

# Social integration in the activity peer group in sport and non-sport organized activities: Links with depressive symptoms in adolescence

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## Abstract

Organized activities can provide a conducive context for various social processes that may prevent internalizing problems. Some types of organized activities, such as team sports, seem particularly favorable to these positive experiences. The aim of this 4-year longitudinal study is to describe the changes in the feeling of social integration into the organized activity peer group and to examine whether this social process predicts depressive symptoms in adolescence. Team sports also are proposed to promote a high sense of social integration. A total of 292 adolescents (62% female) were followed annually from ages 14 to 17. The type of main organized activity practiced and the feeling of social integration into the activity peer group was measured each year. Depressive symptoms were self-reported at the beginning and end of this period. Latent growth analyses showed that social integration into the organized activity peer group was high and decreasing during adolescence. Social integration was higher in team sports compared to individual sports and non-sport activities as a whole. Finally, a high and sustained level of social integration during adolescence was associated with a low level of depressive symptoms at the end of adolescence, controlling for important covariates. These results suggest that organized activities, particularly team sports, provide a favorable context for developing a feeling of social

integration, and that this may protect against depressive symptoms.

**KEYWORDS**

adolescence, depression, organized activity, peer relations, sport

## 1 | INTRODUCTION

Organized activities during childhood and adolescence can enhance social skills, initiative, and emotion regulation (Denault & Poulin, 2016; Hansen et al., 2010), while also fostering friendships and peer groups (Schaefer et al., 2011). Adolescents may connect with peers who share their interests, experience social integration, and desire to establish relationships that extend beyond the confines of the activity. Considering the increasing importance of peers during adolescence (Brown & Larson, 2009; Erikson, 1968), this feeling of social integration into the activity peer group should grow during this developmental period. However, not all types of organized activities are likely to provide the same opportunities for social experiences (Rose-Krasnor, 2009). Among common youth activities, team sports are known for facilitating peer group formation and maintaining a strong sense of social integration within the activity (Denault & Poulin, 2016). Furthermore, this feeling of social integration may contribute to mental health. Researchers have identified that positive peer relationships in organized activities can help reduce internalizing problems (Doré et al., 2017). Hence, our study aimed to investigate changes in social integration within organized activity peer groups during adolescence, distinguish between team sports and other activities in this regard, and assess whether these changes in social integration predict late adolescence depressive symptoms.

### 1.1 | Organized activities and feeling of social integration in the peer groups

Organized activities are practiced in a structured setting, with peers, supervised by at least one adult and take place on a regular basis (Mahoney et al., 2005). These social contexts provide a unique environment in which social skills that are useful for children's and adolescents' development can be fostered (Vandell et al., 2015). Notably, because friendships in childhood and adolescence often are based on shared interests, organized activities can foster friendship formation (Bagwell & Schmidt, 2013; Weiss et al., 1996). Participants also may experience a variety of positive social experiences, such as teamwork and social skill development (Denault & Poulin, 2016). In turn, these social experiences could contribute to adolescents' positive outcomes, including reducing internalizing problems and increasing psychological flourishing (Viau et al., 2015).

One of the less studied dimensions that has significant potential in intervention is the feeling of social integration into the organized activity peer group. First, this social process is different from the sense of belonging often emphasized in recent studies (e.g., Akiva et al., 2013; Newman et al., 2007). The sense of belonging (or social relatedness) has a strong identity component in its definition, where youth feel that the peer group influences the way they define themselves. In contrast, feeling of social integration, first defined by Denault and Poulin (2008), refers to feeling socially accepted by peers in the group. For example, youth can perceive that the group is favorable to the formation or maintenance of friends, and they also can have the desire to continue the relationship with members of the group even outside of its context. It refers to the extent to which the adolescent is integrated into the activity group or whether he or she is alone and not talking to anyone. In other words, social integration into the peer group is high when the adolescent feels that he or she derives social benefits from the activity. Feeling integrated into a group of peers in an organized activity thus could facilitate the formation of friendships outside the activity setting (Fredricks & Simpkins,

2013). Denault and Poulin (2008) argue that feeling appreciated by the group peers may be a key dimension of the social experience in organized activities. Moreover, not only do adolescents form new friendships and maintain existing friendships via organized activities (Schaefer et al., 2011), but membership in a peer group in adolescence, whose formation would be promoted by the activities, may be an essential task in the development of adolescent identity (Erikson, 1968). The beneficial effect of positive social experiences in organized activities also has been demonstrated longitudinally. Researchers have identified that the longer youth participate in an organized activity, the higher their feeling of social integration and, in turn, the lower their subsequent level of depression (Viau et al., 2015). Thus, social integration may be an important social process that can help reduce internalizing problems in adolescence.

## 1.2 | Changes in the feeling of social integration in the organized activity peer groups

There are several indications that this feeling of social integration into the organized activity peer group may be consistent over time across adolescence. First, adolescence is a period generally characterized by a normative quest for autonomy that can create a distancing from parents and a desire to connect with same-age peers (Brown & Larson, 2009). Adolescents typically adopt different strategies to avoid social exclusion and maximize inclusion in peer groups, such as engaging in activities that promote inclusion (Warrington & Younger, 2011). Consequently, adolescents who engage in organized activities on a sustained basis over time notably may seek to be socially integrated. This argues that a low degree of social integration could lead an adolescent to drop out of the organized activity. Indeed, researchers have observed that adolescents are more likely to continue their activity year after year if they have friends within the group (Persson et al., 2007).

Second, in childhood, parents influence greatly the organized activities practiced by their children (Edwardson & Gorely, 2010). As they grow up, adolescents develop interests and become more autonomous in their choice of organized activities (Denault & Poulin, 2009). Adolescents may therefore choose activities based on the quality of the experience they have in that activity (e.g., a positive motivational climate; Atkins et al., 2015). If the experience is mostly positive, the adolescent may be more likely to enroll in the following year (Mahoney et al., 2005). If not, the adolescent may choose a new activity in which they are likely to have positive experiences. Consequently, using a latent growth model, the feeling of social integration in an organized activity should be homogeneous and stable over time, because the adolescent is likely to choose this activity according to whether or not he or she has positive experiences.

## 1.3 | Different types of organized activities and social experiences

Studies have shown that the degree of positive experiences within the activity is predicted by the type of activity (Denault & Poulin, 2016; Hansen et al., 2010). Although youth who participated in team sports were more likely to have many positive experiences, youth who participated in certain types of activities such as performance and fine arts, youth clubs, and individual sports were more likely to experience fewer positive outcomes (e.g., emotion regulation, social skills, social integration; Denault & Poulin, 2016).

Considering the inherently social nature of team sports, social integration with the activity's peer group may be stronger than other types of organized activities. The high degree of task interdependence in team sports requires team members to work together, communicate, and support each other to achieve an optimal performance (Hansen et al., 2010). This cooperation is central to the social dynamics of team sports because team sport activity is built around achieving a common goal. Teamwork often is perceived by participants as an instrumental task necessary for success (Holt et al., 2008). All of this supports the need to consider the type of activity as a control variable when examining changes in the feeling of social integration in organized activities. In a sustained way across time in adolescence, team sports should be linked to a greater feeling of social integration than other type of activities, particularly due to the social nature, the degree of interdependence in the task, and the teamwork instrumentalized

by the participants (Hansen et al., 2010; Holt et al., 2008). As a result, these supportive contexts also may contribute to psychosocial development, particularly by reducing internalizing problems.

#### 1.4 | Feeling of social integration into the activity peer group and depressive symptoms

As mentioned earlier, peer groups are of great importance during adolescence (Brown & Larson, 2009; Erikson, 1968). Buhrmester and Furman's (1986) neo-Sullivanian approach argues that meaningful peer relationships in adolescence contribute to personal development and adjustment. In particular, these relationships satisfy the fundamental need to be part of a group, provide a framework for developing social skills, and offer a safe space for interpersonal experiences. They are especially important because adolescents have a normative need to maintain egalitarian collaborative relationships (Buhrmester & Furman, 1986). Moreover, some researchers have shown that it is not simply being part of a group that is protective for mental health, but rather it is the characteristics of the group (e.g., trusting and supportive relationships; Sani et al., 2012). So the simple fact of being part of a sports team would not be enough to prevent internalizing problems, but having the feeling of obtaining social gains (e.g., making friends they want to see even outside the context of the activity) would be key. Doré et al. (2020) observed that relatedness to the peer group was a reason why physical activity was related to better mental health in adolescents. In the same way, the feeling of social integration in organized activity (i.e., the feeling of obtaining social gain from the activity) also could be related to lower scores of depressive symptoms in adolescence.

Although quality friendships would be protective against depressive symptoms, the formation and maintenance of these could be particularly favorable in an organized activity setting (Schaefer et al., 2011). Denault and Poulin (2008) found that social integration at age 13 was related to depression at age 13, taking into account the previous level of depression at age 12. Although interesting, these results do not take into account the longitudinal aspect of social integration, which appears to be crucial during the developmental period of adolescence, when peers play an increasingly important role. Furthermore, using the same longitudinal dataset as in the present study, Viau et al. (2015) measured the number of years participating in an organized activity between the ages of 14 and 17 and computed the mean of the feeling of social integration assessed yearly during that period. They observed that the longer boys participate in an organized activity during adolescence, the more socially integrated they felt and the fewer depressive symptoms they experienced at age 18. However, this study did not investigate the changes in the feeling of social integration during adolescence, as they only computed the mean of social integration. Yet, it is plausible that the changes of this social process over time better explains the lower levels of depressive symptoms, regardless of how long the youth has been involved in the activity. Consequently, a sustained high level of feeling socially integrated in organized activity in adolescence should predict a subsequent lower levels of depressive symptoms, due to the protective aspect of peer support and friendship, as well as the importance of being socially integrated in a peer group in adolescence (Doré et al., 2017; Erikson, 1968).

#### 1.5 | Study objectives

The present study had three objectives. The first was to examine how the feeling of social integration into the organized activity group changes during adolescence by identifying a developmental trajectory between the ages of 14 and 17. Because no study has examined the changes in the feeling of social integration that is specific to the context of organized activity, a data-driven approach was prioritized (i.e., Latent Growth Model). Considering that peers become an important part of youths' lives during adolescence (Brown & Larson, 2009), our hypothesis was that social integration within the organized activity peer group is high and consistent during adolescence.

The second objective was to identify whether team sports predict a high sense of social integration in organized activity at each year between the ages of 14 and 17, compared with other types of organized activities. Because team sports require a high level of cohesion and teamwork to achieve an optimal result (Hansen et al., 2010; Holt et al., 2008), our hypothesis was that team sports consistently predict a high level of feeling of social integration over the adolescence period. To ensure that this link is specific to team sports and not to sports in general, we also examined these same links but for individual sports as control analyses. We also examined the difference between those who take part in other activities and those who take part in sports activities altogether. This strategy allows the isolation of one type of activity to compare it with all the others. If the type of activity is predictive of social integration, this means that those who practice the targeted activity report significantly more social integration than those whose main activity is not this type of activity. This method of coding contributes to the field by examining whether one type of activity is better than all other activities combined.

The third objective was to examine whether the previously identified trajectory of feeling socially integrated in the peer group between ages 14 and 17 predicts the level of depressive symptoms at age 17. Our hypothesis was that a sustained high level of feeling of social integration in organized activity peer group predicts a subsequent lower level of depressive symptoms. To control for a possible selection effect (i.e., an initial high level of depression predicts a low sense of social integration, and not vice versa), the baseline level of depressive symptoms prior to the trajectory was included as a control variable. We also included baseline social competence at age 13 as a covariate to see if social integration predicts depression beyond social competence. It is possible that, in line with studies showing that positive peer groups are beneficial for mental health (e.g., Newman et al., 2007), adolescents with a high initial level of social competence are more likely to feel socially integrated into different spheres of their lives, and that this facility in joining peer groups is protective notwithstanding integration into organized activity. Gender also was included as a covariate, because some studies show that the effect of organized activities may depend on the gender of the adolescent and because there are well-documented gender differences in depression (Badura et al., 2015; Salk et al., 2017).

## 2 | METHOD

### 2.1 | Participants

Participants in this longitudinal study came from eight elementary schools in an administrative region bordering Montreal, Canada. A total of 390 participants (58% female;  $M_{\text{age}} = 12.38$ ;  $SD = .42$ ) were recruited in the 6th grade of elementary school. Most adolescents were Caucasian (90%), spoke French, and lived with both biological parents (68%) at the time of first data collection. The average household income was \$50,000 per year before taxes; the average household income in Quebec at that time was \$69,600 (Statistics Canada, 2011). The data used in this study were collected at ages 14, 15, 16, and 17. The participation rate of the initial sample ranged from 72% to 78% at each measurement time. A total of 292 participants (62% female) took part in at least one data collection between ages 14 and 17 and reported doing at least one organized activity during that period. Consequently, only these participants were included in this study. Participants in the excluded sample ( $n = 98$ ) were proportionally more likely to be male ( $\chi^2(1) = 6.28$ ;  $p = .01$ ) and to come from a family structure other than two biological parents ( $\chi^2(1) = 13.90$ ;  $p < .001$ ).

### 2.2 | Design and procedure

The project first was presented to school principals and teachers who agreed to take part in the study. The project was then described to 6th grade students through an in-class presentation by trained research assistants. The students were asked to return an information brochure about the project and a consent form. Only those students who returned the consent form signed by their parent (i.e., 75%) were eligible to take part in the study. Participants were given \$20

**TABLE 1** List of the five most popular activities by category and their prevalence.

Team sports	%	Individual sports	%	Other activities	%
Hockey	10.38	Combat sports	5.84	Dance	14.40
Soccer	6.74	Racket sports	3.63	Music	6.23
Basketball	2.20	Skiing	3.63	Scouting	5.58
Football	2.72	Swimming	2.46	Theater and shows	4.54
Kin-ball	1.95	Gymnastic	1.69	Arts and crafts	4.02

Note: The % column represents the average popularity of the activity at each measurement time. Kin-ball is a team sport practiced mainly in Quebec, Canada.

gift cards each year as compensation for taking part in the study. Written parental consent was obtained each year and the study was approved by the internal human research ethics committee at the Université du Québec à Montréal.

Organized activities were measured at the end of each school year (May) between the ages of 14 and 17. In Quebec, where the study was conducted, students complete 6 years of elementary school before entering 5 years of high school (ages 13–17). The study data were collected during the last 4 years of high school (the equivalent of grades 8–11 in the U.S. school system). Each year, the data were collected in two phases. First, participants took part in a structured phone interviews conducted by trained research assistants. This was to ensure that the activities reported were not practiced in an informal setting, but in an organized context. Second, a few days later, participants completed in-class questionnaires about their social integration into the peer group of their main organized activity and various aspects of their functioning.

## 2.3 | Instruments

### 2.3.1 | Organized activity participation between ages 14 and 17

Each year, during the phone interview, adolescents were asked to report all organized activities in which they had participated in the past 10 months (i.e., the past school year). Only organized activities in which adolescents were enrolled and that met the following criteria were selected: (1) regular frequency of participation (i.e., at least once a week), (2) presence of an adult in charge of the activity, (3) rules governing the activity, and (4) presence of peers. For participants who reported taking part in only one activity, that activity was considered the main activity. Those who reported more than one organized activity were asked to report which of these activities was most important to them. Two criteria were used to help them identify this activity: (1) the activity in which they were most involved in terms of hours per week and (2) if more than one activity met this criterion, they were asked to choose their favorite activity among these. The main activities listed were coded into three types: (1) team sports, (2) individual sports, and (3) other activities. Table 1 lists the five most popular activities by type and their prevalence. Three dichotomous variables were created for analytical purposes: (1) is the main activity a team sport (yes or no), (2) is the main activity an individual sport (yes or no), and (3) is the main activity something other than team/individual sport (yes or no).

### 2.3.2 | Feeling of social integration into the activity peer group

Each year, adolescents completed a five-item questionnaire to measure their perception of their social integration into the main activity peer group previously identified (Denault & Poulin, 2008). The organized activities they reported in the phone interviews were already listed on the questionnaire. The instruction stated, "The next few questions are

about other youth who are involved with you in your (*main activity*).” The items (i.e., “I feel appreciated by the other youth”, “I’m pretty much on my own and don’t talk to anyone [reverse coded]”, “I sometimes hang out with some of these youth outside of the activity”, “There are some youth enrolled in this activity that I’d like to see and hang out with when the activity is over”, and “Participating in this activity has allowed me to make new friends”) were measured on a 5-point Likert scale, ranging from 1 (not at all true) to 5 (very true). The scale showed acceptable reliability ( $\alpha = .72, .71, .72, \text{ and } .79$ ). The mean of these five items represented the total score of the social integration in the activity peer group.

### 2.3.3 | Depressive symptoms at ages 13 and 17

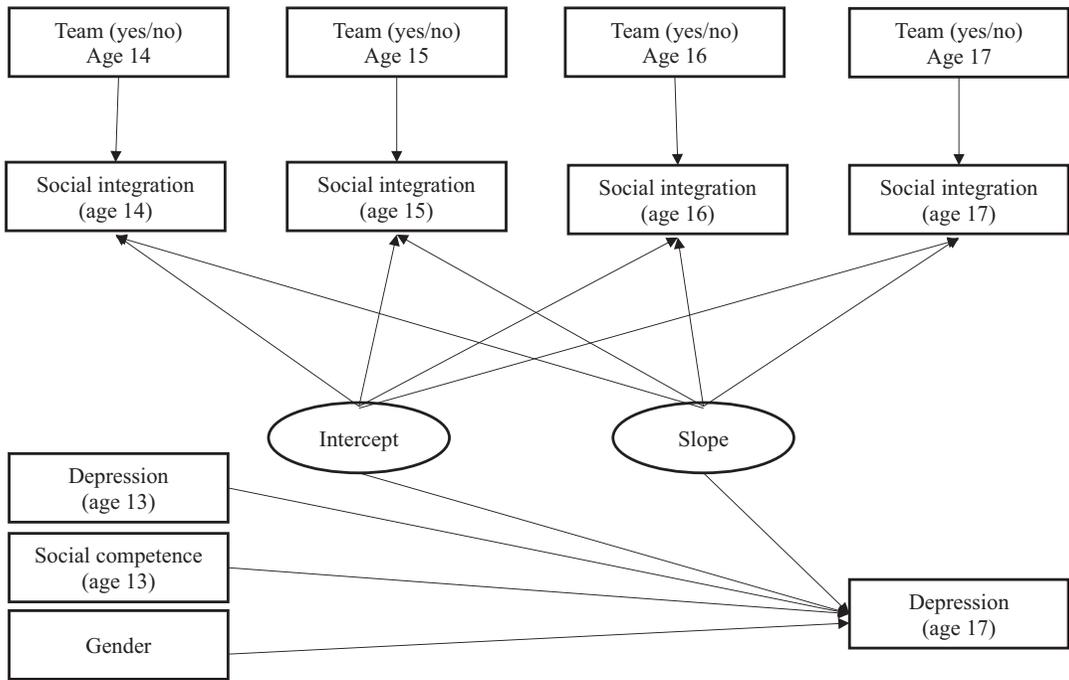
Depressive symptoms were measured with the Children’s Depression Inventory (CDI; Kovacs, 1981). This instrument includes 27 items measured on a 3-point Likert scale indicating symptom severity over the past 2 weeks (e.g., 0 = “I am sometimes sad”, 1 = “I am often sad” and 2 = “I am sad all the time”). The CDI has been shown to be reliable and valid in large representative samples of youth (Kovacs, 1981). The suicidal ideation statement was removed in the present study. The 26 items were summed to obtain a score ranging from 0 to 52 for each participant at each measurement time. For the present study, the internal consistency (Cronbach’s alpha) of the instrument was .84 at age 13 and .86 at age 17.

### 2.3.4 | Social competence at age 13

Social competence was measured at 13 using a French version of the social competence subscale of Harter’s (1985) Self-Perception Profile for Adolescents (Bouffard et al., 2002). This subscale comprises five items that measure the extent to which participants feel accepted and appreciated by their peers, as well as the extent to which they consider themselves to be popular. Each item contains two contradictory items (e.g., “Some teenagers find it hard to make friends”, and “Some teenagers find it pretty easy to make friends”). They first had to choose which of the statements best matched them, and then they had to choose how well that statement corresponded to them (i.e., “Really true for me” or “Sort of true for me”). Consequently, each item response was coded from one to four. The internal consistency of the scale was good ( $\alpha = .82$ ) and the scores corresponded to the mean of the five items.

## 2.4 | Analytical strategy

A conditional latent growth model with time-varying covariates and distal outcome was tested with Mplus version 7.4 (Muthén & Muthén, 1998–2015). Analysis of the missing data reveals that missingness on each of the variables was not related to any of the observed variables in the study, with the exception of social integration at ages 14 and 15, which were related positively to the missingness of social integration at age 17. A Full Information Maximum Likelihood (FIML) missing data estimation method was used to account for participants who did not provide data at all measurement times. According to Baraldi and Enders (2010), because this method involves identifying the parameter with the highest probability of replicating the sample data, adolescents who provided data at only one measurement time were included in the analyses ( $N = 292$ ). In addition, the MLR estimator was used to correct for moderate non-normality of depressive symptoms at age 17. The analyses were conducted stepwise to create a nested model that addressed the three objectives of the study. First, to evaluate the necessity of a multi-trajectory model, an initial unconditional single-trajectory latent growth model (LGM) was conducted. To examine the fit of the LGM, several fit indices were considered: the  $\chi^2$  test of model fit, which measures whether the estimated model has a better fit to the data than a more restricted base model (non-significant chi-square value indicates good fit), the root mean square error of



**FIGURE 1** Final nested conditional latent growth model of social integration into the organized activity context with team sport as time-varying covariate and depression as distal outcome.

approximation and the standardized root mean square residual (RMSEA/SRMR:  $< .08$  represent good fit; Marsh et al., 2004) and, finally, the comparative fit index and the Tucker-Lewis index (CFI/TLI:  $> .95$  represent excellent fit; Hu & Bentler, 1999).

Once the model was identified, a time-varying covariate representing the type of activity was added to the model (dichotomous variable that defined if the main activity is a team sport at each measurement time; 0 = no, 1 = yes). This was done by regressing each of the activity variables on the feeling of social integration into the activity peer group at each measurement time. This method allowed us to examine whether team sports predicted the feeling of social integration into the activity peer group and to take this into account in the latent trajectory model. To ensure that it is not the effect of sports in general that provides this high feeling of social integration but rather the specific effect of team sports, we also examined the same model with the dichotomous individual sports variable, and also with a dichotomous variable representing if the main activity is a sport or not.

Finally, the level of depressive symptoms at age 17 was added to the model as an outcome, to test whether the trajectory model (intercept and slope growth factors) predicted depressive symptoms at age 17. The baseline level of symptoms at age 13, social competence at age 13, and gender were next added to the model to examine if these links remain beyond the influence of the covariates. Figure 1 represents the final conditional nested model.

We also explored the possibility that, as seen in Viau et al. (2015), gender could moderate the relationship between trajectory and depressive symptoms using a multigroup procedure. It is possible that boys derive more benefit from social integration because it has been documented that boys are more oriented toward group relationships based on shared interests to satisfy their social needs, whereas girls are more oriented toward more intimate and dyadic relationships (Rudolph & Dodson, 2022). However, we observed no gender differences. In short, we constrained all the parameters to be equal between males and females. We then freed the regression coefficients one by one, and examined the differences using the Wald Test. Regarding the link between trajectory and depressive symptoms, the

**TABLE 2** Descriptive statistics, *t*-tests, and correlations between study variables.

	%	Social integration at the same age	Depression (age 13)	Depression (age 17)
1. Team sport (age 14)	35.24	−1.95*	−.39	.38
2. Team sport (age 15)	35.32	−2.71**	1.47	.73
3. Team sport (age 16)	29.10	−2.40*	1.57	1.35
4. Team sport (age 17)	29.14	−2.00*	1.61	.82
5. Individual sports (age 14)	25.24	2.15*	2.79**	−.04
6. Individual sports (age 15)	18.91	1.53	−.01	−1.30
7. Individual sports (age 16)	21.16	1.47	.69	.22
8. Individual sports (age 17)	18.54	.95	.56	−1.08
9. Other activities (age 14)	39.52	−.13	−1.21	.42
10. Other activities (age 15)	45.77	1.27	−1.84	.65
11. Other activities (age 16)	49.74	1.07	−.80	.02
12. Other activities (age 17)	52.32	.98	−1.25	−.02
	<i>M</i> ( <i>SD</i> )			
13. Social integration (age 14)	3.88 (0.85)	−	−.14*	−.14*
14. Social integration (age 15)	3.81 (0.88)	−	−.20*	−.16*
15. Social integration (age 16)	3.76 (0.86)	−	−.15*	−.21**
16. Social integration (age 17)	3.68 (0.99)	−	−.15	−.24**
17. Depression (age 13)	8.59 (5.86)	−	−	.41**
18. Depression (age 17)	9.09 (5.96)	−	−	−

Note: The team sports, individual sports, and other activities variables are the dichotomous (yes/no) variables, where % indicates the percentages of “yes” among those who reported a main activity. Therefore, the upper part of the table indicates *t*-test results, and the lower part indicates Pearson's correlations.

\* =  $p < .05$ ; \*\* =  $p < .01$ .

Wald test results show that there is no significant gender difference in the link between intercept and depression (Wald test value = .01,  $p = .76$ ), nor between slope and depression (Wald test value = .06,  $p = .81$ ). Gender was then included as a covariate.

## 3 | RESULTS

### 3.1 | Descriptive statistics

Table 2 presents the descriptive statistics, *t*-tests and the correlations between the variables under study; Table 3 shows the means of social integration per activity types. The results showed that, when comparing the means, those whose main activity was a team sport had a significantly higher level of social integration into the activity peer group than those whose main activity was not a team sport, at all ages. In contrast, those whose main activity was an individual sport did not have a higher level of social integration. When comparing the means, those whose main activity was an individual sport had an even lower level of social integration at all ages. In addition, a greater proportion of adolescents participated in team sports than in individual sports each year. Finally, each year, a high level of social integration into the organized activity's peer group was related significantly to a low level of depressive symptoms at age 17.

**TABLE 3** Mean scores and standard deviations of social integration per activity.

		Age 14	Age 15	Age 16	Age 17
		<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Team sports	Yes:	4.03 (0.71)	4.03 (0.76)	3.99 (0.79)	4.11 (0.77)
	No:	3.81 (0.91)	3.70 (0.92)	3.66 (0.87)	3.62 (0.85)
Individual sports	Yes:	3.67 (0.83)	3.62 (0.95)	3.58 (0.86)	3.56 (0.89)
	No:	3.95 (0.85)	3.86 (0.86)	3.80 (0.86)	3.75 (0.85)
Other activities	Yes:	3.89 (0.97)	3.73 (0.93)	3.69 (0.88)	3.64 (0.85)
	No:	3.88 (0.77)	3.88 (0.84)	3.82 (0.84)	3.77 (0.86)

### 3.2 | Objective 1: Unconditional latent growth model (LGM)

First, the linear latent growth model showed an excellent fit of the data to the model,  $\chi^2(5) = 8.03, p = .15$ ; CFI = .96, TLI = .95; RMSEA = .05 [90% CI = .00, .10]; SRMR = .09. Because the polynomial terms (quadratic and cubic) were not significant, the terms were not included in the model and the trajectory was identified as linear and decreasing (intercept = 3.87,  $p < .001$ ; slope =  $-.08, p = .004$ ). The results showed that the variances for intercept and slope were significant and, according to Jung and Wickrama (2008), this supported the need to examine multi-class models using a linear growth factor. However, the multi-trajectory models were no better than the LGM model. We therefore decided to retain the linear LGM for subsequent steps. Details of the growth mixture modelling procedure are presented in Supplementary Material 1.

### 3.3 | Objective 2: Conditional latent growth model with activity types as covariates

To examine whether team sports are related to a high level of social integration, the dichotomous variable representing team sports was added at each time point as a time-varying covariate in the model, taking into account that the participant may change activity between one time point to another, and to account for the fact that participants in team sports may experience a different social integration compared to other types of organized activities. We did not regress the time varying covariates on each other because the covariate is dichotomous and, therefore, too little variance is explainable from one measurement time to another. The data showed an excellent fit to the model,  $\chi^2(17) = 24.58, p = .10$ ; CFI = .92, TLI = .90; RMSEA = .05 [90% CI = .00, .08]; SRMR = .07. The regression results are presented in Table 4 and showed that team sports were related to higher levels of social integration at ages 14, 15, and 16, but not at age 17. This was not the case for individual sports, nor for the other types of activity compared to sport activities.

### 3.4 | Objective 3: Conditional latent growth model with depression as outcome

Finally, levels of depressive symptoms at age 17 were added as an outcome in the model. Intercept and slope growth factors thus were used as predictors of depressive symptoms at age 17. The fit of the model of the social integration growth factors predicting depressive symptoms at age 17 was excellent ( $\chi^2(23) = 26.05, p = .30$ ; CFI = .97, TLI = .96; RMSEA = .02 [90% CI = .00, .06]; SRMR = .06). Results showed that intercept and slope growth factors predicted depressive symptoms at age 17. Moreover, these results remained significant even when covariates (i.e., baseline level of depressive symptoms, baseline social competence and gender) were added to the model. Detailed results of the final nested model are presented in Table 4. The results showed that the intercept and slope growth factors of social

**TABLE 4** Results of regression models.

	$\beta$	<i>bd</i>	SE	Z	p-value	95% CI (b)
<b>Social integration (at same measurement time)</b>						
Team sports (age 14)	.14	.28	.12	2.36	.02	.05, .51
Team sports (age 15)	.14	.29	.11	2.58	.01	.07, .51
Team sports (age 16)	.13	.27	.13	2.07	.04	.02, .52
Team sports (age 17)	.09	.26	.18	1.49	.14	-.08, .60
Individual sports (age 14)	-.08	-.16	.14	-1.20	.23	-.43, .10
Individual sports (age 15)	-.03	-.08	.15	-.50	.62	-.37, .22
Individual sports (age 16)	-.06	-.14	.15	-.97	.33	-.43, .15
Individual sports (age 17)	-.07	-.23	.24	-1.74	.32	-.70, .23
Other activities (age 14)	-.05	-.09	.07	-.70	.49	-.18, .09
Other activities (age 15)	-.08	-.15	.06	-1.31	.19	-.20, .20
Other activities (age 16)	-.05	-.08	.07	-.68	.49	-.18, .09
Other activities (age 17)	-.04	-.10	.07	-.59	.56	-.19, .08
<b>Depression at age 17</b>						
Intercept	-.29	-2.60	.12	-2.51	.01	-.52, -.06
Slope	-.35	-7.90	.16	-2.28	.02	-.66, -.05
Depression (age 13)	.36	.37	.06	5.90	.00	.24, .48
Social competence (age 13)	-.04	-.36	.07	-.56	.58	-.16, .09
Gender	.02	.26	.06	.35	.73	-.10, .14

Note: Bold characters indicate outcomes. Team sports are coded as 0 = organized activity is not a team sport 1 = organized activity is a team sport (the same coding was used for individual sports and for other activities).

integration significantly and negatively predicted the level of depressive symptoms at age 17. Thus, the higher was the initial level of integration into the organized activity peer group, the lower the level of depressive symptoms was at age 17. Furthermore, the higher was the slope growth factor of social integration, the lower the level of depressive symptoms was at age 17. Finally, baseline level of depressive symptoms at age 13 predicted depressive symptoms at age 17, but gender and social competence were not predictive of depressive symptoms at age 17.

## 4 | DISCUSSION

This 4-year longitudinal study investigated the feeling of social integration into the activity peer group and the association between this social process and depressive symptoms in adolescents. Three important findings emerged from the results. First, the feeling of social integration into the organized activity peer group remained high but declined during the adolescent period. Second, team sports were likely to provide a particularly favorable context to foster a high feeling of social integration. Third, this social experience was associated with positive effects on adolescents, as a sustained high level of social integration into the activity peer group was associated with a subsequent lower level of depressive symptoms in late adolescence. These results are discussed below.

### 4.1 | Feeling of social integration into the activity peer group decreased over time

The results of this study showed that the feeling of social integration into the activity peer group was consistently high but decreased during adolescence. During this developmental period, adolescents begin to develop their own

identities and form relationships outside of their family unit (Brown & Larson, 2009; Erikson, 1968). As a result, they may seek out and participate in organized activities to find a sense of integration and social acceptance among their peers. As the years of participation pass, they may become more involved in these activities and may establish friendships within the group (Poulin & Denault, 2013; Viau et al., 2015), which could make their feeling of social integration consistently high. In other words, adolescents may prefer activities in which they have the feeling they fit in (Denault & Poulin, 2009).

However, we found that this component of social experience within the organized activity context tended to decrease over time. This decrease could be explained by the fact that, as adolescents continue to mature and outgrow the activity or find new interests (Sharp et al., 2015), their involvement in one group may decline and their feeling of social integration may decrease over time. In addition, as they get older, adolescents must adjust their schedules with other elements of their lives, such as a part-time job or a romantic relationship (Denault & Poulin, 2009). As a result, they may have other networks that allow them to make friends or to be appreciated by peers and organized activity groups may become less important.

Furthermore, another explanation is possible. When we look at the mean scores of social integration in various types of activities, it seems that there is an increase at age 17 among youth engaged in team sports. The most important decline seems to be occurring in other activities. Interestingly, over time there is a decrease in involvement in team sports and a simultaneous increase in other activities. Consequently, the overall decrease in social integration may stem primarily from a shift away from specific activities (based on the fact that a participant would be more likely to be integrated into the group if he or she had been doing the activity for longer; Viau et al., 2015). However, we cannot attribute this result conclusively to the decline in team sports participation, as the decrease in other activities simply could reflect a change in activity within this category. Unfortunately, our data do not offer the clarity needed to answer this question.

## 4.2 | Team sports foster a feeling of social integration into the activity peer group

To maximize the likelihood of having a high level of social integration into the activity peer group, our results suggest that team sports could offer a particularly favorable context for such a positive experience. When individuals work together toward a common goal, such as winning a game or tournament, they are more likely to develop a sense of unity and cooperation (Senécal et al., 2008), which can foster social bonding and, therefore, social integration. In this regard, team sports often require a high degree of communication and trust among team members to achieve success (Holt et al., 2008). Furthermore, team sports often involve a level of social hierarchy with clear roles and responsibilities assigned to different team members (e.g., leadership role; Holt et al., 2008; Price & Weiss, 2013). This can create a sense of integration and acceptance within the group, as individuals may feel valued and respected for their unique contributions.

Denault and Poulin (2016) also found similar results. In a cross-sectional study using a single measurement time (i.e., age 14) conducted with 413 adolescents (57% girls), they found that team sports were linked to significantly more positive experiences (i.e., including six indicators: identity, initiative, emotion regulation, teamwork and social skills, leader support, and social integration) than other organized activities. Their results thus only were observed when social integration was combined with the other five indicators. Moreover, their cross-sectional study focused only on early adolescence. Yet, several changes can be observed over the course of adolescence, as youths form their personalities (Erikson, 1968), seek more than ever to avoid social exclusion (Warringtona & Younger, 2011) and seek to distance themselves from their parents in favor of peers (Brown & Larson, 2009). Therefore, it seems essential to study the phenomenon of social integration repeatedly throughout adolescence to identify whether these links change as identity develops. Our results contribute to those of Denault and Poulin (2016) as they suggest that the effect of team sports on the feeling of social integration into the peer group is no longer significantly different from other activities by age 17. This, combined with the fact that social integration in the activity peer group decreases

over time, raises questions about the importance of organized activities on social integration as adolescents get older, and even during the transition from adolescence to emerging adulthood. This is a starting point to investigate: do organized activities have the same social impact at the beginning versus at the end of adolescence?

### 4.3 | Social integration into the activity peer group predicted low depressive symptoms in late adolescence

Many theories argue that peer groups are important in adolescence (e.g., identity development; Erikson, 1968), and our study supports this notion as a high and sustained level of social integration into the activity peer group was related to lower levels of depressive symptoms in late adolescence. These results remained even when the initial level of depressive symptoms, gender and initial level of social competence were taken into account. The results of these analyses support those conducted by Viau et al. (2015) with the same longitudinal dataset, and go further by examining how social integration changes during adolescence. In their study, Viau et al. (2015) observed that the mean of social integration aggregated from ages 14 to 17 was related to depression at age 18. In our study, we went a step further and observed that it is not just the mean that is linked to depression, but the developmental trajectory (i.e., the intercept and the slope). Our results showed that the more social integration increased over time, the lower the subsequent depression symptoms. The fact that slope was related to subsequent depression symptoms implies that growth in social integration is an important aspect in decreasing internalizing problems.

Social integration and peer support are important components of mental health and well-being (Doré et al., 2020; Newman et al., 2007). When individuals feel like they are part of a group, they often may receive emotional and practical support from others (Holt et al., 2008), which can provide key resources to overcome depressive symptoms. In this regard, organized activity peer groups provide individuals with a unique and valuable opportunity to feel socially integrated and receive peer support (Holt et al., 2008). In turn, peer support in organized activities appears to be predictive of low levels of depression in adolescence (Doré et al., 2017). Moreover, these groups are structured around a common interest or activity and bring individuals together in a shared experience, which can foster strong social bonds and a sense of belonging. These social ties can provide individuals with a source of comfort and security in times of difficulty and alleviate feelings of loneliness and isolation. In other words, organized activities seem to provide a favorable context for adolescents to feel socially integrated, and this should be put forward to prevent mental health problems in adolescence.

### 4.4 | Limitations, strengths, and future directions

This study has several strengths. First, it is one of the few to examine social processes in organized activities longitudinally. This allowed us to control for the initial baseline level of depressive symptoms and, thus, to control for a possible selection effect (i.e., those with high levels of depression are less likely to engage in organized activities, and vice versa). Moreover, the results of our study contribute to further understanding why organized activities are related to fewer internalizing problems in adolescence, and why certain types of activities would have these greater benefits by investigating an important social process of youth experience.

Our study is not without limitations. First, only the main activity was considered in this study. For those involved in more than one activity, social integration in each of these activities peer group should be assessed. It is possible that some adolescents had a high feeling of social integration in a second or even third activity that was not their main activity and, therefore, that there is an additive effect of social integration in the activities. Second, it is important to note that our sample was quite homogeneous in terms of socio-demographics, which limits the potential for generalizability of results. Third, our method of coding activities involved a dichotomization of variables (i.e., "is the main activity a team sport, yes or no?"). Consequently, our results do not imply that team sports are significantly better than individual

sports. Instead, our results imply that team sports have something unique when compared to other activities altogether in terms of participants' social integration into the peer group. Finally, our study focused on the contribution of team sports, and not on all organized activities with a high potential degree of cooperation. This is an important consideration, as other specific activities also may have the same social benefits as team sports. To do this, researchers should rate each organized activity according to the degree of cooperation between participants. This exercise was not possible in the present study because we did not have enough detailed information on experience in the activities. This also has an impact on the interpretation of the results, as in various sports traditionally categorized as individual sports, such as swimming and gymnastics, a team element exists. Even within these ostensibly individual sports, teammates still support one another emotionally (e.g., cheering for one another) and physically (e.g., pushing the pace in workouts). Consequently, the classification of sports as either team or individual activities presents a potential limitation that could be addressed by evaluating the level of cooperation across all activities, whether they are sports-related or not. Future studies with specific data on the level of cooperation between participants would be very beneficial for the field.

An interesting hypothesis would be to examine the mediating effect of social integration in the link between team sports and depression symptoms. However, our data did not allow us to test such a hypothesis. For instance, a cross-lagged panel model with mediators would have required a much larger sample size. In addition, it would have been necessary to have the social integration measure for all the participants' organized activities to be able to consider those who changed their main activity from one measurement point to the next (i.e., 81% of our sample changed main activity type from 1 year to the next). Examining this hypothesis would allow the exploration of why, for example, team sports are linked to internalizing problems whereas this is not the case for individual sports, as found in previous studies (White-Gosselin et al., 2023). In addition, future studies should investigate different social processes within organized activities. For example, friendship with co-participants, the support of the adult in charge of the activity, or the involvement of parents in the activity are all components that are likely to influence the benefits that youths take from their participation in organized activities (Bonavolontà et al., 2021; Poulin & Denault, 2013; Viau et al., 2015). Finally, it would be interesting to investigate whether these social processes are predictive of the changes in depressive symptoms over time. It is possible that multiple trajectories of depression symptoms emerge during adolescence, and that changes in social integration are predictive of changes in these symptoms, or vice versa.

## 5 | CONCLUSION

In sum, the results of our study show that the feeling of social integration into the activity peer group seems to decrease with age, potentially due to the relational changes that take place at the end of this developmental period (LaFontana & Cillessen, 2010). If intervention programs seek to foster a feeling of social integration in adolescents, it seems that team sports would provide a favorable context for such positive experiences. This has important implications, as a sustained high level of social integration into the activity peer group during adolescence is associated with a lower level of depressive symptoms in late adolescence. Considering the high prevalence of internalizing problems in adolescence, it is important to provide all necessary resources to help prevent them, including participation in organized activities.

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## ETHICS STATEMENT

The study was approved by the committee for ethics of research involving humans at the Université du Québec à Montréal.

## CONFLICT OF INTEREST STATEMENT

We certify that there is no conflict of interest/competing interest to be declared.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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