Patterns of Necrophilic Behaviors in Sexual Homicide: A Criminological Perspective

Julien Chopin (PhD) & Eric Beauregard (PhD)

Introduction

Necrophilia is defined by as sexual gratification that is attained by having sex with corpses (Aggrawal, 2010; Crow, 2017). This behavior is classified by the Diagnostic and Statistical Manual of Mental Disorders 5 (American Psychiatric Association, 2013, p. 705) and is described as a "recurrent and intense sexual arousal involving corpses". Most necrophiles do not engage in sexual intercourse with the dead and are content simply with fantasying about post-mortem sexual acts (Aggrawal, 2009b). If they decide to take action, necrophile individuals use different contexts to find bodies of people who are already dead (Aggrawal, 2009a, 2009b, 2010). For instance, some individuals steal corpses from morgues, dig up bodies from cemeteries, or retain the body of their partner after their death (Aggrawal, 2009a, 2009b, 2010; Boureghda, Retz, Philipp-Wiegmann, & Rösler, 2011; Wulfen, 1910). In some cases, however, homicide may precede the necrophilic act (Aggrawal, 2009a, 2009b, 2010; Rosman & Resnick, 1989; Stein, Schlesinger, & Pinizzotto, 2010). Studies conducted in different countries (e.g., Canada, France, and South Korea) indicated that the rate of post-mortem sexual acts in sexual homicide cases varies between 8.5% and 36.6% (Beauregard & Martineau, 2013; Chopin & Beauregard, 2019b; Darjee & Baron, 2013; James, Proulx, & Lussier, 2018; Sea, Beauregard, & Martineau, 2019).

Previous studies have considered necrophilic sexual homicide offenders (nSHOs) as a specific category in itself (Aggrawal, 2009a, 2009b; Hirschfeld, 1956; Krafft Ebing, 1886; Wulfen, 1910), while Rosman and Resnick (1989) provided a distinction based on the level of attraction to corpses, suggesting the presence of two distinct types of necrophilia. For the pseudonecrophile the sexual attraction to corpses is transient, while for the genuine necrophile this attraction is persistent (Rosman & Resnick, 1989). Although interesting and informative, previous studies have been mainly based on case reports, making the generalization of these findings difficult. In order to shed additional light on the current knowledge on necrophilia

associated to sexual homicide, this study aims to empirically explore the patterns of

necrophilia in sexual homicide and determine whether nSHOs represent a homogeneous type

of offenders or if they are driven by distinct motivations.

Characteristics of Necrophilia in Sexual Homicide

Only a few studies have examined cases of sexual homicide including necrophilic acts

and most of these studies are based on case reports (e.g., Chan, Wong, & Yuen, 2017; Krafft

Ebing, 1886; Lancaster, 1978; Pettigrew, 2019a, 2019b, 2019c). Although case studies

provide unique insight into the characteristics of nSHOs, these studies are difficult to

generalize and may represent the most extreme or unusual cases. As a result, we decided to

focus on describing the characteristics of necrophilia among studies with samples including at

least 5 cases.

In terms of offender demographic characteristics, nSHOs are always males and mostly

single, but often living with somebody (Rosman & Resnick, 1989; Stein and colleagues,

2010). In their sample of 16 nSHOs, Stein and colleagues (2010) found that the average age

was 26.1 years old, most were laborers (50%; n=8) or unemployed, and almost all had prior

arrests (92.9%; n=15). As to their sexual lifestyle, Rosman and Resnick (1989) identified that

pseudonecrophilic killers (i.e., transient attraction to a corpse) are more likely to be

heterosexual compared to necrophilic killers, while other studies found that some of them

may suffer from sexual dysfunctions (Chopin & Beauregard, 2020d; Hirschfeld, 1944).

Rosman and Resnick (1989) found that the totality of pseudonecrophilic killers present a

history of sadistic acts compared to 78% of necrophilic murderers. This relationship between

sexual sadism and necrophilia has been highlighted in several other publications (Holmes,

2017; Holmes & Holmes, 2002a; Holmes & Holmes, 2002b, 2002c; Pettigrew, 2019c; Purcell

& Arrigo, 2006). Rosman and Resnick (1989) noted that few necrophile killers suffer from

psychosis, while 83% of them present personality disorders.

Research found that victims of nSHOs were mostly female (Rosman & Resnick, 1989; Stein and colleagues, 2010), with an average age of 30.4 years old (Stein and colleagues, 2010). Stein and colleagues (2010) found that victims of necrophilia in sexual homicide cases are single, do not live alone, while approximately half of them do not know the offender. Studies focusing on specific types of victims found that elderly victims (Chopin & Beauregard, 2020d; Safarik, Jarvis, & Nussbaum, 2002) and female victims (Chopin & Beauregard, 2020c) are more likely to be targeted by nSHOs.

As to the crime characteristics, Stein and colleagues (2010) found that most victims are strangled, while 12.5% (n=2) are beaten. In most cases the victim's body is left at the crime location with no effort by the offender to conceal it. Stein and colleagues (2010) noted that victims' bodies are moved to the crime location in 12.5% (n=2) of the cases and 43.8% (n=7) victims are found with ligatures. Ante-mortem sexual behaviors are often present, mostly vaginal and anal penetration, while postmortem mutilation, biting, and necrophagia are observed in some cases (Rosman & Resnick, 1989; Stein and colleagues, 2010). Rosman and Resnick (1989) observed that alcohol consumption prior to the crime is common and Stein and colleagues (2010) highlighted that 25% (n=4) of offenders took money or possessions of value belonging to the victims.

Sexual Homicide and Necrophilia: Patterns and Motivations

Empirical studies focusing on postmortem sexual activities are scarce and for most of them, sexual homicide represents only a small proportion of cases where necrophilic acts were identified. Studies published at the end of the nineteenth century and in the first half of the twentieth century provided the first set of classification approaches. Mainly based on case reports, these studies suggested that SHOs represented a specific category of necrophiles. Krafft Ebing (1886) was probably the first to discuss the relationship between necrophilia and sexual homicide. He provided the first classification and made the distinction between

necrophiles seeking only sexual contact with the dead and those who killed and mutilated their victims (Krafft Ebing, 1886). Wulfen (1910) identified three types of necrophile: The lust murder, the necrostuprum, and the necrophagy. In the lust murder, the offender killed to have sexual intercourse with the corpse. In the necrostuprum, offenders stole the corpse to have sexual intercourse, while for the necrophagy, offenders mutilated and ate dead body parts (Wulfen, 1910). Hirschfeld (1956), suggested that necrophiles can be divided into two categories: those who kill to obtain a corpse and those who use the corpse of a person who is already dead.

More recently, Rosman and Resnick (1989) provided a classification of necrophilic behaviors based on 88 cases from the world literature and 34 unpublished cases. The clinical classification identified made the first level of distinction between genuine necrophilia and pseudonecrophilia. The genuine necrophilia is characterized by persistent sexual attraction to corpses, while the pseudonecrophile is characterized by a transient attraction to corpses that is not the main object of their sexual fantasies (Rosman & Resnick, 1989). The genuine necrophilia cluster includes necrophilic homicide (i.e., murder to obtain a corpse for sexual purposes), regular necrophilia (i.e., the use of already dead bodies for sexual pleasure), and necrophilic fantasy (i.e., fantasizing about sexual activity with a corpse without carrying out any necrophilic acts) (Rosman & Resnick, 1989). Rosman and Resnick (1989) mentioned that the pseudonecrophile (also labeled pseudonecrophilic killer) cluster includes sadistic, opportunistic, and transitory offenders who prefer sexual contact with living partners. Rosman and Resnick (1989) noted that the most common motivation of the genuine necrophile was to possess an unresisting partner.

More recently, a ten-type theoretical classification was provided by Aggrawal (Aggrawal, 2009a, 2009b, 2010, 2017). The different types include the following: role players, romantic necrophiles, necrophilic fantasizers, tactile necrophile, fetishistic

necrophiles, necromutilomaniacs, opportunist necrophiles, regular necrophiles, homicidal necrophile, and exclusive necrophiles (Aggrawal, 2009b). Aggrawal (2009b, p. 318) mentioned that homicidal necrophiles are the most dangerous as "they need to have sex with a dead body to the extent that they will resort to killing". Aggrawal (2010) provided a six-cluster theoretical classification specific to the homicidal necrophiles. This classification was based on acts committed on living victims (torture/mutilation and sex) and dead (mutilation and sex). The first class (IXa) is uniquely characterized by the presence of mutilation while the victim is dead. The second class (IXb) is uniquely characterized by the presence of sex activities with the victims' body. The third class (IXc) is characterized by the presence of both mutilation and postmortem sex activities (i.e., could suggest ante mortem mutilation). The fourth class (IXd) is characterized by the presence of mutilation or sex with the living victim and the presence of postmortem mutilations or post-mortem sexual activities. The fifth class (IXe) includes cases characterized by the presence of mutilation and/or sex with the living victim and the presence of postmortem mutilations and/or post-mortem sexual activities. Finally, the sixth class (IXf) combine all the possibilities (i.e., torture/mutilation and sex with living victim and postmortem mutilation and post-mortem sexual activities) (Aggrawal, 2010). Despite being the only typology to focus specifically on sexual homicide, this model has not been tested empirically and its capacity to generalize to all cases is unknown. Moreover, the information used to identify this typology is limited and fails to understand the necrophiliacs' motivations.

Stein and colleagues (2010) provided the only empirical study to date that focuses exclusively on necrophilia and sexual homicide. Using a sample of 211 sexual homicide cases, they identified 16 with evidence of necrophilia. They suggested that in specific cases of sexual homicide, the need to have an unresisting and unrejecting partner is not necessarily applicable as most of the necrophilic offenders included in their sample were not single at the

time of the offense (Stein and colleagues, 2010). Instead, they assumed that nSHOs included in their sample were closer to the pseudonecrophilic group described by Rosman and Resnick (1989) as none of them killed in order to obtain a corpse. They found that some offenders rationalized both the homicide and the sexual postmortem acts as a consequence of being intoxicated, while others mentioned that the primarily intention was homicide but they engaged in necrophilia because the murder was not sufficiently satisfying (Stein and colleagues, 2010).

Interestingly, recent studies have introduced the concept of Post Mortem Sexual Interference Offenders (PMSIOs) (Carter, Mann, & Wakeling, 2008 ; Higgs, Carter, Stefanska, & Glorney, 2017; Higgs & Stefanska, 2018). This category of offender includes "homicide offenders whose offence contained at least one of the following characteristics, the perpetrator disclosed that he had sexually assaulted the victim after killing them, there was evidence from a pathologist of post mortem sexual behaviour, the perpetrator had disclosed post mortem sexual behaviour, there was evidence of sex with an unconscious or dead victim or the perpetrator disclosed since conviction that they had sexually assaulted the victim after killing them" (Carter and colleagues, 2008 p. 173). PMSIOs is a large group of offenders who perpetrated postmortem sexual activities (perpetrator disclosed he had sexually assaulted the victim after killing, evidence from pathologist of post mortem sexual behavior, perpetrator disclosed post mortem sexual behavior, evidence of sex with unconscious or dead victim, perpetrator disclosed since conviction he had sexually assaulted the victims after killing them) without being necessarily "true" necrophiles (i.e., persistent sexual attraction to corpses) (Carter and colleagues, 2008 ; Higgs and colleagues, 2017). One of the underlying ideas behind the use of the concept of PMSIOs is that the use of the term necrophilia refers to a diagnosis established in accordance with the DSM V criteria. In several studies the concept of necrophilia is improperly used because it has not been clearly diagnosed. There could be

differences between an individual diagnosed with a necrophilic paraphilia and an individual who has committed sexual acts postmortem. We decided not to use the PMSIOs terminology because the sample we used in this research presents more homogeneous cases (i.e., systematic presence of postmortem sexual penetration) than the one used by Higgs and his colleagues (i.e., included one or both of the following (i.e., included one or both of the following: (a) sexual acts or (b) sexual mutilation, see Higgs, Carter, & Stefanska, 2015; Higgs and colleagues, 2017).

In order to avoid the pitfall associated with the use of the term necrophilia, which refers to a diagnostic, we decided to use the term "necrophilic behavior". It refers to a behavior associated with necrophilia (e.g., postmortem sexual acts) but without having to meet the diagnostic criteria.

Aim of Study

Despite the existence of a few studies looking specifically at necrophilic behaviors in sexual homicide, this unusual behavior is still not well-understood. Theoretical and clinical typologies often considered necrophilic behaviors occurring in sexual homicide as a category in itself (Aggrawal, 2009a, 2009b; Hirschfeld, 1956; Krafft Ebing, 1886; Wulfen, 1910). We believe that it is important for investigative practice (e.g., crime-commission process reconstitution, offender profile identification) as well as offender management and treatment (e.g., identification of the appropriate treatment and intervention program) to improve our understanding of the offenders' motivations as well as determine whether sexual homicide offenders (SHOs) involved in necrophilic behaviors constitute a homogeneous group of offenders as suggested by most studies. The current study investigates offender, victim, and crime characteristics of sexual homicides where necrophilic acts were perpetrated to determine whether the primary motivation to kill is associated with the attainment of corpses or whether the post-mortem sexual acts were secondary deviant behaviors.

Methodology

Sample

The sample used in this study was extracted from the Sexual Homicide International Database (SHIelD; see Chopin & Beauregard, 2019b for a complete description of the database methodology). This database includes solved and unsolved extrafamilial SH that occurred between 1948 and 2018 in France and Canada. To identify the sexual motivation of the homicide, the FBI definition by Ressler, Burgess, and Douglas (1988) was used. This definition states that to be considered as sexual, a homicide should include a least one of the following elements: (a) victim's attire or lack of attire, (b) exposure of the sexual parts of the victims body, (c) sexual positioning of the body, (d) insertion of foreign objects into the victim's cavities, (e) evidence of sexual intercourse (oral, anal, or vaginal), and (f) evidence of substitute sexual activity, interest, or sadistic fantasy. This definition has been criticized to potentially present false positive (see e.g., Beauregard & Martineau, 2017; Kerr, Beech, & Murphy, 2013; Stefanska, Beech, & Carter, 2016) and consequently, all cases include in SHIelD presented at least two criteria of the FBI's definition to be considered sexual (see Beauregard & Martineau, 2017 for a complete review on this question). The data included in the database comes from various sources of information and were compiled by a team of crime analysts' experts in violent crimes. In each case, the information comes from investigative reports, offenders interview reports, autopsy reports provided by pathologists, psychological reports provided by a team of forensic psychologists, and reports provided by forensic experts. All this information is compiled by a unit of criminal analysts who enter the information in a database on the basis of a standardized grid. The presence of postmortem sexual activity is confirmed in this database both by autopsy reports and offenders' interviews. Nevertheless, it is possible that the presence of postmortem sexual activity was

not identified by coroners or not confirmed by offenders' interviews and that cases were consequently not included in our sample.

For the current study we selected 109 solved sexual homicide cases where post-mortem sexual acts were committed by offenders. The choice to select only solved case was made in order to utilize the offender's demographic and lifestyle information.

Measures

A total of 40 dichotomous variables (coded as 0, 1) were used to determine patterns of necrophilic behaviors in sexual homicide. Some of these variables were selected to develop the main classification model. These variables are those that were identified in previous studies and that allow to differentiate necrophilic behaviors of SHOs. Other variables are used to test the external validity of the model and are variables identified as important in the overall understanding of the criminal event.

Main Model. Previous studies have found that marital status and sexual dysfunctions are important information to understand the presence of necrophilic behaviors in sexual homicide (Chopin & Beauregard, 2020d; Hirschfeld, 1944; Rosman & Resnick, 1989; Stein and colleagues, 2010). They also identified that the analysis of ante-mortem and post-mortem sexual and non-sexual behaviors were important to determine the level of necrophilic motivations (Aggrawal, 2010; Rosman & Resnick, 1989; Stein and colleagues, 2010). Following these findings, we used ten dichotomous variables that represented these various aspects of necrophilic sexual homicides to the main model of our study: 1) offender was single, 2) offender reported sexual dysfunctions (i.e., unable to obtain an erection, unable to sustain an erection, conditional ejaculation), 3) offender perpetrated ante-mortem vaginal penetration, 4) offender perpetrated ante-mortem anal penetration, 5) offender perpetrated ante-mortem foreign object insertion, 6) offender mutilated victims' genitals, 7) method of

killing: asphyxiation/strangulation, 8) offender used restraints, 9) victim was specifically targeted, 10) offender robbed items during crime.

Additional Variables. Complementary variables were used to provide a more comprehensive understanding of the main model. These variables add information related to offender, victim, and crime characteristics.

Offender characteristics. Based on previous studies (Chopin & Beauregard, 2020d; Hirschfeld, 1944; Rosman & Resnick, 1989; Stein and colleagues, 2010), we used four dichotomous variables to examine offender characteristics: 1) offender possessed a sexual collection, 2) offender was a loner (i.e., avoid social contact with other), 3) offender had previous criminal convictions, 4) offender used alcohol/drugs prior to the crime.

We used a total of 26 dichotomous variables to describe the crime characteristics. This set of variables was divided two subcategories of variables: Target selection and modus operandi characteristics.

Target selection. Previous studies have shown that victims' gender, age, and lifestyle were related to the post-mortem sexual acts (Chopin & Beauregard, 2020c, 2020d; Rosman & Resnick, 1989; Safarik and colleagues, 2002). We used a total of nine dichotomous variables to examine victim characteristics: 1) offender and victims were strangers (i.e., totally unknown at the time of the offense, 2) victim was female, 3) victim aged 65 years or more, 4) victim lived with somebody, 5) victim used alcohol/drugs prior to crime, 6) victim was assaulted while involved in domestic activities (e.g., watching TV, cooking, and cleaning home, etc.), 7) victim was assaulted while sleeping, 8) victim was assaulted while jogging, 9) victim was assaulted after he/she had been drinking at a bar.

Modus operandi. Finally, studies have suggested that necrophilic behaviors could be associated to certain crime behaviors (Rosman & Resnick, 1989; Stein and colleagues, 2010). A total of 17 dichotomous variables were used to examine crime characteristics: 1) offender

used a con to approach the victim (i.e., offender used subterfuge as well as tricks to approach

his victim without using force and coercion; for example, befriended the victim,

posed as an authority figure, and offered assistance.), 2) weapon used, 3) ante-mortem[1]

fellatio, 4) ante-mortem digital penetration, 5) ante-mortem masturbation of the offender, 6)

ante-mortem acts of fondling, 7) ante-mortem vaginal/anal fisting, 8) victim was beaten, 9)

victim was stabbed/cut, 10) victim was shot, 11) victim was bitten, 12) victim was

dismembered, 13) offender perpetrated extreme acts with/on victims' bodies (i.e., carving on

victim, evisceration, skinning victim, cannibalism, drinking of victim's blood), 14) body was

moved from the crime scene to another location, 15) body was concealed, 16) body was found

naked, 17) offender removed/destroyed forensic evidence (e.g., destruction of forensic

evidence, offender set fire to scene, offender washed victim's body, offender cleared crime

scene, offender planted evidence).

Analytical Strategy

The analytical strategy used in this study followed a two-step process. First, a latent

class analysis (LCA) was computed to identify patterns associated with necrophilic behaviors

in sexual homicide. LCA has been described as a statistical procedure used to identify

heterogeneity that is not directly observable or measurable in order to detect underlying

patterns in a set of data or subgroups of individuals who share important behavioral

characteristics (Collins & Lanza, 2010). The goal of this procedure is to identify mutually

exclusive classes using dichotomous variables (Collins & Lanza, 2010; Lanza, Collins,

Lemmon, & Schafer, 2007; Lanza, Flaherty, & Collins, 2003). LCA analysis is similar to

cluster analysis but provide stronger models as it attributes class membership probabilities to

each individual case. Seven models were computed and analyzed from a one-to-seven class

solution (Table 1). Several fit measures were used to identify the model: Bayesian

---

[1] Ante-mortem and post-mortem acts were determined on the basis of the offenders' confessions as well as
coroners' reports.

Information Criterion (BIC), log likelihood, likelihood ratio L^2, degrees of freedom, Akaike

Information Criterion (AIC) and entropy. We have tested for multicollinearity and no

correlations were higher than .33 (Appendix section).

Second, we used additional variables describing offender, victim, and crime

characteristics to test the external validity of the latent class solution and improve the depth of

our model. Specifically, we used bivariate analysis (i.e., chi-square analysis[2]) to identify

significant differences between the different classes.

Results

Latent Class Analysis

To determine patterns of necrophilic behaviors in sexual homicide, we used 10 dichotomous

variables related to offender, victim, and crime characteristics. To assess the best latent class

model, one-to-seven solutions were computed. BIC and AIC fit indicators were used to

identify the best class solution. Dziak, Coffman, Lanza, and Runze (2012) noted that the AIC

is more likely identify a bigger model than BIC when the sample size is large, while BIC is

more likely to select an inappropriate model when the sample size limited. Due to the limited

sample size we used in this research (N=109) (see e.g., Tein, Coxe, & Cham, 2013;

VanVoorhis & Morgan, 2007), BIC is constantly increasing and is useless to determinate the

best class solution. For the research, the AIC is more useful, and the smallest value suggests

that the trade-off between fit and parsimony was achieved. The smallest AIC (1225.5535)

suggested that the 4-class solution was the best fitting solution. Entropy for the 4-class

solution was high (0.79) and suggested that predictors used are fit to classify the cases and

that classes were sufficiently distinct (Schwartz, 1978).

[INSERT TABLE 1 HERE PLEASE]

---

[2] Fisher's exact test was used when the cell count requirement was violated (i.e., cells with expected values less than five)

Table 1 and Figure 1 describe the 4-class solution representing the four different patterns followed by SHOs who perpetrated post-mortem sexual activities. The largest class corresponds to the class 1 including 32.87% of cases, while the smallest is class 3 including 16.03% of cases.

In class 1, labelled opportunist, offenders were more likely to be single (0.72)[3] and did not report any sexual dysfunctions (0.00). They were more likely to perpetrate ante-mortem vaginal penetration (0.64) and to rob some items from the victim (0.97). However, they were less likely to perpetrate ante-mortem anal penetration (0.18), foreign object insertion (0.00), and to mutilate victims' genitals (0.03). These SHOs were also less likely to use asphyxiation/strangulation as a method of killing (0.44), to use restraints, and to target a specific victim (0.33).

In class 2, labelled experimental, offenders were less likely to be single (0.07) or to report sexual dysfunctions (0.00). These offenders perpetrated ante-mortem vaginal penetration (0.61), anal penetration (0.54), and foreign object insertion (0.54). They were more likely to use asphyxiation/strangulation as a method of killing (0.79). These sexual murderers did not mutilate victims' genitals (0.07), did not use restraints (0.00), did not specifically target a victim (0.39), and did not take items from the victim (0.18).

In class 3, labelled preferential, SHOs were more likely to be single (0.76) and report sexual dysfunctions (0.65) but did not perpetrate either ante-mortem vaginal penetration (0.00) nor ante-mortem anal penetration (0.00). They were unlikely to mutilate the genitals of their victims (0.18), use restraints (0.24), target a specific victim (0.29), or rob items (0.18), and never killed their victims using asphyxiation/strangulation (0.00),

In class 4, sadistic, SHOs were not likely to be single (0.18) and to report sexual dysfunctions (0.18). These offenders perpetrated ante-mortem vaginal penetration (0.96),

---

[3] Numbers in brackets are class membership probabilities

ante-mortem anal penetration (0.96), ante-mortem foreign object insertion (0.96), and

mutilation of genitals (0.71). They also used restraints (0.96) as well as

asphyxiation/strangulation as a method of killing (0.96). These offenders specifically targeted

their victims (0.96) but did not rob items from them (0.00).

[INSERT TABLE 2 HERE PLEASE]

[INSERT FIGURE 1 HERE PLEASE]

Additional Analysis of Covariates

Offenders who possessed a sexual collection (χ^2 = 58.05, p = .000) were more likely to

be included in class 4, while those that were characterized by a loner lifestyle (χ^2 = 24.45, p =

.000) were more likely to be part of class 3. Offenders with previous criminal convictions (χ^2

= 9.34, p = .025) and those that used alcohol/drugs prior to crime (χ^2 = 17.02, p = .000) were

more likely to be included in class 1 and 4.

Victims assaulted by stranger offenders (χ^2 = 10.37, p = .016) and while they were

involved in domestic activities (χ^2 = 31.49, p = .000) were more likely to be part of class 1.

Victims assaulted while they were jogging (χ^2 = 15.98, p = .001) were more likely to be

included in class 2, while victims aged 65 years or older (χ^2 = 12.45, p = .006) were more

likely to be part of class 3. Finally, victims living alone (χ^2 = 8.76, p = .033), using

alcohol/drugs (χ^2 = 20.25, p = .00), and who were drinking at a bar prior to be assaulted (χ^2 =

59.28, p = .00) were more likely to be included in class 4.

Although a weapon was involved in the majority of cases, there are still significant

differences between classes. In class 3 and 4, weapons were more often involved (χ^2 = 16.36,

p = .001). Cases were vaginal/anal fisting was perpetrated (χ^2 = 63.02, p = .000), where

victims were beaten (χ^2 = 31.89, p = .000), and where victims were stabbed/cut (χ^2 = 21.41, p

= .000) were more often included in class 4. As to the unusual acts, we observed that when

offender bit the victim (χ^2 = 54.92, p = .000), perpetrated criminal dismemberment (χ^2 =

32.16, p = .000), and extreme acts with/on victims' bodies (χ^2 = 25.06, p = .000), they were more often part of class 4. Offenders who concealed victims' bodies (χ^2 = 20.39, p = .000) and who totally undressed victims' bodies (χ^2 = 29.89, p = .000) were more often included in class 4, while offenders who moved victims' bodies (χ^2 = 10.10, p = .018) and destroyed/removed forensic evidence (χ^2 = 15.36, p = .002) were more often included in class 1 and 2.

[INSERT TABLE 3 HERE PLEASE]

Discussion

This study investigated patterns of necrophilic behaviors in sexual homicide cases. Specifically, this research aimed to empirically determine whether SHOs who perpetrated necrophilic acts were driven by a unique motivation. To answer this research question, we used a sample of 109 sexual homicide cases committed in France and Canada between 1948 and 2018, where post-mortem sexual acts were identified.

1.1. Toward a New Classification of Necrophilic Behaviors Patterns in Sexual Homicide

As discussed in previous studies, several aspects are relevant to explaining the motivations associated with the commission of necrophilic behaviors (see e.g., Rosman & Resnick, 1989; Stein and colleagues, 2010). Hence, offender characteristics (e.g., social integration, sex life, substance use), sexual (ante-mortem sexual acts, sadistic processes), and non-sexual behaviors (e.g., theft of objects, victim selection) are all associated with this paraphilia. In contrast to certain classifications based on some clinical observations and theoretical assumptions (e.g., Aggrawal, 2010), empirical classifications are identified from an adequate number of observations, which increase the generalization of findings. Using latent class analysis on a sample of 109 sexual homicide cases characterized by the presence of postmortem sexual

16

activities, the best model suggested that SHOs involved in necrophilic behaviors can be divided into four groups: Opportunistic, experimental, preferential, and sadistic.

Opportunistic. The opportunistic offenders constitutes the most important group of our model. Offenders are mostly single, consumed alcohol prior to the crime, and are more likely to have prior criminal convictions. These characteristics are congruent with the ones observed in previous studies on individuals for which necrophilic acts are not the primary motivation for the crime (Aggrawal, 2010; Rosman & Resnick, 1989; Stefanska, Higgs, Carter, & Beech, 2017; Stein and colleagues, 2010). Moreover, the presence of previous criminal convictions confirmed the findings of Beauregard, DeLisi, and Hewitt (2018), suggesting that SHOs are mostly versatile and may engaged in various criminal activities.

These offenders assaulted their victims while they were involved in domestic activities or sleeping. This finding suggests that most victims were in their residence at the time of the crime. Interestingly, we observed that crimes perpetrated by opportunistic offenders were characterized by two main aspects: the presence of robbery and the low diversity of ante-mortem sexual acts perpetrated by the offender. Based on previous studies, two interpretations are possible. On one hand, taking items belonging to the victim can happen after the sexual assault and the homicide (see e.g., Chopin & Beauregard, 2020d; Safarik and colleagues, 2002). On the other hand, taking items from the victim may be the primary motivation, while the sexual acts and the homicide are occurring as an afterthought (see e.g., Beauregard, Chopin, & Winter, 2020; Chan, Li, Liu, & Lu, 2019; Chopin & Beauregard, 2020c, 2020d; Pedneault, Beauregard, Harris, & Knight, 2015). We argue that the latter is more likely. The combination of theft, in the victim's residence, and with a low level of diversity in the sexual acts committed suggest that the primary motivation of these offenders was to perpetrate a burglary. The confrontation with the victim gave them the opportunity to perpetrate ante-mortem and post-mortem sexual acts. Moreover, our findings are in line with those of Stein

and colleagues (2010), who suggested that necrophilic behaviors can be a consequence of alcohol/drug intoxication by offenders. Similarly, our findings showed that most opportunistic necrophiles consumed drug/alcohol prior to the crime. Perkins (2008) also noted that necrophilia is often not the primary motivation of a sexual homicide but that postmortem sexual acts can be perpetrated for sexual gratification purposes without resistance and without making matters worse since a killing has already occurred" or because "feelings of anger toward the victim for resisting and dying during the course of a violent sexual assault, resulting in anger being directed toward the corpse" (p.81).

Opportunistic offenders assaulted acquaintance victims in the majority of cases. This information combined with the absence of sexual sadism suggests that the murder is not part of a deviant script. As previously discussed in the research on sexual homicide, the death of the victim is not necessarily part of a deviant process and can be accidental (i.e., due to the use of an excessive amount of physical force to overcome the victim resistance) or instrumental (i.e., offender willingness not to be denounced to the police by the victim) (see Carter & Hollin, 2014; Chopin & Beauregard, 2019a; Chopin & Beauregard, 2019c; Stefanska & Higgs, 2018; Stefanska and colleagues, 2017). Considering that opportunistic offenders are more likely to use specific strategies to avoid police detection, it can be argued that killing the victim presented itself as an opportunity to avoid being identified by the police.

Experimental. Experimental offenders are usually in a relationship, used alcohol/drugs prior to the crime, and assaulted only female victims. Looking at the crime-commission process, we observed two major tendencies. First, analyses indicated that an important diversity of ante-mortem sexual acts were committed by these offenders. Experimental offenders were more likely to vaginally and anally penetrate the victim as well as commit foreign object insertion and fondling. Second, our findings indicated that these offenders did not engage in ante-

mortem and post-mortem sadistic acts. The experimental offenders class is congruent with sexually-motivated SHOs characterized by the diversity of sexual acts they perpetrate (see e.g., Chopin & Beauregard, 2020d; Stefanska, Carter, Higgs, Bishopp, & Beech, 2015). Based on the diversity of ante-mortem sexual acts perpetrated by experimental offenders, we can assume that they were primarily motivated to have sexual intercourse with a living victim. This is in line with findings from Rosman and Resnick (1989) who stated that despite the commission of post-mortem sexual acts, some SHOs involved in necrophilic behaviors prefer sexual contact with living partners. This idea is reinforced by the fact that most of these offenders were in a relationship at the time of the crime.

It is possible that the commission of post-mortem sexual acts by these offenders is motivated by the experimentation of new sexual practices. In other words, postmortem sexual activities was not the primary motivation for these SHOs but given the situation, they experimented with this deviant sexual behavior. Such interpretation is congruent with observations made by Rosman and Resnick (1989) who found that pseudonecrophiles had a transient attraction to corpses.

Preferential. Preferential offenders are mostly single, report sexual dysfunctions, and have a loner lifestyle. These characteristics are congruent with several studies which identified a marginal lifestyle in some necrophilic offenders (Chopin & Beauregard, 2020d; Hirschfeld, 1944; Rosman & Resnick, 1989; Stein and colleagues, 2010). These characteristics suggest that these individuals present relational difficulties and fail to achieve normal relationships (i.e., social, sexual).

This group of SHOs present two possible patterns of "true necrophilia" (Rosman & Resnick, 1989, p. 156). First, in some cases these offenders tried to have ante-mortem sexual interactions (e.g., foreplay) and faced with the failure of successfully completing the crime (e.g., unable to obtain or sustain an erection; victim's resistance), they chose to kill their

victim to have an unresisting and unrejecting partner, as described by Rosman and Resnick (1989). Second, in other cases where no ante-mortem interactions were observed, the offender main motivation was to obtain a corpse for sexual purpose (Aggrawal, 2010; Rosman & Resnick, 1989). In these cases, the victim's death is motivated by the necrophilic urge described by Aggrawal (2010, p. 73) as 'the urge to kill because a dead body is required for necrophile activities'. In such situations, postmortem sexual activities are more likely to be combined with body mutilation and criminal dismemberment (see e.g., Holmes, 2017; Purcell & Arrigo, 2006). Several studies (Puschel, 1987; Püschel & Koops, 1987) suggested that offensive mutilation (i.e., mutilations are part of the deviant process) is often observed in cases of necrophilia. These extreme deviant sexual behaviors can be motivated by the willingness of necrophiles to have sexual activities with body parts of corpses (see e.g., Boureghda and colleagues, 2011; Chopin & Beauregard, 2020a; Stefanska, Higgs, Carter, & Beech, 2018).

Sadistic. Sadistic offenders share all the characteristics associated with sadistic SHOs from the literature. First, they have a relatively common profile and are well socialized (i.e., in a relationship, not a loner lifestyle) which is congruent with previous studies (see e.g., Brittain, 1970). We observe that these individuals possessed a sexual collection (i.e. movies, pictures involving deviant sexual behaviors) allowing them to feed their deviant sexual fantasies (see e.g., Brittain, 1970; Chopin & Beauregard, 2019c, 2019d).

Second, our results showed that the modus operandi used by offenders included in this class is consistent with the one described by previous studies of sadistic SHOs (Chopin & Beauregard, 2019d; Myers, Beauregard, & Menard, 2019; Proulx, Blais, & Beauregard, 2007; Reale, Beauregard, & Martineau, 2017). This includes both the approach used (i.e., con approach strategy, targeting vulnerable victims, use of restrains, see Beauregard & Martineau, 2016; Ressler and colleagues, 1988; Ressler, Burgess, Hartman, Douglas, & McCormack,

1986), ante-mortem sexual acts (i.e., the combination of vaginal and anal penetration, foreign object insertion, see Myers and colleagues, 2019), acts of torture (i.e., vaginal/anal fisting, mutilation of genitals, see Myers and colleagues, 2019), methods of killing (i.e., strangulation and asphyxiation, see Chopin & Beauregard, 2020b; Healey, Lussier, & Beauregard, 2013; Myers and colleagues, 2019; Reale and colleagues, 2017), and the ability to avoid police detection (i.e., body concealment, see Chopin & Beauregard, 2020b; Reale, Beauregard, & Martineau, 2020). As to the mutilation of genitals, Stefanska and colleagues (2018) noted that their presence are fundamental to the expression of violent sexual sadistic fantasies and/or necrosadistic fantasies. The high probability of occurrence of these acts by SHOs included in this class confirms this assumption.

This class of offenders is congruent with previous studies which identified that the necrophilic behavior is often associated with, or is part of sexual sadism (see e.g., Aggrawal, 2010; Holmes, 2017; Krafft Ebing, 1886; Pettigrew, 2019c; Purcell & Arrigo, 2006). Moreover, Rosman and Resnick (1989) found that the pseudonecrophile category includes sadistic cases and determine that most pseudonecrophilic killers and necrophilic murderers had history of sadistic acts. Necrophilia in a sadistic sexual process can have different purposes. First, according to the sexual sadism scale developed by Myers and colleagues (2019), necrophilic acts can be considered as an ultimate way of degradation and humiliation. Second, as mentioned by Stein and colleagues (2010), in some cases necrophilic acts were perpetrated because ante-mortem behaviors as well as the murder were not sufficiently satisfying to the offender. For the sadistic offenders, post-mortem sexual acts are considered as secondary acts of a process focused on victims' humiliation, torture, and death.

Necrophilic Behaviors in Sexual Homicide: Primary Motivation to Kill or Secondary Deviant Behavior?

One of the underlying questions for this study of necrophilic behaviors in sexual homicide was to determine whether the murder is directly associated with the achievement of the deviant fantasy to commit sexual acts with corpses. First, in the four-class model we identified, four classes of offenders (i.e., opportunistic, experimental, preferential, sadistic) who perpetrated ante-mortem sexual and non-sexual acts with their victims. These classes of SHOs involved in necrophilic behaviors correspond with offenders associated with the pseudonecrophile murders identified by Rosman and Resnick (1989). This category of offenders had sexual activities with corpses during the crime-commission process but these acts were not the primary motivation for their crime nor the main object of their sexual fantasies (Rosman & Resnick, 1989). Moreover, these classes are also congruent with Stein and colleagues (2010) findings that none of the SHOs involved in necrophilic behaviors they investigated specifically perpetrated homicides to obtain a corpse for sexual purposes (Stein and colleagues, 2010).

Second, we found in our LCA model one class - labeled preferential offenders-characterized by a crime-commission process which we hypothesize to be mainly focused on the obtaining and the commission of sexual acts with a corpse. This category is congruent with Aggrawal's (2009a, 2009b, 2010) homicidal necrophile and Rosman and Resnick (1989) genuine necrophilic murderer. These offenders, considered as the 'true necrophile' (Rosman & Resnick, 1989, p. 156), present a sexual attraction to corpses and focus their crime-commission process on this aspect.

Conclusion

This study investigated patterns of sexual homicide where necrophilic acts were perpetrated. We used a sample of 109 solved cases that occurred in France and Canada between 1948 and 2018. The objective of this study was to empirically determine whether SHOs involved in necrophilic behaviors represent a homogeneous type of offender. As an

underlying question, we aimed to determine whether post-mortem sexual activities were directly related to the victim's death or if there was evidence to suggest that necrophilic behaviors were not the offender's primary motivation. Using latent class analysis, we generated a four-class model of SHOs involved in necrophilic behaviors : Opportunistic, experimental, preferential, and sadistic. Our findings showed that preferential offenders are the only ones who specifically kill their victims in order to have sex with their corpses. For sadistic offenders, the victim's death is part of the sexual deviance and post-mortem sexual acts are a way to pursue the humiliation and degradation of the victim. Experimental and opportunistic offenders killed their victims to attempt to avoid police detection and perpetrated post-mortem sexual acts because they had the opportunity to do so or because it was part of secondary deviant sexual fantasies to experiment.

This study presents several implications. Our findings provide empirical evidence that SHOs involved in necrophilic behaviors constitute a heterogeneous population of offenders. This could have implications for practitioners working with these individuals. From an investigative perspective, criminal investigators should be aware that the presence of post-mortem sexual acts does not refer to a single category of SHOs and that it is important to observe other crime scene behaviors to determine working hypotheses and suspect prioritization (e.g., identification of robbery, ante-mortem interactions, sadistic process, etc.). Moreover, as SHOs involved in necrophilic behaviors most often target victims they know, the police should prioritize looking at the victims' entourage for potential suspects. From an intervention perspective, practitioners should adapt the management and treatment of these individuals based on the motivation for the necrophilic acts. For instance, preferential offenders would benefit from an intervention directly targeting their sexual attraction to the corpse, whereas for the other groups of SHOs involved in necrophilic behaviors, the intervention should focus on the main paraphilias associated with the crime commission such

as sadism, erotophonophilia (i.e., sexual gratification found in the act of committing murder) or raptophilia (i.e., sexual gratification found in the act of committing a rape).

Although the current study presents novel and interesting findings, it is not without limitations. This study is based on police data which are known to present biases in terms of validity and reliability (see Aebi, 2006; Chopin & Aebi, 2018; Chopin & Aebi, 2019). First, this data includes only 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., number of unreported or undiscovered crimes) for homicide is especially low (see e.g., Aebi & Linde, 2012). Second, we cannot exclude that in some cases post-mortem sexual activities were not identified by coroners and investigators and consequently were not included in our sample. Finally, we included only solved cases in our sample and therefore, it is unknown whether the identified patterns may also apply to unsolved cases.

Future studies need to test the validity of this classification with datasets from other countries. More empirical research is also needed to analyze developmental and psychological risk factors of the different type of SHOs involved in necrophilic behaviors. Finally, future research could investigate in greater details the influence of some of the variables included in the current study, such as the different types of post-mortem sexual acts perpetrated as well as the detailed previous criminal convictions.

References

Aebi, M. F. (2006). *Comment mesurer la délinquance ? [How to measure the delinquency ?]*. Paris: Armand Colin.

Aebi, M. F., & Linde, A. (2012). Regional variation in Europe between homicide and other forms of external death and criminal offences (1970-2008). In M. C. A. Liem & W. A. Pridemore (Eds.), *Handbook of European Homicide Research: Patterns, Explanations, and Country Studies* (pp. 71-94). New York: Springer.

Aggrawal, A. (2009a). *Forensic and Medico-legal Aspects of Sexual Crimes and Unusual Sexual Practices* (C. Press Ed.). Boca Raton: Taylor & Francis Group.

Aggrawal, A. (2009b). A new classification of necrophilia. *Journal of forensic and legal medicine, 16*(6), 316-320.

Aggrawal, A. (2010). *Necrophilia: Forensic and Medico-legal Aspects*. Boca Raton, FL: CRC Press.

Aggrawal, A. (2017). Typologies of necrophilia. In L. Mellor, A. Aggrawal, & E. W. Hickey (Eds.), *Understanding Necrophilia: A Global Multidisciplinary Approach* (pp. 319-330). San Diego, CA: Cognella Academic Publishing.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders : DSM-5™* (5th ed.). Washington, D.C.: American Psychiatric Publ.

Beauregard, E., Chopin, J., & Winter, J. (2020). Lethal Outcome in Elderly Sexual Violence: Escalation or Different Intent? *Journal of Criminal Justice*. doi:10.1016/j.jcrimjus.2020.101704

Beauregard, E., DeLisi, M., & Hewitt, A. N. (2018). Sexual murderers: sex offender, murderer, or both? *Sexual Abuse, 30*(8), 932-950. doi:10.1177/1079063217711446

Beauregard, E., & Martineau, M. M. (2013). A descriptive study of sexual homicide in

Canada: Implications for police investigation. *International Journal of Offender*

Therapy and Comparative Criminology, 57(12), 1454-1476.

Beauregard, E., & Martineau, M. M. (2016). Does the organized sexual murderer better delay

and avoid detection? *Journal of interpersonal violence, 31*(1), 4-25.

Beauregard, E., & Martineau, M. M. (2017). Introduction. In E. Beauregard & M. M.

Martineau (Eds.), *The sexual murderer: Offender behavior and implications for*

practice (pp. 1-10). Oxon: UK: Routledge.

Boureghda, S. S. T., Retz, W., Philipp-Wiegmann, F., & Rösler, M. (2011). A case report of

necrophilia–a psychopathological view. *Journal of forensic and legal medicine, 18*(6),

280-284.

Brittain, R. P. (1970). The sadistic murderer. *Medicine, Science and the Law, 10*(4), 198-207.

Carter, A. J., & Hollin, C. R. (2014). Assessment and treatment when sex is attached to a

killing: A case study. In D. T. Wilcox, T. Garett, & L. Harkins (Eds.), *Sex Offender*

Treatment (pp. 286-304). Chichester, UK: John Wiley & Sons, Ltd.

Carter, A. J., Mann, R. E., & Wakeling, H. C. (2008). Sexual killers and post mortem sexual

interference offenders: Assessment, treatment and risk management. In A. J. R. Harris

& A. C. Pagé (Eds.), *Sexual Homicide and Paraphilias: The Correctional Service of*

Canada's Experts Forum 2007 (pp. 167-212). Ottawa, Ontario: Correctional Service

of Canada.

Chan, H. C., Li, F., Liu, S., & Lu, X. (2019). The primary motivation of sexual homicide

offenders in China: Was it for sex, power and control, anger, or money? *Criminal*

Behaviour and Mental Health, 29(3), 168-178.

Chan, H. C., Wong, E. L. W., & Yuen, H. H. Y. (2017). Chinese ghost marriage. In L. Mellor,

A. Aggrawal, & E. W. Hickey (Eds.), *Understanding Necrophilia: A Global*

Multidisciplinary Approach (1st ed., pp. 83-88). San Diego, CA: Cognella Academic
Publishing.

Chopin, J., & Aebi, M. F. (2018). Les données de police permettent-elles la détection des
agresseurs sexuels sériels ? Une analyse de la validité concourante de ViCLAS [Do
police data allow detecting serial sexual offenders ? An analysis of the concurrent
validity of the ViCLAS]. *Revue Internationale de Criminologie et de Police
Technique et Scientifique, 71*(1), 21-37.

Chopin, J., & Aebi, M. F. (2019). The tree that hides the forest? Testing the construct validity
of ViCLAS through an empirical study of missing data. *Policing: A Journal of Policy
and Practice, 13*(1), 55-65. doi:10.1093/police/pax062

Chopin, J., & Beauregard, E. (2019a). Lethal Combinations: A Conjunctive Analysis of
Crime Scene Behavior Associated with Sexual Homicide. *Behavioral Sciences & the
Law, 37*, 559-578. doi:10.1002/bsl.2425

Chopin, J., & Beauregard, E. (2019b). Sexual Homicide in France and Canada: An
International Comparison. *Journal of interpersonal violence, Advance online
publication*. doi:10.1177/0886260519875547

Chopin, J., & Beauregard, E. (2019c). Sexual homicide of children: A new classification.
International Journal of Offender Therapy and Comparative Criminology, 63(9),
1681-1704. doi:10.1177/0306624X19834419

Chopin, J., & Beauregard, E. (2019d). Sexual Homicide: A Criminological Perspective.
Current Psychiatry Reports, 21(12), 1-9. doi:10.1007/s11920-019-1107-z

Chopin, J., & Beauregard, E. (2020a). Body Dismemberment in Sexual Homicide Cases: Lust
Murder or Rational Decision? *[Manuscript submitted for publication], School of
Criminology. Simon Fraser University*.

Chopin, J., & Beauregard, E. (2020b). Sexual sadism: Its role in the crime-commission process of sexual homicide of children *Journal of interpersonal violence, Advance online publication*. doi:10.1177/0886260520916844

Chopin, J., & Beauregard, E. (2020c). The Unusual Case of Sexual Homicide Against Males: Comparisons and Classification. *[Manuscript submitted for publication], School of Criminology. Simon Fraser University*.

Chopin, J., & Beauregard, E. (2020d). The unusual victim: Understanding the specific crime processes and motivations for elderly sexual homicide. *J Forensic Sci 65*(2), 535-543. doi:10.1111/1556-4029.14208

Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. Hoboken, NJ: Wiley.

Crow, J. C. (2017). Defining necrophilia. In L. Mellor, A. Aggrawal, & E. W. Hickey (Eds.), *Understanding Necrophilia: A Global Multidisciplinary Approach* (pp. 3-12). San Diego, CA: Cognella Academic Publishing.

Darjee, R., & Baron, E. (2013). *Sexual homicide: A comparison of homicidal and non-homicidal sexual offenders.* Paper presented at the annual meeting of the Association of Treatment of Sexual Abusers, Chicago, IL.

Dziak, J. J., Coffman, D. L., Lanza, S. T., & Runze, L. (2012). Sensitivity and Specificity of Information Criteria. *Technical Report Series #12-119, College of Health and Human Development The Pennsylvania State University*.

Healey, J., Lussier, P., & Beauregard, E. (2013). Sexual sadism in the context of rape and sexual homicide: An examination of crime scene indicators. *International Journal of Offender Therapy and Comparative Criminology, 57*(4), 402-424. doi:10.1177/0306624X12437536

Higgs, T., Carter, A. J., & Stefanska, E. B. (2015). Toward identification of the sexual killer: A comparison of sexual killers engaging in post-mortem sexual interference and non-homicide sexual aggressors. *Sexual Abuse, 29*(5), 479-499. doi:10.1177/1079063215609935

Higgs, T., Carter, A. J., Stefanska, E. B., & Glorney, E. (2017). Toward identification of the sexual killer: A comparison of sexual killers engaging in post-mortem sexual interference and non-homicide sexual aggressors. *Sexual Abuse, 29*(5), 479-499.

Higgs, T., & Stefanska, E. B. (2018). Psychological and criminological factors in diverse types of sexual murderers. In J. Proulx, A. J. Carter, E. Beauregard, A. Mokros, R. Darjee, & J. James (Eds.), *Routledge international handbook of sexual homicide studies* (pp. 91-103). Abingdon, UK: Routledge.

Hirschfeld, M. (1944). *Sexual anomalies: the origins, nature, and treatment of sexual disorders*. New York, NY: Emerson Books.

Hirschfeld, M. (1956). *Sexual Anomalies*. New York, NY: Emerson.

Holmes, D. (2017). Psychology and Dismemberment. In S. Black, G. Rutty, S. V. Hainsworth, & G. Thomson (Eds.), *Criminal dismemberment: forensic and investigative analysis* (pp. 27-39). Boca Raton, FL: CRC Press.

Holmes, M. R., & Holmes, T. S. (2002a). *Current perspectives on sex crimes*. Thousand Oaks: Sage Publications.

Holmes, R. M., & Holmes, S. T. (2002b). *Profiling Violent Crimes* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Holmes, R. M., & Holmes, S. T. (2002c). *Sex crimes: Patterns and behavior*. Thousand Oaks, CA: Sage

James, J., Proulx, J., & Lussier, P. (2018). A cross-national study of sexual murderers in France and Canada. In J. Proulx, E. Beauregard, A. J. Carter, A. Mokros, R. Darjee, &

J. James (Eds.), *Routledge International Handbook of Sexual Homicide Studies* (pp. 171-195). New York: USA: Routledge.

Kerr, K. J., Beech, A., & Murphy, D. (2013). Sexual homicide: Definition, motivation and comparison with other forms of sexual offending. *Aggression and Violent Behavior, 18*(1), 1-10.

Krafft Ebing, R. V. (1886). Psychopathia Sexualis, Ferd. *Enke, Stuttgard*.

Lancaster, N. P. (1978). Necrophilia, murder and high intelligence: a case report. *The British Journal of Psychiatry, 132*(6), 605-608.

Lanza, S. T., Collins, L. M., Lemmon, D. R., & Schafer, J. L. (2007). PROC LCA: A SAS procedure for latent class analysis. *Structural equation modeling: a multidisciplinary journal, 14*(4), 671-694.

Lanza, S. T., Flaherty, B. P., & Collins, L. M. (2003). Latent class and latent transition analysis. In J. A. JSchinka & W. F. Velicer (Eds.), *Handbook of psychology: Vol. 2 Research methods in psychology* (pp. 663-685). Hoboken, NJ: Wiley.

Myers, W. C., Beauregard, E., & Menard, W. (2019). An updated sexual homicide crime scene rating scale for sexual sadism (SADSEX-SH). *International Journal of Offender Therapy and Comparative Criminology, 63*(9), 1766-1775. doi:10.1177/0306624X19839595

Pedneault, A., Beauregard, E., Harris, D., A, & Knight, R., A. (2015). Rationally irrational: The case of sexual burglary. *Sexual Abuse, 27*(4), 376-397.

Perkins, D. E. (2008). Diagnosis, assessment and identification of severe paraphilic disorders. In A. J. R. Harris & C. Page (Eds.), *Sexual homicide and paraphilias* (pp. 77-105). Ottawa: Correctional Service of Canada.

Pettigrew, M. (2019a). Fantasy, opportunity, homicide: testing classifications of necrophilic behaviour. *Journal of Police and Criminal Psychology, 34*(1), 14-22.

Pettigrew, M. (2019b). Serial killing and homosexual necrophilia, an exploration. *The Journal of Forensic Psychiatry & Psychology, 30*(3), 409-418. doi:10.1007/s11896-019-09326-5

Pettigrew, M. (2019c). The Sexually Sadistic Properties of Necrophilia, in the Context of Serial Killing, a Case Study. *Journal of Police and Criminal Psychology, Advance online publication*, 1-8.

Proulx, J., Blais, E., & Beauregard, E. (2007). Sadistic Sexual Offenders. In J. Proulx, E. Beauregard, & A. Nicole (Eds.), *Sexual murderers: A comparative analysis and new perspectives* (pp. 107-122). Hoboken: NJ: John Wiley & Sons.

Purcell, C. E., & Arrigo, B. A. (2006). Paraphilia and lust murder. In C. E. Purcell & B. A. Arrigo (Eds.), *The psychology of lust murder: Paraphilia, sexual killing, and serial homicide* (pp. 11-32). New York: NY: Elsevier.

Puschel, K. (1987). Dismemberment and mutilation. *Arch Kriminol, 180*(3-4), 80-100.

Püschel, K., & Koops, E. (1987). Dismemberment and mutilation (1). *Archiv fur Kriminologie, 180*(1-2), 28-40.

Reale, K., Beauregard, E., & Martineau, M. M. (2017). Sadism in sexual homicide offenders: identifying distinct groups. *Journal of criminal psychology, 7*(2), 120-133. doi:10.1108/JCP-11-2016-0042

Reale, K., Beauregard, E., & Martineau, M. M. (2020). Is investigative awareness a distinctive feature of sexual sadism? *Journal of interpersonal violence, 35*(7-8), 1761-1778.

Ressler, R. K., Burgess, A. W., & Douglas, J. (1988). *Sexual homicide: Patterns and motives*. New York, NY: Free Press.

Ressler, R. K., Burgess, A. W., Hartman, C. R., Douglas, J. E., & McCormack, A. (1986). Murderers who rape and mutilate. *Journal of interpersonal violence, 1*(3), 273-287.

Rosman, J. P., & Resnick, P. J. (1989). Sexual attraction to corpses: A psychiatric review of necrophilia. *Bulletin of the American Academy of Psychiatry and the Law, 17*(2), 153-163.

Safarik, M. E., Jarvis, J. P., & Nussbaum, K. E. (2002). Sexual Homicide of Elderly Females:Linking Offender Characteristics to Victim and Crime Scene Attributes. *Journal of interpersonal violence, 17*(5), 500-525. doi:10.1177/0886260502017005002

Schwartz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics*, 461-464.

Sea, J., Beauregard, E., & Martineau, M. M. (2019). A cross-cultural comparison of Canadian and Korean sexual homicide. *International Journal of Offender Therapy and Comparative Criminology*. doi:10.1177/0306624X19834408

Stefanska, E. B., Beech, A., & Carter, A. J. (2016). A systematic review of the literature comparing male non-serial sexual killers and sexual aggressors: examining homogeneous and heterogeneous characteristics of these groups. *Journal of sexual aggression, 22*(3), 323-341. doi:10.1080/13552600.2015.1126657

Stefanska, E. B., Carter, A. J., Higgs, T., Bishopp, D., & Beech, A. (2015). Offense pathways of non-serial sexual killers. *Journal of Criminal Justice, 43*(2), 99-107.

Stefanska, E. B., & Higgs, T. (2018). Understanding the sexual element in sexual murder. In J. Proulx, A. J. Carter, E. Beauregard, A. Mokros, R. Darjee, & J. James (Eds.), *Routledge International Handbook of Sexual Homicide Studies* (pp. 104-116). Abingdon, UK: Routledge.

Stefanska, E. B., Higgs, T., Carter, A. J., & Beech, A. (2017). When is a murder a sexual murder? Understanding the sexual element in the classification of sexual killings. *Journal of Criminal Justice, 50*, 53-61.

Stefanska, E. B., Higgs, T., Carter, A. J., & Beech, A. (2018). "We boil at different degrees": Factors associated with severity of attack in sexual killing. *Journal of interpersonal violence, Advance online publication.*

Stein, M. L., Schlesinger, L. B., & Pinizzotto, A. J. (2010). Necrophilia and sexual homicide. *Journal of Forensic Sciences, 55*(2), 443-446.

Tein, J.-Y., Coxe, S., & Cham, H. (2013). Statistical power to detect the correct number of classes in latent profile analysis. *Structural equation modeling: a multidisciplinary journal, 20*(4), 640-657.

VanVoorhis, C. R. W., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in quantitative methods for psychology, 3*(2), 43-50.

Wulfen, E. (1910). *Enzyklopädie der Modernen Kriminalistik [Encyclopedia of Modern Criminology]*. Berlin: Erich Langenscheidt.

Table 1. Fit indices for latent classes

Nb of classes	LL	BIC(LL)	SABIC	AIC(LL)	L²	df	Entropy
1	-625.955	1298.8234	1211.0248	1271.9099	385.7002	99	1
2	-608.5608	1315.6399	1191.60.39	1259.1216	350.9118	88	0.85
3	-589.1201	1328.3633	1182.9706	1242.2402	312.0305	77	0.81
4	**-569.7767**	**1341.2814**	**1179.4380**	**1225.5535**	**273.3437**	**66**	**0.79**
5	-563.5986	1380.5300	1171.0321	1235.1972	260.9875	55	0.78
6	-548.6523	1402.2422	1169.4164	1227.3045	231.0948	44	0.76
7	-539.4511	1435.4446	1173.0705	1230.9022	212.6924	33	0.75

Note. Boldface type indicates the selected model.

Table 2. Profile of four latent classes - Mean probabilities of crime characteristics based on class membership

|	Class 1 Opportunistic	Class 2 Experimental	Class 3 Preferential	Class 4 Sadistic
Cluster size	36	28	17	28
	32.87%	25.82%	16.03%	25.28%
Offender is single	0.72	0.07	0.76	0.18
Offender has sexual dysfunctions	0.00	0.00	0.65	0.18
Offender perpetrated ante-mortem vaginal penetration	0.64	0.61	0.00	0.96
Offender perpetrated ante-mortem anal penetration	0.18	0.54	0.00	0.96
Offender perpetrated ante-mortem foreign object insertion	0.00	0.54	0.53	0.96
Offender mutilated victims' genitals	0.03	0.07	0.18	0.71
Method of killing: Asphyxiation/Strangulation	0.44	0.79	0.00	0.96
Offender used restrains	0.19	0.00	0.24	0.96
Victim was specifically targeted	0.33	0.39	0.00	0.96
Offender robbed items during crime	0.97	0.18	0.29	0.00
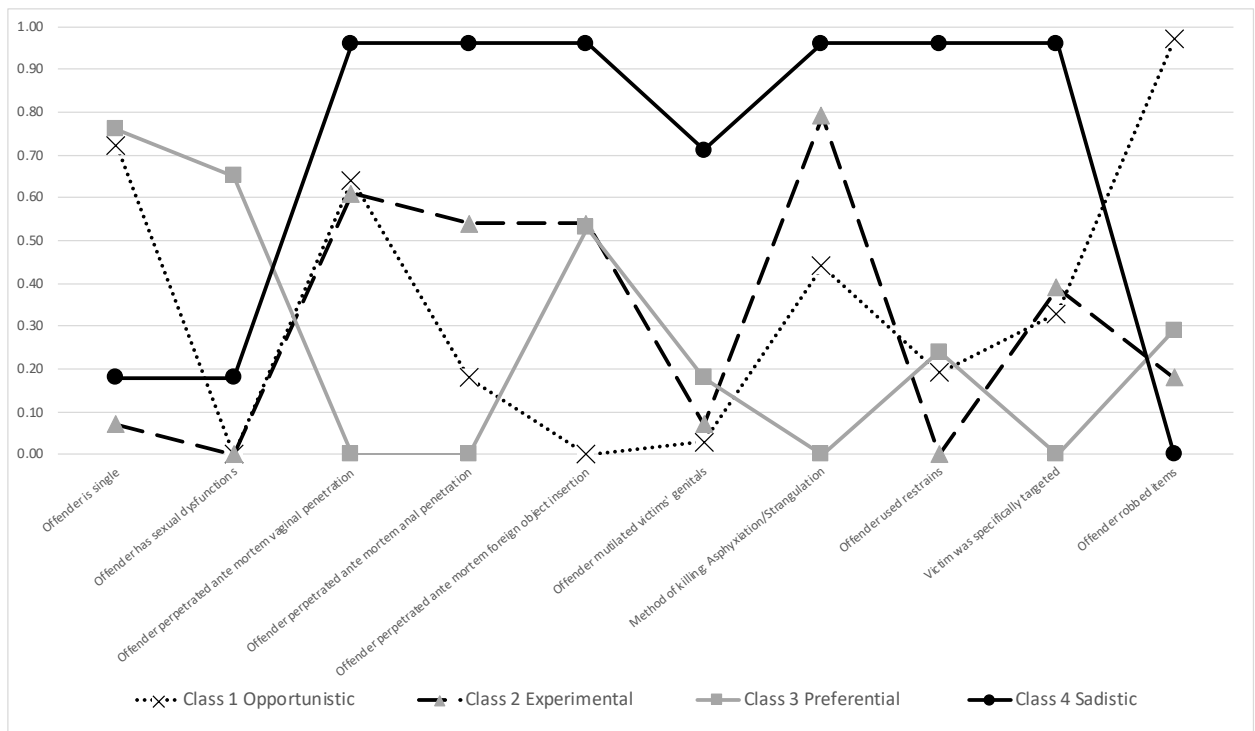
Fig 1. Profile of four latent classes - Mean probabilities of crime characteristics based on class membership

Table 3. Correlates for the offender and crime characteristics of the four-class solution

	Class 1 Opportunistic	Class 2 Experimental	Class 3 Preferential	Class 4 Sadistic	χ^2 / Fisher's exact test
	n=36	n=28	n=17	n=28	
	32.87%	25.82%	16.03%	25.28%	
Offender characteristics					
Offender possessed a sexual collection	16.67%	17.86%	11.76%	96.43%	58.05***
Offender is a loner	27.78%	25.00%	70.59%	0.00%	24.45***
Offender had previous criminal conviction	38.89%	17.86%	5.88%	39.29%	9.34*
Offender used alcohol/drugs previously to crime	63.89%	53.57%	47.06%	100.00%	17.02***
Crime characteristics					
Target selection					
Offender and victims were strangers	41.67%	39.29%	35.29%	7.14%	10.37*
Victim is a female	88.89%	100.00%	88.24%	100.00%	2.57
Victim is 65 years or older	5.56%	14.29%	35.29%	0.00%	12.45**
Victim lived with somebody	61.11%	53.57%	47.06%	25.00%	8.76*
Victim used alcohol/drugs prior to crime	30.56%	25.00%	23.53%	75.00%	20.25***
Victim was assaulted while involved in domestic activities	72.22%	39.29%	47.06%	0.00%	31.49***
Victim was assaulted while he/she was sleeping	27.78%	14.29%	11.76%	0.00%	7.59
Victim was assaulted while he/she was jogging	0.00%	32.14%	23.53%	0.00%	15.98***
Victim was assaulted while he/she was drinking in a bar	0.00%	7.14%	0.00%	75.00%	59.28***
Modus operandi					
Offender used con approach	47.22%	64.29%	58.82%	75.00%	5.31
Weapon involvement	75.00%	53.57%	88.24%	100.00%	16.36***
Sexual act: Fellatio	8.33%	7.14%	11.76%	0.00%	1.19
Sexual act: Digital penetration	13.89%	28.57%	17.65%	0.00%	7.02
Sexual act: Masturbation	8.33%	7.14%	5.88%	0.00%	0.68
Sexual act: Fondling	16.67%	21.43%	17.65%	0.00%	4.20
Sexual act: Vaginal/anal fisting	0.00%	3.57%	0.00%	75.00%	63.02***
Victim was beaten	44.44%	60.71%	17.65%	100.00%	31.89***
Victim was stabbed/cut	30.56%	17.86%	47.06%	75.00%	21.41***
Victim was gunshot	8.33%	0.00%	5.88%	0.00%	1.05
Victim was bitten	5.56%	7.14%	0.00%	75.00%	54.92***
Criminal dismemberment	22.22%	7.14%	41.18%	75.00%	32.16***
Post mortem extreme acts with/on victims' bodies	22.22%	17.86%	41.18%	75.00%	25.06***
Body was moved from the crime scene	33.33%	32.14%	17.65%	0.00%	10.10*
Body was concealed	36.11%	21.43%	23.53%	75.00%	20.39***
Body was found naked	25.00%	10.71%	23.53%	75.00%	29.89***
Offender removed/destroyed forensic evidence	41.67%	46.43%	29.41%	0.00%	15.36**

Notes. * p < .05, ** p < .01, *** p < .001

Appendix 1. Correlation Matrix (Pearson Correlation).

	1	2	3	4	5	6	7	8	9	10
1. Offender is single										
2. Offender has sexual dysfunctions	0.065									
3. Offender perpetrated ante-mortem vaginal penetration	0.123	0.120								
4. Offender perpetrated ante-mortem anal penetration	-0.180	-0.081	0.198*							
5. Offender perpetrated ante-mortem foreign object insertion	0.200*	0.183	-0.055	-0.117						
6. Offender mutilated victims' genitals	-0.021	-0.038	-0.010	0.103	0.329**					
7. Method of killing: Asphyxiation/Strangulation	0.304**	0.147	0.226*	0.048	0.073	0.076				
8. Offender used restrains	-0.108	-0.032	0.067	0.160	0.032	0.087	0.003			
9. Victim was specifically targeted	0.019	0.022	0.112	0.117	0.076	-0.041	0.046	0.192*		
10. Offender robbed items during crime	0.213*	0.007	-0.010	0.006	-0.077	-0.181	.198*	-0.133	-0.186	

Notes. "* $p < .05$, ** $p < .01$, *** $p < .001$.