, & Hunt, 2003), while others have found no sex differences (Pedersen, 2005). Thus, sociodemographic characteristics are important control variables when investigating participation trajectories and young adult outcomes.

Organized Activity Participation and Adult Outcomes

Depressive Symptoms—Depressive symptoms may have negative effects on social relationships and daily functioning and increase risk of harmful behaviors during young adulthood (CDC, 2013). Some researchers have found that higher levels of activity participation are associated with lower levels of depressive symptoms in adolescence (Bohnert, Richards, Kolmodin, & Lakin, 2008), while others have found no association (Darling, 2005). Few researchers have examined the relationship between adolescent participation and adulthood depressive symptoms. Notably, Fredricks and Eccles (2006) found that participation during adolescence was not associated with depressive symptoms in emerging adulthood. Yet, they did not account for growth over time or consider distinct trajectories. Longer-term effects of different adolescent participation trajectories on young adult depression are unknown.

Life Satisfaction—Life satisfaction refers to one’s overall cognitive appraisal of his/her quality of life (Diener, 1994). Individuals with high life satisfaction tend to possess developmental assets such as strong social connections, which may contribute to higher resistance to stressors and better physical and mental health compared to those with low life satisfaction (Diener, 1994). Researchers have found an association between participation and life satisfaction among youth (Bundick, 2011). Organized activity participation may foster intrinsic psychological rewards that, in turn, contribute to life satisfaction (Nakamura &

Csikszentmihalyi, 2002). Although most researchers examining this relationship have only examined life satisfaction during adolescence, its effects may extend into adulthood (Diener, 1994). Furthermore, long term effects may vary by how youth participate over time.

Substance use—The relationship between participation and substance use in emerging adulthood is equivocal. Researchers examining this relationship report mixed findings, with some finding no relationship (Mahoney & Vest, 2012) and others that participation is associated with less substance use in emerging adulthood (Carlo, Crockett, Wilkinson, & Beal, 2011). These differences may be due to differential effects of participation on substance use by participation trajectory. More research is needed to examine how adolescent trajectories may be associated with young adult substance use.

Educational outcomes—Researchers have found that adolescents who participate more in organized activities have higher rates of college attendance compared to less participation (Gardner, Roth, & Brooks-Gunn, 2008). These studies, however, only included educational status a few years following high school in nationally representative samples. Few researchers have investigated adolescent OAP and young adult educational attainment among understudied subgroups of youth, such as those living in urban, disadvantaged communities. Fewer yet have examined how distinct trajectories of participation during adolescence may be associated with educational attainment in young adulthood.

Current study

In the current study, we address these gaps in the literature by investigating the relationship between organized activity participation during adolescence among a sample of young adults living in an urban, disadvantaged community and outcomes in young adulthood, accounting for early adolescent functioning. We explore if these outcomes vary depending on distinct participation trajectory subgroup guided by the following hypotheses: 1) Guided by previous research, we expect to find three distinct subgroups of participation trajectories: a decreasing subgroup, a consistent subgroup and an increasing subgroup; 2) We expect youth who increase participation over time will report the lowest levels of depression and highest levels of life satisfaction, followed by the consistent subgroup and finally the decreasing subgroup; 3) We expect youth in the increasing subgroup will report the lowest levels of substance use, followed by the consistent participation subgroup and finally the decreasing subgroup; 4) We expect youth in the increasing participation subgroup will be most likely to report post-high school education in young adulthood, followed by the consistent and decreasing participation subgroup.

Method

Study Context

The current study includes participants from Flint, Michigan. The decline of the manufacturing economy had a strong effect on the life-circumstances of people in Flint. In the past 40 years, over 70,000 auto industry jobs have been lost in Flint and surrounding Genesee County, and the population has declined by half. Like many urban communities facing declining populations, the city faces extreme challenges, including high rates of crime

and violence. Flint has suffered from higher unemployment levels compared to state and national averages for well over a decade (Bureau of Labor Statistics, 2014).

Participants

This study is based on data collected as part of a longitudinal study of youth from mid-adolescence to young adulthood. Data were collected from 850 adolescents at-risk for dropout at the in four public high schools in a Flint, Michigan. Youth were eligible to participate in the initial study if they were in ninth grade enrolled in one of Flint's four main public high schools with an eighth grade GPA of 3.0 or below and were not diagnosed as having developmental impairments (Zimmerman, Ramirez-valles, Zapert, & Maton, 2000). The study included a 3.0 GPA threshold because the original study focused on high school dropout and substance use. This GPA was used in the selection criteria to ensure the sample was at somewhat higher risk for leaving school before graduation. Waves 1 through 4 correspond to the participants' high school years. The full sample included 52% female, 80% African-American, 18% Caucasian at Wave 1. Mean age at Wave 1 was 14.86 years ($SD=0.64$). In order to focus on our investigation on organized activity participation among an understudied group of adolescents, we included only African American respondents in our analyses ($N=681$ at Wave 1, 49% male). We used Wave 12 data to study young adult outcomes when the participants were in their mid-thirties (mean age was 34.09 years, $SD=0.62$). Following institutional IRB approval and necessary parental consent and participant assent, data were collected during in-school interviews.

Measures

Organized activity participation was the only time varying variable calculated annually during the four years of high school.

Organized Activity Participation—We measured organized activity participation using student-report of behavioral (intensity) and psychological (importance) engagement. Participants were asked annually to list up to four activities each for school, church and community contexts. Participants were asked, using 4-point scales, to report how often they participated in each activity from 1=hardly ever to 4= most of the time, and how important the activity was to them from 1=not important to 4=very important. Non-participants were coded as zero. We created a composite score for each activity by multiplying students' reported frequency by importance. We then summed activity scores within and across domains (school, church and community) to obtain an aggregate participation score. Scores could range from 0 to 192 per year (Wave). The highest score was 119. If a participant, for example, attended an activity "most of the time" (4) and rated it as "very important" (4) that activity's score would be 16 (4×4). A student in the 99th percentile of participation was involved in 7 of such activities throughout the year. The mean for Wave 1 was 18.87, which could represent one activity in which the participant is highly engaged and one activity in which a participant is minimally engaged.

Adult outcomes

Depressive symptoms: We assessed Depressive symptoms using six items from the Brief Symptom Inventory (Derogatis & Spencer, 1982). Response options ranged from 1 (not at

all) to 5 (extremely) according to how uncomfortable in the past week participants were due to loneliness, sadness, lack of interest, hopelessness about the future, thoughts about ending one's life and feeling worthless. We calculated the depression score as the mean of these six items ($\alpha = 0.84$).

Life satisfaction: We assessed life satisfaction using five items from the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Respondents rated their agreement with statements including "The conditions of my life are excellent" and "I am satisfied with my life" from 1: Not True to 5: Very True. We calculated the life satisfaction score as the mean of these five items ($\alpha = 0.81$).

Substance use: We calculated substance use as the sum of alcohol, cigarette and marijuana use reported in the last 30 days. Respondents were asked how often they had consumed alcohol and marijuana from 1=none to 7=40 or more times and cigarettes from 1=not at all to 7=2 or more packs per day. We standardized past 30-day use for each substance variable and summed them.

Educational attainment: We assessed educational attainment using a dichotomous measure of any post-high school training. Respondents who reported a high school diploma or less were coded as zero and those who reported any post-high school training including certificates, an associate's degree, or any college were coded as one.

Controls: Sociodemographic and Selection Bias Factors

Parent education: We used the highest reported education level (from 1=completed grade school or less to 7=graduate or professional school after college) between respondents' parents. If only one parental education score was provided, we used that score in our analyses.

Self-acceptance: We assessed self-acceptance using the self-acceptance scale from the Bentler Psychological Inventory (BPI), (Bentler & Newcomb, 1978). We calculated the score as the mean of the four item scale. Items asked respondent to report how true pairs of statements are for them, such as (I am) happy with myself or unhappy with myself, from 1=the first statement is true for me to 5=the second statement is true for me ($\alpha = 0.64$).

8th grade GPA: We included school reported grade point average (GPA) at the end of 8th grade as a covariate in the analysis. GPA was measured on a 4-point scale (4.0=A to 1.0=D).

Data Analytic Strategy

We used growth mixture modeling (GMM) (Ram & Grimm, 2009), to model possible heterogeneity among urban youth in organized activity participation with MPlus version 7 (Múthen and Múthen, 2013). For investigating the relationship between latent class trajectories and distal outcomes, we used Vermunt's (2010) three-step approach to independently evaluate the relationship between latent class trajectories and distal outcome variables, while accounting for classification error (Asparouhov & Muthén, 2013). A three-step approach helps address some limitations of one-step approaches (estimating

measurement and structural models simultaneously), including statistical and conceptual issues that result from undue influence of the distal outcome on measurement model estimation (Asparouhov & Muthén, 2013; Vermunt, 2010).

The first step consists of estimating the latent class trajectory model. In the second step, we exported the posterior probabilities (probability of membership in each latent class) from the GMM in MPlus to assign each respondent to their most likely latent class (modal class assignment) (Heron et al., 2013). In step three, we created a multiply imputed posterior distribution for the latent class variable in Stata (Version 12, Statacorp) (Asparouhov & Muthén, 2013). Following this, we estimated linear and logistic regression models (depending on the outcome of interest) using the latent class participation trajectory model to predict young adult outcomes while correcting for misclassification (Heron et al., 2013; Vermunt, 2010). In order to account for prior functioning on each outcome variable we controlled for early adolescent (Wave 1) psychological functioning (depressive symptoms, and self-acceptance as a Wave 1 control for life satisfaction), substance use, and 9th grade GPA as a Wave 1 control for educational attainment in each of the step three linear/logistic regression models.

Missing Data

We used a full information maximum likelihood (FIML) approach to address missing data on both time-varying and time-invariant variables in the measurement model for step one of the three-step analysis. In order to minimize the effects of missing data on our analyses, we imputed participants' outcome values for Wave 11 (obtained approximately 12 months prior to Wave 12, also during young adulthood) if Wave 12 was missing and Wave 11 was available. This increased the sample for each outcome by approximately 60 participants ($\approx 6\%$). We then compared participants who had missing data on each outcome versus non-missing on all sociodemographic variables to examine possible differences.

Results

Descriptive statistics

During Wave 1: 35% of youth participated in organized activities within 1 domain (school, church or community), 29% in 2 and 12% in 3; Wave 2: 33% participated in 1 domain, 24% in 2 and 11% in 3. During Wave 3: 31% participated in 1 domain, 23% in 2 and 9% in 3; Wave 4: 26% reported participation in 1 domain, 20% in 2 domains and 6% in 3. Additional descriptive statistics for participation variables are provided in Table 1. Youth reported the highest levels of participation in school, followed by church and community domains and among youth who participated, most reported 1 activity in the respective domain over the course of the year. Among youth who participated, they reported moderate-high levels of participation intensity and importance. Means, standard deviations and sample size by wave for organized activity participation composite variable is provided in Table 2. Participation scores ranged from 0 to 119. Total sample participation across the four waves of data appears to have a fairly consistent, low-level across the high school years, with some decline overall from freshman to senior year. Means and standard deviations for sociodemographic

and Wave 1 self-selection variables and outcome variables by Wave 12 are provided in Table 2.

Attrition Analysis

Of the 681 respondents from Wave 1, 364 cases were lost to follow up by Wave 12 (across all outcome variables, specific number varied by outcome). Attrition analysis indicated a greater proportion of females remained in the study compared to males ($X^2=11.49$, $p=0.001$) and respondents who remained in the sample were slightly older at Wave 1 ($M=14.95$ years, $SE=0.04$) than missing respondents ($M=14.79$, $SE=0.03$; $t=3.40$, $p>0.001$). We found no differences between missing and non-missing respondents for parent education and 8th grade GPA or trajectory group membership.

Growth Models and Trajectory Classes

Model building results are provided in Table 3. Our results indicated a three class solution best fit the data, with a low initial-level, decreasing participation group (approximately 75% of respondents hereafter referred to as decreasing), a moderate initial-level, consistent participation group (approximately 20% of respondents, hereafter referred to as consistent) and a moderate initial-level increasing participation group (approximately 5% of the respondents, hereafter referred to as increasing). The three-class trajectory model is depicted in Figure 1 and estimates with covariates are provided in Table 4. Given the noteworthy proportion of non-participants, we explored the class structure when omitting this group (25% from Wave 1). Our results suggested that a 3-class model was still the best fit for the data (results not shown). Among sociodemographic and self-selection characteristics, higher 8th grade GPA was associated with higher odds of membership in the consistent and increasing versus decreasing participation trajectory subgroups. Higher parent education was associated with higher odds of being in the consistent versus decreasing subgroup. All covariates of class membership were retained in the model for their substantive theoretical value.

We estimated the GMM with self-selection and sociodemographic covariates and class-specific intercept, slope and residual variances as equal. We then attempted to free class-specific parameters. We also examined exploratory plots of variability around intercept and slope for each class. Freeing slope, intercept and residual class-specific variances resulted estimation errors, such as a non positive-definite covariance matrix. The estimation issues and exploratory plots suggested limited within class variability in OAP intercept and slope. Consequently, our models investigating distal outcomes included class-invariant variances for intercepts, slopes and residuals as this approach best fit the data.

Participation Class Membership and Young Adult Outcomes

Following our examination of latent class trajectory classes with covariates, we sought to investigate if participation trajectory class membership associated with outcomes in young adulthood, accounting for early adolescent functioning, using the three-step approach described by Vermunt (2010). Results for trajectories classes and adult outcomes are in Table 5.

Psychological well-being—Youth in the increasing subgroup reported higher levels of life satisfaction in young adulthood than those in the decreasing participation subgroup. Participants in the increasing subgroup reported life satisfaction scores 0.5 points higher in young adulthood than those in the decreasing subgroup, accounting for Wave 1 self-acceptance. We found no differences in life satisfaction across trajectory subgroups. We also found no differences in depressive symptoms during early adulthood by trajectory class accounting for Wave 1 depressive symptoms.

Substance use—Our results indicated that substance use differed in young adulthood by trajectory class. Adolescents in the increasing subgroup reported lower levels of substance use in adulthood compared to those in the decreasing subgroup; for those in the increasing subgroup, substance use was 1.44 points lower than those in the decreasing subgroup. We found no differences in substance use between the consistent and decreasing participation subgroups.

Educational attainment—Our results indicated no differences in young adult educational attainment by participation trajectory subgroup membership when accounting for Wave 1 GPA.

Discussion

Our study findings indicate that organized activity participation trajectories during high school are associated with young adult outcomes. Adolescents who increased their participation over time may have had greater opportunity to experiences that support positive development (Zaff et al., 2003). These results are consistent with Bronfenbrenner & Morris (2006), who suggest that proximal processes occurring over extended periods of time may be effective in shaping developmental trajectories. Our results support the longer-term implications of participation during adolescence and build on previous research with evidence to suggest that the potential positive effects may extend into young adulthood, even after accounting for sociodemographic, self-selection factors and early adolescent functioning (Gardner et al., 2008; (Mueller, Phelps, et al., 2011). Participation may be especially beneficial for youth living in urban, disadvantaged contexts, who are more likely to experience risks compared to youth living in higher resource areas (Patton et al., 2012).

Delete

Psychological well-being—The more favorable life-satisfaction outcomes found among the increasing subgroup compared to the decreasing subgroup may be due to opportunities to enhance developmental assets. Adolescents involved in activities report a greater sense of belonging, higher perceived competence and more confidence than less involved adolescents (Eccles & Gootman, 2002). Researchers have also found that youth report more positive emotional states when they are involved in organized activities compared to other contexts such as school or unstructured time (Bohnert et al., 2008). Youth who increased their participation over time may have experienced greater exposure to these positive experiences during a developmental period characterized by increasing independence and greater exposure to social and personal stressors which may be particularly pronounced among

youth living in urban, disadvantaged areas (Peck, Roeser, Zarrett, & Eccles, 2008). These results suggest that expanding opportunities for youth activity participation during middle- and late-adolescence may be beneficial, especially for youth living in high risk contexts. Participation during this stage may also help build assets that continue to psychological well-being in adulthood.

We did not find differences in depressive symptoms by trajectory subgroup, while accounting for adolescent depressive symptoms. This may be because individuals who experience risk factors, from individual (including genetic) to community (e.g., disadvantaged community) may experience these risks over the life span (Rudenshine, 2013). Despite exposure to adolescent promotive factors, youth experiencing depressive symptoms may also be at higher risk for depression in young adulthood.

Substance use—Adolescents in the increasing participation subgroup reported less substance use in young adulthood compared to youth in the decreasing subgroup. Substance misuse may be of particular concern among young adults living in urban, disadvantaged environments as it may be a coping mechanism for dealing with stressors or trauma present in such contexts (Mulia, Ye, Zeng, & Greenfield, 2008; NIH, 2008). Organized activity participation may serve as an important way to build assets and provide opportunities for positive developmental experiences that help reduce the likelihood of substance use during young adulthood. Youth who increase their engagement in activities during mid- and late-adolescence may be better equipped to handle stressors and avoid substance abuse-related disorders in young adulthood. Adults working with youth experiencing social disadvantage may help bolster long-term prevention efforts through finding ways expand opportunities for youth activity participation during mid- and late-adolescence that supports PYD and helps build important developmental assets.

Educational attainment—Contrary to what other researchers have found, our results indicated that post-high school educational attainment was not associated with participation trajectories. Our results may differ from prior research because our sample was focused in one geographical area. Past research mostly included nationally representative samples, who may not face the same challenges to postsecondary education as youth from urban, disadvantaged areas (Gardner et al., 2008). Another explanation for the divergent findings may be that past researchers focused on a specific type of participation (e.g., civic participation) that may be more predictive of educational outcomes in adulthood (Chan, Ou, & Reynolds, 2014). This suggests that specific types of participation may be more predictive of later educational attainment rather than participation across multiple contexts, and that our results may be most generalizable to lower income urban youth.

Overall, our results suggest that youth who expand their organized activity participation during high school derive long-term benefits. Yet, this group was also the smallest participation subgroup. Adolescents typically decrease their participation over time, particularly from mid- to late-adolescence and sustaining or even expanding participation as adolescents transition to adulthood can be a challenge (Lauver & Little, 2005). Competing demands such as family responsibilities, desire for paid employment, lack of interest in activities and more limited opportunities to engage all may inhibit youth expanding

participation over time (Lauver, Little, & Weiss, 2004). Adults working with youth during mid- to late-adolescence may benefit from structuring activities to meet their diverse and changing developmental needs in order to help expand behavioral and psychological engagement. Researchers have found, for example, that older adolescents may be more likely to become engaged in programs that help them learn about careers and college, and teach them skills related to the future (Greene, Lee, Constance, & Hynes, 2013). Thus, through strategies such as incorporating developmentally-relevant content within organized activities, adults may be better positioned to support expanded participation over time.

We found no differences between the consistent group and other groups. This may be because, compared to other studies with primarily middle- and upper-class participants, the moderate, consistent level of participation was not sufficient to overcome the contextual risk factors faced by youth living in urban, disadvantaged communities. This may also be because the moderate, consistent level of participation was relative to other youth also living in the same economically challenged context. Youth living in disadvantaged communities, on average, participate significantly less in organized activities than youth living in more advantaged communities (Pedersen, 2005). In fact, “(u)rbans African American youth often spend *very* little of their discretionary time involved in organized...activities.” (Bohnert, Richards, Kohl, & Randall, 2009, p. 587) Consequently, the moderate level of participation may not have offered sufficient exposure to building developmental assets whose effects extend into adulthood.

Limitations

Several limitations of this study should be noted. First, our study was conducted in one middle-sized and economically challenged city so the results may not be generalizable to young adults more generally. Yet, this is a critical population to study as organized activities may be particularly beneficial for youth growing up in contexts like this at higher risk for negative developmental outcomes and participating less than their higher SES counterparts (Pedersen, 2005). Second, the size of our increasing participation class was small (5% of the sample) relative to the other classes, so statistical power may be an issue in terms of detecting subgroup differences and drawing conclusions across all outcomes. This proportion, however, falls within acceptable range for a latent trajectory class (Jung & Wickrama, 2008) and is substantively meaningful for understanding positive youth development (Mahoney et al., 2003). It is also notable that despite the small sample we found effects suggesting that limited statistical power might explain our results (i.e., a Type II error was not made). Third, our participation measure itself did not include information about specific categories of activities such as school clubs, sports and after school programs as examined by previous researchers. Although these specific activities have been linked to positive and negative outcomes among youth (Eccles & Gootman, 2002), activity categories have been defined in numerous ways and few researchers have linked specific activities to young adult developmental outcomes (Bohnert et al., 2010). Consequently, we considered organized activity participation more broadly to investigate how distinct participation trajectories across activity contexts were associated with outcomes during young adulthood. Fourth, although we accounted for relevant sociodemographic and self-selection factors that may influence participation trajectories, other factors may exist that may influence

participation during the high school years such as motivation and skill level (Farb & Matjasko, 2012). Yet, we accounted for several empirically-supported factors associated with participation over time in order to reduce potential biases in the relationship between participation and young adult outcomes. Finally, although the results suggest that becoming more engaged in activities over time is associated with long-term benefits, among youth living in economically distressed contexts, participation may be especially challenging. Contextual barriers influencing activity availability and accessibility (e.g., lack of safe and reliable transportation, limited number of high quality programs) may be critical factors influencing youth engagement. Future research that incorporates multi-component evaluations of activity availability and accessibility, including information from multiple data sources, such as GIS mapping with environmental audits and interactive focus groups (Topmiller, Jacquez, Vissman, Raleigh, & Miller-Francis, 2015), may help us understand barriers to participation. Yet, even considering these challenges, adolescents who were able to expand their engagement over time experienced more favorable outcomes in young adulthood compared to less involved peers.

These study limitations notwithstanding, our study is one of the first attempts to examine how distinct organized activity participation trajectories in high school are associated with psychological well-being, substance use and educational outcomes in emerging adulthood. In addition, our study added to our understanding of the developmental effects of participation in several ways. First, we investigated subgroups of participation trajectories during adolescence while accounting for sociodemographic and self-selection factors. Second, we included a measure of organized activity participation that incorporated behavioral and psychological engagement. Third, we examined a range of outcomes in young adulthood, including psychological well-being, substance use and educational attainment. Fourth, we investigated the relationship between participation trajectories and young adult outcomes among an understudied group in the participation literature while accounting for early adolescent functioning. Fifth, we used a three-step analytic approach as described by Vermunt (2010) to address issues related to one-step model estimation and three-step approaches that do not account for classification error when using latent trajectory classes to predict distal outcomes. This study supports the long-term promotive potential of organized activity participation and adds to our understanding of processes during adolescence that may be important influences on health and well-being into adulthood.

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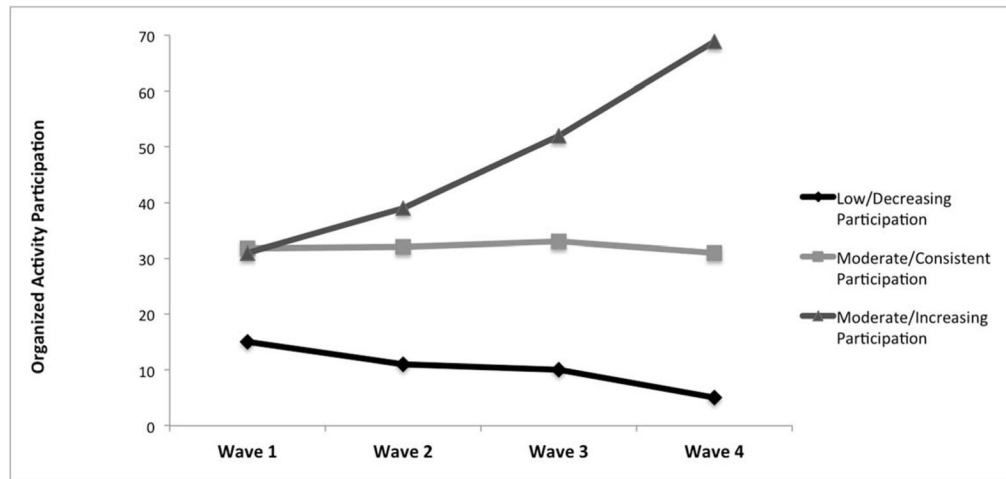


Figure 1. Model-estimated means for the three-class latent class growth analysis solution of organized activity participation across the high school years

Table 1

Descriptive statistics for organized activity participation by domain

	% part/mean # activities ^a	intensity ^b	importance ^b
Wave 1			
School	54.2/1.30	3.25–3.51	3.00–3.40
Church	46.4/1.29	3.24–3.48	3.25–3.48
Community	29.5/1.16	3.20–4.00	3.25–4.00
Wave 2			
School	47.5/1.38	3.38–4.00	3.00–3.26
Church	41.4/1.34	3.00–3.57	3.07–3.80
Community	26.0/1.16	3.15–3.37	3.12–3.33
Wave 3			
School	45.7/1.43	3.45–3.66	3.34–3.66
Church	38.4/1.37	3.24–4.00	3.32–3.75
Community	29.8/1.15	2.66–3.14	2.67–3.37
Wave 4			
School	35.8/1.45	3.30–3.51	3.20–3.45
Church	31.2/1.30	2.66–3.58	2.66–3.60
Community	21.9/1.15	2.79–3.07	3.15–3.50

^a percent participating in at least one activity/mean # of activities among youth who reported participation^b range of mean scores for each activity among youth who reported participation

Table 2

Descriptive statistics for study variables

Time-varying	Mean(SD)
Participation ^a Wave 1	18.87 (18.96)
Participation Wave 2	17.05 (18.32)
Participation Wave 3	17.82 (19.30)
Participation Wave 4	14.33 (18.66)

Time-invariant	Mean(SD)/proportion yes
<i>Class predictors, Wave 1</i>	
Parent education	4.39 (1.41)
Self-acceptance	4.51 (0.70)
8th grade GPA	2.02 (0.68)
<i>Young adult outcomes, by Wave 12</i>	
Depression (N=361)	1.55 (0.69)
Life satisfaction (N=362)	3.05 (1.02)
Substance use (N=359)	3.76 (2.93)
Educational attainment (post HS training) (N=363)	39.12%

^aParticipation= sum of intensity x importance for each activity across domains (school, church, community)

Table 3

Fit statistics for participation GMM by class solution

Model	Log-Likelihood	AIC	SSABIC	Entropy	LMR LRT test
1 class (growth model)				n/a	n/a
2 classes	-12371.21	24792.42	24826.05	0.89	199.05
3 classes	-12296.49	24656.99	24700.04	0.89	149.80 *
4 classes	***	***	***	***	***

* p<0.05; LMR LRT test: Lo-Mendel-Rubin adjusted LRT TEST for N-1(Ho) vs. N classes
*** 4 class model did not successfully converge
AIC=Akaike Information Criteria; SSABIC=sample size adjusted Bayesian Information Criteria

Table 4

Three class model results

GMM Model results		Intercept (SE)	Linear growth (SE)
Class 1 (Low, decreasing participation group)		15.62 (0.78)	-3.03 (0.27)
Class 2 (Moderate, increasing participation group)		27.00 (3.32)	13.91 (1.64)
Class 3 (Moderate, consistent participation group)		32.37 (2.40)	0.26 (0.79)

Participation groups compared		Consistent vs. Decreasing	Increasing vs. Decreasing	
	Estimate (SE)	OR	Estimate (SE)	OR
Covariate				
Male	0.46 (0.24)	1.58	0.11 (0.39)	1.12
Self-acceptance	0.07 (0.19)	1.07	0.67 (0.46)	1.95
8th grade GPA	0.75 (0.23) *	2.12	0.53 (0.35)	1.7
Parent education	0.31 (0.09) *	1.36	0.44 (0.22) *	1.55

* p<0.05

*
p<0.05

Table 5

Distal outcomes by trajectory class membership

Young adult outcomes, by Wave 12 ^b	Participation groups compared		Model F-statistic, p-value
	Consistent vs. Decreasing	Increasing vs. Decreasing	
	Coef/OR [95% CI] ^a	Coef/OR [95% CI] ^a	
Psychological well-being			
Depression (N=361)	-0.14[-0.32, 0.04]	-0.32[-0.65, -0.02]	8.21, >0.001
Life satisfaction (N=362)	0.01[-0.29, 0.32]	0.50[-0.01, 1.01] *	4.03, 0.01
Substance use (N=359)	-0.35[-1.25, 0.54]	-1.44[-2.84, -0.39] *	8.29, >0.001
Educational attainment (post HS training) (N=363)	1.15[0.56, 2.35]	2.56[0.84, 7.80]	11.26, >0.001

^a coefficients for continuous variables, OR for dichotomous (educational attainment)

^b Accounting for Wave 1 controls: depressive symptoms, self-acceptance (life satisfaction), substance use, GPA (educational attainment)

* p<0.05