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Diversity of Profiles Among Adolescent-Athletes Reporting Sexual Violence in Sport

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ABSTRACT

The experience of sexual violence (SV) in sport can vary according to contextual factors such as its form, type of perpetrator, and frequency of acts that might impact the risk factors and outcomes of SV. This study aims to explore the heterogeneity of SV experiences in sport using latent class analysis and to compare the victimization profiles based on personal and sport characteristics as well as on outcomes. A sample of 1357 adolescent-athletes practicing an organized sport who reported SV in sport was included in the study. Four profiles of sexual victimization were identified: (a) *SV from authority figure* (3.5%), (b) *sexual harassment from peers* (84.5%), (c) *low poly-victimized* (6.9%), and (d) *moderate poly-victimized* (5.2%). Overall, the findings suggest that athletes reporting SV are not a homogenous group but do not clearly distinguish in risk factors and outcomes. Results can be used to better target prevention and intervention strategies.

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Thousands of Canadian teenagers are involved in sports organizations every year. According to the Canadian Survey of the Health Behaviour in School-aged Children, around 70% of Canadian high-school students participated in organized sports (Freeman et al., 2016). Although sport has long been recognized as a tool for physical, moral, psychological, and social development (Weiss, 2016), it can also lead to negative experiences. In the last decade, media attention on high-profile cases of sexual violence (SV) in sport, alongside prevalence studies, made it clear that SV in sport is an important social issue (Bjørnseth & Szabo, 2018; Mountjoy et al., 2016). Indeed, 9–38% of athletes have experienced SV in sport (Dallam et al., 2024; Pankowiak et al., 2022). While there is currently no consensus on the definition of SV in sport, it can be defined as "a sexual act that is committed or attempted by another person without freely given consent of the victim or against someone who is unable to consent or refuse" (Basile et al., 2014, p.11).

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Experience of SV in sport is associated with short- and long-term consequences on mental health, including depressive and anxiety symptoms, disordered eating, and lower quality of life and well-being (Dallam et al., 2024; Parent et al., 2021; Vertommen et al., 2018). SV in sport is also associated with negative impact on sport participation such as a lower sporting performance and sport drop out (Bisgaard & Støckel, 2019; Fasting et al., 2002). Given its high prevalence and harmful repercussions for athletes, researchers, and sports leaders have emphasized the need to better understand the factors associated with SV in sport and its outcomes to guide the development of efficient prevention and intervention programs (Dodd et al., 2023; Fortier et al., 2020).

Risk factors of SV in sport

There is currently no consensus between studies on personal and sport-specific risk factors associated with SV in sport, limiting our accurate understanding of the problem. For example, gender is the most explored risk factor in research, but results are inconsistent. Some results suggest that women are more at risk of experiencing SV in sport than men (e.g., Dallam et al., 2024; Willson et al., 2022), few results suggest that men are more at risk (Bermon et al., 2021; Hartill et al., 2023), while other studies have found no statistical difference between women and men (e.g., Parent & Vaillancourt-Morel, 2020). Athletes' sporting level (e.g., local, provincial, and national) is another factor for which results are mixed. According to some results, a high sport level is associated with experience of SV in sport (Schipper van Veldhoven et al., 2022; Willson et al., 2022) while other studies did not find any significant association between sport level and SV in sport (Johansson & Lundqvist, 2017; Marsollier et al., 2021). Finally, very few studies have documented the association between SV in sport and the type of sport practiced. The limited data suggest that sport type is unrelated to the experience of SV in sport (Marsollier et al., 2021; Ohlert et al., 2018; Parent & Vaillancourt-Morel, 2020). Yet sports seem to have their own specific subcultures (Coker-Cranney et al., 2018), which may be related to the experience of SV. Sølvberg et al. (2022) have stressed the importance of studying the factors associated with SV in sport according to the type of sport practiced to gain a better sport-specific understanding of victimization (e.g., perpetrators of SV in different sports categories).

In sum, it is currentlyhard to clearly identify and understand personal and sport-specific risk factors associated with the experience of SV in sport. The current lack of consensus between studies could be explained by the lack of consideration given to the heterogeneity of SV experiences in sport.

Heterogeneity of SV experiences in sport

Studies on factors associated with SV in sport currently employ a one-size-fits-all model, meaning authors generally assess risk factors and outcomes of SV in sport by grouping all athletes reporting SV together, failing to recognize the heterogeneity of their experiences. However, studies conducted in the general population clearly show that victims of SV are not a homogenous group (Gauthier-Duchesne et al., 2023; Matte-Landry et al., 2022). Their experiences differ on several characteristics that might impact the associated factors of SV (i.e., risk factors and outcomes) (Gauthier-Duchesne et al., 2023; Masters et al., 2015). Indeed, the differential profiles of SV victims have been linked to different patterns in psychological, behavioral, and relational outcomes (Lyons & Romano, 2019). For example, in a study conducted with adolescent boys, the profile *reporting multiple childhood sexual abuse (SA)* was associated with higher levels of externalizing problems (i.e., delinquent behaviors and alcohol and drug use) (Gauthier-Duchesne et al., 2023). However, this profile did not differ from other profiles (e.g., the profile reporting only extrafamilial childhood SA) regarding internalizing difficulties (i.e., psychological distress and post-traumatic stress disorder (PTSD) symptoms). Given that the heterogeneity of SV experiences seems to be related to the associated outcomes, understanding the heterogeneous SV experiences is crucial to better inform targeted prevention measures and intervention programs (Gauthier-Duchesne et al., 2023; Masters et al., 2015). As demonstrated by studies conducted in the general population, experiences of SV can vary according to contextual factors such as act perpetrated (i.e., sexual harassment (SH) or SA), type of perpetrator, and frequency of acts (Gauthier-Duchesne et al., 2023; Lyons & Romano, 2019; Watson & Halford, 2010). It is therefore essential to consider the contextual characteristics of SV to capture the heterogeneity of experiences. This would provide a more detailed picture of risk factors and associated outcomes, enabling the improvement of prevention and intervention measures.

Contextual factors of SV in sport

Findings on the heterogeneity of SV experiences in the general population, based on contextual factors, align with some results in the sports literature. In sport, studies show that SH is more frequent than SA (Parent & Vaillancourt-Morel, 2020; Willson et al., 2021). Vertommen et al. (2016) developed a classification system based on experts' assessment of the severity and frequency of the event to categorize interpersonal violence incidents (including SV) into degrees of severity. In their classification method, SH is considered as a mild form of SV, while SA is considered a severe form, suggesting that SH and SA are not equivalent in terms of severity. Moreover, when a form of SV is reported more frequently, is it judged more severely (Vertommen et al., 2016).

For example, SH experienced regularly or often is categorized as a moderate form of SV. Although SH and SA differ both in terms of prevalence and severity, studies conducted in the sports context generally assessed factors associated with SV by grouping all athletes reporting SV together. This represents a major limitation to our accurate understanding of the problem. Since SH and SA have different behavioral manifestations, their associated factors might also differ (Vertommen et al., 2022). For example, outcomes might not be the same for SH and SA. Although knowledge regarding the types of perpetrators of SV in sport is limited (Sølvberg et al., 2022), different perpetrators of SV in sport have been identified in the literature, such as peers, coaches, sports administrators, and medical team personnel (Pankowiak et al., 2022; Vertommen et al., 2017). Peers are the most frequently reported perpetrators of SV in sport (Pankowiak et al., 2022; Schipper van Veldhoven et al., 2022). One study showed that the majority (56%) of SV cases in sport involve more than one perpetrator (Vertommen et al., 2017). Additionnaly, incidents of SV are significantly more severe when the perpetrator is the coach and/or when multiple perpetrators are involved (Vertommen et al., 2017). More dissociative symptoms and post-traumatic stress are also reported when the identified perpetrator is in a relationship of trust, guardianship, or authority with the athlete-victim (Leahy et al., 2004). However, the results of Parent and colleagues (Parent et al., 2021) suggest that SV perpetrated by another athlete is associated with lower self-esteem and higher psychological distress, but this association is not observed when the perpetrator of the SV is the coach. Overall, these findings suggest that the factors associated with SV may vary according to the type and number of perpetrators. However, few studies to date have examined the factors associated with SV in sports considering the type of perpetrator, which represents a major limitation to current knowledge. The frequency at which SV acts are experienced also seems to be an essential factor to consider when looking at the heterogeneity of SV experiences. Indeed, authors who have classified SV in sport into degrees of severity have all used frequency as an indicator of severity (Ohlert et al., 2019; Schipper van Veldhoven et al., 2022; Vertommen et al., 2016). According to these authors, the greater the reported frequency, the more severe the SV experienced. Furthermore, the non-sport literature suggests that the frequency of SV experienced in childhood is associated with greater psychosocial difficulties in victims (Gauthier-Duchesne et al., 2023).

Current study

This study aims to explore the heterogeneity of SV experiences in sports using a person-centered approach, namely latent class analysis (LCA). This approach allows for the identification of sub-groups of people based on their similarities regarding their responses to a set of selected variables of interest (Eshima, 2022;

Roesch et al., 2010). The goal is to identify typologies of people by interpreting the common patterns of responses that categorize their respective class and what distinguishes them from other classes (Roesch et al., 2010). Because LCA aims to regroup individuals together, the unit of analysis is the person, not the separate variables (Roesch et al., 2010). While variable-centered analyses provide ageneralized view of how variables are related, LCA can uncover whether these relationships hold true within specific subgroups of individuals (Howard & Hoffman, 2018; Weller et al., 2020). This helps to gain a deeper and more nuanced understanding of SV in sport by identifying and analyzing the subgroups separately, rather than treating the population as a homogeneous whole. To our knowledge, no study has yet explored profiles of SV in sports using LCA. Therefore, the first objective of our study is to identify victimization profiles based on the contextual characteristics of the SV experienced (i.e., the form of SV experienced, type of perpetrator and frequency of acts). The second objective is to compare the identified profiles based on personal and sport characteristics (i.e., gender, sports level, and type of sport practiced). The third objective is to compare the profiles based on different outcomes (i.e., depressive and anxiety symptoms, alcohol and drug use, and disordered eating). It was hypothesized that profiles with more severe SV characteristics (i.e., SA, perpetrators in positions of trust and power over the athlete, and more frequent acts) would be associated with higher depressive and anxiety symptoms, alcohol and drug use, and disordered eating.

Method

Participants and procedure

This study is part of the Study on the experiences of athletes in the province of Quebec (ÉVAQ) which took place from November 2022 to June 2023. Students from Secondary 1 to 5 from 483 public and private schools in the province of Quebec were recruited through flyer distribution during their in-class completion of the Quebec Health Survey of High School Students. The study was approved by the Research Ethics Committee of Université Laval (No 2020–143 Phase III/01-11-2023). Participants were free to participate in the study or not, and they all provided informed consent prior to the completion of their online survey. For the present study, we used a subsample ($n = 1357$) of the participants aged between 14 and 17 years old ($M = 15.29$, $SD = 1.01$), participating in an organized sport in Quebec and who reported at least one experience of SV in sport. Overall, 93.3% ($n = 1263$) and 30.4% ($n = 377$) of the participants have experienced SH and SA in sport, respectively. In the sample, 62.2% of the participants were girls and 37.8% were boys. Most of the participants were born in Quebec (89.8%), while 2.4% were born in another province in Canada and 7.7% were born in another country. Among the

participants, 72.1% reported being sexually attracted only to individuals of a different sex, 13.1% were mostly sexually attracted to individuals of a different sex, 7.7% were sexually attracted to both sexes or individuals regardless of their sex, 2.7% were sexually attracted only to individuals of the same sex, 1% mostly to individuals of the same sex, 0.1% were only or mostly sexually attracted to non-binary individuals, 1.1% were little or not sexually attracted to others, and 2.1% were uncertain. Most of the participants (61.5%) practiced a team sport, while 38.5% practiced an individual sport. Of the participants, 18.7% did not participate in a competitive sport, while 35.5% competed at the local or regional level, 33.5% at the provincial level, 9.6% at the national level, and 2.7% at an international level.

Measures

Risk factors

Participants' personal and sport characteristics were gathered through a socio-demographic questionnaire designed specifically for the study. Participants were asked to report their current gender (0 = boy and 1 = girl), current sport level (i.e., recreational, local/regional, provincial, national, or international) and the current primary sport they practiced. Sports were subsequently dichotomized into individual and team sports (individual sport = 0 and team sport = 1). For example, individual sports included cycling, swimming, and cross-country skiing, while collective sports included baseball, hockey, and soccer.

SV in sport

SV experienced in the sport context was measured using the SV subscale of the Violence Toward Athlete Questionnaire (VTAQ) short-form (Gillard et al., 2024; Parent et al., 2019). The VTAQ is a self-reported measure of the experience of interpersonal violence in sport. Participants respond to each item having their entire sporting career in mind (i.e., since their childhood). The items refer only to events that occured in the sport context, meaning in training, competition, or any other event related to the practice of sport (e.g., meetings, video sessions, training camps, and team events). The short version of the VTAQ is composed of two sections based on the perpetrator type: (a) the VTAQ-Athlete and (b) the VTAQ-Authority. The SV subscale of the VTAQ-Athlete is composed of three items. Two items are related to SH, and one item is related to SA. The VTAQ-Authority refers to any person in a position of authority in sport (e.g., coach, sports doctor, and massage therapist). The SV subscale is composed of six items, including two items specific to SH and four items specific to SA. Items are assessed on a four-point Likert scale measuring the frequency of the events (1 = *Never*, 2 = *Rarely (1 – 2 times)*, 3 = *Sometimes (3 – 10 times)* and 4 = *Often (more than 10 times)*).

Therefore, each item simultaneously measures the type of perpetrator, the form of SV experienced, and the frequency. For the purpose of the study, we computed four continuous scores: (a) SH by an athlete (addition of the two SH items of the VTAQ-Athlete), (b) SH by an authority figure (addition of the two SH items of the VTAQ-Authority), (c) SA by an athlete (score of the sole item of SA abuse of the VTAQ-Athlete) and (d) SA by an authority figure (addition of the four SA items of the VTAQ-Authority). For all those four scores, a higher score indicated a higher frequency. In the present study, the VTAQ-Athlete showed poor internal consistency ($\alpha = 0.60$ and Omega's $\omega = 0.63$) which could be explained by the small number of items included. The VTAQ-Authority showed good internal consistency (Cronbach's $\alpha = 0.809$, Omega's $\omega = 0.808$).

Depressive and anxiety symptoms

Depressive and anxiety symptoms were evaluated with the four items of the Patient Health Questionnaire for Depression and Anxiety (PHQ-4) (Kroenke et al., 2009). The PHQ-4 is a self-reported questionnaire designed to screen for symptoms of depression and anxiety experienced over the past 14 days. It is composed of two factors (i.e., depression and anxiety) each containing two items representing the two main diagnostic criteria for depression and anxiety (Kroenke et al., 2009). Items are measured using a 4-point Likert scale ranging from 0 (*Never*) to 3 (*Almost every day*). The higher the score, the more likely the respondent is to have a depressive or anxiety disorder. The scale showed a high internal consistency (Cronbach's $\alpha = 0.89$) in the present study.

Substances use

Alcohol and drug use were measured with the questionnaire on lifestyle habits of the Quebec Health Survey of High School Students 2022–2023 (Institut de la statistique du Quebec, 2024). The scale measures whether the participant has ever consumed alcohol or drugs using a yes/no question for both substances. If the participant had ever consumed alcohol, the frequency of consumption is measured by a Likert scale ranging from 1 (*I have not consumed alcohol in the past 12 months*) to 7 (*Every day*). For the analysis, drug consumption was computed as *has never consumed drug* (0) and *has already consumed drug* (1), while we used the frequency of consumption ranging from 1 to 7 for alcohol consumption.

Disordered eating

Disordered eating was measured using the Eating Disorder Examination Questionnaire short-form (EDE-Q7) (Grilo et al., 2015). It is a self-reported tool that assesses the severity of eating disorder symptoms. It is composed of three subscales: (1) dietary restraint, (2) shape/weight overvaluation, and (3) body dissatisfaction. Items from the dietary restraint subscale are assessed in

relation to the last 14 days. Responses are measured on a 7-point Likert scale ranging from 1 (*0 days*) to 7 (*every day*). Items from the shape/weight overvaluation and body dissatisfaction subscales are assessed on a 7-point Likert scale ranging from 0 (*Not at all*) to 6 (*Very Much*). Higher scores indicate greater severity of eating disorder symptoms. A recent systematic review supported the use of the seven-item version of the EDE-Q compared to other versions because of its strong psychometric qualities and its invariance between samples (Jenkins & Rienecke, 2022). The initial 36 items version of the EDE-Q has been adapted and validated with a sample of teenagers (White et al., 2014). We therefore used the wording of the items validated with adolescents for the EDE-Q7 in our study. In the present study, the EDE-Q7 showed a high internal consistency (Cronbach's $\alpha = 0.91$, Omega's $\omega = 0.91$).

Statistical analyses

To meet the first objective, which was to identify victimization profiles based on contextual factors of SV, LCA was performed using Mplus software version 8.11. Indicators entered in the model were the form of SV experienced (SH and/or SA) and the type of perpetrator (peer and/or authority figure). More specifically, the indicators were (a) SH by an athlete, (b) SH by an authority figure, (c) SA by an athlete, and (d) SA by an authority figure. The frequency of SV experiences is implicitly entered into the model since higher scores on each indicator indicate higher frequency. All indicators were continuous variables. We tested the model for a two to six profiles solution. Several relative fit indices were used to choose the most suitable model. First, we examined the Log-likelihood (LL), the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and the Sample-size adjusted BIC (SABIC) to evaluate the model fit to the data. Lower LL, AIC, BIC, and SABIC values indicate a better model fit (Sinha et al., 2021). Second, we used the entropy to examine the separation between classes. Higher entropy indicates better class differentiation (Sinha et al., 2021). Third, the Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test (VLMR-LRT) was used to determine the more parsimonious model. A non-significant p-value (<.05) indicates that the model with κ-1 classes significantly better fits the data than the model with κ classes (Lo et al., 2001).

Once we selected the best fit model, we performed a two-step manual follow-up analysis of Bolk, Croon, and Hagenaars (BCH) on Mplus to compare profiles on personal (i.e., gender) and sports characteristics (i.e., sports level and type of sport practiced) as well as on outcomes (i.e., depressive and anxiety symptoms, disordered eating, and drug and alcohol consumption) (Bakk & Kuha, 2018). This analysis required two steps. We first saved the BCH weights in the selected model. Then, we used the BCH weights to estimate the general auxiliary model on a latent class variable (Asparouhov & Muthen, 2021).

Results

Victimization profiles

Table 1 presents the LCA results for models between two and six profiles. We selected the four-profiles solution. The LL, AIC, BIC, and SABIC were lower than the ones for the two to three-profiles solutions but higher than the ones for the five and six-profiles solutions. Conversely, the entropy for the four-profiles solutions was slightly higher than the ones for the one to three-profiles solutions but slightly lower than the one for the five- and six-profiles solutions. However, the non-significant *p*-value associated with the VLMR-LRT for the five-classes solution suggests the superiority of a model including one less profile, indicating that the four-profiles solution appears to be the more parsimonious model.

Figure 1 presents the scores on each indicator (i.e., contextual factors associated with the experience of SV in sport) for the four profiles. The first profile was named *SV from authority figure* and represented 3.5% of the sample ($n = 48$). This profile was characterized by the experience of both SH and SA by an authority figure in sport. The second profile was named *SH from*

Table 1. Model-fit statistical comparisons for the latent class models.

K	LL	AIC	BIC	SABIC	Sizes	Entropy	VLMR-LRT p-value
2	−6794.68	13615.36	1368.13	13641.84	112|1245	0.97	.000
3	−5871.44	11778.87	11872.71	11815.53	70|93|1194	1.00	.074
4	**−5571.49**	**11188.98**	**11308.88**	**11235.82**	**48|1146|93|70**	**0.98**	.046
5	−5330.61	10717.21	10863.18	10774.23	83|1146|36|34|58	0.99	.458
6	−5076.70	10219.40	10391.42	10286.59	83|1118|36|31|34|55	0.99	.554

The selected best fit model is in bold. K= number of classes; LL= Log-likelihood; AIC= Akaike information criterion; BIC= Bayesian information criterion; SABIC= Sample-size adjusted BIC; VLMR-LRT= Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test.

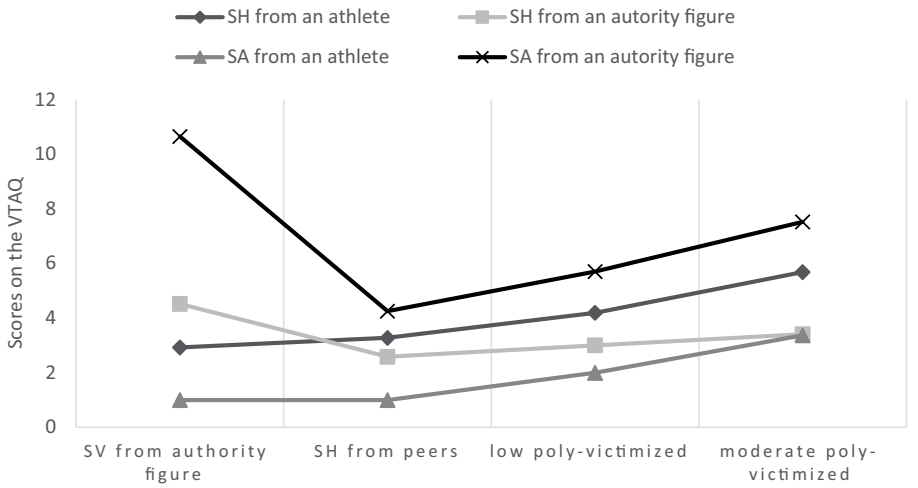

Figure 1. Victimization profiles on contextual factors of SV.

peers and comprised 84.5% of the sample ($n = 1146$). Participants in this profile have experienced SH from peers in sport at a low frequency. The third profile was named *low poly-victimized* and accounted for 6.9% of the sample ($n = 93$). This profile was characterized by a victimization from both peers and authority figures in sport, involving both SH and SA at a low frequency. The fourth profile was named *moderate poly-victimized* and represented 5.2% of the sample ($n = 70$). This profile was also characterized by a victimization from both peers and authority figures in sport, involving both SH and SA but at a moderate frequency.

Comparisons of profiles on risk factors

We used the BCH method to explore the difference between profiles on risk factors (i.e., gender, sport level, and type of sport practiced) (see Table 2). Regarding gender, results from the BCH analysis revealed only two significant differences across the four profiles. Results showed that girls were 6.17 and 3.66 times less likely to belong to the *moderate poly-victimized* profile compared to the *low poly-victimized* and the *SH from peers* profiles, respectively. Concerning the type of sport practiced, the results revealed that participants in the *low poly-victimized* and *moderate poly-victimized* profiles were 5.40 and 4.05 times less likely to participate in a collective sport compared to participants in the *SV from authority figure* profile, respectively. Moreover, participants in the *low poly-victimized* profile were 1.90 times less likely to participate in a collective sport compared to participants in the *SH from peers* profile. Finally, in terms of the sports level, only one difference across the four profiles was statically significant. Results revealed that a higher sport level was related to lower odds of belonging to the *moderate poly-victimized* compared to the *low poly-victimized* profile. Participants who had a higher sport level were 1.77 times less likely to belong to the *moderate poly-victimized* compared to the *low poly-victimized* profile.

Comparisons of profiles on outcomes

The BCH method was also used to explore differences between profiles on outcomes, after controlling for risk factors (i.e., gender, sport level, and type of sport practiced) (see Table 3). Regarding alcohol consumption, only one difference across profiles was observed. Participants in the *SH from peers* profile had higher alcohol consumption ($M = 2.29$) compared to participants in the *moderate poly-victimized* profile ($M = 1.40$). In terms of disordered eating, participants in the *SV from authority figure* ($M = 6.79$) and the *SH from peers* ($M = 10.52$) profiles had less severe symptoms compared to participants in the *moderate poly-victimized* profile ($M = 30.667$). Finally, there was

Table 2. Characteristics associated with victimization profiles ($n = 965$).

	SH from peers VS SV from authority figure[a]		Low poly-victimized VS SV from authority figure[a]		Moderate poly-victimized VS SV from an authority figure[a]		Low poly-victimized VS SH from peers[b]		Moderate poly-victimized VS SH from peers[b]		Moderate poly-victimized VS Low poly-victimized[c]	
	Estimate (*SE*)	95% CI	Estimate (*SE*)	95% CI	Estimate (*SE*)	95% CI	Estimate (*SE*)	95% CI	Estimate (*SE*)	95% CI	Estimate (*SE*)	95% CI
Gender[d]	2.29 (0.98)	[0.99, 5.30]	1.36 (0.70)	[0.49, 3.73]	0.37 (0.22)	[0.12, 1.19]	0.59 (0.18)	[0.32, 1.08]	**0.16 (0.07)*** **	**[0.07, 0.37]**	**0.27 (0.14)***	**[0.10, 0.75]**
Type of sport practiced[d]	0.35 (0.21)	[0.11, 1.12]	**0.19 (0.12)** **	**[0.05, 0.67]**	**0.25 (0.18)***	**[0.06, 0.99]**	**0.53 (0.16)***	**[0.29, 0.95]**	0.70 (0.29)	[0.32, 1.57]	1.34 (0.66)	[0.51, 3.53]
Sport level	0.89 (0.19)	[0.59, 1.35]	1.05 (0.26)	[0.64, 1.71]	0.59 (0.18)	[0.33, 1.07]	1.18 (0.17)	[0.89, 1.56]	0.67 (0.14)	[0.44, 1.02]	**0.57 (0.14)***	**[0.35, 0.93]**

Values in bold are statistically significant. [a]The reference category is the SV from authority figure profile. [b]The reference category is the SH from peers profile. [c]The reference category is the Low poly-victimized profile. [d]These variables are dichotomous: Gender (boy=0, girl=1), type of sport (individual sport=0, team sport=1). *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$.

Table 3. Mean differences between victimization profiles for internal and external outcomes.

	Mean (*SD*)				Mean difference (*p* value)					
	SV from authority figure	SH from peers	Low poly-victimized	Moderate poly-victimized	SV from authority figure VS SH from peers	SV from authority figure VS Low poly-victimized	SV from authority figure VS Moderate poly-victimized	SH from peers VS Low poly-victimized	SH from peers VS Moderate poly-victimized	Low poly-victimized VS Moderate poly-victimized
Mean[a]										
Anxiety symptoms (2–8)	4.61 (1.63)	3.68 (0.19)	5.24 (0.78)	3.96 (0.81)	0.93 (0.57)	−0.63 (0.73)	0.65 (0.72)	−1.56 (0.05)	−0.29 (0.73)	1.276 (0.26)
Depressive symptoms (2–8)	5.56 (1.23)	3.71 (0.16)	4.92 (0.77)	4.71 (0.78)	1.84 (0.16)	0.64 (0.67)	0.84 (0.57)	−1.21 (0.12)	−1.00 (0.21)	0.20 (0.85)
Alcohol consumption (1–7)	1.16 (0.70)	2.29 (0.14)	2.41 (0.61)	1.40 (0.39)	−1.13 (0.12)	−1.25 (0.18)	−0.24 (0.76)	−0.11 (0.86)	**0.89 (0.03)***	1.00 (0.17)
Drug consumption (1–2)	1.71 (2.26)	1.85 (0.04)	1.73 (0.19)	1.82 (0.14)	−0.15 (0.58)	−0.02 (0.94)	−0.13 (0.69)	0.12 (0.52)	0.03 (0.83)	−0.09 (0.69)
Disordered eating (0–42)	6.79 (6.68)	10.52 (1.12)	17.05 (5.19)	30.67 (4.84)	−3.73 (0.58)	−10.26 (0.23)	**−23.88 (0.00)****	−6.53 (0.22)	**−20.15 (0.00)*** **	−13.62 (0.06)

Values in bold are statically significant. [a]Means were controlled by the individual characteristics considered in objective 2 (gender, type of sport practiced, and sport level). *$p \leq .05$ **$p \leq .01$ ***$p \leq .001$.

no difference across profiles for anxiety and depressive symptoms as well as for drug consumption.

Discussion

The overall aim of the study was to explore the heterogeneity of SV experiences in sport. The first objective was to identify victimization profiles based on the contextual characteristics of the SV experienced. The second objective was to compare the identified profiles on risk factors (i.e., gender, type of sport practiced, and sport level) and the third objective was to compare the profiles on outcomes (i.e., depressive and anxiety symptoms, disordered eating, and alcohol and drug consumption).

Victimization profiles

Regarding the first objective, four profiles of SV victimization in sport were identified. The *SV from authority figure* profile is the smaller profile (3.5%) and includes athletes who have experienced both SH and SA from an authority figure in sport. The *SH from peers* profile accounts for most of the sample (84.5%) and is characterized by a low frequency of SH from peers in the sports context. The *low poly-victimized* profile includes athletes (6.9%) who have experienced both SH and SA from peers and an authority figure in sport at a low frequency, while the *moderate poly-victimized* profile also includes athletes (5.2%) who have experienced both SH and SA from peers and an authority figure in sport but at a moderate frequency. These four profiles suggest that athletes reporting SV in sport are not a homogenous group, corroborating results found in the non-sport literature (Gauthier-Duchesne et al., 2023; Matte-Landry et al., 2022). Indeed, the obtained profiles are distinct in the form of SV experienced (i.e., SH, SA, or both), the type of perpetrator (i.e., peers or authority figures), and the frequency of the experience (from rarely to often). Our results also corroborate that peers are the most frequent perpetrators of SV in sport (Pankowiak et al., 2022; Schipper van Veldhoven et al., 2022). It also corroborates that the most frequent form of SV experienced in sport is SH. Indeed, most of the sample (84.5%) belongs to the *SH from peers*profile while the remaining 15.5% of the sample belong to one of the three other profiles characterized by the experience of both forms of SV (i.e., SH and SA) jointly or exclusively from an authority figure in sport. No profile is characterized by the sole experience of SA. This could suggest that SA does not occur independently of SH in sport. For instance, acts of SH such as making sexual innuendos and having conversations of a sexual nature with athletes have been identified as grooming strategies used by coaches who perpetrated SA toward athletes (St-Pierre et al., 2022). Moreover, in their narratives, athletes who have experienced SA in sport also report experiences

of SH such as offensive sexual remarks on their sexual life and body, conversations of sexual nature, and suggestive comments (Owton & Sparkes, 2017; Stevens, 2023). More studies are needed to better understand the link and temporality between the experience of SH and SA in sport.

Risk factors

With regard to the second objective which aims at comparing the profiles based on personal and sport characteristics to identify the risk factors for belonging to a profile, we observed some significant differences between profiles. However, as no single profile differs from all the others on a specific risk factor, our results suggest that the profiles are not clearly distinguishable in terms of gender, sport level, and the type of sport practiced. For example, no single profile stands out from all the others in terms of gender. The lack of clear distinction between the profiles based on gender, the type of sport practiced, and the sport level suggests that both male and female athletes, regardless of their level of competition or the type of sport they participate in, are at risk of experiencing SV. This is consistent with the current lack of consensus between studies on the association between personal and sport-specific risk factors and the experience of SV in sport. Therefore, he risk of belonging to one specific profile could be explained by other risk factors. This aligns with other research findings indicating that the experience of SV is not well explained by gender and sport-specific risk factors. For example, in a recent study, gender, sexual orientation, and sport-specific risk factors (e.g., sport level, type of sport practiced, and early specialization) only explained 1% of the variance of SV in sport (Vertommen et al., 2022). Future studies should therefore explore broader risk factors such as contextual (i.e., online versus in-person SV) or environmental factors (i.e., conformity to dominant values in sport).

Taken together, our results suggest that being a boy at a low sport level is a risk factor to belong to the *moderate poly-victimized* profile compared to the *low poly-victimized* profile. This means that being a boy at a low sport level increases the risk of experiencing both SH and SA from peers and an authority figure at a higher frequency. Moreover, our results suggest that practicing an individual sport is a risk factor to belong to the *low poly-victimized* profile compared to the *SV from authority figure* and *SH from peers* profiles, and practicing an individual sport is a risk factor to belong to the *moderate poly-victimized* profile compared to the *SV from authority figure* profile. Based on those results, it seems that practicing an individual sport is related to higher probability of experiencing SV from both peers and an authority figure. This result could be explained by the fact that athletes from individual sports are more likely to be isolated, and athletes' isolation has been recognized as a risk factor for experiencing SV in sport (Roberts et al., 2020). We could also hypothesize that there are more bystanders in collective sports, which might

be related to lower likelihood of experiencing SV as bystanders could play an important role in the prevention of SV (Banyard, 2015; Coker et al., 2020; Mujal et al., 2021). However, more studies are needed to better understand the unique dynamics of collective and individual sports related to SV.

Outcomes

The third objective of the study was to compare the victimization profiles on outcomes. One interesting finding is that we do not observe any difference between profiles on anxiety symptoms, depressive symptoms, and drug consumption. We also observe little differences between the profiles on alcohol consumption and disordered eating. Indeed, only participants from the *moderate poly-victimized* profile differ significantly from the *SH from peers* profile on alcohol consumption, with the latter reporting higher levels of alcohol consumption. As for disordered eating, participants from the *moderate poly-victimized* profile report more severe symptoms than participants in the *SV from authority figure* and the *SH from peers* profiles. This result suggests that the cumulative experience of SV from different perpetrators at a higher frequency is associated with more severe disordered eating symptoms. Intervention strategies should therefore target disordered eating when the athlete reports cumulative experience of SV in sport.

Our hypothesis that profiles with more severe SV characteristics (e.g., more frequent experiences of SV and experiencing SA) would be associated with more severe outcomes is not corroborated by our results. Our results indicate that the victimization profiles were not clearly distinguishable in terms of outcomes according to the form of SV experienced, the type of perpetrator, and the frequency of incidents. This suggests that experiencing SV in sport is serious and can have repercussions, regardless of these contextual characteristics. Our results therefore suggest that all experiences of SV, regardless of contextual characteristics, should be taken seriously as gestures that might seem commonplace can have repercussions for the athlete experiencing it.

Another possible explanation is that the outcomes of experiencing SV in sport could depend on other risk and protective factors. For instance, individual (e.g., optimism and coping strategies) and environmental (e.g., social support) protective factors are associated with resilience and better mental health outcomes following the experience of child SA (Domhardt et al., 2015; Fuller-Thomson et al., 2020; Hébert et al., 2022). Disclosure and altruism/activism with the purpose of helping others have also been suggested as a factor fostering recovery in people who have experienced SV (Gillard et al., 2022; Guggisberg et al., 2021; Strauss Swanson & Szymanski, 2020). Future studies could therefore conduct longitudinal LCA to identify adaptation profiles of athletes who have experienced SV in sport. This would help to gain a better understanding of the factors associated with outcomes of SV in sport.

Strengths, limitations, and direction for future studies

The large study sample and the use of a person-centered analysis are strengths of the study. Moreover, the simultaneous consideration of three risk factors (i.e., gender, type of sport practiced, and sport level) and five outcomes (i.e., depressive and anxiety symptoms, drug and alcohol consumption, and disordered eating) is a strength of the study as it limits the identification of spurious relationships. While this study provides new insight into the heterogeneity of SV experiences in sport and its associated factors, it is not without limitations. First, the sport level and type of sport practiced were assessed at the time of the study completion which means that those risk factors might have changed from the moment the participants experienced SV in sport and the moment they took part in the study. This could also explain why we did not observe many differences between profiles on those risk factors. Future studies should assess the participants' personal and sporting characteristics at the time they were victims to gain a more accurate understanding of risk factors of SV in sport. Second, the VTAQ-Athlete includes only one item to assess SA from peers, meaning that we may not have captured the full range of SA experiences. Third, the sample was only of adolescent-athletes which means that the results cannot be generalized to adult-athletes. Future studies should conduct LCA with a sample of adult-athletes to better understand their specific experience of SV in sport and compare it with our results. Fourth, the study was cross-sectional and did not allow to identify causal links between the variables. Longitudinal studies are needed to identify the risk factors of experiencing SV in sport and to better understand the development of outcomes following the experience of SV in sport. Finally, we used self-reported questionnaires which could lead to bias in the participants' answers due to social desirability.

Conclusion

This study goes beyond the actual assessment of risk factors and outcomes of SV in sport by taking into account the heterogeneity of victims' experiences. This provides a more nuanced understanding of the risk factors for SV in sport by identifying risk factors that belong to victimization profiles. Overall, the findings suggest that athletes reporting SV are not a homogenous group but do not clearly distinguish in risk factors and outcomes. Therefore, our results underscore the importance of recognizing and addressing the diverse psychological and emotional needs of each athlete who has experienced SV. Indeed, the experience of SV in sport appears to be unique to each individual, necessitating personalized approaches in both research and clinical practice. Results can be used to better target preventive and intervention initiatives.

The results suggest that experiencing SH, SA, or both, from peers, authority figures, or both can have repercussions on the athlete who experiences it. This highlights the need for preventive measures that address both forms of SV, and not just SA. We advocate for greater awareness raising that SH is not trivial; it can be as harmful as SA. Additionally, preventive measures must tackle SV between peers, and they should not only focus on authority figures. Coach education should therefore not only target coaches behaviors toward athletes but also their role in preventing and responding to SV between athletes. Education and awareness of SV in sport are also necessary for all sports actors, including athletes. Everyone needs to be aware of SV in sports, including SH and SA, and knows ways to prevent it and intervene when it occurs.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethical standards and informed consent

The study was approved by the Research Ethics Committee of Université Laval (no 2020–143 Phase III/01-11-2023. All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation [institutional and national] and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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