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Trajectories of participation in organized activities and outcomes in young adulthood

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ABSTRACT

To examine whether trajectories of participation in organized activities during the high school years and beyond (from ages 14 to 20) predicted outcomes at age 21 (externalizing problems, internalizing problems, civic engagement, number of years of education, and perception of physical health), 354 youths (60% girls) were surveyed annually over nine years. Four trajectories were found: (a) “Low and decreasing” (71%), (b) “Moderate and stable” (12%), (c) “High and decreasing after high school” (12%), and (d) “High and increasing after high school” (5%). Results revealed that the predicted outcomes varied according to the different trajectories. Pursuing high levels of activity participation beyond high school was especially beneficial with respect to externalizing problems and educational attainment.

From a developmental perspective, organized activities are considered to play a key role in promoting healthy adjustment in adolescence. The main characteristics of these activities include the presence of an adult leader, other peers in the activity, rule-guided engagement, and regular participation schedules (Larson, 2000; Mahoney & Stattin, 2000). A bulk of research suggests that activity participation in the high school years is associated with a constellation of positive outcomes, including lower rates of externalizing problems and internalizing problems and higher rates of postsecondary educational attainment and civic engagement (for a review, see Farb & Matjasko, 2012). However, less is known about the developmental course of activity participation, since few studies have examined participation over time. Yet, the pattern of youths’ participation in organized activities over the years may influence the extent to which they thrive at the beginning of young adulthood. In the Positive Youth Development (PYD) approach, “thriving is seen as the growth of attributes that mark a flourishing, healthy young person, for example, the characteristics of the Five Cs of PYD: competence, confidence, character, connection, and caring” (Lerner, von Eye, Lerner, Lewin-Bizan, & Bowers, 2010, p. 708). Thus, thriving youths are more likely to show positive outcomes and less likely to engage in risk behaviors (Lerner, Lerner, von Eye, Bowers, & Lewin-Bizan, 2011). The goal of this study was to examine trajectories of participation

intensity from ages 14 to 20 and the outcomes associated with trajectory group membership at age 21.

The development of activity participation over time

Developmental patterns of activity participation over time are a relevant subject of investigation since these patterns may influence the extent to which youths benefit from the organized activities in which they are involved (Eisman, Stoddard, Bauermeister, Caldwell, & Zimmerman, 2016). These patterns can be assumed to be either homogenous or heterogeneous. In the first case, all youths would be expected to experience similar trends of participation in organized activities, which assumes population variability but not distinct developmental trajectories. A few studies have examined this possibility using latent growth curve analyses (LGC). Overall, these studies have shown that activity participation (e.g., number of activities, intensity, and breadth) tends to decrease linearly across the high school years among middle-class (Denault & Poulin, 2009a, 2009b; Denault, Poulin, & Pedersen, 2009) and urban youths (Pedersen, 2005).

In the second case, one would expect to find distinct subgroups with different patterns of activity participation over the years. On a theoretical level, activity participation likely results from complex interactions between personal, familial, social, and school/community factors operating over time. Various

determinants of activity participation have been documented over the years, such as socio-demographic (e.g., gender, socioeconomic status), personal (e.g., school performance, externalizing and internalizing problems), familial (e.g., parental support), social (best friends' participation), and school/community (e.g., resources) factors (Denault & Poulin, 2009b; Duke, Borowsky, & Pettingell, 2012; Pedersen, 2005). These factors are likely to shape youths' dispositions toward activity participation in a multifaceted way, resulting in distinct trajectories of activity participation over time.

At least three distinct trajectories can be expected. One trajectory in which youths follow a low and stable trajectory of activity participation over the years because they do not have the necessary conditions or predisposition to participate (e.g., lack of financial resources or interest, psychosocial problems, disadvantaged neighborhood). Another trajectory in which youths participate mainly during the high school years, when activity participation is normative and synergistic with the important developmental tasks of adolescence (e.g., identity and autonomy development, gaining peer status) and when school and community participation opportunities are most abundant. These levels of participation would be expected to decrease substantially after the high school years. Lastly, a third trajectory in which youths follow a high and stable trajectory of activity participation across and even beyond the high school years, having both the resources and predisposition to maintain high levels of participation over time (e.g., financial resources, motivation, parental support, community resources).

On an empirical level, to our knowledge, only two studies have examined the presence of distinct trajectories using latent class growth analyses (LCGA). First, Mata and van Dulmen (2012) explored participation trajectories using the number of minutes per week spent in organized activities among 1,024 children (14 waves of data collection between kindergarten and Grade 5; approximate ages 5 to 10). The results revealed a five-class model: stable low (53%), increasing high (4%), decreasing low (14%), decreasing moderate (15%), and increasing moderate (14%). Second, in a sample of 681 African-American adolescents at risk for school dropout, assessed four times (Grades 9 to 12) using a composite score reflecting both behavioral (frequency) and psychological (importance) engagement, Eisman et al. (2016) found a three-class model to be the optimal solution: low and decreasing (74%), moderate and stable (21%), and moderate and increasing (5%). The goal of both studies was to predict membership in the distinct trajectories. Results revealed that trajectory membership was differentially predicted by both socio-demographic

and predisposing factors (e.g., gender, family income, parental education, GPA, aggression, substance use, and parental support). These results thus support the notion that predisposing risk and promotive factors may influence the likelihood of following different participation trajectories across the childhood and adolescent years.

Building on this work, the first goal of our study was to investigate trajectories of activity participation based on the number of hours spent in organized activities from ages 14 to 20. We included post high school measurement points to differentiate between youths who stopped participating at the end of high school and those who continued to participate beyond the high school years. In the school system in which the data were collected, youths attend high school for five years (from ages 12 to 17) and junior college for two years (from ages 17 to 19) before entering university. There are important definitional and measurement issues when it comes to the operationalization of activity participation (Busseri & Rose-Krasnor, 2010; Rose-Krasnor, 2009). Both psychological (e.g., degree of engagement in the activity) and behavioral (e.g., intensity, breadth) components can be considered when measuring youths' involvement in organized activities. Given that no measure of the psychological component of activity participation was available in this study, we decided to focus on one behavioral component, namely participation intensity (i.e., the total number of hours spent in organized activities over a 10-month period). This choice was based on two main considerations: (a) this dimension considers multiple types of involvement and is more likely to show greater variability than the number of activities or breadth of participation (number of activity types), which are represented by a restricted range of integers (e.g., 0–5); and (b) given that this dimension was measured through phone yearly interviews, we were able to calculate a score that took account of the fact that not all activities followed a regular schedule over the 10-month period, allowing for a more precise estimation of participation intensity. While participation intensity does not address the complexity of activity participation, we believe that this dimension is particularly well-suited to examining participation trajectories over time. The second goal of this study was to determine whether different participation trajectories were linked to different psychosocial outcomes in young adulthood.

Trajectories of activity participation and outcomes in young adulthood

As mentioned above, based on the degree of exposure to salient development experiences (e.g., acquisition of

various skills, positive relationships with peers and activity leaders; Bohnert, Aikins, & Edidin, 2007; Pittman, Tolman, & Yohalem, 2005; Viau, Denault, & Poulin, 2015), following different participation trajectories may increase or decrease the likelihood of thriving in young adulthood. According to PYD (Lerner, 2002; Lerner, Almerigi, Theokas, & Lerner, 2005), organized activities are central developmental assets which, when aligned with youths' strengths, enable thriving to emerge. According to this perspective, developmental assets refer to resources in a youth's key settings that support the growth of a healthy person (Lerner et al., 2010). Thus, youths who follow low participation trajectories during the high school years may miss out on an opportunity to fully develop their Five Cs. This could, in turn, result in a lower contribution to the self (e.g., as indexed by greater psychosocial problems and lower levels of educational attainment) and the community (e.g., as indexed by less civic engagement) in young adulthood. On the other hand, youths who participate more substantially in organized activities, mainly during high school but not beyond, may accumulate sufficient developmental resources to thrive by the end of high school. However, because they stop participating and thus cease to benefit from the developmental resources in their leisure contexts during the important transition to adulthood, these youths may be characterized by lower contributions to the self and the community in young adulthood than youths who continue to participate beyond the high school years.

On an empirical level, to our knowledge, no study to date has examined whether group membership in different participation trajectories across the high school years and beyond is differentially associated with outcomes in young adulthood. However, we reviewed longitudinal studies examining the predictive associations between participation intensity/frequency and externalizing/internalizing problems, college attendance/post-secondary educational attainment/grades, and civic engagement in young adulthood. First, Bohnert et al. (2007) found that participation intensity during the first year of college ($n = 85$, ages ranging from 16 to 21) predicted less loneliness at the end of the year, but only among young adults who experienced low levels of friendship quality assessed during the summer before their first year of college. Second, Busseri et al. (2011) found that growth in participation intensity during the first year of university ($n = 656$, mean age = 17.9 years) predicted higher grades at the end of the year. Results were not significant with respect to alcohol use, academic-related delinquency or depressive symptoms. Third, Gardner, Roth, and Brooks-Gunn (2008)

found that participation intensity over two consecutive years between the ages of 16 and 18 predicted post-secondary educational attendance and attainment at ages 20 and 26, respectively ($n = 11,029$). Results were not significant with respect to volunteering and voting. Fourth, Mahoney and Vest (2012) found that participation intensity ($n = 1,115$, ages ranging from 12 to 18) predicted higher civic engagement and educational attainment six years later. Results were not significant with respect to risky behavior and distress. Fifth, Obradović and Masten (2007) found that participation frequency ($n = 163$, ages 17–23) predicted higher levels of citizenship behaviors and volunteering at ages 28 to 36. Finally, Viau and Poulin (2015) found that participation intensity from ages 14 to 17 ($n = 287$) predicted an increase in alcohol use at age 21. Results were not significant with respect to depressive symptoms, educational status, and civic engagement.

Overall, these studies reveal a mixed portrait of outcomes associated with participation intensity in young adulthood. In addition to these outcomes, we were also interested in investigating the youths' perception of their own physical health since this factor is closely related to well-being and thriving in young adulthood (Agans, Johnson, & Lerner, 2017; Hoyt, Chase-Lansdale, McDade, & Adam, 2012). Perception of physical health is also likely to be associated with high and stable participation trajectories over time, since a great proportion of organized activities are sports (Vandell, Larson, Mahoney, & Watts, 2015).

Study objectives

The first objective of this study was to identify developmental patterns of participation intensity from ages 14 to 20. Based on both theoretical and empirical considerations, we expected that at least (a) one trajectory would be low and stable over the years, (b) one trajectory would be moderate-to-high and decrease by the end of the high school years, and (c) one trajectory would be moderate-to-high and stable across and beyond the high school years. The second objective was to predict outcomes at age 21 (externalizing problems, internalizing problems, civic engagement, number of years of education, and perception of physical health) based on trajectory group membership (see Figure 1). In order to control for selection effects and pre-existing differences between the youths (Fredricks & Eccles, 2006), gender, family structure, family income, and prior indicators of adjustment were used as control variables. These variables were measured prior to the transition to high school (i.e., age 12). Because prior studies revealed mixed empirical findings and examined

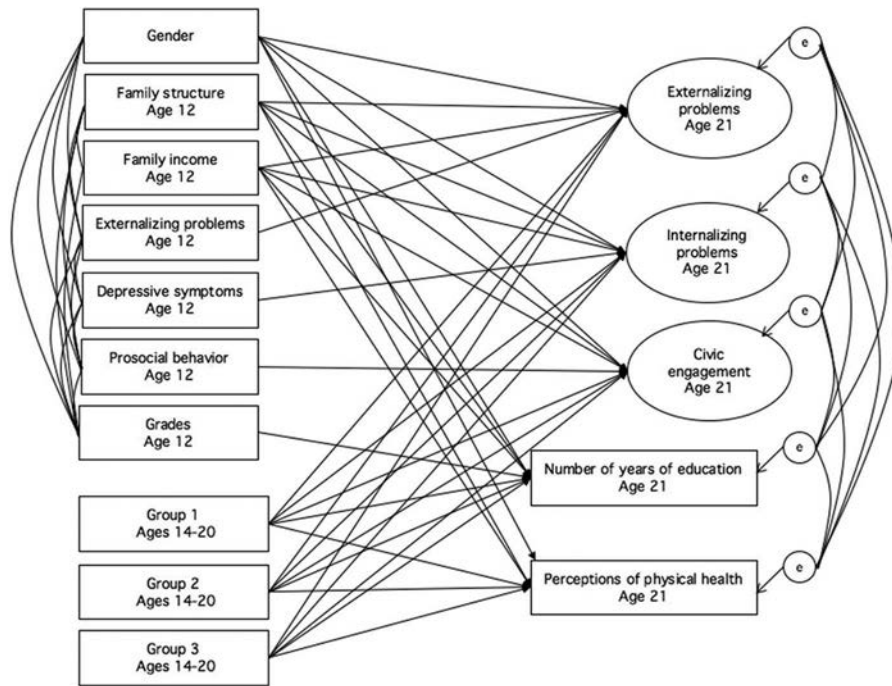


Figure 1. Tested model in which the optimal solution would be four groups. For clarity, the indicators for the latent factors are not included in the figure (risky behaviors, problems associated with alcohol use, and problems associated with marijuana use for “externalizing problems”; depressive symptoms and loneliness for “internalizing problems”; political voice and involvement in political, community, and volunteering activities for “civic engagement”).

longitudinal associations using a variable-centered approach, hypotheses were based purely on PYD theory (Lerner, 2002; Lerner et al., 2005). We expected that, overall, membership in the trajectories characterized by greater intensity of participation (whether mainly in high school or also beyond) would predict better adjustment compared to membership in the trajectories characterized by lower levels of participation. Given the proximity between activity participation and the transition to adulthood, youths whose participation persisted beyond the high school years, if such a group emerged from the analyses, were also expected to be better adjusted than those for whom it did not, with respect to all indicators of adjustment.

Methods

Participants and study design

The data used in this study came from an ongoing longitudinal study beginning in 2001 among 390 students in Grade 6 (58% girls, $M_{\text{age}} = 12.38$, $SD = 0.42$). Nine waves of data collection were used in this study. Students in the sample were drawn from eight elementary schools in four separate districts representing different socio-economic backgrounds in a city of 350,000 in the province of Quebec, Canada. These youths were mostly Caucasian (90%) and

French-speaking and came from families that were, for the majority, intact (68%) and had an average annual income before taxes of over CAN\$50,000. Their mothers and fathers had similar levels of education ($M = 13.08$ years, $SD = 2.68$ and $M = 13.20$ years, $SD = 3.20$, respectively).

As mentioned above, nine waves of data collection were used (T1 = age 12, T2 = age 14, T3 = age 15, T4 = age 16, T5 = age 17, T6 = age 18, T7 = age 19, T8 = age 20, and T9 = age 21). By Grade 11 (age 17), participants were scattered among 30 high schools. At ages 18 and 19, most youths were scattered among approximately 15 junior colleges. As in most longitudinal studies, there were missing data at different time points for different youths. Of the 390 youths in the study, data on activity participation were available for 72% of respondents at age 14 ($n = 282$), 75% at age 15 ($n = 293$), 76% at age 16 ($n = 296$), 77% at age 17 ($n = 303$), 79% at age 18 ($n = 310$), 82% at age 19 ($n = 320$), 78% at age 20 ($n = 304$), and 79% at age 21 ($n = 308$). To reduce the amount of missing data, only youths with data for at least two time points out of seven (T2-T8) were included in the analyses ($n = 354$; on average, 12.9% of the data were missing across the variables). At least two observations for each individual are usually recommended for treating missing data in longitudinal datasets (Jones, Nagin, & Roeder, 2001). For socio-demographic factors and covariates at age

12, youths who met the criterion for inclusion were more likely to be girls ($p < .05$) and to come from intact families ($p < .01$).

Procedure

At age 12, the control variables were measured using various sources: (a) self-report questionnaires completed individually in the classroom under the supervision of trained research assistants, (b) official school records, and (c) teacher-rated questionnaires. From ages 14 to 20, the youths' participation in organized activities was measured retrospectively each year in June using a structured telephone interview conducted by trained research assistants. At age 21, the indicators of adjustment were measured through self-report questionnaires. Most of these questionnaires were administered by a trained research assistant at the youth's home, while some questionnaires were mailed out (approximately 5%). When available, the validated French version of each instrument was used. For all other instruments, following the procedure suggested by Vallerand (1989), instruments that were written in English were first translated into French and then translated back into English to ensure their semantic similarity.

Measures

Descriptive information for all variables is provided in Table 1.

Intensity of participation in organized activities (each year; ages 14 to 20)

The amount of time spent in organized activities over a 10-month period was measured annually using a free recall procedure. To facilitate recall, the youths were first asked to identify all the organized activities (both school- and community-based) in which they were involved from September to December (before the winter break). Second, they were asked to identify all the organized activities in which they were involved from January to June (after the winter break). For each activity identified, they were asked to answer a series of questions. The items targeted the following factors: frequency of participation, number of hours of participation per week, number of weeks of participation during the school year, presence of an adult activity leader, and presence of rules. To determine whether the activities listed met the definition of an organized activity, the following criteria were applied: (a) regular frequency of participation (at least once a month), (b) presence of an adult activity leader, and (c) rule-guided engagement (Larson, 2000; Mahoney & Stattin, 2000).

To calculate the intensity of participation, for each activity reported by the youth, we multiplied the number of hours of participation per week by the number of weeks of participation over the 10-month period (max. 40 weeks). For example, for a youth who played basketball three hours a week from September to June, we multiplied three hours by 40 weeks of participation, resulting in a total of 120 hours. We then summed up the number of hours for all activities reported by the

Table 1. Descriptive statistics for the study variables ($n = 354$).

Variables	<i>N</i>	Range	<i>M</i>	<i>SD</i>	<i>S</i>	<i>K</i>
Participation (Age 14 to 20)						
Intensity – Age 14	302	0–56.29	13.15	14.11	1.08	0.23
Intensity – Age 15	290	0–45.46	9.76	11.47	1.37	1.18
Intensity – Age 16	301	0–47.63	9.56	11.68	1.38	1.38
Intensity – Age 17	311	0–41.57	7.08	10.67	1.70	2.10
Intensity – Age 18	315	0–46.76	4.62	10.25	2.83	7.80
Intensity – Age 19	325	0–30.96	3.81	7.79	2.30	4.57
Intensity – Age 20	314	0–33.77	4.57	9.05	2.16	3.61
Outcomes (Age 21)						
Risky behaviors	304	1–5.25	1.46	0.74	2.13	5.00
Alcohol use problems	304	0–15	2.67	2.70	2.04	5.18
Marijuana use problems	304	0–12	1.33	2.56	2.36	5.24
Depressive symptoms	304	20–62	28.18	8.47	1.44	1.76
Loneliness	302	10–33	14.97	5.08	1.16	0.74
Political voice	304	0–10	2.36	2.09	1.06	1.25
Civic engagement	304	0–7	1.82	1.79	1.25	0.94
Number of years of education	315	10–14	12.02	1.42	0.23	–1.32
Perception of physical health	303	1–5	3.67	0.86	–0.14	–0.16
Controls (Age 12)						
Gender	354	0–1	–	–	–	–
Family structure	352	0–1	–	–	–	–
Family income	261	0–13	10.76	2.91	–1.20	0.51
Problem behaviors	351	1–4.56	1.45	0.53	2.07	5.70
Depressive symptoms	353	0–40	10.86	6.85	1.15	2.06
Prosocial behavior	345	1–5	3.05	0.88	–0.05	–0.47
School grades	351	1.83–5	3.29	0.55	0.34	0.70

youth. Thus, intensity of participation was operationalized as the total number of hours spent in organized activities over the 10-month period. Two modifications were made to the raw data before conducting the analyses: (a) extreme values were screened out and replaced using winsorization to improve the distribution of the variables (z values equal to or higher than 2.5; in total, 56 values [less than 2%] were replaced across the seven measurement waves; Tabachnik & Fidell, 2013) and (b) the total number of hours was divided by ten to facilitate model estimation (e.g., to reduce the number of digits in the variance estimates).

Outcomes at age 21

Externalizing problems

Three indicators were used to assess externalizing problems in young adulthood. First, four items rated on a 6-point Likert scale ranging from 1 (*never*) to 6 (*more than 10 times*) assessed risky behaviors *in the last month* (e.g., do something risky just for fun, drive a car under the influence of alcohol or drugs; $\alpha = .68$; Elliot et al., 2006). Second, a sum of 15 items rated on a yes/no scale was used to assess problems associated with alcohol use (e.g., tried to stop using alcoholic beverages but couldn't, been drunk in a public place, passed out from drinking, lost or broken things because of drinking). Third, a sum of 12 items rated on a yes/no scale was used to assess problems related to marijuana use (e.g., gone to school or work while high on marijuana, had problems related to school or work because of marijuana). The items assessing problems associated with alcohol and marijuana use were taken from the *Structured Clinical Interview for DSM-IV* (SCID; First, Spitzer, Gibbon, & Williams, 1997) and the *Alcohol Use Disorders Identification Test* (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993). These three indicators were used to create a latent factor of externalizing problems in the regression model (see Figure 1).

Internalizing problems

Two indicators were used to assess internalizing problems. First, the *Center for Epidemiological Studies–Depression Scale* (CES-D; Radloff 1977; see Fuhrer and Rouillon, 1989, for French version) was used to measure depressive symptoms. The CES-D is a self-administered questionnaire assessing the severity of depressive symptoms among youths (20 items; e.g., “I felt sad,” “I was bothered by things that usually don't bother me,” “My sleep was restless”; $\alpha = .91$). Participants are asked to rate the items, based on the previous week, using a 4-point Likert scale (0 = *rarely or never* [0–1 day]; 1 = *a few times or not very often* [1–2 days];

2 = *occasionally or somewhat often* [3–4 days]; 3 = *most of the time or all the time* [5–7 days]). The CES-D is considered to be a valid and reliable screening instrument for depression in adolescent populations (Roberts, Lewinsohn, & Seeley, 1991). Second, a brief version of the UCLA Loneliness scale (Russell, 1996) was used to measure loneliness. Ten items rated on a 4-point Likert scale ranging from 1 (*never*) to 4 (*always*) were used. Sample items included “I lack companionship,” “There is no one I can turn to,” “I feel left out” ($\alpha = .88$). These two indicators were used to create a latent factor of internalizing problems in the regression model (see Figure 1).

Civic engagement

Two indicators were used to measure the youths' involvement in civic activities. First, we used 10 items assessing political voice *over the last year*, rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*more than six times*). Sample items included “taken part in a protest or demonstration,” and “signed a written petition concerning a political or social issue” (Keeter, Zukin, Andolina, & Jenkins, 2002; $\alpha = .74$). Second, seven items from the *Youth Involvement Inventory* (YII; Pancer, Pratt, Hunsberger, & Alisat, 2007) were used to assess the youths' involvement in political, community, and volunteering activities. For each activity, the youths indicated the extent to which they had participated *over the last year* on a 5-point Likert scale ranging from 1 (*never*) to 5 (*more than six times*). Sample items included “worked on a political campaign,” “volunteered with a community service organization,” and “visited or provided assistance to people who were sick” ($\alpha = .80$). For each indicator, given the non-normality of the scales' distribution, all the items were recoded on a yes (*at least once*) or no (*never*) scale. Recoded items were then summed up for each indicator to reflect the number of different civic activities in which the youths were involved over the previous year. These two indicators were used to create a latent factor of civic engagement in the regression model (see Figure 1).

Number of years of education

The number of years of education was derived from information provided by the youths regarding their educational attainment. For example, if a youth answered that he or she had just completed his or her first year of undergraduate studies, this youth was attributed a maximum score of 14 (i.e., 6 years of elementary school, 5 years of high school [i.e., high school years = from Grade 7 to Grade 11], 2 years of junior college, and 1 year of university in the school system in which the data were collected).

Perception of physical health

The youths' perception of their physical health was assessed using a single item rated on a 5-point Likert scale ranging from 1 (*poor*) to 5 (*excellent*): "Overall, how would you rate your physical health?" Using this single item has been found to be a valid strategy for assessing self-reported subjective health (Miilunpalo, Vuori, Pasanen, & Urponen, 1997).

Control variables at age 12

Socio-demographic factors

Gender was coded "0" for boys ($n = 143$; 40%) and "1" for girls ($n = 211$). Family structure was coded "0" for non-intact families ($n = 102$; 29%) and "1" for intact families ($n = 250$; data for this variable were missing for two participants). A family was considered to be intact when youths lived with both biological parents. Family income before taxes was used as an indicator of the family's economic situation. Parents responded to a single item, "Which of the following categories corresponds to your total family income before taxes for the year 2000," ranging from 1 (less than \$5,000) to 13 (\$60,000 or more).

Problem behaviors

For problem behaviors, a modified version of a previously developed scale was used (Metzler, Biglan, Ary, & Li, 1998). The adolescents were asked to report on 16 items rated on a 6-point Likert scale ranging from 1 (*never*) to 6 (*more than 10 times*). Sample items included lying to parents, vandalizing public property, stealing, and fighting at school. A mean was calculated for the 16 items ($\alpha = .83$).

Depressive symptoms

To assess depressive symptoms, participants completed the Children's Depression Inventory (CDI; Kovacs, 1983; see Saint-Laurent, 1990, for French version). The CDI has been shown to be reliable and valid in large representative samples of youths (Kovacs, 1983). This inventory measures the intensity of depressive symptoms during the previous two weeks. The item relating to suicidal ideation was withdrawn given the age of the children (12 years old). The remaining 26 items were added up ($\alpha = .85$), with a higher score indicating more severe symptomatology.

Prosocial behavior

The youths' prosocial behavior was rated by their teacher using four items from the *Prosocial Behavior Questionnaire* (e.g., "Helps others"; 1 = *never true* to 5 = *almost always true*; Weir, Stevenson, & Graham, 1980; see Tremblay et al., 1991 for French version). This

questionnaire has been validated among children and showed satisfactory reliability ($\alpha = .85$ in this study). Prosocial behavior was used as a proxy for civic engagement because it is seen as a way for early adolescents to engage in civic behaviors (Sherrod, Flanagan, & Youniss, 2002).

School grades

The mean of the participants' grades in mathematics and French ($r = .65$) was used. These grades were taken from their official school records and were rated on a 5-point scale, ranging from 1 (*poor*) to 5 (*excellent*).

Analytical strategy

Trajectory analyses

To identify the participation trajectories from ages 14 to 20 (T2 to T8), we used latent class growth analyses (LCGAs) with Mplus version 7.4 (L. K. Muthén & Muthén, 2012). This analytical strategy addresses the unobserved heterogeneity within data by extracting the number of latent classes and classifying individuals in distinct trajectories based on their posterior probability of class membership (B. Muthén & Muthén, 2000). To this end, we followed the steps proposed in Jung and Wickrama (2008). First, we specified a single-class latent growth curve model (LGC) to examine the shape of the mean trajectory of participation in our sample and variances around the intercept and slope parameters. Second, we conducted LCGAs to identify the optimal number of classes. Based on the sample size, models involving two to four groups were estimated. To choose the optimal model, the models were compared using the following criteria: (a) the Bayesian Information Criterion (BIC; the lowest possible value), (b) the Vuong-Lo Mendell-Rubin (LMR) Likelihood Ratio Test, which assesses the fit between two nested models that differ by one class or trajectory (in this test, significant p values indicate that the solution with one more class or trajectory provides a better fit than the solution with one less class or trajectory [e.g., 2 vs. 1; 3 vs. 2, 4 vs. 3, etc.]), (c) the percentage of individuals per trajectory (at least 5%), and (d) the entropy (values closer to or equal to 1 indicate a better classification). Full information maximum likelihood (FIML) was used to deal with missing data (on average, 12.9% of the data were missing across the seven waves of data collection; complete data for all seven time points was available for 63% of participants).

Regression analyses

To determine the predictive value of the trajectories with regard to outcomes at age 21 (T9), regressions were

also performed using Mplus. Outcomes assessed at age 21 were regressed on trajectory groups and socio-demographic and proxy variables assessed at age 12 (T1). All outcomes were considered in the same regression model (see Figure 1; all paths in the figure were tested in the same model). Here again, FIML estimation was used to deal with missing data (on average, 13.7% of the data were missing across the outcomes; complete data for all outcomes was available for 84% of participants). Models that fit the data well were those that had a non-significant chi-square value, a comparative fit index (CFI/TLI) greater than .95, and a root mean square error of approximation (RMSEA) of less than .06 (Hu & Bentler, 1999). Given that the scores for the indicators of externalizing problems were not normally distributed, we used robust maximum likelihood estimation to obtain unbiased standard errors for the parameter estimates.

Results

Descriptive statistics

On average, youths participated in two activities at age 14 and decreased their participation to 0.75 activities by age 20. Activities took place in the school context in 30% of cases, a figure that reached 40% by age 17 and then declined to 20% by age 20. During the high school years (ages 14–17), youths were mainly involved in performance and fine arts (approx. 35%), followed by team sports (approx. 30%), individual sports (approx. 20%), community and school clubs (approx. 10%), and volunteering (approx. 5%). After the high school years (ages 18–20), youths were mainly involved in individual sports (approx. 45%), followed by performance and fine arts (approx. 25%), team sports (approx. 20%), community and school clubs (approx. 5%), and volunteering (approx. 5%). The high percentage of youths involved in individual sports after high school can be explained by the enthusiasm of young adults

for fitness activities such as spinning, cross-fit, among others. From year to year, the most popular activities included dance, ice hockey, karate, soccer, band/orchestra, and scouts. Intensity of participation was quite stable across the measurement times, with correlations ranging from .39 to .60.

Trajectory analyses

The first step of the analyses showed that the best model for the mean trajectory in our sample was cubic ($\chi^2 [17] = 45.26$, $p = .000$, CFI = .958, RMSEA = .07 [.04, .09]; the cubic model was significantly better than the quadratic model). In the second step of the analyses, we conducted LCGAs. The four-class model proved to be the optimal model according to our criteria: (a) lowest BIC value when compared to the three-class and two-class solutions (15310.12 vs. 15516.65 and 15748.88, respectively), (b) a significant LMR Likelihood Ratio Test when compared to the three-class solution ($p = .005$), (c) at least 5% of individuals in each trajectory, and (d) the highest entropy value when compared to the three-class and two-class solutions (.94 vs. .90 and .93, respectively).

As shown in Figure 2, the first group (70.9% of the sample, $n = 251$) consisted of youths whose reported intensity of participation started out low (half a standard deviation below the mean at age 14), increased slightly and then decreased over time (quadratic and cubic parameters statistically significant at $p = .001$). This group was labeled the “Low and decreasing” group. The second group (12.1% of the sample, $n = 43$) consisted of youths whose reported intensity of participation started out at moderate levels and remained fairly stable over the years (none of the slope parameters were significant). This group was labeled the “Moderate and stable” group. The third group (11.6% of the sample, $n = 41$) consisted of youths whose reported intensity of participation started out high (one standard

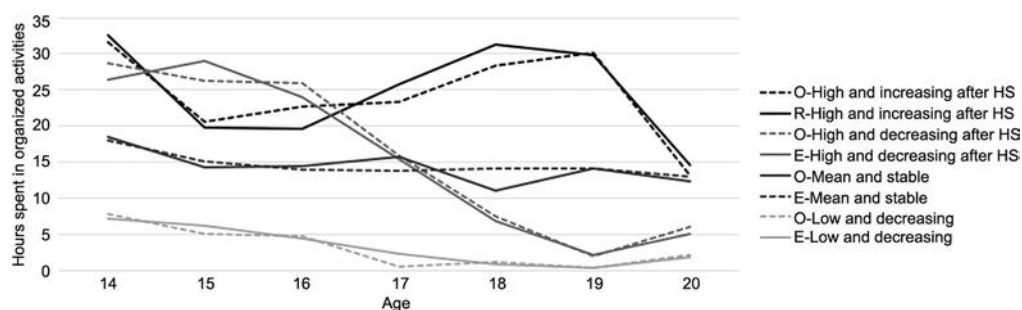


Figure 2. Total number of hours spent in organized activities over a 10-month period at each measurement time for the four trajectory groups ($n = 354$). As mentioned in the description of the measure, extreme values were screened out and replaced using winsorization, and the number of hours was divided by 10 before conducting the trajectory analyses.

deviation above the mean) but then decreased substantially after the high school years (quadratic and cubic parameters statistically significant at $p = .000$). This group was labeled the “High and decreasing after high school” group. The last group (5.4% of the sample; $n = 19$) consisted of youths whose reported intensity of participation started out high (one standard deviation above the mean) and even increased after the high school years (quadratic and cubic parameters statistically significant at $p = .000$). This group was labeled the “High and increasing after high school” group. As can be seen in Figure 2, although the two highest groups started out with similar levels of participation at age 14, they differed in the way these levels changed (one increasing and the other decreasing after the high school years) and with regard to their levels of participation at age 20 (one near that of the “Moderate and stable” group and the other near that of the “Low and decreasing” group).

Predictive associations between trajectories of participation and outcomes

Three models were tested to examine the predictive associations between trajectories of intensity of participation and indicators of adjustment at age 21 (latent factor of externalizing problems, latent factor of internalizing problems, latent factor of civic engagement, number of years of education, and perception of physical health): one model with the “Low and decreasing” group as the reference category, one model with the “Moderate and stable” group as the reference category, and one model with the “High and decreasing after high school” group as the reference category. The same model was estimated: only the reference category differed between the three. The model is shown in Figure 1. As can be seen, in this model, (a) all outcomes were regressed on gender and family structure, (b) each outcome was regressed on its respective proxy at age 12,

Table 2. Results of regression models testing predictive associations between trajectories of activity participation from ages 14 to 20 and outcomes at age 21.

	β	SE	z	p	95% CI (β)
Externalizing problems at age 21					
Gender	-.12	.082	-1.51	.131	-.28, .04
Family structure age 12	-.20*	.010	-2.05	.040	-.40, -.01
Family income age 12	-.04	.046	-0.83	.404	-.13, .05
Problem behaviors age 12	.08	.042	1.80	.072	-.01, .16
Versus Low and decreasing					
High and increasing after high school	-.20**	.076	-2.66	.008	-.35, -.05
High and decreasing after high school	.13	.120	1.10	.272	-.10, .37
Moderate and stable	-.05	.089	-0.54	.587	-.22, .13
Versus Moderate and stable					
High and increasing after high school	-.15	.113	-1.35	.176	-.38, .07
High and decreasing after high school	.18	.130	1.36	.175	-.08, .44
Versus High and decreasing after high school					
High and increasing after high school	-.33**	.125	-2.67	.008	-.58, -.09
Number of years of education at age 21					
Gender	.06	.103	0.57	.570	-.14, .26
Family structure age 12	.24	.124	1.94	.052	-.00, .48
Family income age 12	.03	.064	0.51	.609	-.09, .16
Grades age 12	.44***	.046	9.53	.000	.35, .53
Versus Low and decreasing					
High and increasing after high school	.36*	.172	2.12	.034	.03, .70
High and decreasing after high school	-.07	.140	-0.53	.600	-.35, .20
Moderate and stable	.29	.152	1.91	.057	-.01, .59
Versus Moderate and stable					
High and increasing after high school	.08	.208	0.36	.721	-.33, .48
High and decreasing after high school	-.36	.188	-1.93	.053	-.73, .01
Versus High and decreasing after high school					
High and increasing after high school	.44*	.202	2.16	.030	.04, .83
Perception of physical health at age 21					
Gender	-.28*	.118	-2.33	.020	-.51, -.04
Family structure age 12	.04	.142	0.29	.774	-.24, .32
Family income age 12	-.01	.066	-0.21	.834	-.14, .12
Versus Low and decreasing					
High and increasing after high school	.13	.244	0.528	.598	-.35, .61
High and decreasing after high school	.39*	.166	2.35	.019	.07, .72
Moderate and stable	.42*	.184	2.26	.024	.06, .78
Versus Moderate and stable					
High and increasing after high school	-.29	.289	-0.99	.322	-.85, .28
High and decreasing after high school	-.03	.226	-0.11	.914	-.47, .42
Versus High and decreasing after high school					
High and increasing after high school	-.26	.279	-0.94	.347	-.81, .28

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

and (c) all outcomes were regressed on the dummy codes representing the trajectory groups. Shared variance between the outcomes was thus taken into account. The model fit the data well, $\chi^2(103) = 115.64$, $p = .19$, CFI/TLI = .98/.98, RMSEA = .02 (90% CI = .00, .03). Concerning the latent factors, the loadings for risky behaviors, problems associated with alcohol use, and problems associated with marijuana on “externalizing problems” were .47, .66, and .82, respectively. The loadings for depressive symptoms and loneliness on “internalizing problems” were .91 and .63, respectively, whereas the loadings for political voice and involvement in political, community and volunteering activities on “civic engagement” were .90 and .76, respectively. This suggests that the factors were well defined (e.g., all factor loadings were near .50 or above, $p < .001$).

Significant results for the regressive paths are presented in Table 2. No significant differences between the groups emerged with respect to internalizing problems or civic engagement. First, when comparing the trajectory groups with the “Low and decreasing” group, the results revealed that (a) youths in the “High and increasing after high school” group reported fewer externalizing problems and more years of education, (b) youths in the “High and decreasing after high school” group reported a more positive perception of physical health, and (c) youths in the “Moderate and stable” group reported a more positive perception of physical health. Youths in the “Moderate and stable” group also tended to have completed more years of education ($p = .057$). Second, when comparing the trajectories with the “Moderate and stable” group, only one marginally significant effect was found: youths in the “High and decreasing after high school” group tended to have completed fewer years of education ($p = .053$). Finally, when comparing the trajectories with the “High and decreasing after high school” group, the results revealed that youths in the “High and increasing after school” group reported fewer externalizing behaviors and more years of education. The absolute values of the significant standardized coefficients ranged from .20 to .42, suggesting modest effects. The model explained 14%, 2%, 2%, 26%, and 5% of the variance in externalizing problems, internalizing problems, civic engagement, number of years of education, and perception of physical health, respectively.

To sum up, our results suggest that belonging to trajectories characterized by moderate to high levels of involvement in organized activities over the years is associated with fewer externalizing behaviors, more years of education, and a more positive perception of physical health than belonging to a trajectory characterized by low levels of involvement. Moreover, high levels

of participation in the early years of high school and increasing levels of participation after the high school years appear to have positive effects with regard to externalizing behaviors and the pursuit of postsecondary education.

Discussion

The current study addressed existing gaps in the literature by investigating participation trajectories beyond the high school years and their associated benefits for adjustment in young adulthood. Overall, our findings suggest that organized activities are associated with positive adjustment in young adulthood, but that these associations vary according to the different trajectories of participation followed by youths during their adolescent and young adult years.

Trajectories of youth participation in organized activities

Four distinct trajectories of participation in organized activities from ages 14 to 20 emerged from the data, indicating that youths do not necessarily follow the same paths when it comes to the intensity of their participation during the high school years and beyond. These paths vary not only in the level of participation at the beginning of high school, but also in the pattern and pace of change over time. These results are discussed mainly in light of those of Eisman et al.’s (2016) study since, to our knowledge, this is the only other study that has examined trajectories of participation among a sample of high school students.

The “Low and decreasing” group was consistent with our expectations and previous research. Eisman et al. (2016) found a low and decreasing trajectory from grades 9 to 12. The proportion of youths following this trajectory in their study (74%) was similar to that in ours, even though the sample (i.e., at-risk), the measure of activity participation (i.e., a combination of frequency and intensity of participation), and ages (i.e., limited to the high school years) were different in Eisman et al.’s study. There is thus a substantial group of youths who maintain low levels of involvement in organized activities during the high school years and beyond (an average of 75 minutes per week during the high school years and 20 minutes per week after the high school years). The “High and decreasing after high school” group is also coherent with our theoretical rationale, as well as with some previous studies using LGC (e.g., Denault & Poulin, 2009a). Given the importance of organized activities during the high school years for salient developmental tasks (e.g., autonomy and identity;

Barber, Stone, Hunt, & Eccles, 2005; Larson, Pearce, Sullivan, & Jarrett, 2007), this trajectory is not surprising. However, Eisman et al. (2016) did not find such a trajectory, which suggests that future studies are needed to replicate our results and confirm the existence of this group. This divergence may have to do with cultural or contextual differences, as well as age differences. For instance, the organized activities offered in American and Canadian school and community contexts may differ in terms of accessibility. In addition, the Eisman et al. (2016)'s sample was already in Grade 9 at the first measurement point and was only followed during the high school years.

On the other hand, Eisman et al. (2016) found a group of youths who followed a moderate and stable trajectory over the high school years (21%) and an extreme group of youths with high levels of participation over time (5%), as did we. Regarding the extreme group, we believed that many of these youths were likely to be athletes who were highly committed to their sport. To verify this hypothesis, we examined the specific activities of these youths over the years. We observed that, even though the vast majority of them were involved in more than one activity over time, one of these activities was central to their participation pattern. In most cases, this activity was a sport (e.g., ice hockey, football, martial arts, or gymnastics) during the high school years and fitness activities after the high school years.

Overall, these results highlight the importance of considering the presence of potential subgroups when examining activity participation over time. These subgroups are likely to be hidden when only the mean levels of participation intensity are examined. The next step was to examine whether group membership predicted outcomes in young adulthood.

Associated outcomes in young adulthood

With respect to associations with outcomes at age 21, we first expected that youths who participated in organized activities at moderate or higher levels during the high school years would have greater opportunities to develop their Five C's (Lerner, 2002; Lerner et al., 2005, 2011). In turn, they would be better adjusted than youths who maintained low levels of participation over time. Our expectation was partially supported. When compared to youths who maintained low levels of participation over time, (a) youths in the high and increasing after high school trajectory reported fewer externalizing problems and more years of education at age 21, (b) youths in the high and decreasing after high school trajectory reported higher perceptions of

physical health at age 21, and (c) youths in the moderate and stable trajectory reported higher perceptions of physical health at age 21. No significant differences between the groups emerged with respect to internalizing problems or civic engagement.

These significant findings can be explained by the many opportunities for individual and social development provided by organized activities over the high school years, which could prepare the ground for adolescents to thrive in young adulthood (Mahoney, Vandell, Simpkins, & Zarrett, 2009; Mahoney & Vest, 2012). For instance, with respect to educational attainment and in accordance with PYD, these activities may have helped youths develop their competence in the academic and vocational domains (i.e., positive view of their actions). This may have fostered their desire to contribute to their self by increasing their chances of succeeding in the labor market. Participation in organized activities, and especially sports, may also contribute to a more positive perception of physical health in the long run, which could also be seen as a contribution to the self.

We also expected that youths who participated beyond the high school years would continue to be exposed to the developmental assets provided by activity participation during the important transition to young adulthood. As a result, they would thrive more than youths who dropped out of activities after high school (Lerner et al., 2005, 2011). Again, this was partially supported. Compared to youths who dropped out of or dramatically reduced their activity participation after the high school years, youths who continued and even increased their participation after the high school years reported fewer externalizing problems. Youths in these two groups started out with similar levels of participation at the beginning of high school but followed different pathways thereafter. Persistence thus appeared to have a plus-value for a small group of adolescents in our sample. Or, taken the other way around, dropping out of activities after the high school years appeared to involve costs in the transition to young adulthood, at least with respect to externalizing problems. This raises an important question. Were these youths already on a trajectory characterized by externalizing problems and only participated during the high school years when participation is normative and accessible or did the fact that they dropped out of activity participation trigger or exacerbate their externalizing problems? Mahoney (2000) suggested that activity participation may merely be a marker, rather than a cause, of youths' adjustment. More studies are thus needed to better understand the possible antecedents and consequences of dropping out of organized

activities after the high school years. For instance, in a study over a two-year period involving a group of adolescents aged 13 to 17, Persson, Kerr, and Stattin (2007) found that delinquency predicted switching from involvement in structured activities to hanging out in the street.

The “Moderate and stable” group also allowed us to determine whether decreasing or increasing participation levels over time represented a “plus” or “minus” with regard to young adults’ adjustment, even though the initial levels were different between this group and the other two participating groups. No significant results were found when comparing these groups with regard to outcomes at age 21. Increasing, decreasing and stable levels of participation after the high school years thus appear to be equivalent when it comes to later adjustment. What may be important is to maintain a certain amount of involvement after the high school years, which enables youths to remain exposed to the developmental assets of organized activities and to thrive in young adulthood, at least with respect to externalizing problems, number of years of education, and perceptions of physical health.

However, some of our results were not consistent with the tenets of PYD. First, there were no differences between the four groups with regard to civic engagement. Participating youths were expected to be more engaged in civic activities than youths with low levels of participation over time, even though the results in the literature are mixed (e.g., Gardner et al., 2008; Mahoney & Vest, 2012). Indeed, organized activities—especially activities other than sports—are particularly important for exposing youths to organizational norms, relevant civic skills, and standards held by normative adults in society. This is likely to promote later civic and political engagement (Kahne & Sporte, 2008; Youniss & Yates, 1997). According to PYD, participation in organized activities also enables youths to build character (e.g., social conscience), caring (e.g., empathy towards others), and connection (positive bond with people and institutions) over the course of adolescence. These competencies should help them contribute to their communities after the adolescent years.

In the same vein, based on PYD, we would at least have expected to find differences between the low group and the three other groups with regard to internalizing problems. However, no significant findings emerged from the analyses, which was also the case in other studies (e.g., Busseri et al., 2011; Viau & Poulin, 2015). Yet, prior research showed that the support youths are likely to receive from activity leaders and peers can make a difference in terms of their internalizing problems

(Mahoney, Schweder, & Stattin, 2002; Viau et al., 2015). Another unexpected finding was that youths in the “High and increasing after high school” group did not differ from the other three groups with respect to their perception of physical health. One possible explanation is that these youths continued to participate in organized activities—which mainly consisted of fitness activities as the youths grew older—because they were not yet satisfied with their physical condition. Weight/shape and health reasons are the most endorsed motivators for exercising (Gonçalves & Gomes, 2012). However, given that only one item was used to measure this perception, other studies are needed to replicate this unexpected finding, as well as the other aforementioned unexpected findings.

In summary, this study contributes to our understanding of the optimal participation practices associated with positive youth development in young adulthood. Not only it is important to participate throughout the high school years, even if less time is spent in organized activities as the years go by, but also to maintain some levels of participation after the high school years. Moreover, our findings do not reflect the overscheduling hypothesis (Fredricks, 2012; Mahoney, Harris, & Eccles, 2006). The few youths in the “High and increasing after high school” trajectory were better adjusted than youths with low levels of participation over the years, at least with respect to risky behaviors and number of years of education.

Finally, it should be noted that only small to modest effects were found in this study. Control variables, prior adjustment, and trajectories of activity participation explained between 2% and 26% of the variance in the outcomes. The highest percentage was for the number of years of education, which might be explained by the stability of academic achievement over time. This converges with studies on outcomes in young adulthood, in which percentages of explained variance have ranged from 1% to 23% (Bohnert et al., 2007; Busseri et al., 2011; Gardner et al., 2008; Obradović & Masten, 2007; Viau & Poulin, 2015). Organized activities are part of a constellation of ecological niches, including family, peer group, school, and the community (Bronfenbrenner, 1979). In addition, youths spend only a small portion of their time in these activities compared to the time they spend at home, with friends or at school. These modest effects are thus to be expected.

Study limitations

First, our sample was predominantly composed of white, middle-class youths, which limits the generalizability of the findings. This study should thus be

replicated among youths from diverse ethnic, cultural and socio-economic backgrounds. Second, the main variables of interest (i.e., intensity of participation and outcomes) were self-reported. Given their common source of measurement, this may have resulted in artifactual covariance between the variables. Third, similar to Eisman et al. (2016) and Mata and van Dulmen (2012), we chose to emphasize organized activity participation across activity types and contexts, focusing on intensity of participation across all the activities reported by the youths each year. However, other dimensions of participation, such as breadth, have been associated with positive outcomes in young adulthood (Busseri et al., 2011). In addition, different types of activities (e.g., sport, art, youth clubs) may foster different types of outcomes (Eccles, Barber, Stone, & Hunt, 2003; Viau & Poulin, 2015). Indeed, as found in previous studies (e.g., Larson, Hansen, & Moneta, 2006), youths report different experiences depending on which types of activities they are involved in, suggesting that different activity types might represent distinct learning and social contexts. Moreover, future studies should also consider psychological components of activity participation, such as the degree of engagement in the activity, or use aggregated involvement indices including both psychological and behavioral components of activity participation, as in Eisman et al. (2016). Simply being involved in activities does not necessarily promote development and steps should be taken to address the complexity of activity participation in future research. For instance, examining shifts in activity types as youths transition from high school to other school or work horizons (e.g., preponderance of individual sports such as fitness activities) could shed light on the specific developmental assets provided by organized activities at different periods of time and the associations between these developmental assets and thriving among youths as they grow older.

Among the strengths of this study, we looked at heterogeneity in participation patterns using a prospective longitudinal design spanning nine consecutive years covering both the high school and post-high school years. We also assessed intensity of participation yearly through phone interviews. This provided a greater guarantee that all the activities included in our analyses fit the description of what researchers consider to be “organized activities.” Moreover, our measure took into account the fact that not all activities followed a regular schedule during the 10-month period involved. This is rarely considered in studies of this type. Finally, long-term outcomes, covering distinct areas of psychosocial, educational, and health adjustment, were tested

simultaneously. This accounted for the shared variance among these indicators of adjustment.

Conclusion

Our study provides useful insights into how distinct participation trajectories during the high school years and beyond may influence the extent to which youths thrive in young adulthood. Overall, a complex picture emerged from our data, one that was not as clear cut as we had expected. In addition, causality cannot be claimed from these results as youths were not, and could not, be randomly assigned to trajectories. Nevertheless, this information is still useful for promoting positive development among young adults. For instance, our results suggest that encouraging participation in organized activities during the high school years, but also beyond the high school years, may represent a small step toward improving educational attainment among young adults. Moreover, encouraging persistent participation beyond the high school years may represent a small step toward reducing externalizing problems in young adulthood. In other words, organized activities may be one of many effective strategies that can be used to help youths thrive during this salient developmental transition. To do so, communities should ensure availability and opportunities for organized activity involvement in young adulthood (Agans et al., 2017), especially when youths leave high school and transition to post-secondary education or the labor market. To reach as many young adults as possible, efforts should be concentrated on community organizations that are accessible to all community members regardless of the path they choose after high school.

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