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A Longitudinal Study of Perceived Conflict and Instrumental Relationships Between Life Contexts Among Adolescents: The Role of Self-Determined Motivation

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This study is a 3-year follow-up of 746 adolescents on the evolution of perceived conflicting or instrumental relationships between sport, education, and friendship. School-to-sport conflict increases with age, in particular among boys, and is maximal among adolescents self-determined toward sport but not toward school. Sport-to-school instrumentality increases among boys, decreases among girls, and is positively linked to contextual self-determined motivation. Friendship-to-sport conflict is more prevalent at the beginning and the end of adolescence, among girls, and is negatively linked to friendship self-determined motivation. Sport-to-friendship instrumentality decreases during adolescence, in particular for females, and is positively associated with contextual self-determined motivation.

Structured sport participation tends to decrease with age during adolescence in most Western countries, in particular in France (e.g., Currie et al., 2012). In the last decades, sport psychologists have been seeking to understand the processes underlying participation in or withdrawal from sport during this developmental period. Several previous studies have shown that “conflicts of interest” between sport and other activities was one salient reason used by athletes dropping out of sport programs to justify their behavior (e.g., Molinero, Salguero, Tuero, Alvarez, & Marquez, 2006). According to some scholars, such perceptions are not a universal phenomenon but rather reflect varying motivational characteristics. More precisely, the level of conflict experienced between two contexts may depend on the degree of self-determination toward them (e.g., Senécal, Julien, & Guay, 2003). Drawing upon self-determination theory (SDT; Ryan & Deci, 2000, 2002; Vallerand, 1997), and using a developmental approach within adolescents, this study explores the role played by contextual motivation in the perception of

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the relationships between, on one hand, the sport and education contexts and, on the other hand, and the sport and friendship contexts.

PERCEPTIONS OF CONFLICT AND INSTRUMENTALITY BETWEEN SPORT AND OTHER LIFE CONTEXTS

Intrapsychic conflict represents a state of tension due to an opposition between two competing aims that are simultaneously present within an individual. Depending on the theoretical frame used, such conflict has been conceptualized as an interference between goals (e.g., Carver & Sheier, 1998), roles (e.g., Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011), or life contexts (e.g., Vallerand, 1997). One of the main mechanisms at the origin of conflict is due to the limited amount of resources available within an individual—in terms of time, attention, and energy—which can make this individual's commitment toward one context perceived as detrimental to commitment toward another, because of the resources devoted (Carver & Sheier, 1998). During adolescence, developmental psychologists consider that certain contexts such as education or sport remain important for the self, whereas others such as intimate friendships are new or increase in importance (Harter, 1999). In addition, according to Marsh and Shavelson (1985), adolescents' self-concept is presumed to rely on various components, including the school, social, and physical self. Perceiving conflicts between sport and other valued contexts may lead young individuals to cease their participation or prevent them to engage in sport. This idea was supported by Karoly et al. (2005), who reported that when asked about the contexts that interfere the most with physical activity, young individuals point out education and relationships with friends. Also, Boiché and Sarrazin (2007) reported through a 1-year prospective follow-up a statistically significant negative link between adolescents' levels of school-to-sport conflicts (i.e., perception that education prevents from doing more sport because of the resources devoted) and the time spent doing sport weekly.

Given the gender difference in sport or physical activity involvement (Currie et al., 2012), several authors aimed at examining potential gender differences in perceived conflict related to sport. A study by Lance (2004) among college athletes revealed that compared to men, women reported higher scores of conflicts related to the sport context. Female dropout athletes apparently place more emphasis on other activities that interfere with their sport, compared to male athletes (Molinero et al., 2006), and are more likely to declare that they need more time to study (Butcher, Lindner, & Jones, 2002). Research on gender also indicates that in spite of important changes during the last decades, boys still attach more value to this context in Western societies (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002), which could explain why girls and women report experiencing more conflicts with other activities (Butcher et al., 2002; Lance, 2004; Molinero et al., 2006). Because adolescence is considered as a particularly important period for the internalization of gender roles (Brook-Gunn, 1989), it is plausible that female adolescents will be more likely to experience conflict in relation to the sport context.

If sport and other contexts can be experienced as interfering with each other, individuals may also perceive an instrumental relationship between them. This means that individuals estimate that their commitment in one context brings certain skills or outcomes that are aligned with their goals in another context (Carver & Sheier, 1998). Regarding sport participation, several studies have showed that it is associated with positive outcomes, both regarding the educational (e.g., achievement; Marsh & Kleitman, 2003) and social context (e.g., friendship; Smith, 2007; perceived social status and popularity; Marsh & Kleitman, 2003). Instead of being considered as interfering with school or friendship, being an athlete could actually be viewed as beneficial

to those contexts. One perspective giving insights as to why conflicting or, on the contrary, instrumental relationships, are likely to be experienced by individuals between those contexts is SDT.

AN SDT APPROACH TO INTERCONTEXT RELATIONSHIPS

SDT (Ryan & Deci, 2000) postulates that several reasons may lead individuals to participate in an activity or execute an action and that those reasons lie along a self-determination continuum ranging from intrinsic motivation, when the behavior is performed for the satisfaction that directly derives from it, to amotivation, when the individual lacks a sense of volition—and including autonomous or controlled forms of extrinsic regulation. Identified (i.e., behaving by choice so as to attain a personally valued goal) and integrated regulations (i.e., acting in a way consistent with one's personality and values) are considered as extrinsic, self-determined forms of motivation. Conversely, introjected (i.e., pressuring oneself to execute a behavior) and external (i.e., acting in reaction to environmental contingencies) regulations are controlled forms of extrinsic motivation. By definition, those different motivational states can be expected to have positive or negative bounds with individual perceived conflict or instrumental relationships between contexts. Self-determined individuals are considered to pursue activities in concordance with other aspects of their life (Ryan & Deci, 2000) and when the behavior is in harmony with personal goals or facets of individuals selves. By contrast, when motivation toward a given life context is controlled, it may produce negative consequences, such as conflict.

Taken together, these theoretical elements lead researchers to hypothesize a negative, main effect of self-determined motivation on intercontext conflicts. Past studies generally corroborated this hypothesis using a Self-Determination Index (SDI). Self-determined motivation for education was found to be a consistent negative predictor of conflict between education and friendship (Senécal et al., 2003), education and leisure (Ratelle, Vallerand, Senécal, & Provencher, 2005), or education and sport (Boiché & Sarrazin, 2007). Self-determined motivation for interpersonal relationships was also negatively related to conflict between school and friendship (Senécal et al., 2003) and between sport and friendship (Boiché & Sarrazin, 2007).

Nevertheless, this hypothesis did not garner support in two separate studies. First, Ratelle et al. (2005) failed to observe a statistically significant association between self-determined motivation for leisure activities and the conflict experienced between education and leisure. Similarly, Boiché and Sarrazin (2007) failed to observe such a relationship between self-determined motivation toward sport and friendship-to-sport conflict. In addition, the authors observed a statistically significant positive link between self-determination toward sport and school-to-sport conflict. Even if it is in disagreement with the expectation that derives from SDT, this result is nevertheless congruent with a competing hypothesis proposed within the hierarchical model of intrinsic and extrinsic motivation (HMIEM; Vallerand, 1997). Although in agreement with SDT regarding the conceptualization of different kinds of regulation, this model assumes a slightly divergent hypothesis relative to the dynamic interplay between contexts, according to the type of motivation toward them. Indeed, a conflict is expected to be experienced when individuals feel compelled to participate in an activity for which their level of self-determination is low (e.g., an academic assignment), whereas they could be engaged in another activity for which their level of self-determination is high (e.g., their favorite sport). In other words, an interaction between two contextual motivations is thought to be at the source of the conflict. To our knowledge, this hypothesis has never been tested in past studies.

THE PRESENT STUDY

The purpose of this study was twofold. First, its central goal was to investigate the developmental trends of the perceived conflicting or instrumental relationships between, on one hand, the sport and education contexts and, on the other hand, the sport and friendship contexts. From a developmental perspective, no longitudinal work has yet examined how those perceptions evolve during adolescence. Because sport participation decreases in French adolescents (Currie et al., 2012), and perceived conflict between sport and other contexts was identified as a relevant factor of sport dropout (e.g., Boiché & Sarrazin, 2007; Molinero et al., 2006), we expected perceptions of conflicts related to sport to increase during the period studied. Next, because girls show lower participation and higher rates of sport dropout from sport during adolescence (e.g., Currie et al., 2012), and the level of conflict between sport and education was found to be higher among female athletes (e.g., Lance, 2004), we assumed that female participants would report higher levels of conflict relative to the sport context and/or that those perceptions would evolve more quickly among them than among male participants. Because no developmental study has yet investigated the perceptions of sport participation instrumentality on other contexts, we did not set specific hypotheses on these perceptions.

The second purpose of the study was to examine the motivational correlates of the perceived conflicting or instrumental sport–education and sport–friendship relationships. From a theoretical point of view, research on their relationships with contextual motivation remains scarce and the interaction hypothesis of the HMIEM is still unexplored to date. Based on SDT and on the results of previous research (Boiché & Sarrazin, 2007; Ratelle et al., 2005; Senécal et al., 2003), we expected self-determined motivation toward sport, education, and friendship to relate negatively to perceived conflicts but positively to perceived instrumentality. Moreover, in line with the HMIEM (Vallerand, 1997) and the counterintuitive result observed in one previous study (Boiché & Sarrazin, 2007), we expected that adolescents highly self-determined toward sport but not toward other contexts (e.g., education, friendship) should be more prone to experience those contexts as conflicting with sport, which should be revealed by an interaction effect between contextual motivations.

METHOD

Participants

This study is part of a large longitudinal follow-up conducted between 2004 and 2006. An article was already published to examine the cross-sectional relationships between contextual motivations and perceived intercontext relationships (assessed at Time 1) and to analyze how those psychological variables accounted for the evolution of sport participation (assessed both at Time 1 and Time 2; Boiché & Sarrazin, 2007). All the participants in this study were currently or had been previously engaged in structured sport. During the recruitment process, students declaring that their only structured experience relied on compulsory physical education classes were not invited to participate. They represented around 5% of the initial population. Classes from several schools representing different cohorts of students were visited once a year in January or February by the first author. Students from sixth, seventh, eighth, ninth, and tenth grades participated in the first wave of data collection. Those cohorts were followed through the next two waves of data collection. In France, high school is divided into junior high school, for students about 11 to 15 years of age in Grades 6 through 9, and senior high school, for students about 15 to 18 years of age in Grades 10 through 12. The sample of the current study was representative of the French adolescent population in terms of academic

profile, socioeconomic background, and geographical location. Indeed, approximately 85% of French teenagers attend senior high school after junior high school (National Institute of Statistics and Economical Studies, 2009). The high schools in which the data were collected were public and welcomed students from a variety of backgrounds, from modest middle- and upper-class families. The city in which the study was located was midsize (around 150,000 inhabitants), and the sample comprised adolescents living in an urban or suburban area, which is currently the case of almost 85% of the French population (National Institute of Statistics and Economical Studies, 2010).

During the longitudinal follow-up, some of the students filled out the questionnaires but did not indicate their identity. In addition, certain students participated only once because they were absent on the day scheduled for data collection, did not reach the educational level (grade) concerned by the follow-up, or belonged to a different school at the beginning or at the end of the study. At Time 1, 1,280 students were asked to participate and 20% declined. Overall, 1,015 students participated at Time 1, 790 at Time 2, and 893 at Time 3. Three hundred fifty-eight students participated at all three times of data collection: 179 students participated at both Time 1 and Time 2, 129 at both Time 2 and Time 3, and 100 at Time 1 and Time 3. In the end, the analyses were conducted on those 746 students who provided complete data in at least two times of data collection. This strategy was based on the double rationale that (a) participants who did not take part in the follow-up would provide less relevant data from a developmental point of view and (a) including only those who answered at all three points of data collection would have led to a drastically reduced sample size and potentially a reduction of the profiles studied. During the follow-up, 556 participants showed a stable pattern in terms of sport participation (430 remained engaged in sport, whereas 126 stayed out of sport), whereas the others showed a changing pattern (81 got back to sport participation, 89 dropped out, and 20 showed both dropout and participation during the time of the study).

Measures¹

Conflict and instrumentality

The scale developed by Boiché and Sarrazin (2007) was used to assess the perceptions of resource-based conflict and instrumentality between, on one hand, the sport context and, on the other hand, the education and friendship contexts. This tool comprises two scales measuring the perceived conflicts from school to sport (e.g., “If I didn’t have so much homework I would have the time to do more sport”) and from friendship to sport (e.g., “If I had fewer friends, I could do more sport because I would have more time”) and two scales measuring the perceived instrumentality of sport respectively on school (e.g., “Practicing sport is a good thing for schoolwork because you are in better shape”) and friendship (e.g., “Practicing sport is a good thing for friendship because you learn to work within a group”). All the scales comprise three items, and scores are computed by averaging the three answers. Participants were asked to provide answers on a Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). This questionnaire has shown satisfactory indices of construct validity, internal consistency, and predictive validity (e.g., Boiché & Sarrazin, 2007).

Motivation toward sport

Participants’ self-determined motivation for sport was assessed with the French version of the Sport Motivation Scale (Brière, Vallerand, Blais, & Pelletier, 1995). This scale assesses the multifaceted motivational regulations proposed by SDT: intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. In accordance with the recommendations of Pelletier and Sarrazin (2007), a three-item integrated regulation subscale

was created and added to the Sport Motivation Scale (e.g., “Because sport is an integral part of who I am”).² Responses to the question “Why do you practice(d) sports?” were issued on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). This scale has shown satisfactory indices of internal consistency and predictive validity (Boiché & Sarrazin, 2007).

Academic motivation

The French version of the Academic Motivation Scale developed by Vallerand, Blais, Brière, and Pelletier (1989) to assess contextual self-determined motivation for education was used in this study. Nine items were selected from this multidimensional scale assessing different types of motivation for engaging in the educational domain (i.e., attending classes and doing ones homework): intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. A two-item integrated regulation subscale was created based on the subscales of other questionnaires developed by Pelletier, Dion, Slovinec-D’Angelo, and Reid (2004; see Footnote 2). Responses were given on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). This scale was already used in past research among French speaking high school students and has shown satisfactory indices of internal consistency and predictive validity (Ratelle, Guay, Vallerand, Larose, & Sénécal, 2007).

Friendship motivation

The Interpersonal Motivation Inventory utilized by Sénécal et al. (2003) was used. Nine items were derived from this tool to measure five types of regulations toward interpersonal relationships: intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. A two-item integrated regulation subscale was created based on the subscales of other questionnaires developed by Pelletier et al. (2004; see Footnote 2). Participants were instructed to answer on a 7-point Likert-type scale, from 1 (*strongly disagree*) to 7 (*strongly agree*), corresponding to the extent to which each item represented a possible answer to the question: “Why do you usually do things with your friends?” This scale was used among French-speaking students and has shown satisfactory indices of internal consistency and predictive validity (Sénécal et al., 2003).

For all three contexts, an SDI was calculated by giving a weight to each motivational subscale, depending on its relative position on the theoretical continuum, and adding all the weighted scores. Consequently, intrinsic motivation, integrated, and identified regulation, respectively, received the weights of +3, +2, and +1, whereas amotivation, external, and introjected regulation received, respectively, the weights of -3, -2, and -1. Potential scores for the SDI ranged from -36 to +36.

Procedure

A multiwaves, multicohorts design was used in this study. The headmasters of two junior high schools and one senior high school agreed to collaborate on this research project. Parents were informed of the study’s purpose and organization and had the possibility not to consent to the participation of their child. Teachers and administrators were involved in the project and helped plan the sessions dedicated to the study during a compulsory class. The students who volunteered to participate were assured that their answers would remain confidential, that only the researchers would have access to their data, and that only the means of the samples would be analyzed.

Data Analysis

The central goal of this study was to examine the evolution of the perceptions of conflict and instrumentality associated with the sport context during the high school period. To test our hypotheses, we used growth curve analysis in a hierarchical multilevel design (Raudenbush & Bryk, 2002). This technique allows researchers to take into account the aggregated structure of the data, in particular when similar measures have been repeated among the same participants. It also allows running analyses among a set of individuals even if some of them did not provide data at each time point, because it does not assume an equal number of measurement occasions for every participant. In this study, because data for a single individual were aggregated together hierarchically (Raudenbush & Bryk, 2002), measures repeated at each time point of data collection were considered the first level of analysis; individuals represented the second level. These multilevel analyses were performed with MLWin 2.30 software.

The same testing procedure was used along the different dependent variables in order to facilitate the presentation of the results. Classical model comparisons (i.e., log-likelihood tests) were used along the procedure of data analyses. First, we tested growth models to examine the global rate of change of the perceived intercontext conflict and instrumental relationships (Model 1). Linear and quadratic fixed and random effects of age were tested to examine whether conflict and instrumentality significantly changed and if their potential increase/decrease was stable or not during the period studied. Model 1 also included gender, as well as interaction terms between gender and age, in order to examine whether the value and rate of change could be significantly different for male and female participants. The next step in the data analysis strategy aimed at examining the associations between contextual motivation and the perceived intercontext conflict/instrumental relationships (Model 2). For each perception, the two matching motivation scores were considered (i.e., sport and education, or sport and friendship). At Level 1, Model 2 aimed at examining whether motivational scores at one time were significantly associated with levels of conflict or instrumentality experienced at the same time. Interaction terms between motivation and age, and an interaction term between both matching motivation scores, were also entered in the analysis. At Level 2 Model 2 tested the effect of (a) self-determination indices at the student level—centered across the individual's mean—as simple predictors (this factor tests whether mean individual's level of contextual self-determination is associated with more or less perception of conflict/instrumentality), and (b) an interaction term between both matching motivation scores (i.e., for sport and education, or for sport and friendship) to examine whether certain motivational profiles of individuals would be accompanied by particularly high levels of conflict or instrumentality. Log-likelihood tests showed that Model 2 provided better fit with the data, compared to Model 1.

RESULTS

Table 1 presents the mean scores, standard deviation, and correlations between the variables of the study for each time of data collection. The results appear in Tables 2 and 3, and Figures 1 to 3. Figures 1 and 2 present the combined age across participants in the study.

Perceived Relationships Between Sport and Education

Developmental trend of conflict

Model 1 indicated that age and the interaction term between age and gender were significantly associated with perceived school-to-sport conflict (see Table 2). More specifically, it

Table 1
Mean Scores, Standard Deviation, Internal Consistency, and Between-Variable Correlations at Each Time Point

	(1)			(2)			(3)			(4)			(5)			(6)			(7)				
	M	SD	α	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3		
(1) SDI Sport	T1	14.28	7.55	.87	.19	.40	.15	.03	.10	.16	.16	.11	.20	.20	.13	-.04	-.06	.04	.40	.37	.33	.33	.21
	T2	0.87	4.79	.85	—	-.07	-.02	.04	.12	.12	.14	-.01	.05	.03	.06	.06	.07	.06	.13	.19	.10	.12	.01
	T3	11.34	9.32	.88	—	.16	.06	.14	.05	.20	.33	.02	.03	.02	.03	.10	.02	.08	.12	.27	.25	.39	.35
(2) SDI Education	T1	4.49	8.27	.79	—	—	—	—	.47	.04	.31	.05	-.02	-.17	-.10	.00	-.05	.00	.18	.10	.10	.09	.04
	T2	3.72	8.35	.82	—	—	—	—	—	.10	.10	.13	-.13	-.13	-.13	-.05	.00	-.06	.08	.11	.24	.06	.10
	T3	4.05	8.06	.81	—	—	—	—	—	.36	.35	.35	-.03	-.03	-.05	.00	-.22	-.15	.11	.04	.04	.21	.09
(3) SDI Friendship	T1	18.51	7.18	.84	—	—	—	—	—	—	.41	-.05	-.02	.10	.20	-.16	-.07	.07	.13	.18	.13	.16	.18
	T2	17.01	7.08	.85	—	—	—	—	—	—	—	-.02	-.06	.04	.25	-.12	-.30	.11	.05	.15	.11	.15	.28
	T3	19.27	7.37	.89	—	—	—	—	—	.38	.29	.45	.29	.45	.29	.45	.29	.45	.29	.45	.29	.45	.29
(4) School-to-Sport Conflict	T1	3.26	1.52	.82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T2	3.55	1.54	.83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T3	3.54	1.49	.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(5) Friendship-to-Sport Conflict	T1	1.54	0.93	.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T2	1.52	0.88	.83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T3	1.56	0.88	.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(6) Sport-to-Education Instrumentality	T1	4.02	1.31	.74	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T2	4.10	1.34	.80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T3	4.06	1.28	.79	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(7) Sport-to-Friendship Instrumentality	T1	4.97	1.27	.85	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T2	4.74	1.24	.83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	T3	4.66	1.24	.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note. Nonsignificant correlations at $p = .05$ appear in italics. SDI = Self-Determination Index.

Table 2
Results of the Models for the Relations Perceived Between Sport and Education

Variables	School-to-sport conflict				Sport-to-school instrumentality			
	Model 1		Model 2		Model 1		Model 2	
	Effect	SE	Effect	SE	Effect	SE	Effect	SE
Fixed effects								
Intercept	3.418*	0.053*	3.187*	0.087*	3.983*	0.047*	3.265*	0.071*
Age	0.104*	0.025*	0.106*	0.026*	0.031	0.021	0.046*	0.020*
Age ²	-0.003	0.011	0.004	0.012	0.008	0.009	0.001	0.009
Gender	-0.024	0.053	0.041	0.053	0.035	0.047	0.004	0.044
Gender × Age	0.062*	0.025*	0.069*	0.026*	0.042*	0.021*	0.025	0.020
Gender × Age ²	0.018	0.011	0.009	0.012	-0.003	0.009	0.005	0.009
Level 1								
SDI Educ			-0.004	0.008			0.011	0.007
SDI Educ × Age			0.014*	0.004*			-0.003	0.003
SDI Educ × Age ²			-0.002	0.002			0.003*	0.002*
SDI Sport			0.001	0.005			0.003	0.004
SDI Sport × Age			0.000	0.003			0.000	0.002
SDI Sport × Age ²			0.000	0.001			0.000	0.001
SDI Educ × SDI Sport			0.001	0.001			-0.002*	0.001*
Level 2								
SDI Educ			-0.006	0.009			0.028*	0.008*
SDI Sport			0.045*	0.008*			0.081*	0.007*
SDI Educ × SDI Sport			-0.003*	0.001*			-0.001	0.001
Random Effects								
Level 2								
Intercept	0.814	0.087	0.730	0.086	0.772	0.064	0.523	0.052
Age/Intercept	-0.020	0.024	-0.034	0.025	0	0	0	0
Age	0.031	0.023	0.055	0.024	0	0	0	0
Level 1								
	1.389	0.066	1.322	0.067		0.945	0.941	0.892

Note. For sex, a positive coefficient is associated to male participants. Significant interaction effects were decomposed with scores ± 1 SD (indicated as SDI+ or SDI-). SDI = Self-Determination Index.

* $p < .05$.

appeared that this perception significantly increased during the age period studied and that this increase was smaller for female participants than for male participants (see Figure 1a). Model 1 added 2% of explained variance of school-to-sport conflict.

Associations between motivation and conflict

At Level 1, Model 2 showed that the interaction term between self-determined motivation toward education and age was significantly associated with school-to-sport conflict (see Table 2), indicating that the link between motivation for education and conflict is stronger as the individuals get older. At Level 2, self-determined motivation for sport and the interaction term between both motivation scores were associated with the level of school-to-sport conflict. The first relationship means that the higher the self-determined motivation for sport, the greater the participants' perceptions of conflict from school to sport. The decomposition of the significant interaction indicated that, in line with the HMIEM hypothesis, students experiencing the highest levels of conflicts were highly self-determined toward sport but not self-determined toward school (see Figure 2). Their scores were statistically different ($ps < .001$) from those

Table 3
Results of the Models for the Relations Perceived Between Sport and Friendship

Variables	Friendship-to-sport conflict				Sport-to-friendship instrumentality			
	Model 1		Model 2		Model 1		Model 2	
	Effect	SE	Effect	SE	Effect	SE	Effect	SE
Fixed effects								
Intercept	1.506*	0.030*	2.041*	0.121*	4.723*	0.045*	3.624*	0.167*
Age	-0.023	0.015	-0.001	0.015	-0.076*	0.020*	-0.082*	0.020*
Age ²	0.020*	0.007*	0.018*	0.007*	0.004	0.009	0.004	0.009
Gender	-0.085*	0.030*	-0.016	0.031	0.059	0.045	0.003	0.043
Gender × Age	-0.006	0.015	-0.002	0.015	0.022	0.020	-0.001	0.019
Gender × Age ²	0.002	0.007	-0.005	0.007	-0.017*	0.009*	-0.013	0.009
Level 1								
SDI Friend			-0.013*	0.006*			0.023*	0.008*
SDI Friend × Age			-0.004	0.003			0.000	0.004
SDI Friend × Age ²			-0.001	0.001			0.000	0.002
SDI Sport			0.004	0.003			0.004	0.005
SDI Sport × Age			-0.004	0.003			-0.003	0.002
SDI Sport × Age ²			-0.001	0.001			0.000	0.001
SDI Friend × SDI Sport			-0.001	0.001			-0.001	0.001
Level 2								
SDI Friend			-0.029	0.007*			0.033*	0.009*
SDI Sport			0.004	0.013			0.070*	0.018*
SDI Friend × SDI Sport			0.000	0.001			0.000	0.001
Random effects								
Level 2								
Intercept	0.147	0.028	0.136	0.026	0.591	0.058	0.320	0.046
Age/Intercept	-0.038	0.009	-0.033	0.008	0	0	0	0
Age	0.024	0.008	0.015	0.008	0	0	0	0
Level 1								
	0.617	0.029	0.572	0.028		1.062	0.047	1.027

Note. For sex, a positive coefficient is associated to male participants. Significant interaction effects were decomposed with scores $\pm 1 SD$ (indicated as SDI+ or SDI-). SDI = Self-Determination Index.

* $p < .05$.

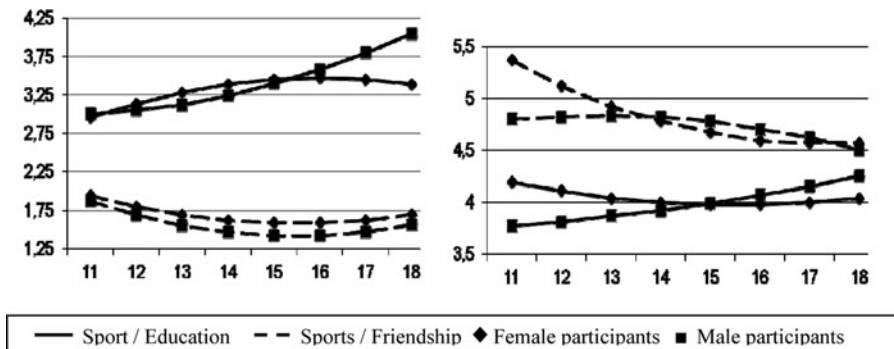


Figure 1. Evolution of the level of (1a) perceived conflict and (1b) instrumentality with age according to gender.

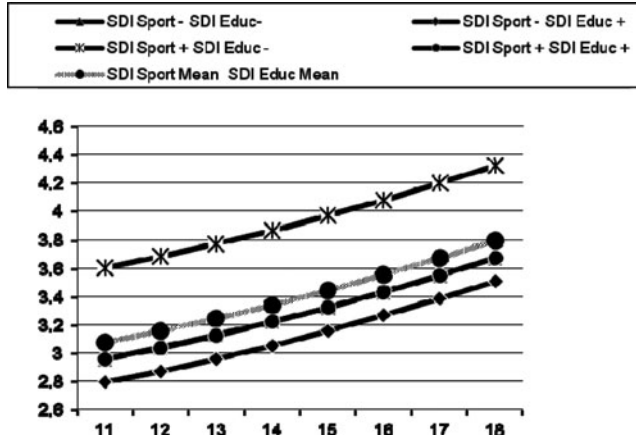


Figure 2. Evolution of the level of perceived school-to-sport conflict with age according to contextual motivation interaction. *Note.* The “SDI Sport + SDI Educ +” and “SDI Sport - SDI Educ -” graphs are not distinguishable from each other. SDI = Self-Determination Index.

of students demonstrating low levels of self-determination for both domains, high levels of self-determination for both domains, or self-determined toward school, not toward sport. As a whole, Model 2 added 6% of explained variance of school-to-sport conflict.

Developmental trend of instrumentality

Model 1 showed that the interaction between sex and age was a significant predictor of sport-to-school instrumentality (see Table 2), implying that the linear change of this perception during the period studied was moderated by gender. More particularly, this perception increased

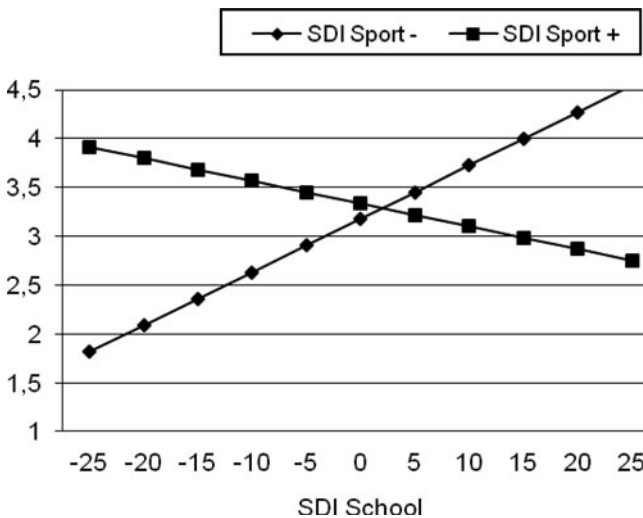


Figure 3. Level of sport-to-school instrumentality according to contextual self-determined motivation combination. SDI = Self-Determination Index.

for male participants but tended to decrease among female participants (see Figure 1b). As a whole, Model 1 added 2% of explained variance in sport-to-school instrumentality.

Associations between motivation and instrumentality

At Level 1, Model 2 showed that the interaction term effect between self-determined motivation for education and the square of age, as well as the interaction term effect between the two self-determination indices, was significant predictors of the level of sport-to-school instrumentality (see Table 2). The first result indicates that the link between self-determined motivation for education and sport-to-school instrumentality was stronger in the beginning and in the end of the period studied but weaker for the middle ages. The second coefficient reveals that the level of instrumentality was associated across individuals with the interaction between both self-determined motivation indices. More specifically, it seems that the highest levels of instrumentality were observed among individuals who were self-determined toward only one domain and that the lowest levels were present among adolescents who displayed a low level of self-determination toward both. Adolescents who were self-determined toward both domains showed intermediate levels of this perception (see Figure 3). At Level 2, both self-determined motivations indices were significantly and positively associated with sport-to-school instrumentality. As a whole, Model 2 added 19% of explained variance of sport-to-school instrumentality.

Perceived Relationships Between Sport and Friendship

Developmental trend of conflict

Model 1 indicated that the quadratic effect of age and gender were significantly associated with friendship-to-sport conflict (see Table 3). Specifically, this perception displayed a curvilinear evolution with age, with higher levels in the beginning and in the end of the period studied for both male and female participants. Also, female participants reported higher levels of friendship-to-sport conflict than male participants (see Figure 1a). As a whole, Model 1 added 4% of explained variance of friendship-to-sport conflict.

Associations between motivation and conflict

At Level 1, Model 2 showed that self-determined motivation for friendship was significantly associated with friendship-to-sport conflict (see Table 3). This negative coefficient indicates that the bound between self-determined motivation for friendship and conflict among individuals was negative and constant with age. At Level 2, the mean level of self-determination toward friendship was also a significant negative predictor of friendship-to-sport conflict. As a whole, Model 2 added 13% of explained variance of friendship-to-sport conflict.

Developmental trend of instrumentality

Model 1 indicated that age and the interaction term between gender and the square of age were significantly associated with sport-to-friendship instrumentality (see Table 3). More specifically, it appeared that this perception significantly decreased during the period studied and that this decrease accelerated among males but decelerated among females (see Figure 1b). As a whole, Model 1 added 1% of explained variance of sport-to-friendship instrumentality.

Associations between motivation and instrumentality

At Level 1, Model 2 showed that self-determined motivation for friendship was significantly and positively related to the level of sport-to-friendship instrumentality (see Table 3). At Level

2, both self-determined motivation scores were significantly linked to sport-to-friendship instrumentality, indicating that subjects with higher levels of self-determined motivation for friendship and sport experienced higher levels of sport-to-friendship instrumentality. As a whole, Model 2 added 19% of explained variance of sport-to-friendship instrumentality.

DISCUSSION

The purpose of this study was twofold: (a) to investigate the evolution of adolescents' perceptions of conflicting and instrumental relationships between sport and education, and between sport and friendship, throughout the entire period of high school studies, and (b) to examine the links between contextual self-determined motivation and the matching perceptions. A three-wave longitudinal design was implemented with five cohorts of students from sixth to 12th grade. Growth curve analyses were performed to test associations between age, gender, and self-determined contextual motivation, as well as their interactions with the conflicting or instrumental relationships perceived between sport and other contexts.

Evolution of Perceived Intercontexts Relationships With Age

Developmental trends of conflict

The continuous decline in sport participation, combined with the results of past studies on sport dropout, prompted us to expect a global increase in the levels of conflict experienced toward the sport context. This hypothesis was confirmed for perceived school-to-sport conflict. Indeed, the scores reported for this variable were found to increase throughout high school, implying that the resources devoted to school steadily increase as students move from grade to grade in high school. French educational guidelines call for an increase in school time hours and in cognitive abilities as students advance in age. This ramping up of demands is sanctioned by graduations at the end of junior and senior high school. School-to-sport conflict emerged as a statistically significant predictor of the decrease in sport involvement in a prospective analysis (Boiché & Sarrazin, 2007). Such perceptions could, thus, partly explain the decrease in sport participation during adolescence.

Regarding the conflicting relationships perceived between sport and friendship, a quadratic trend was observed, with an inversion at the transition from junior to senior high school. Being an athlete and a friend are perceived as progressively less conflicting during the first high school years but as progressively more conflicting during the last ones. A friend is primarily considered as someone similar, who shares common activities during the first part of adolescence, whereas complementary qualities and shared values are more important in late adolescence (Boyd & Bee, 2008). If friendships are more readily developed within sport in middle adolescence, but outside of this context in late adolescence, this would account for slightly higher levels of conflict between the sport and friendship contexts. However, it should be noted that the scores reported were considerably lower than for sport-to-school conflict. As a whole, adolescents mainly disagree with the idea that relationships with friends undermine sport participation.

Developmental trends of instrumentality

No particular hypothesis was set concerning the evolution of the perceptions of instrumentality, because of the exploratory nature of this investigation. No association with age

appeared regarding the perception of a beneficial impact of sport participation on education. Conversely, adolescents' perception that it represents a good way to meet people, gauge friendly relationships with them, and develop group functioning skills steadily decline during the period studied. Whereas most sport organizations encourage participation among children, sport tend to become increasingly competitive in older age categories. As a consequence, the norms conveyed in the sport context may not value friendship as much as behaviors associated with success. For example, in older age categories and at high levels of practice, young soccer players consider rule transgression as more legitimate and think that their teammates would approve of them, when cheating can help them win the game (Romand, Pantaléon, & Cabagno, 2009). Such increased focus on performance may partly explain why adolescents feel that athletics provide fewer opportunities for friendship.

Association Between Sex and Perceived Intercontexts Relationships

Boys show greater sport participation and persistence (Currie et al., 2012), and conflict was previously found to be a factor for dropping out of sport (Boiché & Sarrazin, 2007; Molinero et al., 2006), thus, we expected girls to report higher scores on these perceptions, or show an accentuated trend pattern in the period studied. It appeared that friendship-to-sport conflict was slightly higher among girls than among boys. One potential explanation for this result is that some female adolescents consider friendly relationships a priority over a sport career, which would be consistent with previous developmental results indicating that boys place greater value than girls on sport throughout adolescence (Jacobs et al., 2002). It is possible that girls who drop out of sport activities choose between sport and relationships with their nonathlete friends. This phenomenon apparently involves only a segment of the population, in light of the rather low level of mean perception of friendship-to-sport conflict.

Concerning school-to-sport conflict, our results show that during adolescence, the perception that school-related activities undermine sport participation because the strain on resources increases slightly among girls but shows a more pronounced change among boys. We may posit that girls are more seriously involved in education as soon as they enter high school and hence perceive lower interference from the sport context. In this vein, previous research indicates that girls place more value on the main subjects taught in high school than boys (Jacobs et al., 2002). This earlier academic maturity in girls could explain higher rates of sport dropout (Slater & Tiggemann, 2010). Boys, on the other hand, might follow a more progressive academic involvement, leading to an increase in perceived conflict with athletics as the scholastic demands rise yearly. Indeed, an increase in demands in both education and sport may lead to higher and higher perceptions that school demands prevent from full sport commitment.

Adolescents' perceptions of instrumentality also showed different patterns according to gender. The perception of an instrumental role of sport on the educational context appeared to increase more importantly in boys, compared to girls. In addition, with regard to sport-to-friendship instrumentality perceptions, the scores obtained by girls decreased earlier during the period studied before stabilizing, whereas in boys this perception tends to continuously increase. A general interpretation of this pattern of results would be that male students concurrently perceive the benefits of sport for education and friendship and the increasing difficulty to both pursue them and meet educational demands (increase in both instrumentality and conflict scores). By contrast, girls—who globally disengage earlier and more massively from the athletic setting (Currie et al., 2012)—tend to better compartmentalize those two life contexts and value less and less sport.

Associations Between Self-Determined Motivation and Intercontext Relationships

The last part of our hypotheses concerned the associations between self-determined motivation for the contexts of sport, education, and friendship and the intercontext conflict or instrumental relationships perceived by adolescents. In line with past research (e.g., Boiché & Sarrazin, 2007; Ratelle et al., 2005; Sénécal et al., 2003), we expected self-determination indices to relate negatively with perceived conflicts and positively with perceived instrumental relationships. This hypothesis was only partially confirmed. Indeed, both at Level 1 and 2 a statistically significant negative link was observed between self-determined motivation for friendship and the corresponding perception of conflict on sport. Regarding education, the analyses did not reveal a statistically significant relationship throughout the entire period studied. Conversely, a positive association between sport motivation and school-to-sport conflict emerged at Level 2, as was the case in one previous study (Boiché & Sarrazin, 2007). One of the factors potentially accounting for this result is the nature of the scale used to assess conflict, as the protective function of self-determination seems to operate mainly in one direction. In other words, when self-determined toward one context, such as sport, individuals could be less likely to perceive that this context undermines other commitments but may tend to perceive that other contexts prevent them from meaningful involvement in this activity.

In the case of friendship-to-sport conflict, no effect of sport motivation emerged. In past research, statistically significant links consistently emerged between motivation and conflict for noncompulsory contexts, in contrast to education, which represents a relatively unavoidable life setting for adolescents (Ratelle et al., 2005; Sénécal et al., 2003). However, Boiché and Sarrazin (2007) failed to observe a statistically significant link between sport motivation and friendship-to-sport conflict. When two leisure domains—sport and relationships with friends—are considered, the motivational processes at play can be different. Indeed, in those two contexts, adolescents enjoy greater freedom of involvement, whereas education is compulsory. Regarding instrumentality perceptions, the results indicated a consistent positive association at Level 2 between contextual motivation and instrumentality perceptions, as hypothesized. In the same vein, an interaction effect emerged at Level 1, indicating that the lowest levels of sport-to-education instrumentality perception were observed in adolescents that were not self-determined, neither toward sport nor education. Being highly self-determined toward various life domains might, thus, be associated with experiencing a greater sense of coherence of the self.

Last, to our knowledge, this study was the first to test the interaction effect hypothesized by the HMIEM (Vallerand, 1997), according to which maximal levels of conflict from a context such as education with sport should be reported by individuals who are self-determined toward sport but not toward education. Our study's results support this hypothesis at Level 2. The participants characterized by such motivational pattern actually reached the highest levels of school-to-sport conflict. Conversely, adolescents who were the most self-determined toward education but the least self-determined toward sport reported the lowest levels of conflict. Concerning friendship-to-sport conflict, no interaction effect emerged. This result could be due to the fact that there was little variability in the perceptions of friendship-to-sport conflict and that self-determination was fairly high for both contexts, resulting in less contrasting motivational profiles within the population, and potentially less constraining situations (in which adolescents would feel "forced" to do activities with their friends). As a whole, these contrasting results contribute to highlight the complexity of the associations between contextual motivation and perceived intercontexts relationships.

Limitations and Perspectives

A first limitation of the study relies in its data collection realized in adolescents' school environment. Whereas this methodological choice is deemed particularly appropriate in a longitudinal follow-up, the current results should not be generalized to adolescents who pursue alternate training or leave the educational system (around 15%). Another limitation lies in the contexts taken into account in the study: Although from a psychological point of view, education and friendship are deemed important contexts in general, we did not assess what personal value the participants placed on each of them, which could moderate the relationships observed in the study. Also, other contexts such as romantic relationships or nonsport leisure activities should be examined as well. In the same vein, the current study did not consider the status of the participants (i.e., current or former sport participation). Future studies could investigate longitudinally whether the patterns observed in the perceptions studied are consequently related to sport behavior. Last, future research could explore how the perceptions of conflicting or instrumental relationships are associated with autonomous versus controlled forms of motivation, and even specific regulations, beyond the relative level of self-determination level investigated in this study and past research.

Practical Implications

From a practical perspective, adolescents globally reported intercontext perceptions less and less in favor of maintained sport participation, with a turning point observed at the transition between junior and senior high school. In particular a steady increase was observed regarding school-to-sport conflict. It seems that adolescents experience increasing difficulty in integrating regular athletic participation within their educational career, which could be one explanation of their behavioral disengagement. This perception seems to be maximal in adolescents who are strongly self-determined toward sport but not for school. These results are particularly important as academic achievement represent in the French educational system the main factor determining the nature and quality of university studies, whereas extracurricular activities—such as sport—play a minor role in this process. It is, thus, likely that a large number of adolescents—and presumably their parents—consider sport as a leisure activity only and that its cessation at this developmental period is benign, compared to vocational choices.

However, past research clearly indicates that sport participation during childhood and adolescence is a statistically significant predictor of regular physical activity during adulthood (e.g., Telama et al., 2005). Given the health impact of such behavior, efforts could be made to facilitate an active lifestyle among adolescents and young adults, as prevention of the development of sedentary habits (at least 60 min per day of physical activity is recommended for adolescents). With this regard, it can be advanced that significant others (e.g., coaches, parents) should be aware of the role played by school-to-sport conflict and help adolescents organize their time so as to manage involvement in both contexts. The role played by senior high school institutions to enable sport participation in parallel to academic can also be questioned.

Next, it was observed that adolescents perceived decreasingly that sport could be an effective means to being a good student and that it is a good way to create and foster positive relationships with peers. These trends were more particularly visible in girls. The responsibility of sport organizations can be pointed out here, as their politics tend to favor expertise and/or preparation for elite careers, to the detriment of pleasure of practice for everyone, which may lead to competition between athletes, and may not be in favor of the development and maintenance of friendly relationships. With this regard, a descriptive study among French adolescents that were

never involved in regular sport participation indicated that if they were to subscribe to a sport or exercise program, social relationships and health would represent prevalent goals, whereas competition and motor learning would be secondary (Boiché & Sarrazin, 2009). This can be seen as a call for alternatives to “traditional” programs in order to foster positive development through sport among youth.

FOOTNOTES

¹The invariance properties of the Sport Motivation Scale and the Academic Motivation Scale were previously documented (Amiot, Blanchard, de la Sablonnière, & Vallerand, 2003; Grouzet, Otis, & Pelletier, 2006). In the current study, the Amos 20.0 software was used to conduct invariance tests. Confirmatory factor analysis models were examined in the complete datasets for each time of data collection, and multigroup comparison tests were ran at the $p = .001$ threshold according to regression weight equivalence depending on age group or gender. Regarding the Academic Motivation Scale there was no significant difference for age (Time 1: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 5.79$; Time 2: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 10.58$; Time 3: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 3.02$) or gender (Time 1: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 5.52$; Time 2: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 9.43$; Time 3: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 18.81$). Regarding the Conflict/Instrumentality scale, there was no significant difference for age (Time 1: $\Delta\text{ddl} = 7$; $\Delta\chi^2 = 11.02$; Time 2: $\Delta\text{ddl} = 7$; $\Delta\chi^2 = 10.06$; Time 3: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 24.64$) or gender (Time 1: $\Delta\text{ddl} = 7$; $\Delta\chi^2 = 9.97$; Time 2: $\Delta\text{ddl} = 7$; $\Delta\chi^2 = 14.05$; Time 3: $\Delta\text{ddl} = 7$; $\Delta\chi^2 = 8.84$). Regarding the Friendship Motivation Scale there was no significant difference for age (Time 1: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 11.14$; Time 2: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 5.86$; Time 3: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 8.41$) or gender (Time 1: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 13.04$; Time 2: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 5.12$; Time 3: $\Delta\text{ddl} = 6$; $\Delta\chi^2 = 15.08$). Regarding the Sport Motivation Scale there was no significant difference for age (Time 1: $\Delta\text{ddl} = 12$; $\Delta\chi^2 = 20.75$; Time 2: $\Delta\text{ddl} = 12$; $\Delta\chi^2 = 23.05$; Time 3: $\Delta\text{ddl} = 12$; $\Delta\chi^2 = 16.34$) or gender at Time 1 ($\Delta\text{ddl} = 12$; $\Delta\chi^2 = 29.07$). However, gender invariance was not verified at Time 2: $\Delta\text{ddl} = 12$; $\Delta\chi^2 = 139.6$; and at Time 3: $\Delta\text{ddl} = 12$; $\Delta\chi^2 = 64.75$. Considering the purpose of the study (i.e., examining the evolution of conflict and instrumental perceptions with age) the invariance of regression weight was deemed central because the regression analyses carried out were based on mean scores computed at each time, age and gender being considered as independent variables.

²The items used to assess integrated regulation in each context are as follows: Sport: “Because doing sport is a good thing for my personal development”; “Because being an athlete is an important aspect of who I am”; “Because sport brings me benefits in my everyday life”; Education: “Because high school is meaningful for me”; “Because high school is an important aspect of who I am”; Friendship: “Because my friends are part of who I am”; “Because they are an important aspect of me.”

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