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Running Head: INTER CONTEXT DYNAMICS AND SPORT PARTICIPATION

Self-Determination of Contextual Motivation, Inter-Context Dynamics and Adolescents'
Patterns of Sport Participation over Time

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Abstract

Objectives: Previous studies have shown the heuristic qualities of self-determination theory constructs to predict sport persistence. The purpose of this study was to extend these researches by focusing on the conflicting or instrumental relationship between sport and other life contexts (i.e., school and friendship) to enhance the understanding of this phenomenon.

Design: A correlational longitudinal field design was used, including two data collections over one year.

Method: Participants were 446 French high school students (mean age = 13.85). Self-determined motivation toward sport, school and friendship, perceived conflicts versus instrumental relationships between sport and the other contexts, and sport participation during leisure time were assessed at wave 1. One year later, participants completed the same self-report measure of sport practise.

Results: Structural equation modelling revealed that (a) self-determined motivation toward sport, education and friendship was significantly related to the levels of conflict and instrumentality between those contexts and (b) a competing relationship between sport and education was negatively linked to sport participation at Time 2, whereas the other inter context relationships were not.

Conclusion: Findings suggest that other contexts like education can undermine sport investment among adolescents.

Key words: self-determination theory, motivation, conflict, instrumentality, sport participation.

Self-Determination of Contextual Motivation, Inter Context Dynamics and Adolescents' Patterns of Sport Participation over Time

The contribution of regular physical activity to well-being is now well documented. As numerous studies have shown, physical activity has been linked to a plethora of physical, social and psychological outcomes. More particularly, research has shown the existence of a positive link between physical activity and physical self-perception, self-esteem and social acceptance among youth (see Martinsen & Stephens, 1994, for a review). In order to guarantee these benefits, health professionals recommend that teenagers have a level of physical activity equivalent to thirty minutes per day, most days of the week (e.g., American College of Sports Medicine, 1990). Sport participation during leisure time therefore represents an essential source of physical activity. However, as large national surveys generally show, a large proportion of young athletes diminish their physical activity participation during adolescence (Russel, Allen, & Wilson, 1996; Sallis & Patrick, 1996; Wankel & Mummery, 1996). In France, for example, sport participation decreases constantly as age increases, in particular between 11 and 17 years old of age (French Minister for Youth and Sport, 2003). This rate of decrease slows down during adulthood, but several studies show that sport participation during the adult years is related to the individual's sport experience during childhood or adolescence (e.g., Perkins, Jacobs, Barber, & Eccles, 2004). There is thus great interest in deepening our knowledge of the causes and contributors to sport dropout among teenagers. Self-Determination Theory (SDT; e.g., Deci & Ryan, 2002) represents a heuristic framework to investigate the dropout phenomenon in school (Vallerand, Fortier, & Guay, 1997) or in sport (See Sarrazin, Boiché, & Pelletier, *in press*, for a review) that can enable us to better understand this phenomenon.

The Self-Determination Continuum of Motivation

SDT is a theory which focuses on the nature of motivation as well as its antecedents and outcomes. In opposition with previous quantitative approaches, SDT proposes that individuals can develop different types of motives toward a given behaviour. These motives are assumed to vary in their degree of self-determination, in other words they are more or less personally assumed and fully integrated in the individual's self (Ryan & Deci, 2002). Ryan and Deci used a theoretical continuum of self-determination to represent the range of motives. From the more self-determined to the more controlled form, this continuum includes intrinsic motivation, extrinsic motivation and amotivation. Intrinsic motivation is present when a behaviour is done for the pleasure and satisfaction that derives from it, the sources of satisfaction being pleasant sensations, personal achievement or increased knowledge. SDT also posits the existence of four kinds of extrinsic motivation, when the behaviour is no longer adopted for itself, but seen as a means to an end. Among these four kinds of extrinsic motivation, external regulation (i.e., doing a behaviour because of environmental constraints), and introjected regulation (i.e., internal pressure to perform the behaviour because of a link with perceived self worth) are non-self-determined, whereas identified regulation (i.e., the behaviour is chosen because it is perceived as personally important and useful) and integrated regulation (i.e., the behaviour is perceived as important and coherent with other aspects of the self) are self-determined. Finally, amotivation reflects an absence of regulation toward the behaviour, among individuals who see no relationship between their behaviour and outcomes.

Self-Determined Motivation and Sport Dropout

SDT suggests that self-determined motivation has important cognitive, affective and behavioural consequences, and that these outcomes are decreasingly positive from intrinsic motivation to amotivation (Vallerand, 1997). Studies carried out in the sport context have confirmed the existence of a positive link between self-determined motivation toward the activity and persistence (Pelletier, Fortier, Vallerand, & Brière, 2001; Sarrazin, Vallerand,

Guillet, Pelletier, & Cury, 2002). In these studies, dropout athletes were found to demonstrate lower levels of self-determined forms of motivation toward their activity (i.e., intrinsic motivation and/or identified regulation), and higher scores of controlled forms of motivation (i.e., external regulation and amotivation). Among French female handball players (Sarrazin et al., 2002), self-determined motivation, represented by a self-determination index (SDI), was related positively to persistence 21 months later. Among Canadian swimmers (Pelletier et al., 2001), a significant link was observed between motivational type and short and long term persistence (Time 2 and 3, respectively after 10 and 22 months). In this regard, self-determined forms of regulation were related positively to persistence at Time 2 and 3. These researchers found that introjected regulation was related positively to short term persistence, and external regulation was related negatively to long term persistence. Amotivation was related negatively to persistence both at Time 2 and 3 for the participants in this study.

Competing Activities

Although studies grounded in SDT have demonstrated the value of examining self-determined motivation to predict sport dropout or persistence, past research tended to consider achievement activities and their motivation in isolation. However, sport (see Lens, Lacante, Vansteenkiste, & Herrera, 2005; for a similar analysis concerning school) is not an island separated from the rest of the world. Many teenagers who play sport can be interested in and motivated to participate in other activities. Those “other interests” can be at the origin of a conflict in the athletes’ lives, and limit or hamper sport involvement. The most frequently given reason for dropout as identified by Lindner, Johns and Butcher (1991) was “other things to do” or an overlapping reason: “it took too much time”. Other leisure activities (e.g., dating, going out with friends) or social responsibilities (e.g., working, studying) can represent important alternatives to sport. These alternative activities take time which is a limited resource for the individual. Spending too much time in competing activities might impede

teenagers from doing sport. As Coleman (1961; see also Marsh & Kleitman, 2003) suggested more than four decades ago in his *Zero-Sum Model*, the varying amounts of time devoted to academic, social or athletic pursuits are posited to be in competition with each other. Thus, people's engagement and persistence in a particular activity depend not only on their motivation to do that activity, but also are related to the number and strength of the competing action tendencies (e.g., Atkinson & Birch, 1970). Some works based on the sport commitment model (e.g., Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993) corroborated this point of view, showing that the more athletes were attracted by competing activities, the less they felt committed and persisted in sport (e.g., Guillet, Sarrazin, Carpenter, Trouilloud, & Cury, 2002). In connection with this result, recent developments of SDT suggest that the presence or absence of a conflict between two alternative activities is a function of the type of motivation developed toward them.

The Concept of Conflict within SDT

As Ryan and Deci (2002) stated, the individual's motivation towards a given behaviour might evolve towards the self-determined part of the continuum. This process of *internalization* leads to a good integration of the behaviour in the individual's life, because a harmonious relationship is established with his/her set of goals and values. This assumption suggests that the more individuals develop self-determined forms of regulation towards different identities or activities, (i.e., when they act out of choice), the more "authentic" and satisfied they feel, and in turn the less likely they are to experience conflicts between those activities, because they are more prone to integrate various roles and functions in their self (Ryan, 1993). On the contrary, being non-self-determined for those activities – e.g., doing schoolwork and sport not by choice but under inner or external pressure – would facilitate the perceived conflict between them, because they are not harmoniously integrated in the individual's self-structure.

This hypothesis that motivational conflicts can be present between activities has recently been tested in three empirical studies utilizing a SDT framework (Ratelle, Vallerand, Senécal, & Provencher, 2005; Senécal, Julien, & Guay, 2003; Senécal, Vallerand & Guay, 2001). One of them examined work-family conflict and its outcomes on emotional functioning (Senécal et al., 2001), and the two others were conducted to investigate possible conflicts between education and other contexts, namely interpersonal relationships (Senécal et al., 2003) and leisure activities (Ratelle et al., 2005). As well as examining the links between the degree of conflict and several academic outcomes, the purpose of these latter studies was to verify that self-determined motivation towards these domains would negatively predict the amount of conflict experienced by the students. This assumption was partially supported by the data. Whereas self-determined academic motivation was always significantly linked to lower conflict, it was also the case for self-determined motivation toward interpersonal relationships (Senécal et al., 2003), but not for self-determined motivation for leisure activities (Ratelle et al., 2005). All the significant relationships were negative, confirming the hypothesis of the protective role of self-determined motivation with regards to this kind of conflict. In both studies, the conflict reported between the academic context and other contexts was found to be related to poorer academic functioning (e.g., procrastination, resignation, lower intentions to pursue studies, and lower concentration). Senécal et al.'s (2001) study showed similar results. Low levels of self-determined family and work motivation both contributed to family alienation, which in turn positively influenced a work-family conflict related to negative outcomes (i.e., feelings of emotional exhaustion).

These results underscore the need to consider self-determined motivation of potentially competing activities in order to enhance our comprehension of individuals' choices and behaviours in a given context. More specifically, considering other contexts such

as friendship or schoolwork and their competing relationships with the sport context could enrich a motivational model of sport dropout.

Instrumental effects

If various activities can be in competition with each other, it is also possible that an instrumental relation exists between them. Indeed, the relationship between two life contexts (or activities) can also be perceived as beneficial, as it is the case between two personal goals. Emmons (1986), for example, proposed that an individual can consider that while pursuing a personal striving, he/she is making progress toward another one, in other words that he/she perceives a beneficial impact of one goal on the other. In this regard, several studies (e.g., Barron, Ewing, & Waddell, 2000; Marsh, 1993; Marsh & Kleitman, 2003; Spady, 1971) showed that sport participation can have positive effects on educational outcomes (e.g., educational aspirations, university attendance, educational attainment) and/or on social outcomes (e.g., perceived social status and popularity).

This study

Based on previous research on motivation and competing activities, the purpose of the present study is to examine the motivational determinants of the conflicting or instrumental relationships between sport and two other life contexts – namely, school and friendship – in order to enhance the understanding of sport dropout or persistence. School and friendship were chosen because past work on self development (e.g., Harter, 1999) showed that they constitute along with the athletic area three major domains in adolescents' lives. The motivational model to be tested is presented in Figure 1.

Specifically, it is predicted that low levels of self-determined motivation for sport, school and friendship (i.e. low levels of intrinsic and identified regulation as well as high levels of introjected and external regulation and amotivation) would be associated with higher levels of conflict between these activities. In other words, when individuals are not self-

determined, they would be more likely to perceive school and/or friendship as time and energy consuming with regard to their athletic participation, because these different activities are not harmoniously integrated in their self structure but are carried out under internal or external forms of pressure. In contrast, high levels of self-determined motivation for sport, school and friendship are likely to be positively linked with perceived instrumentality between these domains, because individuals would be prone to see those activities as complementary. In turn, low-conflicting and high-instrumental relationships are expected to predict sport participation at Time 2 controlling for past participation. Using a 12-month prospective design and structural equation modelling (SEM), this study has the potential to increase the understanding of sport involvement.

Method

Participants

This study is part of a three-year multi-wave longitudinal project on teenagers' sport participation which began in January 2004. Students from two French high schools were questioned each year over a period of three years. The present study used data of students who participated in the first two waves of data collection. This sample consisted of four hundred and forty-six students (255 girls, 191 boys). At the beginning of the study, they came from 6th grade ($N = 80$), 7th grade ($N = 73$), 8th ($N = 93$), 9th grade ($N = 63$) and 10th grade ($N = 137$) classes. Their ages ranged between 10.5 and 16.8 years old ($M = 13.85$; $SD = 1.45$).

Procedure

Toward the middle of the first school year, the researcher visited every student between the 6th and the 10th grade. This visit was planned with form teachers or physical education teachers and students completed the questionnaire during class. The students were previously informed of the general purpose of the investigation and that their data would

remain confidential. One year later, at the same period, the researcher visited every student between the 7th and the 11th grade. Once again, form teachers or physical education teachers were contacted to organize a questionnaire completion session. Among the participants of this second wave, 446 students had previously participated and their questionnaires were included in subsequent data analyses.

Measures

Motivation toward sport. Participants' self-determined motivations towards sport were assessed with an adapted version of the Sport Motivation Scale (Brière, Vallerand, Blais, & Pelletier, 1995). This scale assesses the multifaceted motivational regulations proposed by SDT. The initial question was: "Why do you practise sport?". Seven motivational constructs relative to sport are assessed in a 21-items scale: intrinsic motivation to experience stimulation (IMS; e.g., "...for the excitement I feel when I am really involved in the activity"), intrinsic motivation toward accomplishment (e.g., "...for the satisfaction I experience while I am perfecting my abilities"), intrinsic motivation toward knowledge (e.g., "...for the pleasure I experience when I learn new things"), identified regulation (e.g., "...because what I learn in this activity will be useful later"), introjected regulation (e.g., "...because I would feel guilty if I do not succeed in this activity"), external regulation (e.g., "...because I want to please people who want me to do it"), and amotivation (e.g., "It is not clear for the moment"). Responses were made on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Academic motivation. The abridged version of the Academic Motivation Scale (AMS; Vallerand, Blais, Brière, & Pelletier, 1989; Vallerand, Pelletier, Blais, Brière, Sénécal, & Vallières, 1992, 1993) was used to assess participants' contextual self-determined motivations toward education. This multidimensional scale assesses five different types of reasons (3 items each) for engaging in the educational domain. The initial question was: "Why do you

usually get involved in classes and do your homework?”. Participants answered on a 7-point scale. The five sub-scales were intrinsic motivation (e.g., “Because I like what we do”), identified regulation (e.g., “Because it’s important for my future”), introjected regulation (e.g., “Because I would feel guilty if I did not work”), external regulation (e.g., “Because I want the teacher to have a good opinion of me”), and amotivation (e.g., “I really wonder why I do it”).

Friendship motivation. The adapted version of the Interpersonal Motivation Inventory utilized by Senécal et al. (2003) was used. Constituted of 15 items, this scale measures five types of regulations toward interpersonal relationships: intrinsic motivation (e.g., “Because I have lots of fun with them”), identified regulation (e.g., “Because they bring me a lot”), introjected regulation (e.g., “Because I would feel guilty if I refused their invitation”), external regulation (e.g., “Because I don’t want to hurt them”), and amotivation (e.g., “I do it but I sometimes wonder why”). Participants had to answer on a 7-point Likert-type scale, corresponding to the extent to which each item represented a possible answer to the following question: “Why do you usually do things with your friends?”

In order to assess self-determined motivation for sport, school and friendship, we used a Self-Determination Index. This index has been used successfully in the past (e.g., Senécal et al, 2001, 2003; for more information on this topic, see Vallerand, 1997) as a means to represent self-determined motivation. This variable is calculated by giving a weight to each motivational sub-scale, depending on its relative position on the theoretical continuum of self-determination, and adding all the weighted scores. Consequently, intrinsic motivation and identified regulation items respectively received the weights of +2 and +1, because they reflect the highest degree of self-determination, whereas amotivation and the two other types of extrinsic motivation (i.e., introjected and external regulation) received respectively the weights of -2 and -1. The SDI was thus calculated using the following formula: $(2 \times \text{Intrinsic}$

Motivation) + 1 × Identified Regulation – 1 × (Introjected Regulation + External Regulation/2) – (2 × Amotivation). There were three items for each motivational sub-scale and consequently three indicators per context were computed. Cronbach's alphas were high for sport ($\alpha = .86$), school ($\alpha = .92$) and friendship ($\alpha = .93$).

Inter Context Conflict and Instrumentality. One of the most widely studied interrole conflicts is undoubtedly the work-family conflict. Dozens of studies have been dedicated to this phenomenon, and several meta-analyses reviewed its negative outcomes, for example on job and life satisfaction (Kossek & Ozeki, 1998). Certain authors argued that, although they are related, work-to-family and family-to-work conflicts are distinct constructs (Greenhaus & Beutell, 1985) and thus should be assessed through separate scales (Netemeyer, Boles & McMurrian, 1996). The same assumption can be made regarding potential conflicts between sport and other social roles. That is, the way sport may undermine educational functioning, for example, is distinct from the possible harmful effect of school involvement on the athletic experience. On the other hand, descriptive research on sport dropout suggests that the important demands of other social roles impeded some athletes from continuing their activity (e.g., Lindner et al., 1991). In the same vein, a large national survey revealed that having too much homework represents the first reason not to practise sport (French Minister for Youth and Sport, 2002). Consequently, we decided to focus on adolescents' perceptions that educational or interpersonal requirements undermined their sport experience.

According to Carver and Sheier (1998), goal conflicts result from an individual's limited resources. In line with this consideration, a scale was created for the present study in order to assess the conflict caused by limited resources in time, energy and attention. An example of school-sport conflict item was: "If I had less homework for school I could get much better at my activity because I'd have more time". This part of the questionnaire also measured the instrumentality arising from sport in a manner that it enhanced the individual's

functioning in other domains (e.g., “Doing sport is a good thing for schoolwork because it allows to think about something else”). Responses were made on a scale ranking from 1 (*strongly disagree*) to 6 (*strongly agree*). The translation of the complete scale is available in the Appendix. The internal reliability of all sub-scales was satisfactory, with no Cronbach alpha inferior to .70 (See Table 1).

Sport participation. The time spent in sport activities during leisure time was assessed with a seven-day recall used by Bois, Sarrazin, Brustad, Trouilloud, and Cury (2005). Designed to assess the duration of sport involvement over a 1-week period, in this case the week immediately prior to the data collection, this measure assesses participation during each day of the week, by participant indicating when they practised sport. This measure provided information about the activities practised (What sport(s)?), the amount of practice (How many hours per week?), the type of practice (Competitive or recreational), and the kind of structure (association, school, family). The number of hours of sport practice per week was calculated and used as an indicator of the extent of sport participation.

Data Analysis

At the first step of the data analysis, a MANOVA was conducted in order to examine whether gender or school year had a significant effect on the variables of interest. Afterward, the hypothesized model of sport participation (see Figure 1) and an alternative model in which self-determined motivation for the three contexts directly predicted sport participation, were tested using structural equation modelling (SEM) with the Lisrel 8.54 software (Jöreskog & Sörbom, 2003). Since the variables were highly abnormal (multivariate skewness and kurtosis tests, $ps < .0001$), the data were analysed using robust maximum likelihood, as recommended by Bentler (1995). This analysis adjusts the chi-square statistics (χ^2) and the standard errors under conditions of non-normality to prevent Type I error. In order to examine the hypothesized model, we followed the two-step approach recommended by

Anderson and Gerbing (1988). First, a confirmatory factor analysis (CFA) was performed in regard to the hypothesized measurement model to determine whether the indicators were related to the latent factors in a satisfactory manner. Second, after a satisfactory fit was achieved for the measurement model, we tested the fit of the structural model which linked latent factors to each other. Different indexes were considered to determine the fit of the model (Hu & Bentler, 1999; Kline, 2005). First, the Pearson chi square was considered so as to assess the generalized likelihood ratio. When the value of the ratio between the chi square and its degree of freedom is lower than 3.0, the fit of the model is considered satisfactory. Next, two incremental fit indexes, the Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI), were taken into account. Values above .95 (Hu & Bentler, 1999) are considered relevant. Finally, the Root Mean Square Error of Approximation (RMSEA) was considered as an indicator of covariance residuals. Values lower than .06 (Hu & Bentler, 1999) indicate satisfactory errors of approximation of the model. The RMSEA 90% confidence interval was also considered as an indicator of close approximate fit, taking .05 as reference value for its lower bound.

Results

The minimum and maximum values, the mean and standard deviation of each variable as well as the alpha coefficients are shown in Table 1.

MANOVA

A 5 (school year) \times 2 (gender) MANOVA was carried out, including all the variables of the hypothesized model as dependent variables. There was a significant multivariate effect of school year: [Wilk's $\lambda = .80$; Rao $R(36, 1594) = 2.72, p < .001$] and a significant multivariate effect of gender: [Wilk's $\lambda = .87$; Rao $R(9, 425) = 7.22, p < .001$]. Follow-up ANOVAs showed an effect of school level on self-determined motivation toward friendship [$F(4, 441) = 4.93, p < .001, \eta^2 = .04$] and on instrumentality from sport to

friendship [$F(4, 441) = 4.05, p < .01, \eta^2 = .04$]. Newman-Keuls post-hoc analyses revealed that students from 6th and 7th grade were significantly less self-determined for friendship ($M = 10.31$ and 10.74 , respectively) than students from 9th and 10th grade ($M = 19.20$ and 20.07 , respectively), and that students from 6th grade perceived significantly more instrumentality from sport to friendship ($M = 5.32$) compared to older students (mean scores between 4.70 and 4.85).

Follow-up ANOVAs also showed an effect of gender on self-determined motivation toward friendship [$F(1, 444) = 20.08, p < .001, \eta^2 = .04$] and on conflict from friendship to sport [$F(1, 444) = 7.38, p < .01, \eta^2 = .02$]. Girls were significantly more self-determined for friendship ($M = 19.67$) than boys ($M = 16.81$) and they experienced significantly less conflict between friendship and sport ($M = 1.45$ versus $M = 1.70$). Finally, follow-up analyses revealed an effect of gender on sport participation at Time 1 [$F(1, 444) = 35.53, p < .001, \eta^2 = .06$] and Time 2 [$F(1, 444) = 28.55, p < .001, \eta^2 = .06$]. Sport participation was lower for girls than for boys, both at Time 1 ($M = 3.33$ versus $M = 5.34$) and Time 2 ($M = 3.42$ versus $M = 5.03$). Overall, this series of analyses showed relatively similar scores for our variables of interest whatever the gender or the school year of participants. Subsequent analyses were then conducted with the whole sample.

Testing the measurement component of the model

The postulated measurement model was comprised of 22 manifest variables and 7 latent variables: self-determined motivation for education, friendship, and sport; conflict from education to sport; conflict from friendship to sport; instrumentality from sport to education; and instrumentality from sport to friendship.

The analysis showed a good fit of the measurement model with the data: $\chi^2(175) = 261.28; p < .001; \chi^2/df = 1.49; CFI = .97; TLI = .95; RMSEA = .033; 90\% CI$ of RMSEA = .025-.041. All factor loadings were found to be significant, with values between .70 and .98

($M = .85$). Standardized estimates, residual variances, and interfactor correlations disattenuated for measurement error, are displayed in Table 2.

Testing the hypothesized model

After the adequacy of the factor structure was assessed, the hypothesized model which supposes relations among the 9 variables (Figure 1) was tested. The analysis showed a relatively satisfactory fit of the structure with the data: $\chi^2(192) = 290$; $p < .001$; $\chi^2/df = 1.51$; CFI = .94; TLI = .92; RMSEA = .04; 90% CI of RMSEA = .028-.045. Nevertheless, the modification indices suggested the addition of an error covariance between the two scores of conflict and instrumentality, respectively. These relationships seem logical because the formulation of the items was rather similar (see Appendix). A new model taking those modifications into account was tested, leading to an improved adjustment of the model: $\chi^2(192) = 257.74$; $p < .001$; $\chi^2/df = 1.36$; CFI = .96; TLI = .95; RMSEA = .028; 90% CI of RMSEA = .019-.037.

The results indicated that the conflict from education to sport was negatively predicted by self-determined motivation toward education ($\beta = -.17$) but positively by self-determined motivation for sport ($\beta = .26$). Instrumentality from sport to education was predicted positively by those two factors ($\beta = .17$ and $\beta = .48$, respectively). On the other hand, conflict from friendship to sport was predicted significantly only by self-determined motivation toward friendship ($\beta = -.23$) and not by self-determined motivation for sport. Instrumentality from sport to friendship was predicted positively by both factors ($\beta = .18$ and $\beta = .48$, respectively). Sport participation at Time 2 was significantly predicted by conflict from education to sport ($\beta = -.10$), but neither by instrumentality from sport to education, nor by the sport-friendship relationships (i.e., conflict from friendship to sport or instrumentality from sport to friendship). Those links were observed controlling for sport participation at

Time 1 ($\beta = .58$). This model accounted for 37% of the variance of sport participation at Time 2.

An alternative model, in which self-determined motivation for the three contexts was assumed to predict the evolution of sport participation, was tested. That is, we added three paths between self-determined motivation scores and sport participation at Time 2, maintaining all previous relationships. This model led to a more satisfactory fit: $\chi^2(187) = 247.31$; $p = .002$; $\chi^2/df = 1.32$; CFI = .96; TLI = .96; RMSEA = .027; 90% CI of RMSEA = .017-.036. The paths between self-determined motivations for school and education and sport participation at Time 2 were significant ($\beta = .18$ and $\beta = -.09$, respectively), whereas the path from self-determined motivation toward friendship was not. When comparing two models, it is recommended to look at the difference between the chi square values, and to examine whether this difference is significant with regard to the difference in degree of freedom (Kline, 2005). In our case, the chi square difference was: $\chi^2\Delta(3) = 10.43$, $p < .05$. This result means that the improvement in overall fit due to the addition of the paths between motivation and sport participation is statistically significant at the .05 level. Moreover, the percentage of explained variance of sport participation at Time 2 was increased by 3%.

Standardized estimates and percentages of explained variance are displayed in Figure 2. For simplicity, only the structural model (i.e., paths connecting latent factors) is presented. The measurement model (i.e., paths connecting latent factors to their indicators) has been omitted, but the relevant information is presented in Table 2.

Discussion

Sport involvement clearly has a positive influence on numerous life domains, including physical health, psychological well-being, and self-esteem (Martinsen & Stephens, 1994). Consequently, it is important to attempt to maximize the opportunities to practise sport activities for children, adolescents, and adults, and to understand why some individuals

discontinue their participation. Self-determined motivation to participate in sport is an important variable to consider (Sarrazin et al., *in press*), but previous research conducted in the sport context studied athletic motivation in isolation from other life domains. The purpose of this study was to test a motivational model of sport involvement that integrated conflicting or instrumental relationships between the athletic domain and two other relevant contexts for adolescents: education and friendship. The hypotheses addressed the links between contextual self-determined motivation and inter context relationships, as well as the potential impact of those conflict and instrumentality scores on the subsequent course of sport participation. More precisely, the hypothesized model posited that self-determined motivation for sport, school and friendship would be related to lower levels of conflict and higher levels of instrumentality between sport and the other contexts. In turn, higher levels of conflict and lower levels of instrumentality were expected to undermine sport participation at Time 2, after the initial participation control.

Overall, SEM provided support for these hypotheses, but there were several exceptions. First, the link observed between self-determined motivation toward sport and the school-sport conflict was positive, whereas it was anticipated to be negative. Moreover, only one of the four inter context variables was significantly related to the subsequent pattern of sport participation. Finally, self-determined motivation toward sport and school directly predicted sport participation at Time 2. This alternative model was found to offer a better fit to the data and explained a greater amount of variance of the dependent variable. This study brings important elements both from a theoretical and an empirical point of view.

Self-Determined Motivation and Inter Context Relationships

Past research on motivational conflict strongly supported the existence of a negative link between contextual self-determined motivation and perceived conflict between two life domains. This relationship was especially observed for a work-family conflict (Senécal et al.,

2001), an education-interpersonal relationships conflict (Senécal et al., 2003) and an education-leisure conflict (Ratelle et al., 2005). The present study replicated and extended this line of research in two ways. First, three different contexts were considered simultaneously. In order to have a broad picture of teenagers' experiences related to sport, we decided to investigate both the sport-education and the sport-friendship relationships. Second, instead of focusing only on the conflicting aspect of the relationship between those domains, we also assessed the extent to which sport was perceived as beneficial for the other areas in the form of an instrumental relationship.

As predicted, higher scores of self-determined motivation led to higher scores of perceived inter context instrumentality. Thus, when the participants declared that they practised sport and were invested at school for self-determined reasons, they felt to a greater extent that sport had a beneficial impact on their academic functioning. In the same vein, the more they were engaged in sport and pursued activities with their friends for self-determined motives, the more they perceived that sport contributed to the initiation and maintenance of their relationships with friends.

On the other hand, the expected pattern of a negative relationship between self-determined motivation and conflict was less consistent. Whereas self-determined motivation toward friendship and school were negatively linked to the respective conflict scores, this was not the case for self-determined motivation for sport. This variable was not significantly related to the level of conflict from sport to friendship. More surprisingly, self-determined motivation toward sport positively predicted the school-sport conflict. In other words, the more the participants had self-determined reasons for being involved in sport, the more likely they were to perceive that educational demands impeded the realization of their athletic goals. These results appear contradictory with previous results on motivational conflicts (e.g.,

Senécal et al., 2003) and to the SDT hypothesis that inter context conflicts would be limited when different activities are coherent within the self or internalized (Deci & Ryan, 2000),

The discrepancy between these results and those obtained in past research on motivational conflict can be explained by certain specificities of this work compared to previous studies. First, the means of assessing conflict were different in this study. Following the recommendations of Netemeyer and al. (1996) regarding the assessment of work-family conflict, and previous research on sport dropout, the specific direction of the potential sport-education conflict was investigated by measuring the extent to which some contexts (i.e., school and friendship) were perceived by the participants as detrimental for their athletic investment (see Appendix). By contrast, previous studies grounded in SDT (e.g., Ratelle et al., 2005; Senécal et al., 2001) used a “global” measure to assess a conflict conceptualised as the individual’s difficulty in managing his/her available time (e.g., “I sometimes have difficulty choosing between my leisure activities and studying”, “Sometimes I have difficulties in balancing my time between work and family activities”) or as a stress between two domains (e.g., “Sometimes I feel torn between my work and my family”; Senécal et al., 2001). This measure does not allow one to interpret the observed links between self-determined motivation and a specific conflict. As a consequence, it is difficult to compare our own results to those observed in those studies. One might argue that the use of a global scale, or of a reverse unidirectional scale (i.e., sport undermining the individual’s functioning in other contexts) would have led to the observation of a positive link between self-determined motivation and conflict, but further research is needed to validate this hypothesis.

Another complementary explanation resides in the characteristics of our sample. In Ratelle et al.’s study (2003) on school and leisure, the participants were older (mean age = 18) and their self-determined motivation for those two contexts were more balanced (mean score

= 6.97 and 10.44 for school and leisure, respectively). In our study, the participants were younger, and their self-determined motivation was clearly higher for sport (mean score = 14.29), compared to school (mean score = 4.32). In other words, many of our participants showed a strong preference for sport compared to school. Because school is compulsory at this age, it is possible that a majority of them experience situations where they have the obligation to do schoolwork, whereas they choose to do their favourite sport. Vallerand (2001) discussed such a conflict and commented “priming another context in which intrinsic motivation is high should increase extrinsic motivation toward the activity to be performed in a pressured situation, leading to some negative consequences, especially if the latter activity is deemed less interesting” (p. 313). In sum, to the extent that participants’ motivation toward school was less self-determined than their motivations towards sport, they may have the perception that school consumes time and energy that they would like to spend doing sport, in clear that school impedes them from fulfilling their athletic goals.

Conflict, Instrumentality, and the Evolution of Sport Participation

This study also aimed at examining the relationships between sport and school and friendship, in order to explain the evolution of sport participation over time. Our analyses revealed that the conflict experienced by the participants between school and sport significantly predicted sport participation at Time 2, controlling for sport participation at Time 1. This result means that the more the participants perceived that educational demands undermined their athletic experience, the more they tended to decrease their sport practice. Previous research conducted on the sport dropout phenomenon already suggested that teenagers cease their sport participation partly because of competing interests (e.g., Lindner, Johns & Butcher, 1991). This study leads to a similar conclusion in relation to the conflict experienced with regards to school demands, and the validity of this finding was enhanced thanks to the use of a prospective design instead of a retrospective recall examining the

reasons of sport dropout. Instrumentality from sport to school was found to be positively related to sport participation at Time 2 ($\phi = .20, p < .01$; see Table 2). However, this variable did not predict sport participation when all the variables of the model were taken into account. In other words, the perception that sport is actually helpful for academic functioning does not seem to be a variable facilitating sport involvement. The conflict perceived between sport and school seems a more detrimental factor for sport involvement, compared to the potential beneficial relationship that those two domains could have.

Concerning the sport-friendship relationships, neither conflict nor instrumentality was found to be related to sport participation at Time 2. Adolescents reported very low scores of conflict between those two areas. Indeed, the mean score for the friendship-sport conflict was 1.55 on a 6-point scale. This finding suggests that relationships with friends are usually not considered to interfere with the sport practice, nor are they considered to consume resources that could be devoted to sport. On the other hand, the mean score for sport-friendship instrumentality suggests that sport activities are actually considered as a good means to create or maintain friendly social relationships. Even if this link needs further empirical support, these results suggest that the sport-school relationship is more relevant to consider than the sport-friendship relationship, if one wants to understand the evolution of sport participation among adolescents.

Motivation, Inter Context Relationships and Behavioural Outcomes

If perceived conflicts versus instrumental relationships between sport and the other contexts are the key mediational construct of our model, results show that self-determined motivation for sport and school directly predict sport participation at Time 2 when controlling for conflict and instrumentality. More precisely, as consistent with previous research (Pelletier et al., 2001; Sarrazin et al., 2002), the more participants were active in sport for self-

determined motives (i.e., high levels of intrinsic and identified regulation as well as low levels of introjected and external regulation and amotivation), the more their participation increased.

On the contrary, a negative link was observed between self-determined motivation for school and sport participation. This result means that adolescents who had high levels of intrinsic motivation and identified regulation for their studies were likely to decrease their sport participation in order to dedicate more attention to the academic context. Furthermore, this relationship seems independent from the perception of a conflict exerted by the academic domain on the athletic experience. The longitudinal procedure used in the study can partly account for this result. Indeed, the data were collected in the middle of the school year. The participants were involved in different school years at Time 1 and 2, and it is possible that academic demands had increased between those two moments. Consequently, the highly self-determined students who were very concerned about their studies might have reduced their sport practice in order to spend more time on their schoolwork and to dedicate greater effort to the increased educational demands of a superior class level. This seems particularly likely to be the case for participants who were non-self-determined for sport, given the positive bond between self-determined motivation for sport and sport involvement.

Limitations

If the results provided some support for the model, some limitations of the present study should be underscored. First of all, because of the difference in the tool used to assess conflict in this study, compared to those utilized in previous investigations, it is difficult to compare the results obtained. This element could account for the discrepancies observed concerning the relationship between self-determined motivation and conflict. However, regarding these discrepancies, it should be noted that the scales used in previous studies, although corresponding to a rather similar schema (i.e., global), were all different. This

reveals the need for developing standardized conflict scales, both global and unidirectional, in order to conduct more systematic SDT-based research on inter context conflicts.

Besides, given the correlational nature of the data, it is not possible to be certain of the direction of the observed relationships. Even if self-determined motivation was always considered as an antecedent of conflict in previous research, we cannot exclude the hypothesis of a reverse relationship, in which the way the individual manages different life contexts could influence his/her motivation toward those contexts. As outlined by Ratelle et al. (2005), an experimental replication of these results is needed with regard to this aspect. Finally, the conflict of interest evoked by past athletes in descriptive studies on dropout concerned not only educational pressure, but also other leisure activities. In order to have a more complete picture of the phenomenon, it would be interesting to investigate the perceived relationships between the athletic area and other types of extracurricular and recreational activities, such as music or video games.

Conclusion

The purpose of the present study was to test a motivational model of sport involvement including the perceived relationship between sport and other relevant contexts in adolescents' lives. The model suggested that self-determined motivation was significantly linked to inter context conflict and instrumentality. Moreover, self-determined motivation for school and sport, as well as the conflict experienced between those contexts, predicted the subsequent pattern of sport participation. This study confirms the interest of integrating inter context relationships in SDT research. From an empirical point of view, these results highlight the notion that other contexts such as education can undermine sport investment among adolescents.

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Table 1

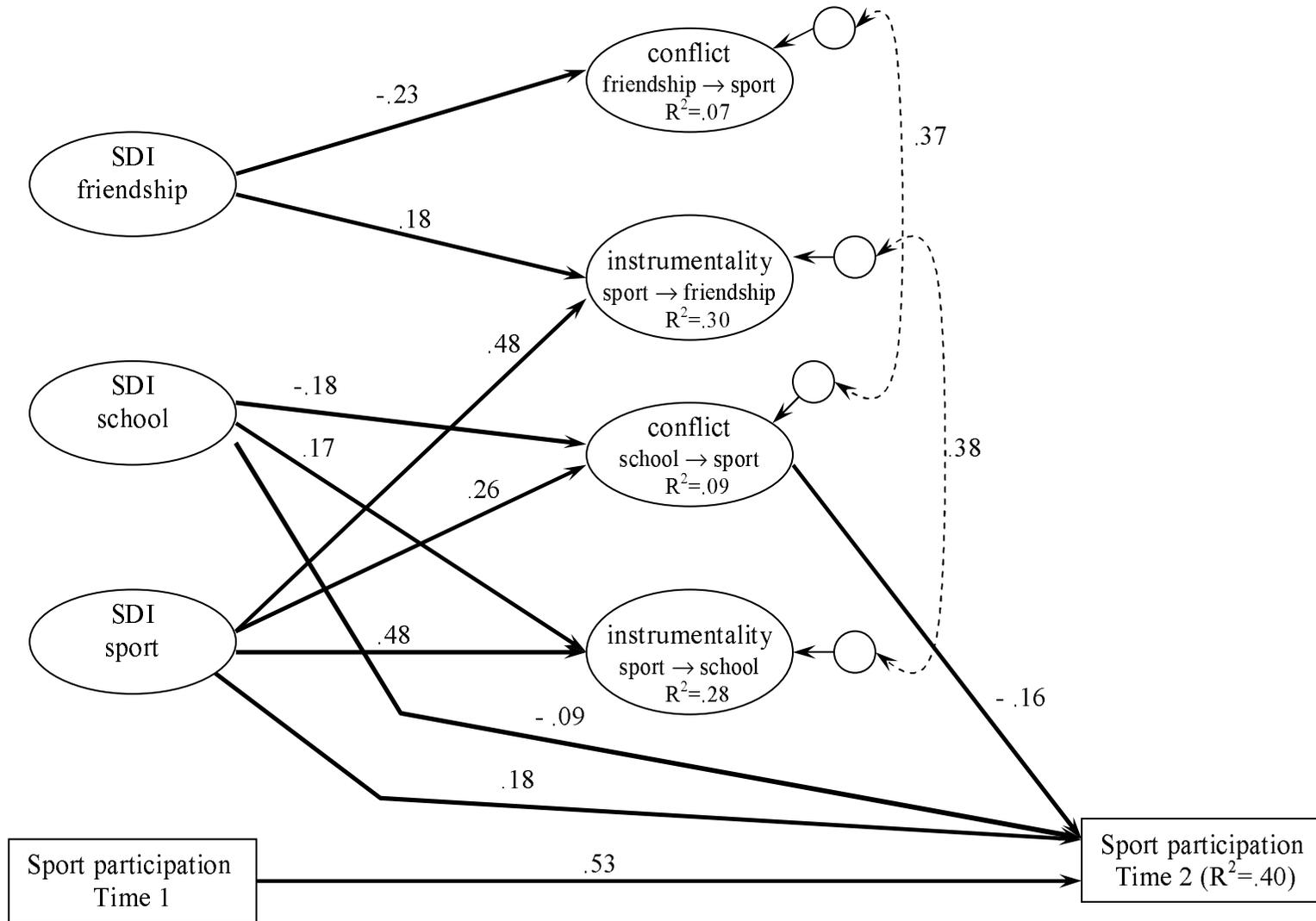
Descriptive statistics

	Minimum	Maximum	<i>M</i>	<i>SD</i>	∞
SDI for Sport	-19.33	27.67	14.29	7.49	.86
SDI for School	-21.67	28.67	4.32	8.61	.92
SDI for Friendship	-11.33	30.00	18.43	6.81	.93
Conflict School toward Sport	1	6	3.30	1.52	.82
Conflict Friendship toward Sport	1	6	1.55	0.94	.84
Instrumentality Sport on School	1	6	4.04	1.28	.74
Instrumentality Sport on Friendship	1	6	4.93	1.30	.75
Sport Participation – Time 1	0	17	4.31	3.63	-
Sport Participation – Time 2	0	16	4.02	3.37	-

Table 2. Factor loadings, residuals and correlations between factors

Factors	Variables	Factor loadings	Residuals	2	3	4	5	6	7	8	9
1. SDI sport	Indicator 1	.83	.31	.15	.23	.23	-.13	.49	.50	.34	.32
	Indicator 2	.81	.34								
	Indicator 3	.80	.36								
2. SDI school	Indicator 1	.71	.50		.03 <i>ns</i>	-.17	-.08 <i>ns</i>	.25	.10 <i>ns</i>	.01 <i>ns</i>	-.02 <i>ns</i>
	Indicator 2	.96	.08								
	Indicator 3	.98	.05								
3. SDI friendship	Indicator 1	.91	.17			-.05 <i>ns</i>	-.32	.12 <i>ns</i>	.27	-.04 <i>ns</i>	-.09 <i>ns</i>
	Indicator 2	.81	.34								
	Indicator 3	.98	.05								
4. conflict school → sport	Indicator 1	.85	.29				.36	.22 <i>ns</i>	.19 <i>ns</i>	.12 <i>ns</i>	.00 <i>ns</i>
	Indicator 2	.83	.31								
	Indicator 3	.81	.34								
5. conflict friendship → sport	Indicator 1	.89	.20					-.05 <i>ns</i>	-.19 <i>ns</i>	.05 <i>ns</i>	.03 <i>ns</i>
	Indicator 2	.91	.17								
	Indicator 3	.85	.28								
6. Instrumentality sport → school	Indicator 1	.75	.43						.65	.18 <i>ns</i>	.20
	Indicator 2	.73	.47								
	Indicator 3	.70	.51								
7. Instrumentality sport → friendship	Indicator 1	.93	.13							.16 <i>ns</i>	.15 <i>ns</i>
	Indicator 2	.88	.22								
8. Sport participation T1	Indicator	1.00	.00								.59
9. Sport participation T2	Indicator	1.00	.00								

Note. All factor loadings are significant at the $p < .01$ level. Correlations are disattenuated for measurement error and are significant at the $p < .01$ level except when *ns* (not significant) is mentioned.



Appendix

Conflict Education → Sport

If I didn't have so much schoolwork, I would have the time to do more sport.

If I didn't have so much schoolwork, I could do more sport because I wouldn't be so tired.

If I was not so preoccupied by my schoolwork I could do more sport.

Conflict Friendship → Sport

If I had fewer friends, I could do more sport because I would have more time to do so.

If I had fewer friends, I could do more sport because I would have more energy.

If I had fewer friends, I could be a better athlete because I would think less about them.

Instrumentality Sport → Education

Doing sport is a good thing for my schoolwork because I am in better shape.

Doing sport is a good thing for schoolwork because you learn to manage your schedule.

Doing sport is a good thing for schoolwork because it allows me to think about something else.

Instrumentality Sport → Friendship

Doing sport is a good thing for friendship because I meet many nice people.

Doing sport is a good thing for friendship because I learn to work within a group.