

**Juvenile Sexual Murderers: Examination and Classification of the Crime-Commission  
Process**

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Sexual homicide can be defined as the intentional killing of a person where there is evidence of a sexual element to the murder (1-4). Sometimes, the sexual activity is not necessary for the murder to be sexual as the act of killing itself may be sexually gratifying for the offender (5-7). Although sexual homicide is a rare offense, research has evolved to become especially dynamic as the understanding and management of sexual homicide offenders presents several challenges for public safety (8). However, access to sexual homicide data presents many barriers as it is often difficult to collect large and representative samples. As a result, most studies used mixed samples (i.e., offenders who killed women, children, men) of sexual homicide offenders (SHOs) and considered this type of offender as a homogeneous population (8, 9). Unlike most other crimes, juveniles involved in sexual homicides have often been ignored. Only a handful of researchers have taken an interest in juvenile SHOs, despite the fact that these offenders present major challenges for society in terms of intervention and reintegration (3, 10-12). This is especially concerning given that they are more likely to be released compared to adult SHOs (12, 13) and are also at a greater risk to recidivate than juvenile nonsexual murderers, and juvenile sexual offenders in general (3, 10).

To date, most of the existing research on juvenile SHOs has been published by Myers and colleagues (3, 10, 12-16). Most of this work has been based on a relatively small sample of juvenile SHOs (i.e., between 14 and 20 juvenile SHOs depending on the studies) and described their developmental, psychological, and behavioral characteristics. Despite the small sample size, this pioneer work is of the utmost importance being the first and only to focus on this rare phenomenon and having substantially improved our understanding of this type of offender. Nonetheless, many key questions regarding the offending behavior of juvenile SHOs still remain. Consequently, the main objective of the current study is to determine whether juvenile SHOs present differences in their crime-commission process

compared to adult SHOs. Moreover, we aim to determine whether juvenile SHOs constitute a homogeneous group of offenders.

### *Characteristics of Sexual Homicide Perpetrated by Juvenile Offenders*

Only a few studies have examined sexual homicides perpetrated by juvenile offenders and most of these studies are based on case reports (5, 17-23). In fact, a review of the literature shows that most of the empirical work on juvenile SHOs has been published by Myers and colleagues (3, 10, 12-16). As such, the following section reviews the key offender, victim, and crime characteristics identified by Myers and colleagues.

#### Offender characteristics.

Studies by Myers and colleagues showed that the average age of juvenile SHOs was approximately 15 years old and with an average intelligence quotient of 101.4 (i.e., suggest a normal level of intelligence) (3, 11-13). They did not present current or past psychotic disorders such as schizophrenia or a delusional disorder but were all concerned by a history of psychotic symptoms (i.e., paranoid ideation, auditory hallucinations, blurring of boundaries between fantasy and reality, ideas of reading other's minds, visual hallucinations) (3, 13). Depending on the age of juvenile SHOs at the time of the evaluation PCL-R or PCL-Youth Version were used to assess the degree of psychopathy. They presented an average score of 22.4 suggesting a moderate level of psychopathy while 43% of them were under the influence of alcohol/drugs at the time of the offense (3, 13). Myers and Blashfield (13) noted that none of the juvenile SHOs included in their sample reported past sexual abuse.

#### Victimology.

Studies by Myers and colleagues have focused only on female victims of juvenile SHOs. Nonetheless, these studies have indicated that the average age of female victims was 24.2 years old (3, 11-13). Conversely, for victims of homosexual juvenile murderers, Myers and Chan (14) found an average age of 30.5 years. Interestingly, they found that juvenile

SHOs were more likely to kill children and adolescent victims while adult SHOs were more likely to kill adult victims. Safarik, Jarvis (24) and Safarik (25) suggested that juvenile SHOs were more likely to target elderly victims but Chan and Heide (26) did not find any significant difference when they tested this finding. Acquaintance was the most common offender-victim relationship followed by stranger, and in some anecdotal cases familial (3, 11-14). All the victims lived in the same town as the offenders and in most cases they lived in the same neighborhood (3, 12, 13). Juvenile SHOs were more likely to assault low-risk victims (e.g., victims assaulted in their homes; by a family member or a friend, in a safe neighborhood, etc.) than high-risk victims (i.e., those victims whose life circumstances and behaviors would increase their risk for becoming victims of violent crimes. For example, sex-trade workers, drug addicts, etc.), and victims previously selected by the offender were more likely to be targeted (e.g., for vulnerability, physical characteristics, etc.) compared to victims of opportunity (3, 12, 13).

#### Crime characteristics.

As to the sexual behaviors perpetrated by juvenile SHOs, vaginal intercourse was observed in the majority of cases while few offenders with no previous sexual experience only touched victims (3, 12, 13). Juvenile SHOs used a weapon during the crime in most cases (3, 12-14). Compared to adult SHOs, juvenile SHOs were significantly more likely to use firearms and personal weapons (i.e., strangulation, asphyxiation, drowning, and pushing the victim out of a window (26). The most common crime locations selected by juvenile SHOs were the victim's residence and wooded area (3, 12-14). To access the crime scene, juvenile SHOs used a car in 28% of cases and walked in 43% of cases, whereas no transportation was used in 29% of cases (3, 12, 13). Myers, Chan (10) found that full criteria of sexual sadism were identified in 59% of cases while 14% of cases were characterized by marked traits of sexual sadism. Using the organized-disorganized classification (18, 27), 54%

of cases of juvenile SHOs followed an organized modus operandi, while 46% followed a disorganized process. This dichotomous classification identified by Hazelwood and Douglas (28) suggests that organized murderers feel rejection and hatred for the society in which he lives and the lust murder can be considered as the final expression of his hatred. The disorganized offenders also feel rejection and hatred for the society but they internalize their feelings. In comparison to disorganized SHOs, organized SHOs follow a structured modus operandi and are more likely to avoid police detection (28).

Interestingly, studies noted that most crimes that began with an organized process degenerated in disorganized homicides (3, 11-13). Myers, Burgess (12) suggested that the disorganization could result from the lack of maturity, the lack of sophistication, or intoxication and psychopathology. The naivety about how to kill someone (i.e., not being familiar with what is needed to kill someone, the effect of killing someone. For example, Myers, Burgess (12) mentioned that in two cases of their sample, the juveniles tried to twist their victim's heads off) was observed in some cases and may be associated with developmental immaturity and inexperience in sexually assaulting and killing someone (12).

#### *Juvenile SHOs Motivations*

Little is known about juvenile SHOs' motivations. In their study, Myers, Burgess (12) listed the motivations collected from 14 juvenile SHOs they interviewed. To summarize, the most frequent motivations were anger, rape and murder fantasies, revenge, jealousy toward victims, and violence escalation (i.e., attempt of rape resistance). Among the 14 juvenile SHOs in this sample, 50% reported violent sexual fantasies that may have played a significant role in the crime-commission process (12).

In his book, Myers (3) proposed the first and only classification of juvenile SHOs. This preliminary clinical classification based on a sample of 16 juvenile SHOs focused on motivations and was elaborated from six indicators: Attack style, PCL-R score, pre-existing

sadistic fantasies, relationship to the perpetrator, sexual penetration of victim, and crime location. Four categories of juvenile SHOs were identified by Myers (3). The *explosive* type is characterized by a blitz attack, a medium/high PCL-R score, usually pre-existing sadistic fantasies, acquaintanceship between offender and victim, variable sexual penetration of victims, and crime located close to the offender's residence. As to the *predatory* type, this SHO is characterized by a controlled attack style, a high PCL-R score, as well as pre-existing sadistic fantasies. The offender does not know the victim, who is likely to be sexually assaulted at a location far from the offender's neighborhood (i.e., considered as a strategy to avoid detection). The *revenge* type is also characterized by a controlled attack style and a high PCL-R score, but this SHO does not report pre-existing sadistic fantasies. The offender and victim are typically acquaintances, and the offender is likely to sexually assault the victim at a location away from the offender's neighborhood. As to the *displaced matricide*, this SHO is characterized by a mixed attack style, a low/medium PCL-R score, as well as pre-existing sadistic fantasies. This type of sexual homicide is likely to be characterized by a mixed relationship between offender and victim, an absence of sexual penetration, and a crime location close to the offender's home (3). Myers (3) mentioned that the *displaced matricide* type of juvenile SHOs is characterized by "severe mental illness in the offender, a domineering mother, a hostile-dependent relationship with the mother, a passive or withdrawn father and overkill behavior" (p. 142).

### *Aims of Study*

Although interesting and revealing, the clinical typology proposed by Myers (2002) presents certain limitations. In addition to the small sample size and the absence of empirical validation, Myers (2002) mentioned that his motivational typology required revision and/or expansion. Moreover, although some studies have examined differences between adult and juvenile SHOs (14, 15, 26, 29), these comparisons were made on a very limited number of

variables coming from the Supplemental Homicide Report (SHR). Finally, all the existing empirical studies on juvenile SHOs were based on cases from the U.S. only, which may have influenced some of the findings (e.g., access to firearm). Therefore, in order to improve our understanding of juvenile SHOs, the current study focuses on two major aspects. The first is to identify whether juvenile SHOs present specific characteristics by comparing these cases to a group of adult SHOs. Second, this study aims to provide an empirical classification of the juvenile SHOs' motivations using a robust statistical method.

## **Methods**

### *Sample*

The sample used in this study comes from the Sexual Homicide International Database (SHIeID). This database includes offender, victims and crime characteristics of solved and unsolved extrafamilial (i.e., stranger or acquaintance relationships) sexual homicides that occurred in France and Canada between 1948 and 2018 (for a complete description of the database methodology see 9). To be included in this database, sexual homicides were identified using the FBI definition from Ressler, Burgess (18). This definition suggests that to be considered as sexual, a homicide must present at least one of the following characteristics: victim's attire (e.g., torn clothing exposing the victim's breasts) or lack of attire; exposure of the sexual parts of the victim's body; sexual positioning of the victim's body; insertion of foreign objects into the victim's body cavities; evidence of sexual intercourse; evidence of substitute sexual activity (e.g., masturbation), interest, or sadistic fantasy. Despite being used in most studies focusing on sexual homicide, this definition has been criticized for the potential to increase false positives (see e.g., 30, 31, 32). Consequently, a decision was made to consider only homicides that present at least two criteria from the FBI definition. Data collected were compiled by a team of crime analysts from investigation files and different expert reports provided by forensic psychologists, coroners, and forensic scientists.

For the purpose of this study, 336 solved cases of sexual homicide were selected: 55 cases involving juvenile SHOs and 281 involving adult SHOs. The selection of cases followed different steps. First, as there is no standardized definition of what constitutes a juvenile offender, we followed the guidelines provided in previous studies and have chosen to include all offenders aged less than 18 years old (see 3, 12, 13, 20). Second, we decided to restrict the adult victims to those aged 21 years old or more (i.e., 21 years old is the age of majority in the US and is often used as the cut-off to designate adults). This decision was made to avoid including cases that could fall in between the two categories, thus introducing noise into the analyses and findings. Third, half of the sample of adult SHOs was randomly selected from a larger sample including 560 SHOs aged 21 years old or more. This decision was made to limit the size difference between the two samples. Finally, we decided to use only solved cases as unsolved cases often present important missing information about the crime-commission process.

Juvenile SHOs included in the sample were all men, most of whom were single (92.72%) at the time of the crime. They were 16.14 years old, on average ( $SD = 0.99$ ; range = 14–17). Few of them possessed a sexual collection (i.e., illegal sexual and/or violent pictures and/or movies) (3.64%) and reported sexual dysfunctions (i.e., erectile and/or ejaculatory disorders (3.64%), but 23.63% were characterized by some paraphilic behaviors (type of behavior associated to any paraphilias but without having to meet the diagnostic criteria, see 33, 34). Half used alcohol/drugs prior to the crime (49.09%), while only a few (16.36%) engaged in a loner lifestyle (i.e., avoided social contact with others). Finally, 40% of juvenile SHOs presented prior criminal convictions.

Adult SHOs were also all men, who were mostly single (59.43%) and 32.28 years old, on average ( $SD = 8.71$ ; range = 21–65). Approximately one fifth (17.08%) possessed a sexual collection and presented paraphilic behaviors, while 12.10% reported sexual dysfunctions.



The majority of adult SHOs used alcohol/drugs prior to crime (58.71%), while 29.53% had previous criminal convictions.

### *Measures*

A total of 36 dichotomous variables (0 = absence; 1 = presence) were used to explore the crime-commission process of juvenile SHOs.

Dependent variable.

To compare the two groups, we used one dichotomous variable that differentiates sexual homicides perpetrated by juvenile (i.e., less than 18 years old) and adult (i.e., 21 years old or more) SHOs.

Independent variable.

A total of 36 dichotomous independent variables were used to describe victim selection, sexual behaviors, non-sexual behaviors, body recovery, FAS characteristics, as well as crime-related locations.

Previous studies have shown that certain victim gender, age, and lifestyle characteristics could be associated specifically with sexual homicide perpetrated by juvenile SHOs (3, 11-14, 26, 29). We used a total of 13 dichotomous variables to describe victim selection characteristics. Specifically, these variables detail victim characteristics, lifestyle, and routine activities: 1) Victim specifically targeted by the offender, 2) victim and offender were strangers (i.e., offender and victim did not know each other), 3) victim was a female, 4) victim was aged less than 10 years old, 5) victim aged between 11 and 15 years old, 6) victim aged 65 years old or more, 7) victim consumed alcohol/drugs prior to crime, 8) victim was a loner (i.e., he/she avoids social contact with other people), 9) victim was frequently engaged in social activities, 10) victim was involved in domestic activities prior to crime (e.g., watching TV, etc.), 11) victim was playing, 12) victim was involved in sports or recreational activities, 13) victim was jogging.

As to the sexual behaviors, previous studies have shown that some juvenile SHOs committed sexual penetration while other more inexperienced juvenile SHOs mainly perpetrated fondling acts (3, 12, 13). Following these studies, we used a total of four variables describing the sexual acts perpetrated by SHOs during the crime: 1) vaginal/anal penetration with a penis, 2) fellatio (i.e., received), 3) fondling, 4) sexual sadism (SADSEX-SH scale was used to operationalize the concept of sexual sadism from crime scene actions. This scale uses a cut-off score on the basis of eight items: (a) sexual domination of the victim through the use of bondage, blindfolding, a knife, etc.; (b) physical or psychological torture of the victim; (c) victim forced to verbally or physically engage in sexually degrading, humiliating behavior; (d) gratuitous violence, excessive injury, biting, cutting, or other acts of physical cruelty inflicted on the victim; (e) anal or oral sex forced upon the victim; (f) use of an inanimate object(s) to sexually penetrate the victim; (g) sexual mutilation of the victim; (h) souvenirs or trophies taken from the victim. For more details see 35).

Previous studies have shown that juvenile SHOs mostly used weapons to kill their victims (3, 12-14). We used a total of five variables to describe the non-sexual behaviors and understand the violent interactions that occurred during the crime-commission process: 1) offender used a con as a strategy to approach the victim (e.g., befriended the victim, posed as an authority figure, offered assistance, etc.), 2) use of a weapon, 3) offender beat the victim, 4) method of killing: asphyxiation/strangulation, and 5) use of restraints (i.e., to overcome victim's resistance

Previous studies have not tested the ability of juvenile SHOs to avoid police detection. Nonetheless, several studies suggested that SHOs may take precautions to avoid police detection (36-38). In order to test this specific aspect of the crime-commission process, we used a total of four variables describing the body recovery characteristics and the forensic awareness strategies used by SHOs: 1) body moved from the crime location, 2) body

concealed, 3) offender protected his identity (e.g., offender used a condom, offender wore gloves, etc.), and 4) offender destroyed evidence (e.g., offender set fire to scene, offender washed victim's body, offender cleared crime scene, offender planted evidence).

Previous studies have suggested that homicides perpetrated by juvenile SHOs occurred at specific locations (3, 12-14). We used a set of 9 dichotomous variables to describe the crime-related locations: 1) contact scene: risk to be seen, 2) contact scene: residence (i.e., victim residence, offender residence, common area of a building), 3) contact scene: outdoor location, 4) offense scene: risk to be seen, 5) offense scene: residence, 6) offense scene: outdoor location, 7) body recovery scene: risk to be seen, 8) body recovery scene: residence, 9) body recovery scene: outdoor location.

#### *Analytical Strategy*

This study followed a three-step process. First, we examined at the bivariate level (i.e., chi-square analysis, Fisher's exact test), the differences between the two groups of offenders (i.e., juvenile and adult SHOs) using the set of independent variables. Second, using only the significant variables ( $p \leq 0.05$ ) from the bivariate analyses, we computed a sequential binomial regression. The goal of this multivariate analysis was to identify both the independent variables associated with juvenile SHOs at the multivariate level and determine the weight of each block of variables (i.e., victim selection, sexual behaviors, non-sexual behaviors, body recovery and FAS characteristics, and crime-related locations). Each block of variables was tested individually. The third step of this study was to determine the heterogeneity in the crime-commission process of juvenile SHOs. To this end, we used latent class analysis (LCA) in order to detect underlying patterns in a set of data or subgroups of individuals who share important behavioral characteristics (39). The goal of this procedure is to identify mutually exclusive classes using dichotomous variables (39-41). LCA is similar to cluster analysis but provides stronger models as it attributes class membership probabilities to

each individual case. Seven models were computed and analyzed from a one-to-seven class solutions (Table 1). Several fit measures were used to identify the model: Bayesian Information Criterion (BIC), log likelihood, likelihood ratio  $L^2$ , degrees of freedom, Akaike Information Criterion (AIC) and entropy.

Based on previous studies describing modus operandi characteristics of juvenile SHOs (3, 12, 13), we used a set of nine dichotomous variables to analyze the complete sequence (i.e., from pre crime to post crime phases) of the crime-commission process: 1) Victim specifically targeted by the offender, 2) victim and offender were strangers, 3) offender used a con as a strategy to approach the victim (e.g., befriended the victim, posed as an authority figure, offered assistance, etc.), 4) offense scene: outdoor location, 5) offender perpetrated sexual penetration with a penis (i.e., vaginal and/or anal penetration), 6) Sexual sadism (SADSEX-SH scale, see 35), 7) weapon involvement, 8) Offender beat the victim, 9) method of killing: asphyxiation/strangulation. We have tested for multicollinearity and no correlations were higher than .434 (Appendix 1).

## **Results**

### *Bivariate Analyses*

Table 1 presents findings on the comparison between cases perpetrated by juvenile and adult SHOs. Bivariate findings suggest that juvenile SHOs less often assaulted female victims ( $\chi^2 = 11.77$ ,  $p = .001$ ), victims who used alcohol/drugs prior to crime ( $\chi^2 = 6.10$ ,  $p = .014$ ), and those who were frequently engaged in social activities ( $\chi^2 = 3.84$ ,  $p = .05$ ). Juvenile SHOs were more likely to assault victims who were less than 10 years old ( $\chi^2 = 21.28$ ,  $p = .001$ ), while playing ( $\chi^2 = 10.05$ ,  $p = .001$ ) or involved in sports or recreational activities ( $\chi^2 = 17.50$ ,  $p = .000$ ). Juvenile SHOs were more likely to conceal the victim's body ( $\chi^2 = 4.10$ ,  $p = .043$ ) and protect their identities ( $\chi^2 = 4.83$ ,  $p = .028$ ). At the contact scene, juvenile SHOs more frequently selected a location where there was a risk to be seen by witnesses ( $\chi^2 =$

13.11,  $p = .000$ ) or used an outdoor location ( $\chi^2 = 4.83$ ,  $p = .028$ ) but they were less likely to choose a residence ( $\chi^2 = 3.83$ ,  $p = .05$ ). As to the crime location, juvenile SHOs were more likely to select an outdoor location ( $\chi^2 = 10.89$ ,  $p = .001$ ) as well as a body recovery location that had a higher risk of being seen ( $\chi^2 = 4.68$ ,  $p = .030$ ).

[INSERT TABLE 1 HERE]

### *Binomial Sequential Regression*

Table 2 describes findings of the binomial sequential regression. Model 1 includes only the variables related to the victim selection and presents a Nagelkerke  $R^2$  of 0.17. Results show that juvenile SHOs were 3.68 times more likely to target victims who were less than 10 years old at the time of the crime (OR = 3.68,  $p = .010$ ) and 8.48 times more likely to assault victims who were involved in sports or recreational activities (OR = 8.48,  $p = .000$ ) at the time of the crime. Moreover, juvenile SHOs were 2.86 times less likely to assault female victims (OR = 1/0.35,  $p = .036$ ). Model 2 includes only the variables related to the body recovery characteristics and forensic awareness strategies used by SHO and presents a Nagelkerke  $R^2$  of 0.04. None of the two variables included in this model were significant. Model 3 includes only the variables related to the crime-related locations and presents a Nagelkerke  $R^2$  of 0.12. Findings show that juvenile SHOs were 2.53 times more likely to select a contact location where there was a risk to be seen (OR = 2.53,  $p = .010$ ) and were 1.96 times more likely to select a residential area as contact location (OR = 1.96,  $p = .031$ ). Finally, juvenile SHOs were 2.28 times more likely to select an outdoor place as a crime location (OR = 2.28,  $p = .028$ ).

[INSERT TABLE 2 HERE]

### *LCA Model*

To test for heterogeneity in the crime commission process of juvenile SHOs, we used nine dichotomous variables related to victim selection, crime location, and crime

characteristics. To assess the best latent class model, one-to-seven solutions were computed (Appendix 2). Due to the limited sample size of juvenile SHOs (n=55), BIC is constantly increasing and is not an adequate measure to determine the best class solution. AIC is more useful, and the smallest value suggests that the trade-off between fit and parsimony was achieved. It appeared that the 4-class solution was the best fitting solution. Entropy for the 4-class solution was high (0.90) and suggested that predictors used are fit to classify the cases and that classes were sufficiently distinct (42).

Table 3 and Figure 1 describe the 4-class solution representing the four different pathways followed by juvenile SHOs. The largest class corresponds to the class 1 including 32.73% of the cases, while the smallest is class 4 including 10.91% of the cases.

In class 1, juvenile SHOs were less likely to target their victims (0.11) and to use a con as the strategy to approach the victim (0.22) but they were more likely to assault stranger victims (0.83) and to use outdoor locations (0.83) to perpetrate their crime. They were also less likely to perpetrate vaginal/anal penetration (0.39) and acts of sexual sadism (0.17).

In class 2, juvenile SHOs were less likely to target their victims (0.25), to use a con as a strategy to approach the victim (0.44), and to use an outdoor location as the crime scene (0.44). They were more likely, however, to perpetrate vaginal/anal penetration (0.75) as well as acts of sexual sadism (1.00). Moreover, these juvenile SHOs were more likely to have a weapon during the crime (1.00) but they were less likely to use asphyxiation/strangulation to kill their victims (0.38).

In class 3, juvenile SHOs were less likely to target their victims (0.27) but were more likely to use a con approach (1.00) and to select an outdoor location as the crime scene (0.80). They were also more likely to perpetrate vaginal/anal penetration (0.73) but they were less likely to perpetrate acts of sexual sadism (0.00). Lastly, these juvenile SHOs were more likely

to beat their victims (1.00) but still less likely to use asphyxiation/strangulation to kill them (0.20).

In class 4, juvenile SHOs were more likely to target their victims (1.00), to use a con as the strategy to approach their victims (1.00), and to select an outdoor location as the crime scene (0.67). These juvenile SHOs were never strangers to their victims (0.00) nor did they perpetrate vaginal/anal penetration (0.00) or acts of sexual sadism (0.00). They were more likely to have a weapon (0.83) during the crime and to use asphyxiation/strangulation to kill their victims (1.00).

[INSERT TABLE 3 HERE]

[INSERT FIGURE 1 HERE]

## **Discussion**

The objectives of this study were twofold: first, to identify the differences in the crime-commission process of juvenile compared to adult SHOs and second, to determine whether juvenile SHOs constitute a heterogeneous population. Based on an important database of sexual homicide cases committed in Canada and France between 1948 and 2018 (i.e., SHIELD see 9), bivariate and multivariate analyses focusing on the crime-commission process were conducted to provide new insights on these offenders. This database contained 55 cases perpetrated by juvenile SHOs that we compared to a control group of 281 cases perpetrated by adult victims. Findings of our study suggest that the crime-commission process of juvenile SHOs present important differences with adult SHOs and that juvenile SHOs are driven by four distinct types of motivations.

### *Offenders' Age as a Situational Constraint*

Our results on the comparison of sexual homicides perpetrated by juvenile and adult offenders are unambiguous: Only victim selection and crime location parameters present significant differences. First, our findings showed that juvenile SHOs were more likely to

assault young victims while involved in sports or recreational activities. This finding is congruent with the study of Chan and Heide (26) who found that juvenile SHOs were more likely to target child and adolescent victims. Moreover, such findings are in line with the routine activities theory (43). Thus, criminal opportunities are found in the offender's everyday life activities. This theory assumes that predatory crimes, such as sexual homicide, are the outcome of the convergence in space and time of motivated offenders, suitable targets, and the absence of capable guardians. It is likely that the over-representation of child victims in juvenile sexual homicides may be explained by the fact that adolescents and children share more everyday life activities (e.g., school, commuting to and from school, similar schedules, same paths, etc.). We may also hypothesize that children are less suspicious of adolescents than adults, and would therefore be more likely to follow someone who is closer to their age. This could facilitate the isolating phase of victims and consequently the commission of the crime (44, 45).

Second, we observed that juvenile SHOs selected riskier contact location and outdoor crime scene. We argue that the situational constraints associated with the offenders' age play a role in the choice of places associated with the crime. As to the contact scene, it is possible that the limitation of traveling in a private vehicle has an impact on the victims' contact location, which is restricted to offenders' everyday activities. Unlike some adult SHOs who determine their predatory area themselves (see e.g., 46, 47), adolescents are restricted to the various places related to their routine activities. This lack of choice leads to increase the juvenile SHO's exposure (e.g., presence of witnesses). Consequently, this limitation in transportation also limits the choice of where the crime is committed.

#### *Juvenile Sexual Murderers' Typology: Exploration of a Heterogeneous Population*

The current study provided the first empirical typology of juvenile SHOs. We used nine indicators, based on previous research focusing on juvenile SHOs (3, 11-13) to explore



the crime-commission process and determine the offenders' motivations. The use of crime scene behaviors to determine offenders' motivations is a classical method used in several sex offending studies (3, 48, 49). Using LCA, our analysis suggests that our sample of 55 juvenile SHOs should be divided into four categories: Explosive opportunistic, sadistic, overcontrolled anger, and predator.

Explosive opportunistic.

The explosive opportunistic juvenile SHOs constitutes the most important group of our model. This category of offender seems motivated by the presence of an opportunity to sexually assault someone. These offenders have not targeted the victim who is a complete stranger and assault them at an outdoor location. The combination of these two aspects highlights the unprepared character of this crime with a low level of planification and is congruent with previous studies describing opportunistic sex offenders (see e.g., 50, 51-53).

The specific aspect of the crime-commission process compared to general samples of opportunistic sex offenders is the use of coercive approach to assault the victims. As discussed by Myers, Burgess (12), the lack of sophistication in the approach can be the result of the young age of the offender and his lack of maturity, criminal experience, and excess of spontaneity.

Our findings indicate that explosive opportunistic offenders were less likely to penetrate the victim. This aspect is also congruent with previous studies suggesting that opportunistic sex offenders were more likely to commit foreplay and fondling acts (see e.g., 50, 51-53). This lack of sexual penetration could be explained in two ways. First, the suddenness of the crime may have resulted in the victim's resistance, which did not allow the offender to attempt sexual intercourse. Second, as highlighted by previous studies, the act of sexual homicide constitutes for some young offenders their first real sexual encounter (12).

Thus, the lack of sexual experience could explain why foreplay and touching were perpetrated instead of sexual penetration.

We observed that juvenile SHOs used mixed methods to kill the victim (i.e., use of weapons, asphyxiation/strangulation). Lethal outcome in opportunistic sexual crimes can be explained in two ways. First, the use of excessive violence to overcome the victim resistance, also known as crime escalation, may lead to the death of the victim. Second, the victim's death could have been premeditated to avoid police detection (54-56). We argue that the latter is more likely. The absence of beating by the offender rules out the possibility of an overreaction to the victim's behavior. This reinforces the idea of an instrumental approach to the motivation to kill the victim (i.e., avoid police detection).

Sadistic.

This category fits with findings of previous studies suggesting that most juvenile SHOs were diagnosed with full criteria for sexual sadism (10). Moreover, Myers, Burgess (12) found that half of juvenile SHOs they interviewed reported violent sexual fantasies that may have played a significant role in the crime.

Juvenile sadistic SHOs share many characteristics with adult sadistic SHOs and also followed an organized process. First, these offenders do not target specifically their victims. As suggested in several studies, sadistic offenders do not target victims but were looking for specific situations allowing them to have an easier access to vulnerable victims (46, 47). Second, to limit both the risk of being interrupted by a witness and the victim's resistance, sadistic offenders were more likely to use a con as a strategy to approach the victim (18, 57, 58). Third, the presence of vaginal penetration and the systematic identification of sexual sadism through the SADSEX-SH scale, leaves no doubt about the sadistic nature of these crimes (35). Finally, we observed a difference in the method of killing. Juvenile sadistic SHOs were more likely to use weapons to kill their victims, whereas

strangulation/asphyxiation has been identified as the most common method used by adult sadists (35, 46, 59, 60).

Two hypotheses may explain this difference. First, as suggested by Myers, Burgess (12), the juvenile SHOs are naive about how to kill someone and have rationally chosen a more obvious killing method. Second, we can argue that the development of the sadistic process was not complete for these young offenders and that the use of a specific method was not a central part of the crime-commission process. We assume that for juvenile sadists SHOs the death of the victim is more important than the method of killing.

#### Overcontrolled anger

The overcontrolled anger juvenile SHOs is characterized by a specific crime-commission process. This category of offender is similar to the anger category of sex offenders (see 49, 53, 61). They were mostly characterized by both the presence of sexual penetration and the excessive use of physical force during the crime. The most important difference we observed with anger adult SHOs consists of an escalation of the violent behavior. Angry sexual abusers are generally characterized by the use of coercive approach strategies (e.g., the offender grabbed and immediately choked the victim, offender immediately overpowered the victim, the offender immediately hit the victim, the offender immediately stabbed or shot the victim) (see 49, 53, 61). Angry juvenile SHOs use a con or a ruse as a strategy to approach their victims before turning to anger-related acts during the crime. This suggests that the anger is controlled by these offenders until they find themselves in optimal conditions to express it. The use of a con as a strategy to approach the victim suggests that these offenders intend to avoid the victim's resistance or an interruption by third parties. As noted by Myers, Burgess (12), such a crime-commission process illustrates well the instability of the modus operandi of young offenders and the transition from an organized to a disorganized process.

We observed that this category of juvenile SHOs targets both victims who are strangers or acquaintances. We hypothesize that the *revenge* and *displaced matricide* categories identified by Myers (2002) could be associated with angry juvenile SHOs. We assume that in cases where the victim was both targeted and known to the offender, anger could be the underlying force for the motive of revenge as identified by Myers (2002). In cases where the victim was both strangers and not targeted by the perpetrator, the victim could represent an outlet for the offender to express his anger that was provoked by a cause independent of her (e.g., displaced matricide, see Myers 2002).

#### Predator

Predator offender is the smallest class of juvenile SHOs. This class of offenders is similar to the sadistic SHOs as these offenders followed an organized process but differ in that sexual sadism and acts of sexual penetration are totally absent. We observe that these offenders specifically target their victims, that are always acquaintances, that they used weapons, and that all victims were killed by asphyxiation or strangulation. This class of offender is similar to the predatory category identified by Myers (2002). We noted that juvenile SHOs are more likely to target children, while the literature suggests that child molesters less frequently perpetrate acts of sexual penetration (see e.g., 62, 63). An interesting link can be drawn with the *inadvertent/prepubescent* category of sexual murderers of children typology identified by Chopin and Beauregard (48). This type of SHO of children is characterized by similar characteristics as predator juvenile SHOs (i.e., premeditation, predatory behavior, lack of sexual penetration, asphyxiation/strangulation). Chopin and Beauregard (48) found that these offenders are young and inexperienced pedophiles who try to have a first sexual experience with a child. They mentioned that these offenders were mainly motivated to have sexual gratification with children with foreplay and fondling acts, while the death of the victim is the outcome of a lack of care toward a physically vulnerable

victim. Nevertheless, the systematic use of asphyxiation/strangulation by predator juvenile SHOs led us to hypothesize that the victim's death was premeditated and it was either part of a deviant process or motivated by the willingness to avoid police detection.

## **Conclusion**

The current study investigated juvenile sexual homicides. First, we aimed to determine whether the crime-commission process of juvenile SHOs presented differences when compared with adult SHOs. Findings from multivariate analyses suggested that the offender's age played an important role in victim selection and the crime associated locations. We observed that juvenile SHOs were more likely to assault children and to select riskier outdoor locations. Juvenile everyday life activities led them to be in contact more often with children compared to adults, while the limited options for transportation restricted their predatory area and the crime-commission location possibilities. The second objective of this study was to empirically determine whether juvenile SHOs represented a homogeneous group of offenders. Using latent class analysis, we identified a four-class model of juvenile SHOs: Explosive opportunistic, sadistic, overcontrolled anger, predator.

This study presents both theoretical and practical implications. At the theoretical level, results showed that routine activities theory is useful to understand the specific aspects associated with the crime-commission process of juvenile SHOs. We showed that child victims are overrepresented because they were more likely to share unsupervised everyday life activities with adolescents than with adult motivated offenders. We also determined that transport limitations for juvenile offenders has important consequences for the selection of victims as well as contact and crime locations. This study also confirmed previous findings suggesting that young offenders follow a mixed (i.e., organized and disorganized) and incomplete crime-commission process (e.g., lack of strangulation/asphyxiation in sadistic homicides). As to the practical implications, this study aimed to provide more details on

sexual homicides perpetrated by juvenile offenders. For investigative purposes, the typology we identified provide specific characteristics of crime associated with young offenders (e.g., presence of coercive approach for opportunistic crime, use of a weapon as a method of killing for sadistic sexual homicides, con approach strategy for anger sexual homicides). These differences observed with classical typologies of adult SHOs and adult sex offenders could facilitate the investigators' work for suspect prioritization. Juvenile SHOs also pose specific challenges for corrections and treatment. Compared to adult SHOs, juvenile SHOs are more likely to be released into the community (10). Therefore, it is important to understand the underlying motives for their actions in order for interventions to be tailored to address causal factors related to their crime (e.g., sadistic fantasies, pedophilia, etc.). Moreover, it is particularly important to propose specific measures for offenders who adopted an organized process as they are more likely to recidivate (see 12, 13). At the time these offenders will be released back in the community, it will be important to adapt the supervision conditions. Myers (2002) suggested an intensive community-based services as well as a follow-up to monitor and foster psychological, social and occupational progress of these offenders.

Despite its interest, this study is not without limitations. This study used police data which are known to present limitations in terms of validity and reliability (see e.g., 64, 65, 66). First, findings are applicable only to cases reported to authorities and we cannot exclude that some cases of homicide were never reported. However, we can assume that it represents a very limited number of cases as the dark figure (i.e., the number of unreported or undiscovered crimes) for homicide is especially low (see e.g., 67). Second, data used in this research concerned only cases solved by the police and we cannot exclude that unsolved crimes follow different patterns (57, 68-70). Third, we computed multivariate analyses on rare events. Despite the fact that we respected the one in ten statistical rule (71), methodological problems of rare events with logistic regression have been highlighted (see 71, 72) and can

lead to several biases, as for example an over-representation of odds ratio. Therefore, multivariate findings must be interpreted with caution by focusing on trends instead of odds ratios.

Further research should test the validity of the identified typology with data from other countries. More research is needed on the everyday activities and situational constraints (e.g., the limitation of traveling in a private vehicle) of juvenile offenders and the specific characteristics of the crimes they perpetrate. Research on developmental and psychological characteristics of juvenile SHOs should be pursued in order to determine the best treatments to help the reintegration of these youths and limit the risk of recidivism.

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**Tables**

Table 1. Bivariate analyses (N=336)

	Adult SHOs n=281		Juvenile SHO n=55		$\chi^2$ /Fischer's Exact test
	n	%	n	%	
<b>Victim selection</b>					
Victim specifically targeted	90	32.03%	16	29.09%	0.18
Victim and offender were strangers	128	45.55%	26	47.27%	0.06
Victim was a female	249	88.61%	39	70.91%	11.77***
Victim age less than 10	19	6.76%	15	27.27%	21.28***
Victim age between 11 and 15	20	7.11%	8	14.55%	3.32
Victim age 65 years and older	27	9.60%	3	5.45%	0.98
Victim consumed alcohol/drugs prior to crime	99	35.23%	10	18.18%	6.10*
Victim was a loner	19	6.76%	1	1.82%	2.01
Victim was frequently engaged in social activities	82	29.18%	9	16.36%	3.83*
Victim was involved in domestic activities prior to crime	67	23.84%	13	23.64%	0.01
Victim was playing	16	5.69%	10	18.18%	10.05***
Victim was involved in sports or recreational activities	8	2.85%	9	16.36%	17.50***
Victim was jogging	68	24.20%	14	25.45%	0.04
<b>Sexual behaviors</b>					
Vaginal/anal penetration with a penis	174	61.92%	30	54.55%	1.05
Fellatio	42	14.95%	6	10.91%	0.61
Fondling	55	19.57%	14	25.45%	0.98
Sexual sadism (SADSEX-SH Scale)	92	32.74%	16	29.09%	0.28
<b>Non-sexual behaviors</b>					
Con approach	168	59.79%	31	56.36%	0.22
Weapon involvement	198	70.46%	38	69.09%	0.04
Offender beat the victim	128	45.55%	30	54.55%	1.49
Method of killing: Asphyxiation/Strangulation	126	44.84%	24	43.64%	0.03
Use of restrains	57	20.28%	9	16.36%	0.45
<b>Body recovery / Forensic awareness strategies</b>					
Body moved	75	26.69%	8	14.55%	3.65
Body concealed, hidden or otherwise placed in order to prevent discovery	70	24.91%	21	38.18%	4.10*
Protection identity	36	12.81%	2	3.64%	3.86*
Removing / destroying forensic evidence	98	34.88%	12	21.82%	3.56
<b>Contact, crime and body recovery location parameters</b>					
Contact scene: Risk to be seen	40	14.23%	19	34.55%	13.11***
Contact scene: Residential place	110	39.15%	29	52.73%	3.83*
Contact scene: Outdoor place	76	27.05%	23	41.82%	4.83*
Offense scene: Risk to be seen	64	22.78%	17	30.91%	1.66
Offense scene: Residential place	118	41.99%	29	52.73%	2.15
Offense scene: Outdoor place	88	31.32%	30	54.55%	10.89***
Body recovery scene: Risk to be seen	55	19.57%	18	32.73%	4.68*
Body recovery scene: Residential place	106	37.72%	25	45.45%	1.16
Body recovery scene: Outdoor place	110	39.15%	29	52.73%	3.5

Notes. \*p < .05. \*\*\*p < .001.



Table 2. Sequential Binomial Regression (N=336)

	Model 1			Model 2			Model 3		
	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
Victim was a female	-1.04	0.39	0.35**						
Victim age less than 10	1.30	0.51	3.68**						
Victim consumed alcohol/drugs prior to crime	-0.44	0.41	0.64						
Victim was frequently engaged in social activities	-0.45	0.43	0.64						
Victim was playing	-0.41	0.61	0.67						
Victim was involved in sports or recreational activities	2.14	0.56	8.48***						
Body concealed, hidden or otherwise placed in order to prevent discovery				0.57	0.31	1.77†			
Protection identity				-1.29	0.74	0.28†			
Contact scene: Risk to be seen							0.93	0.36	2.53**
Contact scene: Residential place							0.67	0.31	1.96*
Contact scene: Outdoor place							0.15	0.38	1.17
Offense scene: Outdoor place							0.83	0.03	2.28*
Body recovery scene: Risk to be seen							0.43	0.35	1.54
Constant	-0.899	0.389	0.41*	-1.715	0.189	0.18***	-2.675	0.309	0.07***
$\chi^2$	36.98***			8.10*			25.22***		
-log likelihood	262.56			291.44			274.32		
Cox & Snell R2	0.1			0.02			0.07		
Nagelkerke R2	0.17			0.04			0.12		
Overall classification %	84.8			83.6			83.00		

Notes. †p < .1. \*p < .05. \*\*p < .01. \*\*\*p < .001

Table 3. Profile of four latent classes - Mean probabilities of crime characteristics based on class membership

Cluster size	Class 1	Class 2	Class 3	Class 4
	<i>Explosive - Opportunistic</i>	<i>Sadistic</i>	<i>Overcontrolled - Anger</i>	<i>Predator</i>
	18 32.73%	16 29.09%	15 27.27%	6 10.91%
Victim specifically targeted	0.11	0.25	0.60	1.00
Victim and offender were strangers	0.83	0.56	0.47	0.00
Con approach	0.22	0.44	1.00	1.00
Offense scene: Outdoor place	0.83	0.44	0.80	0.67
Vaginal/anal penetration with a penis	0.39	0.75	0.73	0.00
Sexual sadism (SADSEX-SH Scale)	0.00	1.00	0.00	0.00
Offender beat the victim	0.17	0.56	1.00	0.50
Weapon involvement	0.44	1.00	0.60	0.83
Method of killing: Asphyxiation/Strangulation	0.50	0.38	0.20	1.00

### Appendix

Appendix 1. Correlation Matrix (Pearson Correlation).

	1	2	3	4	5	6	7	8	9
1. Victim specifically targeted									
2. Victim and offender were strangers	-0.418								
3. Offender used con approach	0.218	-0.151							
4. Offense scene: Outdoor place	-0.012	0.16	0.430**						
5. Offender perpetrated sexual penetration	-0.081	-0.057	-0.037	0.037					
6. Sexual sadism (SADSEX SH Scale)	-0.113	0.003	-0.233	0.017	0.343*				
7. Weapon involvement	0.092	-0.037	0.037	-0.024	-0.062	0.377*			
8. Offender beat the victim	0.019	-0.246	0.434**	0.331*	0.151	-0.003	0.037		
9. Method of killing: Asphyxiation/Strangulation	0.248	0.015	0.079	0.096	-0.109	-0.021	-0.198	-0.203	

Notes. \* $p \leq .05$ . \*\* $p \leq .01$ .

Appendix 2. Fit indices for latent classes

Nb of classes	LL	BIC(LL)	AIC(LL)	Npar	L <sup>2</sup>	Entropy
1-Cluster	-327.417	690.9001	672.8341	9	233.4356	1
2-Cluster	-315.8732	707.8858	669.7465	19	210.3479	0.76
3-Cluster	-304.6522	725.517	667.3043	29	187.9058	0.82
<b>4-Cluster</b>	<b>-293.0414</b>	<b>742.3689</b>	<b>664.0829</b>	<b>39</b>	<b>164.6843</b>	<b>0.9</b>
5-Cluster	-283.8316	764.0225	665.6632	49	146.2646	0.92
6-Cluster	-275.0083	786.4492	668.0166	59	128.618	0.94
7-Cluster	-267.5862	811.6785	673.1725	69	113.774	0.95