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Running head: SPORT EXPERIENCES QUESTIONNAIRE

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Abstract

To understand sport participation, multiple scales existed to examine *why* people participate. However, no questionnaires have been devised to assess *what* sport experiences people declare most pleasurable. This study aimed to develop and provide initial validation of a scale measuring adolescent athletes' retrospective reports of pleasure in three modern sports experiences: competition, progress, and risk-taking. The first study examined the validity of a pool of 25-items. The second study examined the factor structure and reliability of a 14-item questionnaire among a sample of adolescent athletes, the measurement invariance across sexes and context of participation and the differential item functioning and possible latent mean differences as a function of age. Results showed initial evidence regarding the reliability and validity of the scale. They showed invariance of the model across sexes, and context of participation. This questionnaire could be used by sports federations and could help the development of sport promotion programs.

Keywords: hedonic experiences; remembered utility; struggle; competition; performance; risk-taking

1. Introduction

Involvement in regular physical activity (PA) (including sports and exercise) represents an important protective factor against the development of physical and mental health diseases (Biddle & Asare, 2011; Hills, King, & Armstrong, 2007; Janssen & LeBlanc, 2010; van de Laar et al., 2011). Moreover, practice of PA during childhood and adolescence is associated with positive physical, cognitive and psychosocial development (Brown, Patel, & Darmawan, 2017; de Greef, Bosker, Oosterlaan, Visscher, & Hartman, 2017). Despite the importance of PA participation, in the European Union multiple studies have shown that people's overall PA remains insufficient: only 4.5% to 37.6% of boys and girls meet the current guideline recommendations (Kalman et al., 2015). As regards adolescents' sport participation, it has declined continuously in many countries over the last decades (Adams, 2006; Knuth & Hallal, 2009; Suris, Michaud, Chossis, & Jeannin, 2006). This situation is alarming.

To understand people's commitment in sport, and to help development of sport promotion initiatives, over the last three decades, numerous scholars have highlighted the importance of pleasure. Under the self-determination theory 'SDT' (Deci & Ryan, 2000), researchers showed that people's participation when motivated by their own interest or pleasure is the most beneficial form of motivation for their well-being and long-term adherence to sport and PA (Hagger & Chatzisarantis, 2008; Owen, Smith, Lubans, Ng & Lonsdale 2014; Ryan & Deci, 2007; Texeira, Carraça, Markland, Silva, & Ryan 2012). By contrast, the more people declared that they acted for an external reward, the more negative effects are observed for these outcomes. In a public health perspective, researchers have recently argued that health promotion initiatives could be efficiently improved by the development of empirical and theoretical knowledge about pleasurable experiences within the context of PA (Jallinoja, Pajari, & Absetz, 2010; Phoenix & Orr, 2014; Ekkekakis, 2017). They argued that past

initiatives have too much focused on providing people with rational reasons to participate in healthy behaviors, assuming that they act rationally, governed by cognitive forces.

Numerous questionnaires exist in sport motivation research asking people *why* they participate in sport, such as the Participation Motivation Questionnaire (Gill, Gross, & Huddleston, 1983); Behavioral Regulation Questionnaire (Lonsdale, Hodge, & Rose, 2008), Sport Motivation Scale (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013), and the Physical Activity and Leisure Motivation Scale (Molanorouzi, Khoo, & Morris, 2015).

However, actual knowledge about *what* experiences are pleasurable in sport has been mainly observed through qualitative and experimental studies. In qualitative studies, some previous findings showed the central of competitive environment, stress and pressure while playing as key-role to understanding sport participation (Bélanger et al. 2011; Craike, Symons, & Zimmerman, 2009; Uijtdewilligen et al., 2011). However, these results were contradicted by others studies that showed that these experiences were also important reasons for non-participation (Allender, Cowburn, & Foster, 2006; Brooks & Magnusson, 2007; Coleman, Cox, & Roker, 2008; Craike et al., 2009; Humbert et al., 2008; Knowles, Niven, & Fawkner, 2011; Yungblut, Schinke, & McGannon, 2012). Other findings showed the importance of the social environment of sport participants. For example, the absence of a friendly environment while playing was invoked as a reason for displeasure and drop-out in sport (Yungblut et al., 2012; Bélanger et al., 2011).

In experimental studies, a specific attention has been paid to the importance of the intensity of exercise to understand future participation. Previous findings showed that beyond an intensity threshold, peoples experienced no pleasure and thus, no repeated sport experiences (Ekkekakis, Parfitt, & Petruzello, 2011). Authors argue for the importance of an adequate exercise intensity prescription to enhance individuals' long-term adherence to exercise.

In quantitative design, however, only a few studies have been developed to improve knowledge about what sports experiences are pleasurable. Many questionnaires have been identified but although measuring components of experiences, they did not answer this research question exactly. In the Youth Experience Survey, participants were asked to report whether they felt a range of experiences selected by the authors -and identified as positive- (Hansen & Larson, 2002, 2005). The objective was to detect subgroups of participants more likely to have positive experiences than negative. However, it does not make it possible to know whether the participants actually find such experiences pleasurable. Another questionnaire (Youth Sport Values Questionnaire; Lee et al., 2000) was developed to ask participants about the values they consider important in sport. Although values are important for understanding individual's tendencies to follow some types of objectives or experiences, this knowledge do not answer the question related to the pleasure people declared they derived from specific experiences. In the Physical Activity Enjoyment Scale (Kendzierski & DeCarlo, 1991), participants are invited to report whether they liked or disliked the past experience they had had. This scale has led to important findings such as the key-role of the coaches, autonomy and competence perception in the quality of the experience lived. However, this questionnaire can only be used in a specific type of experiment that is controlled by the researchers. This questionnaire has not been developed to ask participants questions about specific experiences that are provided in writing. It is useful to test a training session, or sport session, on the individual's enjoyment. However, this questionnaire cannot measure, in a large sample of athletes, whether they found multiple types of experiences pleasurable.

To our knowledge, only one questionnaire has been developed to quantitatively assess *what* sports experiences are pleasurable for adolescents (Recours et al., 2004). In their study, the authors invited adolescents to answer the question "What I like in the sport I practice

most is…" by ticking a seven-point Likert scale. They draw on the SDT and its two motivation components to draw up the scale: extrinsic and intrinsic motivation. They proposed to explore four distinct dimensions that are related to extrinsic and intrinsic motivation. Concerning intrinsic motivation, the authors explored whether adolescents liked "playing to the limit" (confronting obstacles that I think I can conquer without being sure that I can or not) and "sociability" (having a good time with friends). Concerning the extrinsic motivation, they explored whether adolescents liked the "competition" (obtaining the best ranking or the best position possible) and "exhibitionism" (impressing the persons who are watching me). Results showed that sociability and playing to the limit were appreciated all along adolescence (13-18). However, they observed that the appreciation of competition/exhibitionism was negatively linked to age. In addition, boys scored higher in competition/exhibitionism experiences than girls. Given the link between experienced pleasure and future participation, these findings suggest that the experience of competition in sport could be a greater marker of future non-participation in older than younger adolescents (as well as for girls than for boys). Meanwhile, the relative stability and high declared pleasure in other kinds of experience regardless of age and sex, suggest that providing such experiences during sport could efficiently promote adherence.

The present scale: Sport Experiences Questionnaire (SEQ)

According to modern sport theorists, the confrontations experiences are the core meanings of sport (Caillois, 1958). The competition experience is a kind of agonistic relation -or confrontation- against another player or team in sport. In the present scale, we would like to measure how much adolescents like this form of experience and also two others kinds of sport experiences related to the confrontation, traditionally underlined by researchers as essential in modern sport: the confrontation to individual's past results, and to risk and danger.

As Ulmann (1971) wrote, modern sport is a ["tempered and socialized form of the struggle for life,"] (p. 329). But, confrontations -or struggle- in sport cannot be limited to competition experiences. As Ulmann goes on to say, modern sport is "[…] connected with a more or less diffuse or coherent philosophy, the theory of progress" (p. 336). This philosophy is expressed, in sport, by the famous Olympic motto "Citius, Altius, Fortius" ("faster, higher, stronger"), proposed by Pierre de Coubertin in 1894. Progress increases the level of performance of individuals or teams. It increases the likelihood of being successful in the competition. Training, repetition and optimization are used by players or coaches to improve performance. Performance is not only a feedback of one's action, but also a marker used to determine future objectives and strategies to reach one's goals. Progress can be observed in a personal dimension. Players improve their abilities (see mastery-goals in Sarrazin et al., 1995) or their own performance, referring it to their past experiences. Progress can also be observed in an increase in ranking. For example, a player or a team ranked in the mid-table usually tries to improve his ranking in the following seasons. This experience is related to another form of struggle. Here, the struggle is not against another team or player but against past performances. For some authors, the experience of progress can take the form of "an increase in intensity of joy" (Tännsjö & Tamburrini, 2000, p.46). However, to our knowledge, this general assumption has not been verified among a large-sample of youth involved in sport practice. While competition experiences are less appreciated all along adolescence and less among girls than boys (Recours et al., 2004), we do not know how progress experiences are appreciated by adolescents. Such knowledge could be important given the central place given by modern sport to these experiences (Tännsjö & Tamburrini, 2000).

Finally, we argue that a third form of confrontation exists - and is essential - in modern sport: the confrontation with risk and danger. Experiencing danger is both, as Guyau said as

long 1888, "a powerful exciter of all abilities, capable of raising them to their maximum potential and producing an intense pleasure" (Guyau, 1888, p. 128). Following this logic, the risk culture in sport has been widely explored and many authors have shown that sport culture enhances risk-taking and presents it as a normal behavior, which contributes to progress and victory (Nixon, 1992, 1993, 1996; Saragiotto, di Pierro, & Lopes, 2013; Schnell, Mayer, Diehl, Zipfel, & Thiel, 2014). Nixon showed that the common representation of athletes was that risk-taking, suffering, pain and injury are part of sport. For him the "sportsnet," understood as the social network of sport, considers risk a condition to increase performance ("No pain, no gain!"). Risk in sport had an additional importance. As noted by Howe (2000), the "initial concerns about the risks in sport […] centered around the belief that the push for victory might lead people to overextend themselves" (p. 17). In this way, risk-taking has been recently identified as an injury risk factor (Saragiotto, di Pierro, & Lopes, 2013; Schnell, Mayer, Diehl, Zipfel, & Thiel, 2014).

Risk-taking is a challenge laid down by an individual - or a team - to his own capabilities. It is an attempt to move largely beyond the past limit and, sometimes to accomplish an exploit. In this confrontation, the individual or the team crosses a threshold in his/its capabilities. Risk-taking provides - in some social situations - pleasure in itself (Steinberg, 2007). In addition, the success of the action, where the players reach a new level of performance, lead the participants to feel pleasure (Willig, 2008). This pleasure is probably the consequence of the new level of achievement reached by the risk-takers. This experience does not necessarily imply danger. However, in some sports – e.g., extreme sports - severe physical risks, even the risk of death, are present. Participation in dangerous challenges has been interpreted by Lyng (1991) as a confrontation to life. Such confrontation would help to gain sense in life, feel achievement and pleasure. This theory is supported by empirical qualitative and quantitative studies (Lyng & Snow, 1986; Willig, 2008; Woodman et al.,

2010). In more "classical" sports, some authors have pointed out that risk culture has increased in recent decades due to the increasing pressure to play with pain and injury resulting from the mediatization of sport (Deroche, Woodman, Stephan, Brewer, & Le Scanff, 2011; Howe, 2004; Loland, Skirstad, & Waddington 2006). In our opinion, improving knowledge about adolescents' appreciation of risk-taking experiences could help to develop sports promotion initiatives including risky experiences among specific subgroups of adolescents. This knowledge could also help the development of educative programs to reduce the additional injury risk that risk-taking in sport can provoke.

Overview of the Studies

Despite the relative historical and present importance of these experiences, to our knowledge, no scale has been developed to assess in a large sample of youth involved in sport practice, whether they find these experiences pleasurable or not. The main purpose of the studies is to develop and validate a scale to measure the retrospective report of pleasure 'RRP' of a sample of French adolescent sports players in these three forms of confrontations (competition, progress and risk-taking) in sport, that are also essential in modern sport. Classics of sports theory agree that the search for progress and winning are central in sport (Elias & Dunning, 1986; Guttmann, 1978; Jeu, 1977; Ulmann, 1971). However, risk experiences, in spite of their common existence in sports, have been neglected. Nowadays, the development of informal sport, as well as outdoor sports, alongside organized sport raises many questions. Are these experiences of modern sport appreciated by young sportsmen/women? As seen previously, many studies have shown that competitive environments were not similarly appreciated by athletes, and that these experiences were less appreciated by older adolescents and by girls than boys. The answer remains totally unknown as regards risk and progress experiences. One other question also remains unanswered: do specific subgroups of athletes exists with different *global* appreciations of these three kinds

of experiences? It is likely that subgroups would be identified. For example, subgroups where athletes do not like competition and progress but like risk, another one where it is the opposite, etc. In this regard, we hypothesize that the context of participation will be an important marker of the pleasure declared by sports practitioners. According to theory, these three experiences represent modern sport. Thus, it is likely that adolescents playing in the organized setting will report greater pleasure in these experiences compared with those playing in the unorganized context. However, such an assumption has not been verified. Such findings would contribute both to contemporary knowledge of sports and the development of future sport promotion programs (informal- or club-based participation).

The first study aimed to develop items representing the experiences of competition, progress and risk-taking. The most appropriate items were grouped into a scale and tested in the second study. The objective of the second study was first to examine the factor structure and reliability of the scale using exploratory factor analyses (EFA). Then, it was to examine the measurement invariance of the best model across sexes (girls vs. boys) and context of sport participation (organized/unorganized). These two variables were chosen because (i) previous findings showed that gender has an influence on the appreciation of competition experiences; and (ii) the theory supports the idea that modern (ie club-based) is represented by these experiences. Thus, there is a need to control the validity of the scale across sexes and context of participation. Finally, we examined the differential item functioning (DIF) and possible latent mean differences on the scale as a function of the participants' age. Once again, this measurement was performed because age is negatively related to the appreciation of competition experiences.

2. Study 1. Development of the Sport Experiences Questionnaire

2.1. Method

2.1.1. Participants

A panel of academic experts (*N*=6) was recruited based upon their theoretical expertise and/or their involvement in adolescent PA research to develop items of the scale. The panelists included two experts in achievement goal theory, two academic researchers in sociology of sport and two academic researchers in social psychology applied to exercise. One author of the present study - specialized in sociology of sport - was included in the expert panel (Pr. Jean Griffet).

2.1.2. Instructions of the scale: operationalization of the concept of pleasure

Pleasure is theoretically grounded in the concept of *utility* that was developed by Bentham (1789). According to Bentham, human behavior is governed by two sovereign forces: pleasure and pain. The term *utility* refers to "the property of something whereby it tends to: (i) produce benefit, advantage, pleasure, good, or happiness [all equivalent in the present case]; and (ii) prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered. If that party is the community in general, then the happiness of the community; if it's a particular individual, then the happiness of that individual" (Bentham, 1789, p.7). In other words, the more individuals experienced utility, the more individuals experienced pleasure in a particular situation. The concept of utility then been deepened by Kahneman (1997) who distinguished the temporality of utility. There is a distortion between the perceived utility before the behavior (*predicted utility*), during (*instant utility*) and after it (*remembered utility*). For more information about the distortion that can occur see Robinson and Clore (2002).

In the present study, we decided to measure the remembered utility of sports players in each distinct sports experience. According to Kahneman (1997), remembered utility is "*[…] a measure on past temporally extended outcomes, which is inferred from a subject's retrospective reports of the total pleasure or displeasure associated with past outcomes […]"*

(p. 376). He added that *"Remembered utilities also […] determine whether a situation experienced in the past should now be approached or avoided. Unlike pain and pleasure, which control behavior in the current situation, learned attractions and aversions adjust current behavior to the remembered evaluations of events in the past. Remembered utilities can be measured in humans by reported evaluations of past experiences […]"* (p. 380). Some recent studies have shown that remembered utilities of past experiences were positively related to probability of repetition and frequency of target behaviors (Kiviniemi et al., 2007; Van Cappellen et al., 2017; Wang, 2011; Wirtz et al., 2003). Thus, this questioning could help to determine what kind of experiences adolescents will looking for in their future participation.

To measure the remembered utilities of the experiences of risk-taking, progress and competition, we first, invited the participants to read the instructions: "*You will find below actions, situations, experiences or moments that you experience sometimes in your favorite sport. Please tick how much you like each of them. There are no right or wrong answers. However, your answer must be representative of the intensity of the pleasure you experience.*" Then, the sentence *"What I like in my preferred sport is"* preceded the items. A 7-point Likert scale ranging from 1 *(strongly disagree)* to 7 *(strongly agree*) was used.

2.1.2. Development of items

Items were developed in accordance with the instructions of the scale. After reading the instructions, the expert panel were informed about the three conceptual dimensions that we wanted to measure. Definitions were provided verbally and in writing. Then, a discussion started to clarify the concepts until every expert was in accordance with the same definition. The three definitions provided to the expert panel were:

Competition experiences refers to the struggle among opponents, ranking and victory over others.

Progress experiences refers to progress against individuals' past limits or performances. Progress must be measured both socially and individually.

Risk-taking experiences refers to risk, danger, uncertainty and exceptional achievement.

For each dimension, experts were invited to develop items that do not necessarily represent the whole conceptual definition. They were invited to develop both (i) distinct items that represent part of the concept and (ii) mixed items that represent multiple parts of it.

Items were created through an oral and written exchange among the experts. They were invited to discuss around each item's creation in an informal discussion. They were invited to create 25 items and globally the same number of items in each dimension (around 8). The three authors took note of the items and then invited the expert panel to a second session. In the second session, experts were invited to analyze each item separately and to question whether it correctly represented each theoretical dimension. The experts had to score each item's quality for Clarity (CL) and Appropriateness (AP) on 5-point Likert scale from 1 (*very poor*) to 5 (*very good*). Means of the two scores were calculated. We wanted to develop a scale in a short format and we decided to limit the number of items to 15. The mean cut-off to select items for validation was calculated to have a final number of items equal to or less than 15. Thus, items with mean score under 4.3/5 were not selected for the scale.

2.1.3. Results and Discussion

Table 1 shows the original pool of 25 items with their score in Clarity (CL), Appropriateness (AP) and the mean of CL and AP. Selected items in each dimension were marked with a cross-mark. Five items were selected in the risk and progress dimensions. Because of the low rating score of competition items, we selected only four items in this dimension.

3. Study 2. Factor Validity and Reliability of the Sport Experiences Questionnaire

3.1. Method

3.1.1. Participants and Procedures

We used part of a data collection on French students' health carried out between February and April 2015. Participants were selected with a data quota sampling based on the proportion of disadvantaged and advantaged high schools in the area concerned by the survey. Sampling methodology is available in a previous article (Luiggi, Travert, & Griffet, 2018a).

Only adolescents who declared playing sport at least one hour a week were included in the present study. Sports players were already classified in the data set, according to the definition used in this previous article.

The present study included 674 adolescents (364 males, 54.0%), aged 13-19 (M = 16.4 years, SD = 1.58). The study was approved by the Superintendent of Schools and the University Ethics Committee. In the present sample, 529 (78.5%) practice a sport at least once a week in an organized context and 145 (21.5%) in an unorganized context. All participants agreed to participate and returned signed parental informed consent forms (response rate: 98.5%). They answered to the questionnaire under the supervision of a physical education teacher and a researcher.

3.1.2. Measures

Adolescents answered the questions *"What sport do you prefer to do?"* and *"Usually, how many hours a week do you do your preferred sport?"* They also had to give their favorite context of sport participation (organized, unorganized) and how many hours per week they usually participated in their favorite sport in these contexts. Then, they read the instructions (see Study 1) and were asked to tick on a 7-point Likert scale – ranging from 1 *(strongly*

disagree) to 7 *(strongly agree*) – how much they agreed with the statement "*What I like in my preferred sport is*" for each item (Table 2, N = 14).

3.1.3. Data Analyses

The analyses were performed with Mplus 7.4 (Muthén & Muthén, 2015), using the robust maximum likelihood estimator (MLR). Full-information MLR (FIMLR) estimation was used to correct for the small amounts of missing data present at the item level (*M* = .33%; range = .15% to .74%). In a first step, five EFA with one to five correlated latent factors were examined (Models 1-1 to 1-5) using Mplus's exploratory structural equation modeling (ESEM) capabilities. As recommended by Marsh et al. (Marsh et al., 2009; Marsh, Morin, Parker, & Kaur, 2014), each model was estimated with an oblique geomin rotation and an epsilon value of .5. In a confirmatory factor analytic (CFA) model, items are specified as associated with a single factor (no cross-loadings are allowed). In contrast, ESEM freely estimates all cross-loadings via a rotation procedure as in traditional EFA. For a visual representation of two- and three-factor ESEM models see Figure 1. The optimum number of factors to retain in this model was determined based on Horn's (1965) parallel analysis test (Horn, 1965) as implemented in Mplus and using a total of 50 randomly generated data sets. Essentially, a parallel analysis seeks to identify the number of factors that can be considered to explain more variance in item ratings than the randomly-generated process. The composite reliability of responses to the questionnaire was then calculated using McDonald's (1970) omega (ω).

As recommended in the literature (e.g., Hu & Bentler, 1999; Lai & Green, 2016; Marsh, Hau, & Grayson, 2005), assessment of fit for the models was based on the following indicators: the chi-square test of exact fit (χ^2), the comparative fit index (CFI; bad fit: < .90; acceptable fit ≥ .90; good fit >. 95), the Tucker-Lewis index (TLI; as for the CFI), the root mean square error of approximation (RMSEA; bad fit: > .10; acceptable fit: > .05 and ≤ .10;

good fit: ≤. 05 indicates), and the 90% confidence interval of the RMSEA. The composite reliability of the sport confrontation scale was calculated using McDonald's (1970) omega (ω).

In a second step, the measurement invariance of the best model was tested across sexes (girls vs. boys; see Models 2-1 to 2-6) and context of sport participation (organized vs. unorganized; see Models 3-1 to 3-6) using ESEM. These analyses could be performed using the total sample (N = 674) for the comparison across sexes. In contrast, only 656 participants could be used for the comparison across contexts of sport participation (this information was missing for 18 participants). These invariance tests were performed following the sequence recommended by Meredith (1993): (a) configural invariance; (b) weak invariance (loadings); (c) strong invariance (intercepts); (d) strict invariance (uniquenesses); (e) variance-covariance invariance; and (f) latent means invariance. In each sequence of invariance the preceding model served as reference. Although the first four steps (a-d) probe for the existence of biases in the measurement of the scale construct across subgroups of participants, the last two steps (e-f) do not reflect biases, but rather substantively interesting group-based mean- or variance-level differences.

The DIF and possible latent mean differences on the scale as a function of the participants' age was examined using multiple indicators and causes models (MIMIC; e.g., Morin et al. 2013). These analyses were performed on the 672 participants who provided information on their age. In this model, age was essentially specified as a predictor (or *cause*) of responses to the latent factors (the *multi-indicator* constructs) and could easily be extended to more predictors (i.e., *multiple causes*). For a visual representation of a MIMIC model with a three-factor ESEM see Figure 2. These MIMIC invariance tests were performed in the following sequence (Morin et al., 2013): (a) a null effects model (Model 4-1; the paths from age to the scale latent factors and item responses were constrained to be zero); (b) a saturated model

(Model 4-2; the paths from age to the scale latent factors were constrained to be zero, but those to the item responses were freely estimated); and (c) an invariant model (Model 4-3; the paths from age to the scale latent factors were freely estimated, but those to the item responses were constrained to be zero). The fit indices of the null effects model were compared with the saturated or invariant models to examine the effect of age on the scale responses. Then, fit indices of the saturated model were compared with the invariant model to examine possible DIF.

As recommended in the literature (e.g., Hu & Bentler, 1999; Lai & Green, 2016; Marsh, Hau, & Grayson, 2005), model fit was based on the following indicators the comparative fit index (CFI; bad fit: < .90; acceptable fit ≥ .90; good fit >. 95), the Tucker-Lewis index (TLI; as for the CFI), the root mean square error of approximation (RMSEA; bad fit: > .10; acceptable fit: > .05 and ≤ .10; good fit: ≤. 05 indicates), and the 90% confidence interval of the RMSEA. Tests of measurement invariance and DIF were evaluated through the assessment of changes in CFIs/TLIs and RMSEAs (Chen, 2007; Cheung & Rensvold, 2002). As recommended by Cheung and Rensvold (2002) and Chen (2007), changes in CFI/TLI equal to or less than .01 and in RMSEA equal to or less than .015 reflected an equivalent fit to the data between models. Therefore, changes exceeding these criteria suggested a lack of measurement invariance. For purposes of complete disclosure, we also report robust chi-square test of exact fit (χ^2) and robust χ^2 difference tests ($\Delta\chi^2$; Muthén & Muthén, 2015; Satorra, 2000; Satorra & Bentler, 2001). However, given that these tests demonstrate an oversensitivity to minor model misspecifications and sample size, these tests will not be used for purposes of model selection and comparisons (Morin, Marsh, & Nagengast, 2013).

3.2. Results and Discussion

3.2.1. Factor Validity and Composite Reliability

Five a priori EFA models (see Models 1-1 to 1-5) with one to five factors were examined. Their goodness-of-fit statistics are presented in Table 3. Goodness-of-fit indices (CFI/TLI < .90; RMSEA < .10) were unsatisfactory for EFA models with one and two factors (Models 1-1 and 1-2). Inversely, goodness-of-fit indices from EFA models with three to five factors (Models 1-3 to 1-5). (CFI/TLI > .95; RMSEA <.05) indicate good fit to the data. Comparison of the three-, four- and five-factor EFA models showed that ΔCFIs, ΔTLIs, or ΔRMSEAs were not above the recommended criteria. This means therefore that the increased number of factors does not significantly increase the goodness-of-fit statistics of the EFA models. Additionally, results from the parallel analysis test (see Figure 3) showed that the study's sample data line crossed the estimated random data line between the three- and four-factor solutions. Therefore, the three- and four-factor solutions were analyzed. In the three-factor solution all items were mainly loading on one distinct factor, whereas in the four-factor solution one factor only comprised one item (SEQ11). Therefore, based on the findings from the goodness of fit indices and of the parallel test, the three-factor EFA model was retained for subsequent analyses.

The standardized parameter estimates of the three-factor model are reported in Table 4. The first factor comprises five items (SEQ1, SEQ5, SEQ8, SEQ9 and SEQ12) with significant and substantial loadings (M = .673) and cross-loadings of lower magnitude (M = .075). These items measure the participants' RRP in risk-taking experiences. The second factor contains four items (SEQ3, SEQ6, SEQ10, and SEQ14) with significant and substantial loadings (M = .762) and cross-loadings of lower magnitude (M = .080). These items reflect competition experiences. The third factor comprises five items (SEQ2, SEQ4, SEQ7, SEQ11, and SEQ13) with significant and moderated loadings (M = .583) and cross-loadings of lower magnitude (M = .085). They all reflect progress experiences.

The composite reliability and latent factor correlations of the three-factor model are displayed in Table 4. The composite reliability coefficients of the three factors are acceptable (M_ω= .811; range = .737-.869). All of the latent factor correlations were statistically significant (Table 4) with a small to moderate magnitude (range = .094-309; M = .214). They confirmed the relative independence of the factors.

3.2.2. Measurement Invariance as a Function of Sex and Context of Sport Participation

The results for the tests of the measurement invariance of SEQ as a function of participants' sex and context of sport participation are reported in Table 2 (Models 2-1 to 2-6 and 3-1 to 3-6). These results support the full invariance (loadings, intercepts, uniquenesses, latent variances/covariances) of the three-factor ESEM model of the SEQ as a function of sex (ΔCFI/ΔTLI $\leq$ .010; ΔRMSEA < .015). However, the ΔCFI/TLI and ΔRMSEA were greater than .01 in Model 2-6 (Table 3), showing that latent means differed across sexes. The results showed that boys tended to present significantly higher latent mean scores on risk-taking (estimate = .470, standard error = 0.089, Z = 5.287, p < .001) and competition (estimate = .818, standard error = 0.097, Z =8.458, p < .001), and lower mean score on progress (estimate = -.255, standard error = 0.095, Z = -2.690, p = .007) when compared with girls. Additionally, these results support the partial strict invariance (loadings, intercepts, and uniquenesses) of the three-factor ESEM model of the SEQ as a function of the context of sport participation. Indeed, as illustrated in Table 3 (Model 3-4), three of the uniquenesses (items SEQ2, SEQ8, SEQ13) were not invariant (ΔCFI/ΔTLI > .010) according to the context of sport participation. When the invariance constraints were relaxed for the three uniquenesses of these factors (Model 3-5), the results supported the partial invariance of the uniquenesses. Finally, changes in CFI and TLI were also greater than .01 (Model 3-7), revealing latent means differences as a function of the context of sport participation. Probing these differences revealed that athletes practicing a sport in an organized context tended to

present significant higher latent mean scores on risk-taking (estimate = .528, standard error = 0.117, Z = 4.524, $p < .001$), competition (estimate = .651, standard error = 0.116, Z = 5.593, $p < .001$), and progress (estimate = .424, standard error = 0.138, Z = 3.076, $p = .002$) than those practicing in an unorganized context.

3.2.3. DIF as a Function of Age

The results from the DIF test conducted as a function of age are presented in Table 2 (Models 4-1 to 4-3). All the models examining DIF as a function of age provided a good fit to the data. Across these comparisons, the results show that none of the models allowing age to influence scores on the SEQ responses (saturated model) or latent factors (invariant model) resulted in any meaningful improvement in model fit when compared with the null effects model. These results are consistent with the complete invariance of the SEQ responses as a function of age, and a lack of effects of age on scores of the SEQ latent factors.

4. General Discussion

4.1. Factor validity and composite reliability

The first objective of this study was to examine the factor validity and reliability of the SEQ among a sample of adolescent athletes. When comparing the one- to five-factor model with EFA, the results showed that the three-factor structure of the SEQ better fitted the data. The three factors observed were competition, progress, and risk-taking. They had significant and substantial loadings and cross-loadings of low magnitude. Internal consistencies of the three factors measured with the composite reliability were acceptable. Finally, the results showed that correlations between factors were low to moderate. The progress factor was weakly correlated with both the risk-taking and the competition factors. The risk-taking factor was moderately correlated with the competition factor. These results suggest the independence of these three dimensions. Therefore, this study suggests that these experiences

are viewed as distinct dimensions by adolescent athletes and no global score should be calculated for this questionnaire.

4.2. Invariance across sex and context of sport participation

The second objective of this study was to examine the measurement invariance of the three-factor structure of the scale across sexes (girls vs. boys) and context of sport participation (organized vs. unorganized). The results supported the full invariance (loadings, intercepts, uniquenesses, latent variances/covariances) of the factor structure among both girls and boys. However, the results supported the partial strict invariance (loadings, intercepts, and uniqueness) of the SEQ as a function of the context of sport participation. Three of the uniqueness were not invariant (items SEQ2, SEQ8, SEQ13) according to the context. The difference in measurement error across the context for items 2 and 13, representing the progress factor, can be explained by the interpretative difference that could exist between players in organized and unorganized context in the statements "*Improve my results*" and "*Improve my personal performances*". For the former, their results or performances are usually evaluated within the competition. As stated above in the Introduction, progress could be observed both independently from the others and by comparing past competition results with present results. It is plausible that for the organized context, players' item 2 and 13 scores were similar to their item scores in the competition factor. By contrast, for unorganized context players, results and performances could be in a greater proportion understood as an increase in their personal progress, independently from others, compared with club players. These differences could explain the absence of invariance of these items across the context of sport participation. Finally, the absence of invariance of item 8 (*"Put myself in danger"*) across the context may be explained by the interpretation of the word danger. The absence of strict definition of the word *danger* let participants give it their own meaning. Perhaps the organized context players consider in a

greater proportion a symbolic danger (defeat, self-esteem, peer consideration) compared with unorganized context players. By contrast, danger might be more understood by unorganized context players as a risk for their physical health compared with the others. The absence of adult supervision could be a factor of explanation. In any case, these measurement errors did not influence the capacity of the scale to examine mean-comparison across sexes and contexts of sport participation given the invariance of loadings and intercepts.

4.3. Latent mean scores analyses

Findings from the latent mean scores analyses across sexes showed that boys tend to present higher levels of reported pleasure in risk-taking and competition experiences than girls, and that girls tend to present higher levels of reported pleasure in progress experiences than boys. Differences in reported pleasure in risk-taking are consistent with previous findings related to risk behaviors. Boys are more prone to take risks than girls (Byrnes, Miller, & Schafer, 1999; Ginsburg & Miller, 1982; Jetallan, Spirito, & Rasile, 1997; Slovic, 1966). Sex differences regarding competition experiences are consistent with findings in motivation and ethnographic studies. Previous findings showed that boys are more motivated to win than girls (Gill et al., 1982; Molanorouzi et al., 2015; Sirard, Pfeiffer, & Pate, 2006) and that competitive contexts are perceived as more negative by girls than boys (Crocker & Graham, 1995; Croxton, Chiacchia, & Wagner, 1987; Niederle & Vesterlund, 2008; Warner & Dixon, 2013). Sex differences in progress experiences are consistent with other findings which showed that girls were more motivated to improve their personal performance than boys (Sirard et al., 2006).

Findings from the latent means differences across the sport participation context showed a higher reported pleasure in competition, progress and risk experiences for players in organized context compared with those in unorganized context. In the organized context, in France, adolescent sport participation is mainly characterized by competition. Almost all

sports players participate in games, whilst in the unorganized context, only a few sports players did so (Luiggi. Rindler, & Griffet, 2018b). In that previous study, only 14.2% of unorganized context players play in competition. This rate reached 60.8% for those playing in organized contexts. The higher reported pleasure in competition experiences for the latter compared with the former is probably linked to the different setting of participation between the two. Differences in progress experiences are consistent with previous studies showing that the higher the level of competitive sport, the more athletes make efforts to reach perfection (Rasquinha, Dunn, & Dunn, 2014). Progress is an integral part of the process needed to be excellent. Moreover, progress is indispensable to increase the likelihood of being successful in competition. It may be concluded that the more athletes play at a high level, the more importance they give to progress experiences. Finally, differences in risk experiences are consistent with studies explaining how elite sports systems enhance athletes' acceptance of risk-taking (Nixon, 1992, 1993, 1996).

The third objective was to examine the DIF and possible latent mean differences on the SEQ as a function of the participants' age. Results showed that SEQ scores were similar as function of age.

4.4. Limitations and perspectives

The first limitation of this study is related to the content validity of the items. Dunn et al. (1999) suggest that the reviewing of items should be done by an independent panel of experts who were not included in the process of item creation. In the present study, the same panel was used at two different times. It is possible that the scores in clarity and appropriateness would have been different with another expert panel. An additional study could be done to test the content validity of the items with another expert panel who are not informed about the present study.

The second limitation of this study is related to the participants' characteristics. Previous research indicated that goal orientations were different for athletes participating in different types of sports (Hanrahan & Biddle, 2002; Molanorouzi et al., 2015). It is plausible that the scores of the scale would be different with another sample of athletes with a different sport distribution. To address this issue, further studies could test the scale validity by testing the invariance by type of sports (e.g. collective vs. individual).

The third limitation is the absence both of a test-retest of the scale responses over time and of the examination of the longitudinal stability of the scale factor structure. Therefore, these issues should be examined in future research focusing on the factor validity and reliability of the scale.

The fourth limitation is the absence of convergent validity of the scale with other similar constructs. The risk-taking factor should be associated, for example, with measure of injuries related to sport participation, alcohol consumption and other risk-taking behaviors. Given that greater levels of performance in sport are associated with higher extraversion and lower neuroticism traits (Egloff & Gruhn, 1996; Kirkaldy, 1982; Williams & Parkin, 1980), it would be interesting to observe whether high RRP in competition is also correlated with these personality traits.

The fifth limitation is related to the participants last sports experiences. Previous findings showed that individuals' emotional self-report about a past experience changed across the time of the self-report (Robinson & Clore, 2002). More specifically, authors demonstrated that the retrospective emotional self-report about a specific experience may be influenced by the most intense moment of this experience (Hargreaves & Stych, 2013). In our case, adolescents played sport at least one hour a week, and it is likely that some individuals answered according to their last experience of sport. Assuming that, for example, competition experiences were very unpleasant, it is likely that they declared such experiences as negative

whereas they may experience them as positive in some other cases. To limit this bias, in future studies, it could be useful to add in the instructions a statement that refers to the pleasure that individuals *usually* enjoy in these experiences. Such information could limit the potential effect of peak moment of experience.

Finally, given the complexity of emotional self-reports, future studies should specify or modify the instructions of the scale according to their specific problematic. In addition, the moment of the self-report is of great importance. Robinson and Clore (2002) provide important information regarding the source of information used by individuals in these reports. If the research - or practical - questions concern the pleasure experienced by sports players during the last training, it may be important to ask sports players very close to this experience. In this way, answers will reflect this experience more closely.

4.5. Implications for Practice and Future Research

Previous questionnaires were derived from motivation theories and were focused on 'Why' people participate in sport (Gill et al., 1983; Lonsdale et al., 2008; Pelletier et al., 2013; Molanorouzi et al., 2015). Thus, participants were asked about rational reasons for participation. In the SEQ, we decided to ask participants to report the pleasure they experienced in specific situations. We assume that this knowledge also helps to understand people's participation. Previous findings showed the importance of the experienced pleasure for understanding people's future behavior. Thus, it is likely that adolescents who declared strongly agreeing that they appreciate past experiences of risk-taking (for example), will search for such experiences in their future sport participation. This way of thinking could help coaches or sport promoters to develop sport sessions that focus on 'What' sports experiences the targeting public like. Indeed, such perspectives need additional population-based study to determine the pleasure reported by specific subgroups of populations (sex, age, socioeconomic status, sport practiced, etc.)

We would like to make clear that the present study was focused on a statistical questionnaire validation. This procedure gave confidence regarding the validity and reliability of the questionnaire. The results prove that the experiences of competition, progress and risk-taking are viewed as distinct by adolescent athletes. It means that each of these experiences of confrontations could be modulated by sports promoters or coaches to improve the pleasure during participation. By modulation, we understand the frequency of each of these kinds of experiences, and their intensity. However, results did not provide information regarding the reported pleasure of adolescents by other series of variables. For example, it might be interesting to know in each sport activity what are the most pleasurable experiences for adolescents. In a sociological perspective, it would be interesting to know whether reported pleasure differs as a function of socioeconomic status, place of residence or sex (factors linked to sport participation). For example, it is well known that girls with a low socioeconomic status are least likely to play sport (Stalsberg & Pedersen, 2010; Luiggi et al., 2018a). Improved knowledge about what experiences they prefer could help to develop adequate sport promotion initiatives, or infrastructures, that correspond to their 'tastes'. In this logic, the present scale and sample of participants will be used in further analysis focused on the distribution of reported pleasure as a function of the participants' characteristics. Obviously, experiences measured with this scale are not sufficient to understand the whole sports experience. Further research should measure other essential sports experiences. For example, sport is associated with sharing, pressure, stress, feelings of injustice, etc. It is plausible that people would appreciate - or not - these experiences differently. Further scales should try to measure retrospective reports in other forms of experience.

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Table 1.
French and English Back-Translated Items from the study 1 of the Sport Experiences Questionnaire with expert panel scores in Clarity and Appropriateness

Items	Subscales	French Items	English Items	Clarity	Appropriateness	Mean	Selected items
1	RISK	Prendre un risque	Take a risk	4	4.8	4.4	x
2	RISK	Relever un défi, au risque d'échouer	Take up a challenge, even if I risk losing	3.2	3.3	3.3	
3	RISK	Faire quelque chose d'extraordinaire	Do something extraordinary	3.9	3.6	3.8	
4	RISK	Courir un danger	Run a danger	3.2	4.6	3.9	
5	RISK	Tenter un exploit, même s'il y a des risques	Attempt an exploit, even if there are some risks	4	4.8	4.4	x
6	RISK	Jouer à me faire peur	Playing with my fear	3.9	4.7	4.3	x
7	RISK	Affronter un obstacle qui me paraissait presque insurmontable	Confront a difficulty that I thought impossible	4.5	3.9	4.2	
8	RISK	Tenter quelque chose au risque de tout perdre	Attempt something even if I risk losing everything	4.5	5	4.8	x
9	RISK	Tenter une performance bien au-delà de mes possibilités (physique, psychique)	Attempt a performance far beyond my capacities (physical, psychological)	4.3	3.2	3.8	
10	RISK	Se mettre en danger	Put myself in danger	4.7	4.8	4.8	x
11	PROG	Améliorer mes résultats	Improve my results	4.2	4.5	4.4	x
12	PROG	Aller au-delà de ce que j'ai déjà fait	Go beyond what I have ever done	4.5	4.5	4.5	x
13	PROG	Faire reculer les limites de mes possibilités	Extend the limits of what I can do	3.2	4	3.6	
14	PROG	Faire progresser mon niveau de jeu, d'exécution	Improve my playing level, skills	3.6	3.5	3.6	
15	PROG	Améliorer mes propres performances	Improve my personal performance	4	4.7	4.4	x
16	PROG	De constater que j'ai progressé	Noted that I have progressed	4.9	4.5	4.7	x
17	PROG	Faire la meilleure performance possible pour moi	Achieve the best performance I can	4	4.6	4.3	x

18	COMP	Battre mes adversaires	Beat my opponents	5	5	5	x
19	COMP	L'emporter sur les autres	Win over the others	3.5	4.5	4	
20	COMP	Battre les autres	Beat the others	4.8	3.6	4.2	
21	COMP	Me classer devant les autres	Class myself in front of the others	3.9	4.5	4.2	
22	COMP	Gagner devant les autres	Win in front of the others	3.6	4.2	3.9	
23	COMP	Etre meilleur que les autres	Being better than others	4.5	4.5	4.5	x
24	COMP	Etre parmi les meilleurs	Be among the best	4.4	4.2	4.3	x
25	COMP	Obtenir le meilleur classement possible	Obtain the best ranking that I can	4.8	4.8	4.8	x
Answer scale		1= Pas du tout d'accord 2= Pas d'accord 3= Plutôt pas d'accord 4= Ni en désaccord, ni en accord 5 = Plutôt d'accord 6 = D'accord 7 = Tout à fait d'accord	1= Strongly disagree 2= Disagree 3= Slightly disagree 4= Neither disagree, nor agree 5= Slightly agree 6= Agree 7 =Strongly agree	Expert Quality Likert Scale		1= Very poor 2= Poor 3= Acceptable 4= Good 5= Very good	

Note. COMP = Competition; PROG = Progress; RISK = Risk-Taking.

Table 2.

French and English Back-Translated Items from the final version of the Sport Experiences Questionnaire

Items	Subscales	French Items	English Items
1	RISK	Prendre un risque	Take a risk
2	PROGRESS	Améliorer mes résultats	Improve my results
3	COMP	Battre mes adversaires	Beat my opponents
4	PROGRESS	Aller au-delà de ce que j'ai déjà fait	Go beyond what I have ever done
5	RISK	Tenter quelque chose au risque de tout perdre	Attempt something even if I risk losing everything
6	COMP	Être parmi les meilleurs	Be among the best
7	PROGRESS	Faire la meilleure performance possible pour moi	Achieve the best performance I can
8	RISK	Se mettre en danger	Put myself in danger
9	RISK	Tenter un exploit, même s'il y a des risques	Attempt an exploit, even if there are some risks
10	COMP	Être meilleur que les autres	Being better than others
11	PROGRESS	De constater que j'ai progressé	Noted that I have progress
12	RISK	Jouer à me faire peur	Playing with my fear
13	PROGRESS	Améliorer mes propres performances	Improve my personal performance
14	COMP	Obtenir le meilleur classement possible	Obtain the best ranking that I can
		1= Pas du tout d'accord	1= Strongly disagree
		2= Pas d'accord	2= Disagree
		3= Plutôt pas d'accord	3= Slightly disagree
	Answer Scale	4= Ni en désaccord, ni en accord	4= Neither disagree, nor agree
		5 = Plutôt d'accord	5= Slightly agree
		6 = D'accord	6= Agree
		7 = Tout à fait d'accord	7 =Strongly agree

Note. COMP = Competition; PROG = Progress; RISK = Risk-Taking.

Table 3.
Goodness-of-Fit Statistics of the Exploratory Structural Equation Modeling (ESEM) for the Sport Experiences Questionnaire

Models	N°	Description	χ^2 (df)	CFI	TLI	RMSEA	RMSEA 90% CI	CM	$\Delta^S\chi^2$(df)	ΔCFI	ΔTLI	ΔRMSEA
EFA	1-1	1-factor	1088.17(77)***	.602	.530	.140	.132-.147	-	-	-	-	-
(*N*= 674)	1-2	2-factor	484.090(64)***	.835	.765	.099	.091-.107	1-2	676.9(13)***	+.233	+.235	-.041
	1-3	3-factor	109.834(52)***	.977	.960	.041	.031-.051	1-3	326.2(12)***	+.142	+.195	-.058
	1-4	4-factor	82.996(41)***	.983	.963	.039	.027-.051	1-4	26.5(11)*	+.006	+.003	-.002
	1-5	5-factor	73.426(31)***	.983	.951	.045	.032-.058	1-5	15.1(10)	.000	-.012	+.006
ESEM: Sex	2-1	Configural invariance	175.146(104)***	.971	.949	.045	.033-.056	-	-	-	-	-
(*N*= 674)	2-2	λ invariance	226.059(137)***	.963	.951	.044	.033-.054	3-1	50.5(33)*	-.008	+.002	-.001
	2-3	λ, τ invariance	245.701(148)***	.960	.950	.044	.034-.054	3-2	19.7(11)*	-.003	-.001	.000
	2-4	λ, τ, δ invariance	282.053(162)***	.950	.944	.047	.038-.056	3-3	30.1(14)**	-.010	-.006	+.003
	2-5	λ, τ, δ, ξ/φ invariance	296.716(168)***	.947	.942	.048	.039-.056	3-4	14.2(6)*	-.003	-.002	+.001
	2-6	λ, τ, δ, ξ/φ, η invariance	385.096(171)***	.912	.906	.061	.053-.069	3-5	151.1(3)***	-.035	-.036	+.013
ESEM:	3-1	Configural invariance	182.100(104)***	.969	.945	.048	.036-.059	-	-	-	-	-
Context of	3-2	λ invariance	215.516(137)***	.968	.958	.042	.031-.052	4-1	30.1(33)	-.001	+.013	-.006
sport	3-3	λ, τ invariance	244.675(148)***	.961	.952	.045	.034-.054	4-2	31.5(11)***	-.007	-.006	+.003
participation	3-4	λ, τ, δ invariance	303.463(162)***	.943	.936	.052	.043-.060	4-3	43.4(14)***	-.018	-.016	+.007
(*N* = 656)	3-5	λ, τ, δ (δ^2, δ^8, δ^{13} free) invariance	262.067(159)***	.958	.953	.044	.035-.054	4-3	17.7(11)	-.003	+.001	-.001
	3-6	λ, τ, δ (δ^2, δ^8, δ^{13} free), ξ/φ invariance	273.351(165)***	.956	.952	.045	.035-.054	4-5	11.2(6)	-.002	-.001	+.001
	3-7	λ, τ, δ (δ^2, δ^8, δ^{13} free), ξ/φ, η invariance	315.624(168)***	.941	.936	.052	.043-.060	4-6	46.1(3)***	-.015	-.016	+.007
DIF: Age	4-1	Null effects model	131.568(66)***	.975	.961	.038	.029-.048	-	-	-	-	-
(*N* = 672)	4-2	Saturated model	106.385(52)***	.980	.959	.039	.029-.050	5-1	24.2(14)*	+.005	-.002	+.001
	4-3	Invariant model	121.249(63)***	.978	.963	.037	.027-.047	5-1	11.7(3)**	+.003	+.002	-.001

Note. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; DIF = differential item functioning; EFA = exploratory factor analysis; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; 90% CI = 90% confidence interval of the RMSEA; CM = comparison model; $\Delta S\chi^2$ = scaled chi square difference tests (calculated from models loglikelihoods for greater precision); Δ = change from previous model; λ = factor loadings; τ = intercepts; δ = uniquenesses; ξ = factor variances; φ = factor covariances; η = factor means. * p < .05. **p <.01. *** p <.001.

Table 4.
Standardized Parameter Estimates from the 3-factor Exploratory Factor Analysis of the Sport Experiences Questionnaire

Items	Risk-taking(λ)	Competition(λ)	Progress(λ)	δ
SEQ1	.689	.107	*.053*	.456
SEQ2	.106	.192	.481	.654
SEQ3	.108	.761	-.070	.381
SEQ4	.062	.109	.530	.666
SEQ5	.558	.221	*-.027*	.568
SEQ6	*.019*	.752	.157	.343
SEQ7	*-.024*	.185	.529	.644
SEQ8	.836	*.002*	*-.045*	.304
SEQ9	.605	.124	.158	.520
SEQ10	.091	.770	*.012*	.351
SEQ11	*-.050*	-.080	.639	.610
SEQ12	.677	*.002*	*.014*	.540
SEQ13	*.012*	*-.029*	.738	.463
SEQ14	.053	.763	.129	.324
ω	.826	.869	.737	
Latent Factor Correlations				
Risk-Taking	-			
Competition	.309	-		
Progress	.094	.240	-	

Note. λ = standardized factor loadings; δ = uniquenesses; ω = omega coefficient of composite reliability. Greyscale = main loadings; non-significant parameters are in italics; SEQ = Sport Experiences Questionnaire. All correlations are statistically significant ($p \leq .001$).

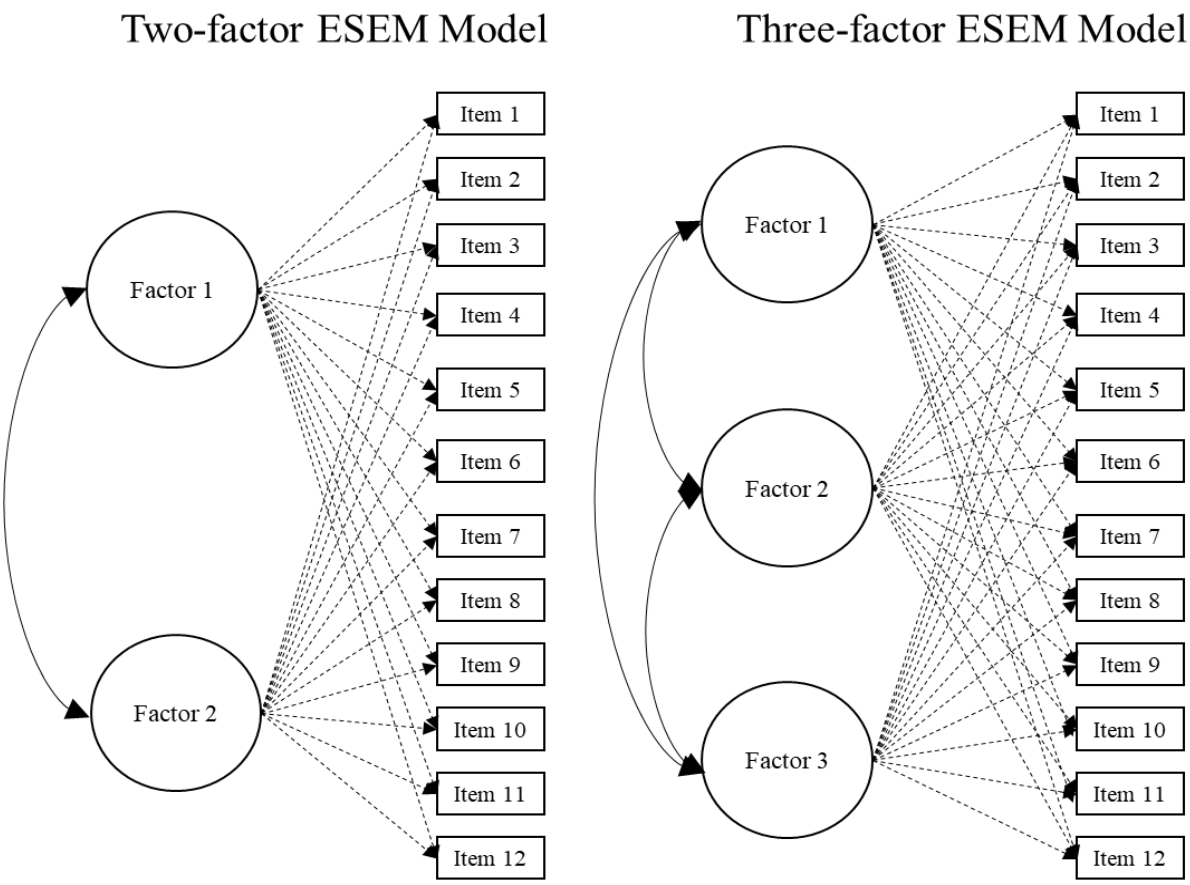

Figure 1. Graphical representations of a two- and three-factor ESEM models.
Note. ESEM = exploratory structural equation model

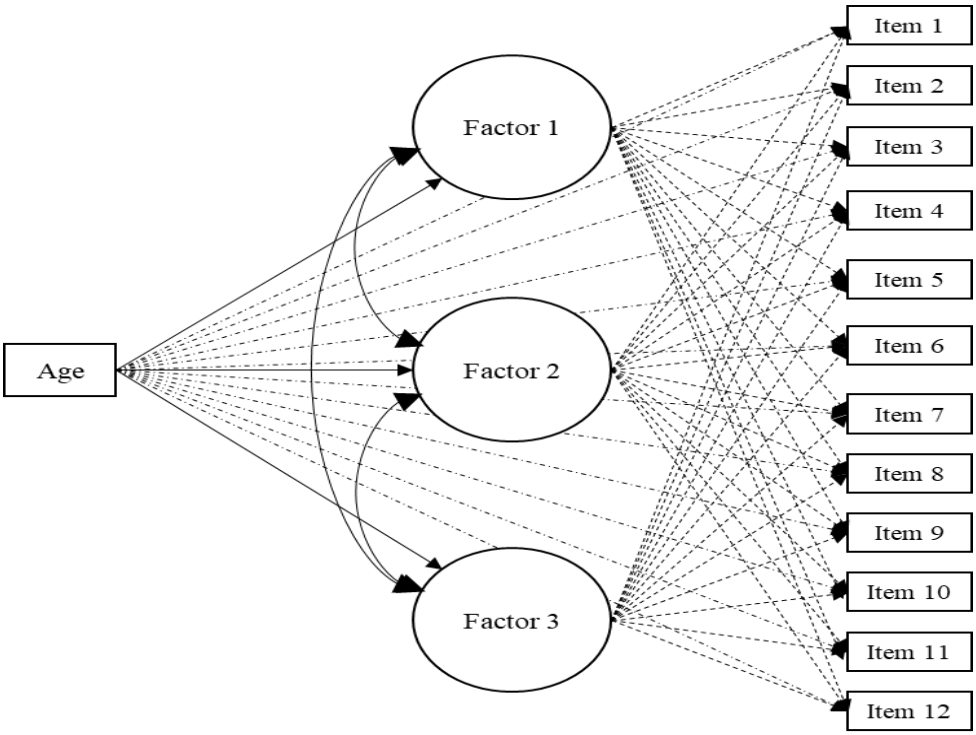

Figure 2. Graphical representations of a MIMIC model used to test differential item functioning with one predictor (age) and a three-factor ESEM model.
Note. ESEM = exploratory structural equation model; MIMIC = multiple indicators and causes models. Full unidirectional arrows from age to the three latent factors represent the paths needed to examine the invariant model (in this model the dotted unidirectional arrows from age to the item responses are constrained to zero). The dotted unidirectional arrows from age to the item responses represent the paths needed to examine the saturated model (in this model the full unidirectional arrows from age to the three latent factors are constrained to zero).

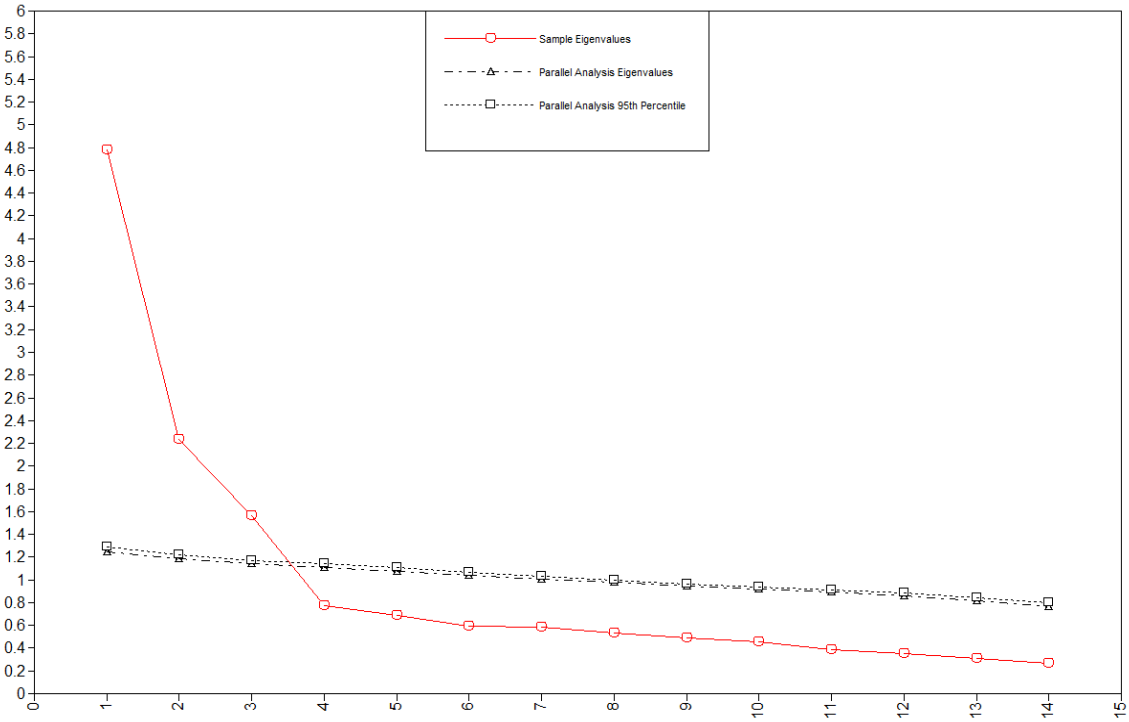

Figure 3. Scree Plot and Parallel Analysis Test from the exploratory factor analysis of *Sport Experiences Questionnaire*