The Risk-Related Correlates & Recidivism of Victim Age Polymorphism: A Meta-Analysis

by

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Abstract: Victim age polymorphism refers to individuals who sexually offend against victims in multiple age categories (e.g., both child and adult victims). Despite some findings that this group tends to be higher risk of recidivism than non-age polymorphic groups, the literature on victim age polymorphism and its association with risk-related correlates and recidivism is mixed. The present study used meta-analyses to examine the associations between victim age polymorphism and the two main risk-related correlates (atypical sexual interests, antisociality) and recidivism. Database searches retrieved 2,924 articles, resulting in the inclusion of 22 studies. Results revealed that victim age polymorphism was associated with the antisociality risk domain and violent recidivism. A small positive association with atypical sexual interests and sexual recidivism also emerged. Overall, individuals with offences that are victim age polymorphic appeared to share more clinically relevant similarities to individuals who target exclusively adults than to individuals who exclusively target children.

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Acknowledgments

Table of Contents

The Risk-Related Correlates & Recidivism of Victim Age Polymorphism: A Meta-Analysis

Recidivism has been a major focus of forensic research on individuals with sexual offences (ISOs). Although recidivism studies date back decades (e.g., Furby et al., 1989; Hanson & Morton-Bourgon, 2005; Quinsey et al., 1995), recent estimates put the sexual recidivism rate of ISOs at approximately six percent (Lussier et al., 2022). Despite this overall estimate, it is important to note that ISOs are heterogeneous and can differ based on various characteristics, such as Risk of recidivism, criminal history, victim selection, and psychological characteristics (Guay et al., 2001; Hanson et al., 2007). One factor that is often used to distinguish ISOs is victim age (Aebi et al., 2011; Faniff & Kolko, 2011; Leroux et al., 2014). Traditionally the field has categorized ISOs into those who offend against children (ISOCs) or adults (ISOAs).

In a 1994 review, Laws described the "offence-specific fallacy," in which it is assumed that ISOs select victims based on specific characteristics or traits, rarely deviating from a victim type between offences. This assumption is problematic as it may lead to the exclusion of potential suspects based on their previous victim choice (Laws, 1994). For example, Laws (1994) argues that an individual who targets adults in their known sex offences may be less likely to be linked to sexual offences in which a child was targeted because of this bias.

Despite the offence specific fallacy, researchers acknowledge a group of ISOs for whom victim selection is considerably more variable (e.g., Brown et al., 2015; Cormier et al., 2020; Lussier et al., 2007). Victim choice polymorphism, also known as mixed sexual offending or victim crossover, refers to variability in victim selection across a series of sexual offences. ISOs can exhibit polymorphism on a variety of victim characteristics, such as victim gender (e.g., male and female victims), relationship to the victim (e.g., intrafamilial and extrafamilial victims), or victim age (e.g., adult and child victims). Furthermore, ISOs can be polymorphic in multiple

domains, such as age and gender (Eyer et al., 2021; Scurich & Gongola, 2021). Victim age

polymorphism is a major focus of polymorphism research, likely because victim age has been

found to provide a valid distinction between subgroups of ISOs (Aebi et al., 2011; Faniff &

Kolko, 2011; Leroux et al., 2014) and appears to be one of the more inconsistent victim

characteristics (Guay et al., 2001). Therefore, victim age polymorphism will be the focus of this

thesis.

Risk-Related Correlates of Victim Age Polymorphism

Research has often focused on correlates of victim age polymorphism for the purpose of

identifying potential risk factors for recidivism among detected ISOs (Heil et al., 2003; Stephens

et al., 2017). Prior to discussing the literature on the risk-related correlates among ISOs who are

victim age polymorphic (ISOVAPs), the broader literature on risk domains will be briefly

highlighted. The literature has suggested that the risk-related correlates of sexual recidivism fall

into two broad domains: atypical sexual interests and antisociality (Doren, 2004; Hanson &

Morton-Bourgon, 2005).

For the purposes of this study, atypical sexual interest is conceptualized as two separate

constructs. The first construct is paraphilias. According to the *Diagnostic and Statistical Manual*

of Mental Disorders – 5th ed. – Text Revision, a paraphilia is defined by persistent, intense, and

sexual interest toward unusual targets, activities, or objects (American Psychiatric Association,

2022). This broad definition allows for the inclusion of a wide variety of paraphilias; for

example, pedophilia (i.e., an attraction to prepubescent children) and exhibitionism (i.e., sexual

gratification from exposing one's genitals to an unsuspecting person; American Psychiatric

Association, 2022). The second construct that is often considered when discussing atypical

sexual interests is sexual preoccupation. Sexual preoccupation refers to an intense interest in sex

that dominates psychological functioning (Hanson et al., 2007), and is closely related to hypersexuality (i.e., frequent and intense sexual urges that cause personal distress or impairment; Kingston et al., 2018).

The contribution of atypical sexual interests to sexual offending and sexual recidivism is well-supported in the literature. For example, individuals with paraphilia diagnoses are more likely to sexually reoffend than individuals without paraphilias (e.g., Brouillette-Alarie et al., 2018; Hanson & Morton-Bourgon, 2005). The association between sexual preoccupation and persistent sexual offending has long been established as well (e.g., Cortoni & Marshall, 2001; Gregório Hertz et al., 2022; Hanson & Morton-Bourgon, 2005). Nonetheless, it is important to highlight that atypical sexual interests alone are not adequate to explain sexual violence given that many individuals with atypical sexual interests never offend (e.g., many individuals with sexual interest in children never sexually offend; Cantor & McPhail, 2016; Seto, 2019).

Another major risk domain identified in the literature is antisociality. Antisociality refers to a disregard for typical social conventions and can be used to describe lifestyle (e.g., parasitic lifestyle), personality (e.g., callousness), or behavioural (e.g., impulsivity) qualities of an individual. Antisocial personality disorder (American Psychiatric Association, 2022), a history of rule violations, and especially antisocial traits have often been used to operationalize antisociality in forensic research (e.g., Brouillette-Alarie, 2016; Hanson & Morton-Bourgon, 2005). Antisociality is generally found to be a strong predictor of non-sexual recidivism among ISOs (Hanson & Morton-Bourgon, 2005).

A common focus in the research on antisociality is psychopathy. Although antisociality and psychopathy are distinct, there is significant overlap and convergence between the two constructs (Lilienfeld & Andrews, 1996; Neumann et al., 2015; Skeem & Cooke, 2010).

Whereas antisociality is a risk factor that describes a variety of traits and behaviours that involve a disregard for social norms and conventions, psychopathy is a responsivity factor that can be conceptualized as a trait characteristic defined by interpersonal, affective, impulsive, and antisocial symptoms (Brook & Kosson, 2013; Hare, 2007; Jonason & Krause, 2013). Thus, antisociality is a core component of psychopathy as a construct (Neumann et al., 2015). Although psychopathy is generally considered to be a responsivity factor, it has been found to contribute to risk of recidivism as well (Hawes et al., 2013).

The literature on these broad risk domains as they apply to victim age polymorphism has been a focus of a small body of research. It has generally been found that ISOCs have a higher level of atypical sexual interests than ISOAs, whereas ISOAs are more likely to exhibit antisociality than ISOCs (e.g., Brown et al., 2015; Paquette et al., 2022). Therefore, it is possible that ISOVAPs may show elevations across both of these risk domains.

Atypical Sexual Interests

Multiple paraphilias. One might expect that individuals with varied sexual offence histories, like ISOVAPs, would exhibit a significantly greater number of distinct paraphilias (herein referred to as multiple paraphilias) than nonpolymorphic ISOs. Laws (1994) argued that multiple paraphilic interests among ISOs may increase the likelihood of polymorphism, given that multiple paraphilias among ISOs are associated with a greater number of victims and offences.

Despite Laws' hypothesis, studies that have explicitly examined the relationship between victim age polymorphism and multiple paraphilias have often found no association. For example, Cormier and colleagues (2020) conducted a study with an archival database of 387 ISOs referred to a provincial forensic sexual behaviour program for assessment. The authors found a

nonsignificant association between victim age polymorphism and multiple paraphilia diagnoses

compared with ISOCs and ISOAs. It was suggested that multiple paraphilias may be less

indicative of victim age polymorphic offending specifically and more generally indicative of

sexual offending (Cormier et al., 2020). This hypothesis is well-supported by findings in the

literature, which finds higher rates of paraphilias in forensic samples compared with community-

based samples (e.g., Abel et al., 1988; Bradford et al., 1992), and it could explain why there was

no significant difference in the number of paraphilias between ISOVAPs and nonpolymorphic

ISOs (e.g., Cormier et al., 2020; Jackson & Richards, 2007). Regardless, it is important to

examine multiple paraphilias in ISO samples given the association between multiple paraphilias

and higher rates of reoffending (Brouillette-Alarie et al., 2018; Hanson & Morton-Bourgon,

2005; Mann et al., 2010).

      Another possibility is that victim age polymorphism reflects a non-exclusive interest in

different age groups, referred to as indiscriminate sexual arousal. Indiscriminate arousal has been

captured in studies that use phallometric devices, which measure changes in girth or penile blood

volume in response to audio or visual stimuli (Ohlmeyer et al., 1944). Studies that use

phallometric devices have identified victim age polymorphism as fitting a bimodal (i.e., attracted

to children and adults) or indiscriminate (i.e., attracted to children, adolescents, and adults)

arousal profile (Barbaree & Marshall, 1989; Michaud & Proulx, 2009). For example, Barbaree &

Marshall (1989) examined the arousal profiles of ISOCs and community members using

circumferential phallometry and visual stimuli. They determined there were two arousal profiles

that responded to more than one age group: a bi-modal (responded to child and adult stimuli) and

indiscriminate (responded to child, adolescent, and adult stimuli) arousal profile (Barbaree &

Marshall, 1989). These results suggest that some ISOCs may experience a sexual attraction to

both children and adults; however, just 7.2% (N =6) and 21.7% (N = 18) of the total sample fit

the bi-modal and indiscriminate arousal profiles respectively, indicating that these profiles are

somewhat rare.

In a subsequent study, Michaud and Proulx (2009) examined arousal profiles across 420

ISOs. The authors also detected a small (6.9%; N = 29) indiscriminate arousal profile within the

sample, supporting the previous findings of Barbaree and Marshall (1989). Arousal to different

sexual activities was included in the analysis (e.g., rape, humiliation, consensual sex), with

ISOVAPs demonstrating less arousal to non-sexual assault and more arousal to sexual assault

across victim age groups. This suggests that ISOVAPs may be less preferential when it comes to

victim age; however, the low prevalence of victim age polymorphism in this study prevented

meaningful statistical analysis of the arousal profiles within this group.

Building on this literature, Stephens and colleagues (2022) examined whether non-

exclusivity in age interest (i.e., presence of child victims and legal or illegal sexual contact with

adults) could explain low response discrimination (i.e., indiscriminate arousal profiles) during

phallometric testing. The study was conducted with 2,858 adult men who were assessed at a

sexual behaviour clinic, most (84%) of whom had self-reported or had been convicted of a sexual

offence (Stephens et al., 2022). Among ISOs, the authors found those with non-exclusive age

interest had the lowest response discrimination when compared with individuals who

consistently offended against children or had adult sexual partners/victims (Stephens et al.,

2022). These findings suggest that victim age polymorphism could be associated with

indiscriminate arousal given that the response discrimination for non-age exclusive individuals

across all stimuli was quite low; however, the size of the effect was quite small (Stephens et al.,

2022). While this study was not limited to ISOs (i.e., included men who self-referred for sexual

assessment), it still provides the largest offending sample to be examined in relation to victim age polymorphism and indiscriminate arousal.

  Sexual preoccupation. Another possible factor that contributes to polymorphism is sexual preoccupation. Sexual preoccupation has been examined at length by many different theorists within sexual offending research (e.g., Ellis, 1991; Kingston et al., 2018; Laws & Marshall, 1990; Malamuth et al., 2000; Marshall & Barbaree, 1990; Quinsey & Lalumière, 1995); however, the association between sexual preoccupation and polymorphism has been examined in only a few studies. Lussier and colleagues (2007) examined the relationship between sexualization (construct used to capture a broad range of sexual behaviours including sexual preoccupation and paraphilias) and polymorphism but this relationship was not significant (Lussier et al., 2007). Similarly, a study by Cormier and colleagues (2020) found that ISOVAPs were no more likely to exhibit sexual preoccupation than nonpolymorphic ISOs, although it should be noted that the authors did not use a standardized measure of sexual preoccupation. Thus, while sexual preoccupation has been hypothesized to drive victim age polymorphic offending, an empirical basis for this claim has not yet been established.

  In examining some of the common constructs within the atypical sexual interest domain, there is less convincing evidence to suggest that victim age polymorphism is associated with multiple paraphilias and sexual preoccupation, though there is some evidence for indiscriminate arousal. It would therefore appear that the domain of atypical sexual interests may be less indicative of victim age polymorphism, despite the reasonable hypothesis that the domain could be elevated in ISOVAPs relative to ISOAs and ISOCs. While further research is needed, a meta-analytic approach to a literature synthesis could help guide researchers in theoretical development.

Antisociality

Much of the research on victim age polymorphism and antisociality has specifically examined psychopathy using the Psychopathy Checklist – Revised (PCL-R; Hare, 2003). The PCL-R is a clinician-administered assessment that has strong psychometric properties (Hare, 2007; Hare & Neumann, 2008). The PCL-R items are divided into Factor 1 (comprised of facets 1 and 2) and Factor 2 (comprised of facets 3 and 4) categories. Factor 1 includes the following interpersonal (facet 1) and affective (facet 2) characteristics: Glibness, grandiosity, pathological lying, manipulative, lack of remorse or guilt, shallow affect, callousness, and failure to accept responsibility. Factor 2 includes the following lifestyles (facet 3) and deviant behaviours (facet 4): Need for stimulation, parasitic lifestyle, lacking realistic and long-term goals, impulsivity, irresponsibility, poor behavioural control, early behavioural problems, juvenile delinquency, revocation of conditional release, and criminal versatility (Hare, 2003). The checklist totals a maximum possible score of 40 with a recommended cutoff score of 30 for determination of psychopathy (Hare, 2007). In forensic research, a cutoff score of 25 is sometimes used to increase sample size in psychopathic groups (e.g., Olver & Wong, 2006; Skovran et al., 2010), though Huss and Langhinrichsen-Rohlin (2006) found that changing the cutoff point resulted in very little change in study outcomes.

ISOVAPs have shown significantly elevated levels of psychopathy when compared with individuals with non-sexual offences, ISOAs, and ISOCs (Brown et al., 2015; Jackson & Richards, 2007; Olver & Wong, 2006; Porter et al., 2000; Porter et al., 2001; Porter et al., 2009; Skovran et al., 2010). For example, Porter and colleagues (2000) found that 64% of ISOVAPs in a sample of federally imprisoned ISOs met the cut-off for psychopathy. Furthermore, 17% of the ISOs with psychopathy were victim age polymorphic compared with just 4% of ISOs who were

not psychopathic (Porter et al., 2000). While compelling, it should be noted that the studies reporting these differences have small ISOVAP sample sizes, ranging from 19 (Skovran et al., 2010) to 56 (Jackson & Richards, 2007). A more recent study that included 105 ISOVAPs found no significant differences between ISOVAPs, ISOCs and ISOAs using multiple measures of psychopathy and antisociality (Cormier et al., 2020); however, the authors found a lower-than-average rate of psychopathy in a low risk (e.g., provincial treatment program) sample, which may have contributed to the limited differences that were found. This indicates that risk level may partially explain the association between psychopathy and victim age polymorphism, as the association appears to be stronger in high risk samples (e.g., Porter et al., 2000) than in low risk samples (e.g., Cormier et al., 2020).

In addition to total psychopathy scores, there has been research that has examined differences in Factor 1 and Factor 2 scores between ISO groups. Brown and colleagues (2015) found that ISOVAPs had significantly higher Factor 1 scores than ISOCs and ISOAs, whereas other studies have found ISOVAP Factor 1 scores differ only from ISOCs (Porter et al., 2009; Skovran et al., 2010). Additionally, significantly higher scores on Factor 2 items have also been found in ISOVAPs when compared with ISOCs (Brown et al., 2015; Nicholaichuk et al., 2000; Olver & Wong, 2006; Porter et al., 2009; Porter et al., 2000). Therefore, it is more likely that the differences between ISOCs and ISOVAPs are due to a significantly lower score on the part of the ISOCs. This hypothesis is supported by multiple findings that ISOCs also score lower on Factor 2 traits than non-ISOs and ISOAs, reflecting a less diverse criminal history (Brown et al., 2015; Porter et al., 2000). Although there has been no literature synthesis to date, it is generally accepted among researchers that ISOVAPs are more psychopathic than ISOCs, but not ISOAs.

Regardless, ISOVAPs have been labelled as a highly psychopathic group (e.g., Brown et al., 2015; Porter et al., 2000).

The need for stimulation is a key feature of psychopathy and is included in the Factor 2 traits of the PCL-R. It is usually discussed in terms of an individual's proneness to boredom that leads to sensation- and thrill-seeking behaviours. In a 2002 literature review, Meloy suggested that the link between psychopathy and sensation-seeking in ISOs could be explained by habituation. In other words, repeating the same sexual activities with the same targets loses novelty over time, resulting in psychopathic individuals escalating to riskier behaviours and distinct targets. The motivation for some ISOs to change victim types could therefore be explained by an appetite for novel sexual stimuli. Highlighting this, Porter and colleagues (2000) profiled one participant, designated a Dangerous Offender in Canada, who said that when he "got bored" with one victim type he would target a different victim type in future offences. It is also possible that psychopathic ISOs are motivated by the excitement of victimizing a diverse victim group (Porter et al., 2000). This motivation falls into the broad category of thrill-seeking, which may lead psychopathic individuals to commit riskier and more violent crimes against people of all ages (Porter et al., 2001). Although psychopathy would provide a theoretical framework in which thrill-seeking motivates victim age polymorphism, the relationship between thrill-seeking and polymorphism has not yet been tested in the literature.

It would therefore appear that the domain of antisociality – and specifically, psychopathy – is more closely associated with victim age polymorphism than the domain of atypical sexual interest. Synthesizing the literature on risk-related correlates of victim age polymorphism would be beneficial given the potential implications for explaining sexual and non-sexual recidivism rates among ISOVAPs.

Recidivism

Although overall recidivism rates of ISOs tend to be quite low (Cortoni et al., 2010; Gannon et al., 2019; Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005; Yates & Kingston, 2022), they can vary greatly depending on individual characteristics (e.g., atypical sexual interest, antisociality; Brouillette-Alarie, 2016; Hanson & Morton-Bourgon, 2005). For example, ISOCs tend to score higher on measures of atypical sexual interest (Paquette et al., 2022), which is in turn associated with persistent sexual offending (Hanson & Morton-Bourgon, 2005). ISOAs tend to score higher on measures of antisociality (Brown et al., 2015), which is associated with violent reoffending (Hanson & Morton-Bourgon, 2005). Based on the present review of risk-related correlates, ISOVAPs appear to exhibit lower scores in the risk domain of atypical sexual interests and higher scores in the antisociality risk domain. Therefore, these findings would be expected to translate into lower rates of sexual recidivism and higher rates of violent recidivism, respectively, among ISOVAPs.

There is evidence of an elevated overall recidivism rate for ISOVAPs in the literature (e.g., Harris et al., 2011; Link & Lösel, 2021; Olver & Wong, 2006), but the specific rates of sexual and violent recidivism are inconsistent across these studies. Regarding sexual recidivism, ISOVAPs have been found to demonstrate significantly higher reoffence rates than ISOCs and ISOAs (Harris et al., 2011; Olver & Wong, 2006; Parent et al., 2011). In a high risk sample, Olver and Wong (2006) reported a sexual recidivism rate of 46% for ISOVAPs, compared with 37% for ISOAs and 32% for ISOCs. This study contrasts with the findings reported by Link and Lösel (2021), who found no significant differences in sexual recidivism between the ISO groups. Furthermore, Stephens and colleagues (2016) investigated sexual recidivism in a sample that included 109 ISOVAPs. The authors found that there was a significant association between

victim age polymorphism and sexual recidivism; however, when controlling for the number of victims, this association was no longer significant (Stephens et al., 2016). This finding suggests that the elevated sexual recidivism found among ISOVAPs could be driven by the number of victims. There is evidence in the literature that ISOs with multiple victims have significantly higher levels of sexual recidivism than ISOs with a single victim (Hanson & Bussière, 1998; Helmus et al., 2015). Given that an increased number of victims is associated with polymorphism (Cann et al., 2010; Lussier et al., 2007; Stephens et al., 2016), the association between sexual recidivism and victim age polymorphism may be a function of belonging to the multiple-victim ISO group rather than the polymorphic ISO group.

There also appears to be some association between victim age polymorphism and violent recidivism. Kleban and colleagues (2012) conducted an analysis of the risk of violent recidivism between ISOCs, ISOAs, and ISOVAPs. The authors found that ISOVAPs did not differ significantly from ISOCs nor ISOAs in terms of risk of violent recidivism (Kleban et al., 2012). Based on these findings alone, it would be expected that observed violent recidivism rates would not differ across these groups either; however, ISOVAPs are generally found to have lower violent recidivism rates than ISOAs and higher violent recidivism rates than ISOCs (Harris et al., 2011; Link & Lösel, 2021; Olver & Wong, 2006; Parent et al., 2011; Vess & Skelton, 2010). Importantly, some of these studies have found very small differences in violent recidivism rates between ISOVAPs and ISOAs (e.g., Harris et al., 2011; Parent et al., 2011). Research has suggested that offending against adults, rather than offending against multiple age groups, may drive the association with violent recidivism (Stephens et al., 2016). Regardless, it would be beneficial to establish the association between violent recidivism and polymorphism via meta-analytic synthesis given the wealth of recidivism studies available.

Due to the limited association between atypical sexual interest and victim age polymorphism, ISOVAPs would not be expected to recidivate sexually at a higher rate than other types of ISOs; however, as discussed, some studies have found a significantly higher sexual recidivism rate among ISOVAPs (e.g., Harris et al., 2011). On the other hand, the association between antisociality and victim age polymorphism does appear to translate into higher levels of violent reoffending (e.g., Parent et al., 2011). Explanations for why the expected trend between the risk-related correlates and recidivism of victim age polymorphism are not found in the literature have yet to be investigated.

Methodological Considerations

Based on the present review, there is some variation across studies examining the risk-related correlates and recidivism of victim age polymorphism. What remains unclear is how much of the variation across studies is due to true differences in ISO groups versus methodological differences in victim age polymorphism research. Research on victim age polymorphism varies greatly in terms of the definitional and methodological processes employed, including the ways in which victim age is categorized, sample characteristics, and the sources of information available to the researchers. It is important to understand the different ways in which researchers examine victim age polymorphism given the potential impacts on study outcome. To demonstrate the effect of these operational and methodological differences, literature on the prevalence of victim age polymorphism will be used as an example. Examining victim age polymorphism prevalence studies has important implications for accurately identifying ISOVAPs in all victim age polymorphism research, which could in turn lead to better accuracy in detecting associations with the risk-related correlates and recidivism.

Despite finding that victim age polymorphism is more frequent than other forms of polymorphism (e.g., victim relationship polymorphism), there is wide discrepancy in its prevalence across various studies (e.g., Guay et al., 2001; Sjöstedt et al., 2004; Heil et al., 2003). Some studies that examined victim age polymorphism have reported a prevalence rate exceeding 40% within the population of ISOs (e.g., Saramago et al., 2020; Sim & Proeve, 2010; Weinrott & Saylor, 1991), though a study that used official offence documentation and polygraphy to elicit self-reported offences almost doubled this rate (70%; Heil et al., 2003). The high prevalence rate found in these studies may have led to an increased focus on victim age polymorphism in the literature, as indicated by the rate at which studies examining victim age polymorphism outnumber those examining gender (i.e., offending against men/boys and women/girls) and relationship polymorphism (i.e., offending against extrafamilial and intrafamilial victims; Scurich & Gongola, 2021). Noting a wide range in prevalence rates, Scurich and Gongola (2021) recently conducted a meta-analysis of studies that examined the prevalence of polymorphic sexual offences, including victim age polymorphism. A total of 47 studies included in the meta-analysis produced a victim age polymorphism weighted mean of 19%; however, Scurich and Gongola (2021) identified various methodological factors (e.g., sources of information) that impacted the prevalence rate found across studies.

Victim Age Categories

Although victim age is a continuous variable, researchers often categorize victim age to group ISOs (e.g., ISOCs, ISOAs). Proper categorization methods are important for ensuring that ISOs are not mislabeled as polymorphic or nonpolymorphic; however, victim age polymorphism research differs significantly in the ways researchers operationalize victim age. Often, the victim age categories in each study depend on the information that was available to researchers. Exact

ages are sometimes not included in archival data, and as a result, there may not be enough information available to examine age as a continuous variable and victims may be sorted into approximate categories (e.g., Heil et al., 2003; Saramago et al., 2020). Studies usually divide victim ages into two categories (child, adult; e.g., Link & Lösel, 2021), though others have used three (child, adolescent, adult; e.g., Stephens et al., 2016) or four victim age categories (prepubescent child, pubescent child, adolescent, adult; e.g., Cormier et al., 2020).

In polymorphism research, age is often used as a proxy for the sexual maturity of the victim (e.g., Cormier et al., 2020). As the number of victim age categories increases, there is less distinction in the sexual maturity of the victims represented between categories (Cormier et al., 2020; Saramago et al., 2020). For example, an ISO with a 10- and 12-year-old victim may be considered polymorphic according to certain categorization methods; however, with only a two-year age difference between the victims, there are likely few differences in terms of sexual maturity. In comparison, an ISO with a 5- and 25-year-old victim would represent extremely different sexual maturity stages. Furthermore, increasing the number of victim age categories increases the likelihood of detecting victim age polymorphism within a sample regardless of differences in victim sexual maturity (Stephens et al., 2016). Victim age polymorphism does appear to be more prevalent in studies that include adolescents as their own distinct victim age group (Kleban et al., 2012). It is therefore possible that the prevalence of victim age polymorphism found in studies using more victim age categories (e.g., Kleban et al., 2012; Stephens et al., 2016) may be overestimations. On the other hand, studies with only two age categories may underestimate rates of victim age polymorphism, as there is less variation in sexual maturity captured in the categories. This finding was confirmed by Stephens and colleagues' (2016) study in which victim age polymorphism was more prevalent if it was

operationalized as any crossover between child, adolescent, and adult categories (35%) versus

when it was only operationalized as crossover between child and adult categories (22%). Thus,

there is a trade-off between representing all victim maturity stages and guaranteeing distinct

maturity between victims. Unless this trade-off is addressed in study methodology, studies may

not accurately capture polymorphism.

Another operational inconsistency is that the cutoffs for each victim age category vary

across studies. For example, some researchers may consider a child to be under age 11 (e.g.,

Stephens et al., 2017), while others may define a child victim as under 14 years old (e.g., Hanson

et al., 2007). Tanner (1978) provided a schematic of the different stages of sexual development

with approximate age ranges for each stage, which can be used to categorize victims when exact

age information is available. Stage I describes prepubescent children with no secondary sex

characteristics, approximately nine years of age and younger. Stages II, III, and IV describe

different phases of puberty in children, generally around the ages of 10-14 years, in which the

development of secondary sex characteristics occurs. Finally, Stage V describes adults with

developed sex characteristics, approximately 15 years or older (Tanner, 1978). While the Tanner

Stages are commonly used in forensic research on victim age (e.g., Saramago et al., 2020;

Stephens et al., 2017), they are imperfect identifiers of sexual development given that there can

be significant variation in sexual maturity at a certain age (Hames & Blanchard, 2012). For

example, an individual with a 12- and 15- year-old victim may be categorized as polymorphic

according to the Tanner Stages, even though both victims may appear similar in terms of sexual

development.

Surprisingly, there are relatively few methodological solutions employed across studies

to improve accuracy in detecting distinct sexual maturity between victims, and the victim age

categorization component is missing from Scurich and Gongola's meta-analysis (2021). Instead, Scurich and Gongola (2021) collapsed each study sample into 'child' and 'adult' categorization schemes, where the former was considered a person under the age of majority and the latter as a person at or over the age of majority. Importantly, the age of majority was defined per study, meaning the exact age cutoffs of the included studies differed within the meta-analysis. For example, studies that defined a child as under age 14 would lead to 14- to 18- year-old victims being included in the 'adult' category. Other studies included in the meta-analysis that defined a child as under age 18 would result in the same group of individuals being included in the 'child' category. This highlights the issue of inconsistent age classification across studies as it is even a barrier for literature synthesis. As a result, the effects of different age classification methods on the findings of polymorphism studies have remained largely unaccounted for.

One methodological solution is the requirement of an age gap between victims (e.g., Michaud & Proulx, 2009), which would increase the likelihood that victims are in distinct stages of sexual maturity. For example, a hypothetical study could operationalize age such that a child is under 15 years old, and an adult is 15+ years old. Requiring a five-year age gap between victims of each ISO would ensure that an individual with a 14-year-old and 15-year-old victim would not be labelled an ISOVAP. Thus, accuracy in detecting victim age polymorphism would be improved given that there is likely little difference in sexual maturity between these victims. Of course, there would be challenges in selecting the correct ages in which to apply the age gap requirement. For example, a five-year age gap requirement would not be helpful in determining whether victim age polymorphism has occurred if an ISO has targeted a 17- and 22-year-old, given that this age difference likely does not represent a broad spectrum of sexual maturity. At the same time, a five-year age gap requirement does not capture the differences in sexual

maturity between a nine- and 13-year-old. Therefore, age gap requirements may not always be the appropriate method of increasing accuracy in ISOVAP classification.

Recently, authors have started classifying ISOVAPs as those with victims in non-adjacent age categories to increase the likelihood that victims were at different stages of sexual development (Cormier et al., 2020; Saramago et al., 2020). For example, Saramago and colleagues (2020) used age categories that roughly mapped on to prepubescent (10 years old or younger), pubescent (11 to 14 years old), postpubescent (15 to 17 years old), and adult (18 years old or older) groups. Those with victims in adjacent age categories (e.g., prepubescent and pubescent victims) may be less distinct from each other in terms of sexual characteristics than those with victims in non-adjacent categories (e.g., prepubescent and adult). It should also be noted that the prevalence of victim age polymorphism tends to be higher when adjacent polymorphism is used and lower when non-adjacent polymorphism is used (Saramago et al., 2020), suggesting that adjacent classification methods could be prone to overestimating polymorphism. On the other hand, it could be argued that non-adjacent classification underestimates the rate of polymorphism, given that prepubescent, pubescent, and post-pubescent stages are distinct representations of sexual maturity (Tanner, 1978). Thus, the problems associated with using age as an identifier of sexual maturity are not easily addressed in polymorphism literature.

Victim age categorization is clearly a complicated procedure and there are extreme differences in how victim age and ISOVAPs are operationalized across studies. Furthermore, it is not always possible to maintain victim age categorization across studies given that researchers have different types of information available to them. This influences the number of age categories and the category age ranges that can be used in victim age polymorphism studies.

Some researchers have begun to use age gap requirements or adjacent and non-adjacent polymorphism to account for concerns in accurately distinguishing between the sexual maturity stages of the victims (e.g., Stephens et al., 2017), but these are imperfect solutions and few other methodological considerations have been employed. To date, the effect of different age categorization methods on various findings in the literature (e.g., association with psychopathy) has not been examined.

Sample Characteristics

Forensic samples can differ on a variety of important characteristics, such as risk level. Specifically, samples selected from forensic outpatient programs (e.g., Cormier et al., 2020) would be expected to have a lower risk level than samples drawn from federal correction settings (e.g., Abel et al., 1988). The sample used in research can impact rates of polymorphism. For example, Cann and colleagues (2010) conducted an analysis of the prevalence of victim age polymorphism in a sample of 1,345 ISOs in England and Wales. The authors reported that low and high risk ISOs comprised 17% and 33% of the victim age polymorphic sample respectively. These findings have two significant implications: First, polymorphism may be associated with higher risk levels (e.g., Harris et al., 2011), as more extensive history of sexual offending is associated with sexual recidivism (Hanson et al., 2007). Second, the risk level of samples could influence findings related to the prevalence, risk-related correlates, and risk of recidivism in polymorphism studies. As previously described, Cormier and colleagues (2020) found no association between victim age polymorphism and psychopathy in a low risk (e.g., provincial outpatient program) sample. This study contrasts with the findings of Porter and colleagues (2000), in which ISOVAPs were significantly more psychopathic compared with nonpolymorphic ISOs in a high risk (e.g., federal prison) sample. The findings in these studies

suggest that the variation in victim age polymorphism prevalence and risk-related correlates is at least partially due to sample characteristics. Therefore, risk level is a relevant consideration for synthesizing the literature on victim age polymorphism.

In addition to sample risk level, there is some debate surrounding the inclusion of ISOs with a single victim in studies of polymorphism (e.g., Link & Lösel, 2021; Stephens et al., 2017). Many studies include single-victim ISOs for the purpose of determining the prevalence of victim age polymorphism within the overall ISO population (e.g., Brown et al., 2015). Scurich and Gongola (2021) reported that studies that included single-victim ISOs from the total sample found a significantly lower victim age polymorphism rate (16%) than studies that reduced the sample to only multiple-victim ISOs (28%). The inclusion of single-victim ISOs in prevalence studies would obviously provide a more accurate prevalence of victim age polymorphism across the entire ISO population; however, it is possible that including single-victim ISOs could confound the results on risk-related correlates and recidivism. Multiple-victim ISOs are known to differ from those with a single victim in rates of recidivism (Helmus et al., 2015), which suggests that there is a psychologically meaningful difference between single-victim and multiple-victim ISOs. By definition, ISOVAPs will each have at least two victims, and as a result, the associations found in studies that include single-victim ISOs may be less attributable to victim age polymorphism and more attributable to targeting multiple victims. For example, many studies reporting a significantly greater recidivism rate of ISOVAPs did not exclude single-victim ISOs (e.g., Harris et al., 2011; Olver & Wong, 2006; Parent et al., 2011), while those that reported nonsignificant differences excluded this group (e.g., Link & Lösel, 2021; Stephens et al., 2016). Thus, the variation in the relationship between recidivism and victim age polymorphism across studies may be explained by the inclusion of single-victim ISOs (Stephens

et al., 2016). It has been argued that studies examining recidivism should exclude single-victim ISOs in their comparison groups, which several recent studies have done (e.g., Cormier et al., 2020; Link & Lösel, 2021; Stephens et al., 2016; Stephens et al., 2017).

Sources of Information

All victim age research depends on somewhat unreliable sources of information, and it is generally acknowledged that researchers may not have access to an individual's complete victim history (e.g., Cormier et al., 2020). Nonetheless, researchers must often rely on official records to classify ISOVAPs (e.g., Cann et al., 2010; Guay et al., 2001; Link & Lösel, 2021). Official records are sometimes incomplete (e.g., missing victim characteristic data) or only include offences that resulted in a charge and/or conviction. In some studies, only index offence information (i.e., the offence for which the perpetrator was referred) is available, meaning that prior convictions and therefore past victims are inaccessible to researchers (e.g., Cann et al., 2010; Saramago et al., 2020). It is also possible that sexual offences are missing from reports given that most are undetected by law enforcement (Conroy & Cotter, 2017; Morgan & Truman, 2019; Rennison, 2002; Scurich & John, 2019). In general, the number of sexual offences that go unreported is of concern to all victim age research because the inability to identify victims and offences could result in the inaccurate classification of ISOs. For example, an individual with undetected child victims and detected adult victims would be inaccurately classified as nonpolymorphic based on official documentation. Police investigation bias and the offence-specific fallacy are thought to be problematic for conviction-based sources of information since it is possible that some offences are never linked to the perpetrator (Guay et al., 2001; Laws, 1994; Robertiello & Terry, 2007). Although there has been no examination of the detection rates associated with victim age polymorphism, the offence-specific fallacy would suggest that

ISOVAPs are less likely to be linked to their offences than ISOs with consistent victim types (Laws, 1994). This would result in fewer convictions, unreliable official records, and a reduced ability to detect victim age polymorphism.

A sole reliance on self-report measures is similarly problematic as they are sensitive to the effects of memory and the self-interests of ISOs. Often, ISOs cannot remember the details of all their offences, especially if data collection is performed years after the offence occurred (Abel et al., 1988; Stephens et al., 2017). There is further evidence to suggest that ISOs have some difficulty accurately estimating victim characteristics, especially when the victim is an adolescent (Mokros et al., 2011). Depending on the context, ISOs may also be motivated to lie or conceal undetected crimes if there are potential repercussions for admitting additional offences. First, inaccurate, or incomplete information may be given if the individual fears legal consequences. ISOs may try to present themselves favorably, suggesting that participation in these studies is subject to the fears of further incarceration or parole denial (Kaplan et al., 1990). Literature has suggested that many ISOs admit to additional sexual offences when guaranteed confidentiality (Abel et al., 1988; Blagden & Pemberton, 2010; Cowburn, 2005; Kaplan et al., 1990; Weinrott & Saylor, 1991). Second, there are social influences on the accuracy of self-reports. Stigma is of particular concern to ISOs (Bailey & Klein, 2018), and ISOs may try to present themselves favorably to family and clinicians out of a fear of repulsion (Heil et al., 2003). Prison culture is also hypothesized to contribute to ISOs being less likely to admit to sexual offences, especially when a child is involved as childhood sexual abuse is the lowest status crime in prison (Abel et al., 1988; Heil et al., 2003). Both factors could lead to underreporting and inaccurate classification of ISOs in studies that rely on self-reported offence information.

An early demonstration of some of these issues was conducted by Weinrott and Saylor (1991). In their study, the authors found that 87 out of a sample of 99 ISOs were classified as having only one victim type based on official convictions. After confidential interviews, only 47 of the men could still be classified having one victim type. Scurich and Gongola (2021) also examined the prevalence of victim age polymorphism by data collection type. Studies that exclusively used official sources of information reported a significantly lower prevalence (13%) than studies that also used self-report measures (32%; Scurich & Gongola, 2021). Although Scurich and Gongola (2021) reported the prevalence of victim age polymorphism across all studies to be nearly one in five ISOs, studies that included information provided through self-report would suggest a rate closer to one in three ISOs. These findings highlight that the source of information is highly relevant to the accurate identification of ISOVAPs, which could also impact findings on risk-related correlates and recidivism.

Present Study

Among the population of ISOs, different risk-related correlates are associated with different types of recidivism. Specifically, atypical sexual interests have been found to contribute to sexual recidivism and antisociality has been found to contribute to non-sexual recidivism (Hanson & Morton-Bourgon, 2005). While there appears to be a less consistent association between atypical sexual interest and victim age polymorphism (e.g., Cormier et al., 2020), ISOVAPs have been found to score higher on measures of psychopathy than nonpolymorphic ISOs (e.g., Brown et al., 2015). Thus, it would be expected that ISOVAPs are more likely to reoffend non-sexually than other types of ISOs. Despite this, studies vary in their findings of both risk-related correlates and recidivism, and it is possible that different methodologies could account for differences in findings. It is important to examine ISOVAPs given that they could be

a high risk group of ISOs with a variety of criminogenic needs (Harris et al., 2011). It is

therefore necessary to determine the risk-related correlates and recidivism of victim age

polymorphism through a comprehensive synthesis of the literature.

The present thesis examined the risk-related correlates and recidivism associated with

victim age polymorphism in adult ISOs using a meta-analytic approach. A meta-analysis is a

method of systematically locating, appraising, and statistically synthesizing data from multiple

studies (Borenstein et al., 2009). A meta-analysis of the risk-related correlates and recidivism as

they pertain to victim age polymorphism would be beneficial for advancing the literature beyond

that of Scurich and Gongola's (2021) recent meta-analysis on polymorphism, which exclusively

focused on prevalence. Furthermore, the meta-analysis by Scurich and Gongola (2021) did not

consider several methodological differences highlighted in the current review (e.g., victim age

categories, sample risk level) that could impact findings on risk-related correlates and recidivism.

An additional benefit of a meta-analytic design is that these methodological differences across

studies could be examined using meta-regression, which is not possible in a single study. Like

multiple regression, meta-regression allows for the determination of outcome predictors;

however, instead of examining predictors across participants, predictors are examined across

studies (Hanson, 2021). Therefore, meta-regression can be used to examine the effect of

methodological differences across studies.

The primary aim of the thesis was to determine the risk-related correlates and recidivism

associated with victim age polymorphism. To measure atypical sexual interest, variables related

to multiple paraphilias, indiscriminate sexual arousal, and sexual preoccupation were examined,

as these are the constructs most often theorized to drive victim age polymorphism (e.g., Lussier

et al., 2007). To examine the antisociality domain, the present study focused on psychopathy

given that there are many studies that examine its association with victim age polymorphism. Finally, associations between victim age polymorphism and overall, sexual, and violent recidivism were synthesized, as these recidivism types are closely associated with atypical sexual interests and antisociality (Hanson & Morton-Bourgon, 2005). The second aim of this study was to determine how the methodological differences in victim age categorization, sample characteristics, and differing sources of information impact study findings via meta-regression.

Methodology

A meta-analysis was conducted to examine the risk-related correlates and recidivism associated with victim age polymorphism. Given that all data were available through public sources, an exemption for review from the Saint Mary's University Research Ethics Board was granted (File #22-317). The study was registered with Prospero, an international prospective register for systematic reviews. A full copy of the study protocol can be found on Prospero using the identifier CRD42022345093. This thesis follows the reporting standards provided by the Preferred Reporting Information for Systematic reviews and Meta-Analyses (PRISMA; Page et al., 2021).

Inclusion & Exclusion Criteria

To be included in the meta-analysis, studies must have been published in English or have an English-language translation readily available. This inclusion criterion was to ensure accuracy during the coding process, as online translation services are often poor translators of scientific jargon. Due to the relative recency of polymorphism research, improved operationalization of relevant constructs, and the need to contact authors for additional information, only studies published after the year 2000 were included. Studies must have included a sample of ISOVAPs and reported at least one of the following:

➢ An indicator of atypical sexual interest, such as multiple paraphilias, indiscriminate arousal, or sexual preoccupation (or similarly related construct); and/or

➢ A measure of psychopathy (such as the PCL-R, Factor 1 and Factor 2 scores); and/or,

➢ An examination of overall, sexual, or violent recidivism.

Only studies with samples of adult men were included given that adolescent and women ISOs have been found to have some unique risk-related correlates and risk of recidivism (Cortoni et al., 2010; Lussier et al., 2007). Notably, Scurich and Gongola (2021) reported that approximately 40% of studies did not specify sample inclusion criteria, resulting in some studies being excluded from their meta-analysis. For the present study, authors were contacted to provide inclusion criteria and sample information when necessary.

Information Sources

Studies were collected from PsycINFO/PsycArticles, PubMed, Web of Science, ProQuest, and Wiley Online Library. A compatible version of the following search string was used to search titles and abstracts:

(Sex Offen* OR Sexual Offen* OR Sexual Devian* OR Sex Devian* OR Sex

Abuse OR Sexual Abuse) AND (Victim Polymorph* OR Polymorph* OR

Mixed Offen* OR Victim Crossover OR Crossover OR Victim select* OR Victim

Age)

Book chapters, systematic reviews, and meta-analyses were excluded to reduce the scope of this project, given that they rarely present new information pertaining to victim age polymorphism. While government reports were not explicitly sought, they were included if they were captured in the search strategy.

Searches for relevant grey literature were also conducted. Whenever possible, theses, dissertations, and conference abstracts were included in the search parameters. The Open Science Framework (including PsyArXiv and SocArXiv sources) was searched using the same search string described above. The Association for the Treatment & Prevention of Sexual Abuse (called Association for the Treatment of Sexual Abusers at the time of the first search) website was searched using Victim Polymorph*, Mixed Offen*, Crossover, and Victim Age search terms for additional conference presentations.

After the final round of study collection, the online queues of *Sexual Abuse, Journal of Sexual Aggression,* and *Sexual Offending: Theory, Research and Prevention* were searched for any available pre-prints to ensure that the most recently available data were included. The studies used in Scurich and Gongola's (2021) meta-analysis were also reviewed for inclusion given the topic relevance. Some journals containing pertinent studies (e.g., Psychology, Crime & Law) were not indexed in a database and therefore were not collected in the searches. To ensure that this gap in study collection was addressed, the reference lists of all studies that met the inclusion criteria were reviewed. The reference lists were reviewed for mentions of victim age polymorphism and/or variables of interest in samples of ISOs among studies that could not be excluded based on other obvious criteria (e.g., year).

Finally, thirteen authors who published polymorphism studies in the last five years were contacted via email in April 2023 to provide any unpublished "file-drawer" studies. Authors were given a total of one month to respond to email inquiries, with a reminder email sent at the end of the second week if no response was received. There was no further attempt to contact the authors after this reminder. The response rate for unpublished studies was 46% ($n = 6$ authors responded), and no file-drawer studies were provided by the authors.

Study Selection

Once study collection was completed, abstract and full-text screening were conducted using online software Covidence. Covidence allows for online collaboration with other reviewers for the screening and data extraction stages of meta-analysis. All studies that were identified in the study collection process were imported to Covidence in .ris, .XML, or PubMed formats, after which Covidence automatically removed duplicate studies. An additional benefit to using Covidence is that the program monitored study exclusion, automatically building a PRISMA diagram as screening progressed.

A team consisting of the primary investigator and two undergraduate students screened study abstracts for topic relevance. Both undergraduate students and another graduate student attended a one-hour training session with the primary investigator to review the concept of victim age polymorphism and its many other terms (e.g., mixed offending, age crossover). For each study, two reviewers examined the abstract for mentions of victim age groups, victim age polymorphism, or a similar term (e.g., mixed offending) among studies related to sexual offending. If present, the study was deemed topically relevant, and reviewers were instructed to vote 'yes' to include the study in full-text screening. If the study was not topically relevant, reviewers voted 'no' and the study was excluded. At the training session, the team reviewed several study abstracts together until all reviewers were comfortable with these instructions. Differences between reviewers were flagged by Covidence and a fourth reviewer, the graduate student who was present at the training session, was prompted to vote on the study to resolve the discrepancy. As a general rule, reviewers were instructed to be overly inclusive to ensure that no studies with relevant data were mistakenly excluded.

After all abstracts were screened for topic relevance, the same team of reviewers progressed to the full-text screening stage. During this process, reviewers were instructed to read the methodology and results sections of each study and compare it to the inclusion and exclusion criteria. Another one-hour training session was held to ensure reviewers understood the criteria, and the team reviewed several studies together until the reviewers were comfortable with the process. Two reviewers voted to include or exclude each study. Differences between reviewers were flagged and the primary investigator was prompted to resolve the discrepancy in consultation with the academic supervisor.

Next, the primary investigator examined the sample information described in each study that was included. In Canada, researchers often draw data from the same source (e.g., Correctional Services of Canada), resulting in the use of the same sample across multiple studies. The studies that met the inclusion criteria were examined for the purpose of identifying similar sample characteristics (e.g., same location, years of incarceration, etc.). Corresponding authors were contacted to confirm whether the samples used in both studies overlapped partially or completely if it was not clear from the information provided in the paper. In cases of complete sample overlap between two studies that examined different variables, the two studies were collapsed and analyzed together. For cases of partially overlapping studies that reported the same variables, only those that contained all the information necessary for analysis or the largest sample size were used in the analysis. For example, Nicholaichuk et al. (2000) and Olver & Wong (2006) examined recidivism using the same sample. Although Olver & Wong (2006) had a smaller sample size, Nicholaichuk et al. (2000) only provided data across treated and untreated ISOs, and the relevant data across victim age groups were not readily available. Therefore, Olver & Wong (2006) was included given that it reported the data for ISOCs, ISOAs, and ISOVAPs. In

two cases, studies with smaller sample sizes were included in addition to the study with the

larger sample size because they reported unique data on other relevant variables. For example,

Ryan et al. (2017) had a larger sample size than Skovran et al. (2010) and both reported the same

atypical sexual interest data; however, Skovran and colleagues (2010) uniquely reported the

PCL-R scores for the sample. In this case, data on atypical sexual interests were extracted from

Ryan et al. (2017), and the PCL-R data were extracted from Skovran et al. (2010).

After overlapping samples were determined, all studies were assigned a project number

with overlapping samples designated a subset of the same project. For example, two studies with

partial sample overlap would be identified as Project 1.1 and 1.2, where Project 1.1 was the most

recent study. When complete, the studies meeting the inclusion criteria progressed to the data

extraction stage in Covidence.

Data Collection

The primary investigator and a trained graduate student (same student who assisted with

the screening process) extracted data from each study using the coding manual and a prepared

data extraction template (Appendix B) in Covidence. After coding was complete, the team

discussed their results and came to a consensus on any discrepancies. If discrepancies could not

be resolved, the academic supervisor was consulted.

All projects were coded for variables in four broad categories: study information, sample

characteristics, methodology variables, and outcome variables (see coding manual in Appendix

A). Study information included identifying traits such as author(s), year of study, publication

status, etc. Sample characteristics included items such as age, ethnicity, sample source and

setting (e.g., forensic hospital; prison), and the prevalence of victim-age polymorphism.

Methodology variables included secondary analysis items such as victim age classification

methods, sample risk level, etc. Sample risk was determined using the Static-99R manual when Static-99R scores were reported in the study. If studies did not report risk using an actuarial risk tool, sample risk was estimated using sample setting. For example, samples from civil commitment centers or high risk treatment programs were coded as high risk.

Outcome variables included primary analysis items such as risk-related correlates and sexual or non-sexual recidivism. Detailed operationalization information was included for all variables. If there were any significant deviations from the measures used (e.g., extensively modified PCL-R scoring), inclusion of the study was reviewed with the academic supervisor. Using these variables, a pilot coding manual was designed to cover a broad range of possible findings in the literature and was tested by coding three random studies. After these studies were coded, the pilot coding manual was updated, and the three test studies were re-coded alongside an additional three test studies to ensure it could accommodate a variety of data. The coding manual was periodically subject to minor changes if any issues emerged while coding the full list of studies. For example, we discovered that the recidivism rate was reported more often than the association with recidivism across studies (e.g., Hazard Ratios). Therefore, a section was added in the coding manual to include a recidivism rate. The final coding manual is available in Appendix A.

In some cases, authors had to be contacted to provide the data necessary to calculate effect sizes (e.g., missing information on standard deviation associated with mean scores). Twenty-six corresponding authors were contacted to provide these data in January and February 2023. Just under half of the authors responded to the data requests (46%; $n = 12$), and three additional authors (12%) were unable to provide the data due to access restrictions.

After all projects were coded, a second round of searches was conducted to capture newly published studies and the screening and extraction processes were repeated. Finally, the extracted data were exported from Covidence in .csv format and imported to IBM SPSS Statistics v. 28 for analysis.

Assessing Risk to Internal Validity

Studies that met the inclusion criteria were screened using Cabells Predatory Reports to ensure the journals utilized a rigorous peer-review process. Cabells Predatory Reports is a database that investigates journals for predatory behaviour such as listing deceased individuals as editors, improper or absent review process of manuscripts, or publishing fabricated studies. For example, predatory journals may publish studies that were completely fabricated by the journal founder and not subject to a proper peer review process. Journals that are found to violate such standards are blacklisted and reported on the Cabells Predatory Reports website. No studies included in this thesis were published in predatory journals and therefore no studies were removed from the analyses.

Summary Measures

Synthesis was performed using two summary measures: Cohen's *d* and Risk Ratio (*RR*). For continuous variables, Cohen's *d* was calculated using the mean, standard deviation, and sample size for each ISO group. For categorical variables, Risk Ratios were calculated using the number of participants that met a certain condition compared with those who did not (e.g., diagnosed with multiple paraphilias versus diagnosed with less than two paraphilias; recidivists versus non-recidivists) across ISO groups. One study reported continuous data for a measure of sexual preoccupation while all others reported categorical data. In this case, the Odds Ratio for the categorical effect size was converted to Cohen's *d* for analysis using DeCoster's (2009)

effect size converter. The standard error was calculated by dividing the Odds Ratio by 1.65 to convert to the Cohen's *d* distribution (Sánchez-Meca et al., 2003).

Methods of Synthesis

A meta-analysis was performed in SPSS following the recommendations listed in *Prediction Statistics for Psychological Assessment* (Hanson, 2021). Effect sizes were calculated for each study and entered in SPSS alongside study characteristics and potential moderators. Weighted means for each outcome variable were calculated using an inverse-variance random-effects model. Random-effects models are used when the effect sizes reported vary across studies based on more than just sampling error (e.g., methodological variables), which can be measured by examining heterogeneity of the data (Hanson, 2021). Heterogeneity was calculated using the I^2 statistic, which can be used to classify the magnitude of heterogeneity (i.e., 25% = low; 50% = moderate; 75% = high; Higgins et al., 2003). If heterogeneity was not present ($I^2 < 25\%$), the analyses were repeated using a fixed-effects model and the results were compared. The Hartung-Knapp correction was applied to fixed-effects analyses given recent recommendations for widespread use (Jackson et al., 2016; van Aert & Jackson, 2019).

Moderators included victim age categorization variables (number of categories, victim age cutoffs, adjacency versus non-adjacency), sample characteristics (single-victim ISO inclusion, risk level), and source of information (official versus self-report). The effects of the moderators on each outcome variable were estimated using meta-regression. Like multiple regression, meta-regression is used to assess the relationship between a dependent variable (effect size) and covariates (moderators; Borenstein et al., 2009). Whereas multiple regression requires a large subject to covariate ratio, meta-regression requires a large study to covariate ratio. Thus, it is generally recommended that meta-regression be performed with at least ten

studies per covariate (Borenstein et al., 2009). The meta-regressions were performed with a random-effects model using study effect sizes and standard errors.

Publication Bias

Per our registration protocol, the effect of publication bias was to be examined by calculating Orwin's Fail-Safe *N* (Orwin, 1983). Orwin's Fail-Safe *N* calculates the number of unpublished studies that are required to significantly alter the results of the meta-analysis. After further review of the literature, it was discovered that regression-based tests (e.g., Egger's regression-based test) are increasingly favoured over Orwin's Fail-Safe *N* during meta-analyses given that regression-based tests are statistical models that are weighted to the sample size, while Orwin's Fail-Safe *N* is not (Higgins & Green, 2011; Marks-Anglin & Chen, 2020). Due to these limitations, Orwin's Fail-Safe *N* is not recommended as a measure of publication bias by Cochrane Training (Higgins & Green, 2011) and we planned to shift our methodology toward using Egger's regression-based tests. Unfortunately, Egger's regression-based tests could not be performed in the present study because either relatively few studies were retrieved for the outcomes or because no unpublished studies were retrieved from authors. Since there was no reliable way to determine publication bias, the effect was not measured in this thesis.

<div align="center">

Results

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Study Selection

The first round of study collection was conducted on April 18th, 2022, and yielded 3,455 articles across all databases. This number was reduced to 2,772 articles after removing duplicates. Prior to analysis, the study collection was updated with a second round of searches using the same search parameters on November 1st, 2022, identifying an additional 120 studies. After removing duplicates, this number was reduced to 112 studies. An additional 40 studies

were identified as potentially relevant by reviewing the reference lists of included studies.

Therefore, a total of 2,924 studies were screened for inclusion. More detailed information about

study collection and screening can be found in the PRISMA diagram (Figure 1).

The interrater reliability for the abstract screening stage was moderate to substantial, $\kappa =$

.61, with 92% agreement across reviewers. The interrater reliability for the full-text screening

stage was substantial, $\kappa = .79$, with 96% agreement across reviewers. In the data extraction stage,

a total of 28 out of 93 effect sizes were identified by one coder but not the other, and an

additional 11 effect sizes were provided by authors.

Study Characteristics

Twenty-three samples from 22 studies were included in the analyses (Zanatta, 2005,

contained two samples). The characteristics of all included studies are detailed in Table 1. In

total, three studies examined sexual preoccupation and five studies reported data on multiple

paraphilias. Only two studies (Michaud & Proulx, 2009; Stephens et al., 2022) were identified as

providing data on indiscriminate arousal. Both studies used different techniques and reported

different indices, and therefore could not be synthesized. Twelve studies that met the inclusion

criteria examined psychopathy. Of these, 11 studies used the PCL-R and only one did not report

PCL-R data (Brouillette-Alarie et al., 2018, used the Minnesota Multiphasic Personality

Inventory-2; Butcher et al., 1990). Given that this was the only non-PCL-R psychopathy measure

used, it was excluded from the analysis. Finally, ten studies reported recidivism data.

Due to the limited number of studies, meta-regression could be performed for total PCL-

R scores compared with ISOCs (total PCL-R scores compared with ISOAs had nine studies) and

sexual recidivism. Furthermore, only victim age cutoff (according to highest age of the child

group), sample risk level, and sources of information were included as moderators given that

there was very little variation between studies for other types of moderators. For example, just one study used more than two victim age categories and reported both adjacent and non-adjacent ISOVAP samples (Cormier et al., 2020). As a result, the number of victim age categories could not be included as a moderator, and only the youngest ISOC sample and ISOA sample in Cormier et al. (2020) were extracted. The non-adjacent ISOVAP sample was extracted given that it would be more representative of victims with distinct sexual maturity than the adjacent ISOVAP sample (Cormier et al., 2020). Finally, the average follow up period of the studies was included as a moderator for the sexual recidivism meta-regression since most studies did not conduct analyses that accounted for differences in follow up times (e.g., Cox regression).

Meta-Analytic Synthesis

Atypical Sexual Interests

The association between victim age polymorphism and multiple paraphilias was synthesized across five studies. Compared with ISOCs, ISOVAPs were 0.26 times more likely to have two or more paraphilia diagnoses, $RR = 0.26$, 95% CI[0.02, 0.49]. Heterogeneity was low, $I^2 = 9.5\%$. Therefore, analyses were run with a fixed-effects model using the inverse-variance method to ensure model appropriateness. The fixed-effects model revealed similar results, $RR = 0.28$, 95% CI[0.11, 0.46], $I^2 = 2.2\%$. Compared with ISOAs, ISOVAPs were .52 times more likely to have two or more paraphilia diagnoses, $RR = 0.52$, 95% CI[-0.11, 1.15]. Heterogeneity was moderate to high, $I^2 = 62.4\%$, indicating that the random-effects model was appropriate. Figure 2 summarizes the multiple paraphilia effect sizes across the studies.

The association between victim age polymorphism and sexual preoccupation was synthesized across three studies. Conversion limitations occurred when a negative Odds Ratio could not be converted into Cohen's *d*, so effect sizes were reversed such that ISOVAPs were the

comparison group. Compared with ISOCs, victim age polymorphism was strongly associated with sexual preoccupation, d = -0.80, 95% CI[-2.08, 0.48]. The random effects model was appropriate for the data given the high heterogeneity, I^2 = 97.5%. Compared with ISOAs, victim age polymorphism was moderately associated with sexual preoccupation, d = -0.65, 95% CI[-1.47, 0.16]. Again, the random effects model was appropriate for the data, I^2 = 90.6%. The sexual preoccupation effect sizes across the three studies are summarized in Figure 3.

Antisociality

Figure 4 summarizes the total PCL-R effect sizes across ten studies. Compared with ISOCs, victim age polymorphism was positively and moderately associated with higher total PCL-R scores, d = 0.50, 95% CI[0.21, 0.79]. The heterogeneity was high, I^2 = 70.6%, indicating that the random-effects model was appropriate. Meta-regression revealed that risk level (b = 0.28, p = .44), victim age cutoff (b = -0.08, p = .58), and sources of information (b = 0.06, p = .91) did not significantly predict the total PCL-R effect size compared with ISOCs. Compared with ISOAs, the association between psychopathy and victim age polymorphism was negligible with high heterogeneity, d = -0.02, 95% CI[-0.46, 0.41], I^2 = 82.7%, indicating that the random-effects model was appropriate. Meta-regression was not possible for total PCL-R scores compared to ISOAs because the number of studies fell below the ten-study threshold needed to conduct meta-regression.

Synthesizing Factor 1 scores revealed similar trends. Victim age polymorphism was moderately associated with higher Factor 1 scores compared with ISOCs, and the random effects model was appropriate given that heterogeneity was moderate, d = 0.28, 95% CI[-0.01, 0.55], I^2 = 59.7%. Compared with ISOAs, the association with Factor 1 scores was negligible, d = 0.05, 95% CI[-0.32, 0.41]. The heterogeneity was moderate, indicating the random effects model was

appropriate, $I^2 = 65.6\%$. Figure 5 shows the Factor 1 effect sizes across nine studies. Meta-regression was not possible for Factor 1 synthesis because the number of studies fell below the ten-study threshold.

Finally, the Factor 2 data were synthesized across nine studies. Compared with ISOCs, victim age polymorphism was moderately associated with higher Factor 2 scores, and the random effects model was appropriate since heterogeneity was high, $d = 0.48$, 95% CI[0.16, 0.80], $I^2 = 68.8\%$. Compared with ISOAs, the association between victim age polymorphism and Factor 2 scores was negative and small, $d = -0.15$, 95% CI[-0.51, 0.21]. The heterogeneity was moderate, indicating the random effects model was appropriate, $I^2 = 66.6\%$. Meta-regression was not possible for Factor 2 synthesis because the number of studies fell below the ten-study threshold. Figure 6 shows the Factor 2 effect sizes.

Recidivism

Lastly, the associations between polymorphism and recidivism (overall, sexual, and violent recidivism) were synthesized.[1] Across the four studies that examined overall recidivism, there was a recidivism rate of 42.2% for ISOVAPs, 37.3% for ISOCs, and 49.4% for ISOAs. For a summary of the recidivism rates across studies, see Table 2. Victim age polymorphism was positively associated with overall recidivism when compared with ISOCs, $RR = 0.19$, 95% CI[-0.09, 0.46]. High heterogeneity indicated that the random effects model was appropriate, $I^2 =$

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[1] Parent et al. (2011) examined sexual and violent recidivism at 5-, 10-, and 15-year follow up periods. The 10-year period is reported here because it was closest to the average follow up period across all recidivism studies ($M = 10.11$ years); however, Parent et al. (2011) was weighted heavily in the synthesis. To account for possible changes in results, the analyses were run with the 5- and 15-year follow up periods to check for major differences. Using the appropriate models according to heterogeneity indicators, effect sizes remained the same or similar (all within ± .10) with the following exceptions:
[1] Sexual recidivism compared with ISOCs at 5-year ($RR = 0.14$, $p = .29$) and 15-year follow up periods ($RR = 0.43$, $p = .11$). Thus, the association with sexual recidivism compared with ISOCs seemed to increase over time.
[2] Sexual recidivism compared with ISOAs was negligible at the 5-year follow up, $RR = -0.02$, $p = .86$.
[3] Violent recidivism compared with ISOAs was weaker and positive at the 5-year follow up, $RR = 0.09$, $p = .77$.

79.5%. Compared with ISOAs, ISOVAPs were .12 times less likely to recidivate, though again, this relationship was not significant, RR = -0.12, 95% CI[-0.25, 0.01]. Low heterogeneity indicated that the random-effects model may not be appropriate, I^2 = 21.3%; therefore, the analyses were performed again using a fixed-effects model. Results were similar except that the effect size became significant, RR = -0.13, 95% CI[-0.24, -0.02], I^2 = 24.8%. The effect sizes between overall recidivism and victim age polymorphism across four studies are summarized in Figure 7. Meta-regression was not possible for synthesis of overall recidivism because the number of studies fell below the ten-study threshold.

Across the ten studies that examined sexual recidivism, there was a sexual recidivism rate of 14.6% for ISOVAPs, 13.4% for ISOCs, and 14.6% for ISOAs (see Table 2). ISOVAPs were 0.28 times more likely to recidivate sexually than ISOCs, RR = 0.28, 95% CI[0.01, 0.55]. The random effects model was appropriate for the analyses given the moderate to high heterogeneity of the data, I^2 = 67.7%. Meta-regression revealed that risk level (b = 0.02, p = .97), victim age cutoff (b = 0.08, p = .75), sources of information (b = -0.62, p = .20), and follow up time periods (b = 0.04, p = .62) did not significantly predict the sexual recidivism effect size compared with ISOCs. Compared with ISOAs, ISOVAPs were 0.13 times more likely to recidivate sexually, although this relationship was not significant, RR = 0.13, 95% CI[-0.17, 0.44]. The random effects model was appropriate for the analyses, I^2 = 71.7%. Again, meta-regression revealed that risk level (b = 0.66, p = .30), victim age cutoff (b = 0.17, p = .54), sources of information (b = -0.22, p = .63), and follow up time periods (b = -0.07, p = .46) did not significantly predict the sexual recidivism effect size compared with ISOAs. The effect sizes between sexual recidivism and victim age polymorphism across ten studies are summarized in Figure 8.

Across the seven studies that examined violent recidivism, there was a nonsexual violent recidivism rate of 22.6% for ISOVAPs, 12.5% for ISOCs, and 29.9% for ISOAs (see Table 2). ISOVAPs were found to be .61 times more likely to recidivate violently than ISOCs, $RR = 0.61$, 95% CI[0.34, 0.89]. There was low but sufficient heterogeneity for the random effects model, $I^2 = 32.2\%$. Compared with ISOAs, ISOVAPs were .22 times less likely to recidivate violently, $RR = -0.22$, 95% CI[-0.39, -0.05]. The random-effects model did not appear to be an appropriate choice, $I^2 = 0.0\%$. The analyses were run again with a fixed-effects model, which revealed similar results, $RR = -0.22$, 95% CI[-0.39, -0.05], $I^2 = 45.3\%$. Figure 9 provides a summary of the effect sizes for violent recidivism across seven studies. Meta-regression was not possible for violent recidivism synthesis because the number of studies fell below the ten-study threshold.

Discussion

In summary, ISOVAPs scored higher on measures of atypical sexual interest as determined by sexual preoccupation and multiple paraphilias, compared with ISOCs and ISOAs. While these effect sizes were large, it is important to note that the sexual preoccupation effect sizes were nonsignificant. ISOVAPs also scored higher on the PCL-R compared to ISOCs but not ISOAs. Lastly, victim age polymorphism was associated with higher overall, sexual, and nonsexual violent recidivism compared to ISOCs, but not ISOAs. Therefore, ISOVAPs demonstrate more similarities to ISOAs than ISOCs in terms of risk-related correlates and recidivism, though ISOVAPs can perhaps be differentiated from both comparison groups based on elevations in the atypical sexual interest domain.

While the atypical sexual interest results were based on only a few studies, the effect sizes that emerged in this domain were notable. The large (but sometimes nonsignificant) associations between victim age polymorphism and measures of atypical sexual interests indicate

a need to revisit the sexualization hypothesis, which suggests that sexual preoccupation, sexual compulsivity, and paraphilic interests may lead to polymorphic offending (Lussier et al., 2007). Based on the results of the present study, ISOVAPs may be more likely to have multiple paraphilia diagnoses and score higher on sexual preoccupation than ISOCs and ISOAs. It is therefore possible that the behaviour of ISOVAPs is explained by a sexualization pathway into offending. The sexualization pathway contrasts with ISOCs and ISOAs, who were found to follow internalization (i.e., overcontrolled behaviours; combination of negative emotions and introversion) and externalization (i.e., undercontrolled behaviours; negative emotions are enacted on others or the environment) pathways, respectively (Lussier et al., 2007). Additional research is needed to fully explore this relationship given the notable but nonsignificant effect sizes found in the present study.

In line with previous research (e.g., Hanson & Morton-Bourgon, 2005), the positive effect sizes in the atypical sexual interest domain likely translated into a small positive relationship between sexual recidivism and victim age polymorphism when compared with ISOCs. Across studies, ISOCs demonstrated a lower sexual recidivism rate than both ISOAs and ISOVAPs. Other victim characteristics may explain why the ISOCs had lower recidivism rates than the other two groups, as this may be a function of combining extrafamilial and intrafamilial ISOCs into one group. ISOCs who target extrafamilial victims have been found to have a higher sexual recidivism rate than ISOCs who target intrafamilial victims (19.5% and 8.4%, respectively; Hanson, 2001), so it is possible that a large portion of the ISOC group in the present study targeted intrafamilial victims and had lower recidivism rates. On the other hand, it would also make sense that ISOVAPs have higher sexual recidivism rates given their elevated scores in the atypical sexual interest domain as well as their greater potential victim pool.

Unfortunately, this thesis does not exclude the possibility that the association between sexual recidivism and victim age polymorphism is explained by having multiple victims (Stephens et al., 2016).

The association between psychopathy and victim age polymorphism was much more robust given the larger number of studies included in the meta-analysis. Compared with ISOCs, ISOVAPs had higher total PCL-R, Factor 1, and Factor 2 scores. These findings are consistent with previous research that suggests ISOCs score lower on the PCL-R than other types of ISOs and non-ISO groups (Brown et al., 2015; Porter et al., 2000), and that atypical sexual interests may be a stronger driver of offending against children than antisociality (Lussier et al., 2005). This thesis found that there were no differences between ISOVAPs and ISOAs on total PCL-R and Factor 1 scores, but ISOAs had higher Factor 2 scores. Therefore, ISOVAPs appear to demonstrate more similarities to ISOAs on PCL-R scores than to ISOCs. This aligns with previous research that found ISOVAPs and ISOAs follow an antisocial pathway to offending, while ISOCs are more likely to follow a sexual pathway to offending (Yates & Kingston, 2006). The similarities between ISOAs and ISOVAPs suggest that a history of sexual offending against adults is associated with elevated psychopathy scores. As previously discussed, it is possible that the psychopathic behaviours captured in Factor 2 scores, such as proneness to boredom, thrill-seeking, and sensation-seeking, could lead to a more diverse victim profile (Meloy, 2002; Porter et al., 2001). An examination of ISO differences on specific PCL-R items could reveal that ISOVAPs score higher than other ISOs on certain items (e.g., proneness to boredom).

Finally, the association between victim age polymorphism and PCL-R scores likely translated into higher rates of violent recidivism when compared with ISOCs. As shown in Table 2, the largest group differences were found in the rates of violent recidivism. ISOVAPs had a

significantly lower violent recidivism rate than ISOAs but a significantly higher violent recidivism rate than ISOCs. These findings provide support for the hypothesis that the association between violent recidivism and victim age polymorphism is related to victimizing adults (Stephens et al., 2016).

Implications

The first major takeaway from this thesis is that ISOVAPs demonstrated more similarities to ISOAs than ISOCs in terms of risk-related correlates (i.e., elevated psychopathy) and recidivism rates. These findings have important implications for research into the prediction of victim age polymorphism among those who sexually reoffend. For example, a study could examine whether ISOCs with elevated psychopathy scores are more likely to target adults in future offences than those with lower psychopathy scores. This information could be useful in developing supervision plans after release from prison, as it may be beneficial for parole officers to monitor interactions with romantic partners in these cases. Thus, the findings of the present study provide the foundation for future studies aiming to predict future victim age polymorphism among sexual recidivists.

Overall, the findings of the present study suggest that ISOVAPs may have a combination of various risk factors associated with offending against children and adults. As highlighted in the present review, offending against children is often associated with atypical sexual interests and specialization in sexual offending (Harris et al., 2009; Soothill et al., 2000), while offending against adults is associated with the antisociality domain and generalization across a variety of criminal behaviour (Gottfredson & Hirschi, 1990; Lussier et al., 2005). ISOVAPs appear to take an antisocial pathway into offending based on their similarities to ISOAs and previous research (e.g., Yates & Kingston, 2006), but may also demonstrate elevations in the atypical sexual

interest domain. ISOVAPs could therefore be considered generalists both within sexual offending and across offence types, which could be accounted for in post-release supervision plans.

The results of this meta-analysis also present several implications for the clinical assessment and treatment of ISOVAPs. In particular, the relationship between victim age polymorphism and psychopathy is highly relevant, given that psychopathy is associated with a variety of problematic and harmful behaviour in forensic samples (Hart & Hare, 1997), such as increased risk of violent recidivism (Hanson & Morton-Bourgon, 2005). Effective treatment of psychopathy has been associated with decreases in violent recidivism in previous research (Olver et al., 2013). Therefore, it is likely important to assess and treat psychopathy in ISOVAP populations to reduce the risk of violent recidivism.

It is interesting to note that several factors in the atypical sexual interest domain are linked to psychopathy, including sexual preoccupation. The relationship between psychopathy and sexual preoccupation is well-established in community samples (e.g., Dyer & Olver, 2016; Lee & Forbey, 2010; Malamuth, 2003; Visser et al., 2010). For example, Steininger and Pietschnig (2022) recently examined the relationship between sexual behaviour and the Dark Triad (i.e., psychopathic, narcissistic, and Machiavellian personality traits) in a sample of college students. The authors found that only psychopathy consistently and significantly predicted sexual preoccupation (Steininger & Pietschnig, 2022). Sexual preoccupation is also related to some PCL-R items such as "Sexual Promiscuity," which has been found to be associated with more antisocial behaviour in ISOs (Harris et al., 2007). Although nonsignificant, the large effect sizes found in the present study suggest that sexual preoccupation may be particularly relevant in ISOVAPs, and in turn, this could be related to the elevations in psychopathy. Issues with self-

regulation, novelty-seeking, and impulsivity have been theorized to drive the association between sexual preoccupation and psychopathy (Kastner & Sellbom, 2012). It would therefore be important to examine the relationship between impulsivity and victim age polymorphism given the implications self-regulation issues would have for clinicians tasked with providing psychological treatment to ISOVAPs.

Overall, it appears that victim age polymorphism is associated with a general antisocial predisposition, which in turn is linked to the sexual preoccupation aspect of atypical sexual interests. This suggests that ISOVAPs may have a wide breadth of criminogenic needs to address during clinical assessment and treatment. As determined in a meta-analysis by Hawes and colleagues (2013), ISOs with elevated scores on the PCL-R and a measure of atypical sexual interest were more than twice as likely to recidivate sexually than ISOs without elevated scores in both domains. Thus, the combination of elevated psychopathy and atypical sexual interest scores may be particularly problematic and suggest that ISOVAPs could be an important group to target to reduce the risk of persistent sexual offending.

Limitations

The present study was significantly limited by the lack of available data. First, there were few studies that examined the relationship between atypical sexual interests and victim age polymorphism. Only two studies in this thesis reported the association between victim age polymorphism and indiscriminate arousal. Unfortunately, the lack of phallometric data extracted in the present study eliminated the possibility of synthesizing past findings on indiscriminate arousal. Furthermore, while some data on multiple paraphilias and sexual preoccupation were synthesized, very few studies (five and three, respectively) were included. Therefore, the results

for the atypical sexual interest domain and the conclusions drawn about this construct in

ISOVAPs should be interpreted with caution until additional research is conducted.

Another limitation was that many studies ($n = 17$) were excluded because corresponding

authors didn't respond ($n = 14$) or were unable to share data due to restricted access to the data ($n = 3$). Low response rates from corresponding authors are an established concern in meta-analytic

methods (Field & Gillett, 2010), and many meta-analyses in sexual offending research have

reported response rates similar to this thesis (e.g., 48% in Seto & Lalumière, 2010). Furthermore,

publication bias could not be examined because zero unpublished studies were provided by

authors. Additional methods of obtaining unpublished studies may have improved retrieval,

although the procedure followed in this thesis was according to current norms in psychological

research (Field & Gillett, 2010). Of the six authors who responded to file drawer requests, three

provided data that had already been published. Thus, it is possible that unpublished data are

generally rare in sexual offending research. Forensic data are thought to be particularly limited

due to restricted access to prisoners and non-disclosure agreements placed on researchers by

correctional institutions (Watson, 2015). The limited amount of available data on ISOs may have

led to the overuse of certain samples in the field, given that there were 15 studies excluded from

this meta-analysis due to duplicate samples (i.e., had published the same data as another included

study). Restricted access to forensic populations has raised concerns about the generalizability of

findings on forensic populations from the scientific community (Spivakovsky, 2011).

Finally, there were a few key methodological characteristics of the samples that limited

the present analyses. First, many methodological moderators could not be examined because

there was little variation in study methodology (e.g., all but one study used child and adult victim

age categories). It is interesting that the literature on the risk-related correlates and recidivism

used a similar methodology, while literature on the prevalence of victim age polymorphism used extremely diverse methodologies (e.g., Cann et al., 2010; Saramago et al., 2020). Scurich and Gongola (2021) demonstrated that several methodological characteristics (e.g., sources of information) impacted the prevalence of victim age polymorphism. Thus, it is expected that methodological moderators could explain some of the diversity in research on risk-related correlates and recidivism. Readers should consider victim age categorization methods, sample characteristics, and sources of information when interpreting victim age polymorphism research.

Another concern was that the recidivism data reported in the studies often did not account for differences in follow up time periods, despite unequal follow up periods in several of the studies. It is important to consider the influence of time given that recidivism rates increase alongside follow up time (Durose et al., 2014). Studies included in the present analyses usually reported recidivism rates and the average follow up time of the entire sample, instead of methods that account for differences in follow up time across individuals (e.g., Hazard ratios). Although follow up time periods did not appear to moderate the association between sexual recidivism and victim age polymorphism in the present study, associations with sexual recidivism differed substantially depending on whether the 5-, 10-, or 15-year follow up periods reported by Parent and colleagues (2011) were used. The potential influence of follow up time is especially concerning given empirical evidence that ISOCs generally have longer detection times than ISOAs (Lussier et al., 2011); that is, studies with shorter follow up time periods may not accurately capture the recidivism rates of ISOCs because the offences are not discovered until many years later. Therefore, the possibility that follow up time periods influenced recidivism findings in the present study cannot be entirely ruled out.

Recommendations

It is strongly recommended that researchers carefully consider the ways in which forensic data are used and reported in their own scientific writing, as serious concerns were raised throughout the duration of the present study. First, there is a clear need in the field to re-emphasize the importance of data reporting standards, especially in reference to effect sizes and information that can be used to calculate effect sizes. Reporting this information would not only be in accordance with the Publication Manual of the American Psychological Association (7th edition), but it would also be helpful to researchers trying to conduct meta-analyses by reducing the need to contact authors for missing data. If data had been more consistently available, fifteen studies would not have been excluded from this meta-analysis, nearly doubling the number of included studies. It is therefore important to adopt improved and consistent reporting procedures across scientific journals.

Second, many studies published the same data that had already been presented in previous publications, and very few authors disclosed this information in the study. Notably, similar concerns about the overuse of data were raised by a recent meta-analysis by Lussier and colleagues (2022), who found that many recidivism studies used decades-old datasets which may no longer be applicable to the current cohort of ISOs. Of course, it is understandable that researchers would like to use all data available to them given the limited research access to forensic populations (e.g., Watson, 2015) and the institutional pressure placed on researchers to increase publication output (Mertkan et al., 2022); however, researchers should take care to develop unique research questions for multi-use archival datasets and disclose all previous publications that have used the same dataset.

Future Research Directions

This thesis identified several avenues for future research to increase our understanding of victim age polymorphism. First, the literature on victim age polymorphism and atypical sexual interests is lacking, even though preliminary evidence suggests that certain manifestations of atypical sexual interests are important contributors to victim age polymorphism. Future research should examine the relationship between victim age polymorphism and other measures of atypical sexual interests, particularly those associated with psychopathy (e.g., sexual preoccupation). Additionally, the results of Stephens and colleagues' (2022) phallometry study provide some evidence that victim age polymorphism is associated with indiscriminate arousal, albeit the size of the effect was small. There is a need to replicate and explore the relationship between victim age polymorphism and indiscriminate arousal in future research given the implications for clinical assessment. It is possible that phallometric testing for indiscriminate arousal in ISOs could enable the identification of those who are at risk of targeting multiple age groups in future offences.

The literature on victim age polymorphism and psychopathy is more fulsome, although an item-level analysis of ISOVAP scores on the PCL-R may elucidate distinctions between ISOAs and ISOVAPs in the antisociality domain. Specifically, proneness to boredom and other items related to thrill-seeking and sensation-seeking may explain the motivation to target multiple age groups across sexual offences. Thus, ISOVAPs may score higher on these PCL-R items and related measures (e.g., sensation seeking, impulsivity) than ISOAs. Future research should examine the relationship between victim age polymorphism, PCL-R items, and measures of atypical sexual interest that are associated with psychopathy (e.g., sexual preoccupation) to identify specific motivators and the offence pathways of ISOVAPs.

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Table 1

Characteristics of Studies Included in Meta-Analysis

Study	Sample Information	Relevant Variables	Analysis Information
Boughner (2010)	$N = 232$ (33 ISOVAPs; 148 ISOCs; 51 ISOAs) Men incarcerated for a sexual offence and released from Kentucky Department of Corrections (U.S.A.) between 1999 and 2000.	Recidivism (Sexual, nonsexual violent)	
Brouillette-Alarie et al. (2018)	$N = 558$ (59 ISOVAPs; 355 ISOCs, 174 ISOAs) Men under federal supervision for contact sexual offence conviction(s) in Quebec (Canada) between 1995 and 2000.	Psychopathy (MMPI-2) Sexual preoccupation (Unique scale assembled for project) Multiple paraphilias (DSM-IV-TR) Recidivism (Sexual, nonsexual violent)	MMPI-2 scores not included in psychopathy analysis since this was the only study to examine psychopathy and not report PCL-R data.
Brown et al. (2015)	$N = 719$ (40 ISOVAPs; 211 ISOCs; 468 ISOAs) Men incarcerated for sexual offence conviction(s) in Wisconsin state prison (U.S.A.) between 2000 and 2013.	Psychopathy (Total PCL-R and Factor scores)	

Study	Sample Information	Relevant Variables	Analysis Information
Cormier et al. (2020)	N = 315 (34 ISOVAPs; 184 ISOCs, 97 ISOAs) Adult men with sexual offences against 2+ victims assessed at a forensic outpatient clinic in Canada between 1998 and 2018. Reported multiple ISOC victim age groups (e.g., victims 0-5, 6-10, 11-14).	Psychopathy (Total PCL-R and Factor scores) Sexual preoccupation (Clinician judgment) Multiple paraphilias (DSM version that was in use at the time of the assessment)	For ISOC comparisons, the data used were for the 0-5 child victim age group (n = 31). This study reported categorical sexual preoccupation scores. Effect sizes were converted from Odds Ratio to Cohen's d for analysis.
Ducro & Pham (2006)	N = 147 (17 ISOVAPs; 94 ISOCs; 36 ISOAs) Male patients in a high-security psychiatric hospital in Belgium who were deemed to lack the capacity to control their behaviour when sentenced for a sexual offence.	Recidivism (Overall, sexual, and nonsexual violent)	
Howard et al. (2014)	N = 1,586 (464 ISOVAPs; 712 ISOCs; 410 ISOAs) Men with a criminal record for sexual offending per the Offender Assessment System in England & Wales.	Recidivism (Overall, sexual, nonsexual violent)	

Study	Sample Information	Relevant Variables	Analysis Information
Langevin et al. (2004)	$N = 250$ (28 ISOVAPs; 188 ISOCs; 34 ISOAs) Men referred for assessment or treatment in relation to a sexual offence in Canada between 1966 and 1974.	Recidivism (Overall, sexual)	
Link & Lösel (2021)	$N = 508$ (85 ISOVAPs; 287 ISOCs; 136 ISOAs) Men sentenced to 2+ years in prison for a sexual index offence and released from Bavarian prisons (Germany) between January 2004 and June 2015.	Recidivism (Overall, sexual, nonsexual violent)	
Michaud & Proulx (2009)	$N = 466$ (29 ISOVAPs; 263 ISOCs; 174 ISOAs) Adult men undergoing assessment while in presentence detainment or a maximum security forensic inpatient clinic related to a sexual offence in Canada.	Indiscriminate arousal (Circumferential assessment of max response to various stimuli according to victim age and paraphilia)	One of two studies that reported data on indiscriminate arousal, but this study reported paraphilic information alongside victim age preference. Therefore, data could not be synthesized.

Study	Sample Information	Relevant Variables	Analysis Information
Olver & Wong (2006)	$N = 127$ (26 ISOVAPs; 25 ISOCs; 76 ISOAs) Adult men serving federal sentences for a sexual offence who were admitted to the Clearwater Sex Offender Treatment Program in Canada between 1983 and 1997.	Psychopathy (Total PCL-R and Factor scores) Recidivism (Sexual, nonsexual violent)	
Parent et al. (2011)	$N = 503$ (54 ISOVAPs; 275 ISOCs; 174 ISOAs) Men evaluated at the Massachusetts Treatment Center for Sexually Dangerous Persons in the U.S.A. between 1959 and 1984.	Psychopathy (Total PCL-R scores) Recidivism (Sexual, nonsexual violent)	
Porter et al. (2000)	$N = 229$ (25 ISOVAPs; 88 ISOCs; 103 ISOAs) Men serving a federal sentence for a sexual offence in Canada.	Psychopathy (Total PCL-R and Factor scores)	This study reported the ISOC group separated by intrafamilial and extrafamilial victims. The same sample was used in a later publication (Porter et al., 2009) with the intrafamilial and extrafamilial ISOCs combined. Therefore, ISOC data were extracted from Porter et al. (2009).

Study	Sample Information	Relevant Variables	Analysis Information
Ryan et al. (2017)	N = 293 (51 ISOVAPs; 209 ISOCs; 33 ISOAs) Men convicted of a sexual offence and held in a state forensic mental health hospital in the U.S.A.	Sexual preoccupation (Sexual Compulsivity Scale)	This study used the same sample as Skovran et al. (2010). Both of these studies reported data on sexual preoccupation, which were extracted from Ryan et al. (2017) given its greater sample size.
Skovran et al. (2010)	N = 134 (19 ISOVAPs; 95 ISOCs; 20 ISOAs) Men convicted of a sexual offence and held in a state forensic mental health hospital in the U.S.A.	Psychopathy (Total PCL-R and Factor scores)	This study used the same sample as Ryan et al. (2017), which had a greater sample size. This study was also included in the analysis because it reported psychopathy data (Ryan et al., 2017, did not).
Stephens et al. (2018)	N = 751 (168 ISOVAPs; 460 ISOCs; 123 ISOAs) Men referred for assessment at a sexual behaviour clinic in Canada.	Recidivism (Sexual)	
Stephens et al. (2022)	N = 2,411 (1,787 ISOVAPs; 107 ISOCs; 834 ISOAs) Men referred for assessment at a sexual behaviour clinic in Canada between 1995 and 2011.	Indiscriminate arousal (Volumetric assessment of pedohebephilia index and max response to victim age group)	One of two studies that reported data on indiscriminate arousal, but this study reported only on victim age preference. Therefore, data could not be synthesized.
Stinson et al. (2008)	N = 95 (18 ISOVAPs; 59 ISOCs; 18 ISOAs) Men civilly committed in the U.S.A.	Psychopathy (Total PCL-R and Factor scores) Multiple paraphilias (Multiphasic Sex Inventory-II)	

Study	Sample Information	Relevant Variables	Analysis Information
Stinson et al. (2017)	$N = 156$ (52 ISOVAPs; 48 ISOCs; 56 ISOAs) Men eligible for sex offender treatment services due to history of sexual offending or sexually problematic behaviour in the correctional facility in the U.S.A.	Multiple paraphilias (Various paraphilias selected for project)	
Vess & Skelton (2010)	$N = 2,435$ (402 ISOVAPs; 1,165 ISOCs; 868 ISOAs) Men sentenced for a sexual offence who were released from prison in New Zealand between 1990 and 1995.	Recidivism (Sexual)	
Walters et al. (2016)	$N = 287$ (99 ISOVAPs; 188 ISOCs) Men incarcerated for a sexual offence who were assessed upon entering a federal prison in Canada.	Psychopathy (Total PCL-R and Factor scores)	Only ISOCs were used as a comparison group during analyses. One comparison group was not used because it was a combination of various types of offenders (e.g., ISOVAPs, ISOAs, and individuals who offended against teens).
Woodworth et al. (2013)	$N = 101$ (18 ISOVAPs; 41 ISOCs; 42 ISOAs) High-risk men incarcerated for a sexual offence in Canada.	Multiple paraphilias (DSM-IV-TR)	

Study	Sample Information	Relevant Variables	Analysis Information
Zanatta (2005)[ab]	N = 164 (40 ISOVAPs; 34 ISOCs; 90 ISOAs) equally divided into two matched samples. [a] Men convicted of a sexual offence and designated as a Dangerous Offender in Canada between 1978 and 2002. [b] Men convicted of 2+ sexual offences against multiple victims from the Pacific Region of the Correctional Service of Canada.	Psychopathy (Total PCL-R and Factor scores)	This study reported ISOVAP, ISOC and ISOA comparisons across two different samples (reported as Zanatta 2005a and 2005b).

Note. k = 22. ISOVAPs = Individuals with sexual offences that are victim age polymorphic; ISOCs = Individuals with sexual offences against only children; ISOAs = Individuals with sexual offences against only adults; PCL-R = Psychopathy Checklist-Revised.

Table 2

Recidivism Rates Across Studies

Recidivism Type	Sample	Sample Size (*n*)	Recidivists (*n*)	Recidivism Rate (%)
Overall	ISOC	1,221	455	37.3
	ISOA	589	291	49.4
	ISOVAP	592	250	42.2
	Total	2,402	996	41.5
Sexual	ISOC	3,649	489	13.4
	ISOA	2,055	300	14.6
	ISOVAP	1,325	194	14.6
	Total	7,029	983	14.0
Nonsexual Violent	ISOC	1,882	236	12.5
	ISOA	1,030	308	29.9
	ISOVAP	727	164	22.6
	Total	3,639	708	19.5

Note. Overall Recidivism, $k = 4$; Sexual Recidivism, $k = 10$; Nonsexual Violent Recidivism, $k = 7$. ISOC = Individuals with sexual offences against children; ISOA = Individuals with sexual offences against adults; ISOVAP = Individuals with sexual offences that are victim age polymorphic.

Figure 1

PRISMA Diagram


```
┌─────────────────────────────────┐
│ Studies from databases/registers │
│ (n = 3616)                       │
└─────────────────────────────────┘
                │
                │──────────────────────►  ┌──────────────────────────────┐
                │                          │ Duplicates removed (n = 692) │
                ▼                          └──────────────────────────────┘
┌─────────────────────────────────┐     ┌──────────────────────────────┐
│ Studies screened (n = 2924)     │────►│ Studies excluded (n = 2589)  │
└─────────────────────────────────┘     └──────────────────────────────┘
```

Studies from databases/registers (***n* = 3616**)

Duplicates removed (***n* = 692**)

Studies screened (***n* = 2924**)

Studies excluded (***n* = 2589**)

Studies assessed for eligibility (***n* = 335**)

Studies excluded (***n* = 281**)
18 English manuscripts not available
10 reported no new data
152 were not relevant
67 did not contain sample of interest (e.g., juveniles, women, etc.)
34 had no variables of interest

Studies meeting criteria (***n* = 54**)

Studies excluded (***n* = 32**)
15 used a duplicate sample
17 were missing data that was no longer available (including 14 authors who did not respond)

Studies included in review (***n* = 22**)
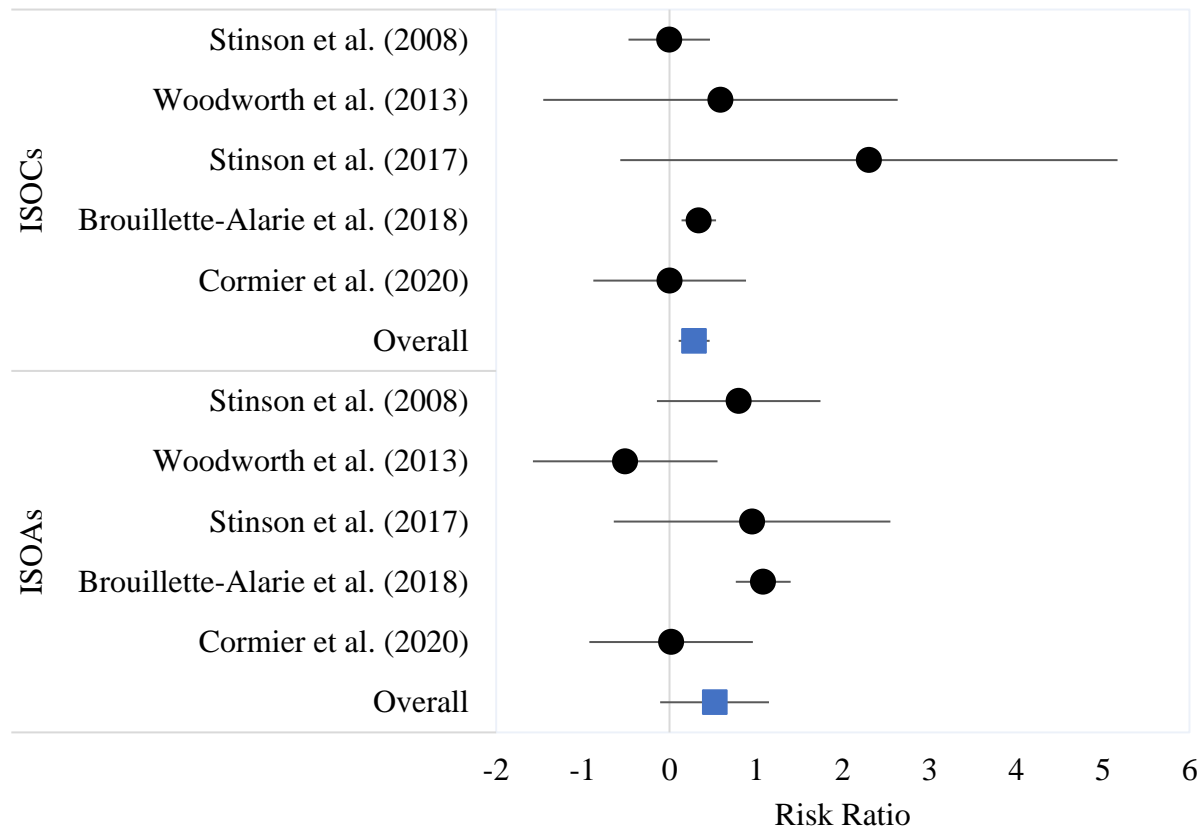
Note. PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses

Figure 2

Forest Plot of Multiple Paraphilias Effect Sizes

Note. k = 5. ISOVAPs were used as the comparison group; control group indicated on vertical axis. Positive Risk Ratios (*RR*) indicate increased likelihood of multiple paraphilias in the ISOVAP group. Negative *RR*s indicate decreased likelihood of multiple paraphilias in the ISOVAP group. ISOVAPs were significantly more likely to have multiple paraphilias than ISOCs. The results of the fixed effects model for the ISOAs comparison are reported here due to low heterogeneity across the studies.

Figure 3

Forest Plot of Sexual Preoccupation Effect Sizes
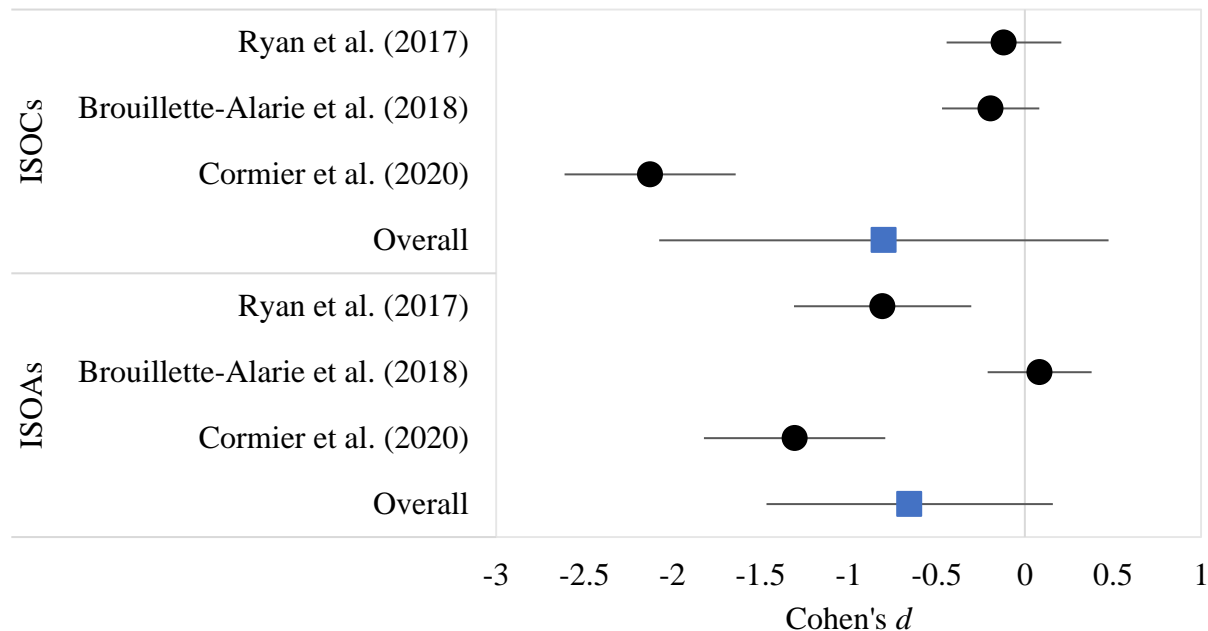
Note. k = 3. For these analyses only, ISOVAPs were considered the control group due to conversion limitations. Comparison groups are indicated on the vertical axis. Effect sizes appear reversed compared to other syntheses; that is, negative Cohen's *d* indicates increased association between sexual preoccupation and victim age polymorphism. Positive Cohen's *d* indicates decreased association between sexual preoccupation and victim age polymorphism. Although non-significant, the effect sizes were large and indicated a positive relationship between victim age polymorphism and sexual preoccupation.
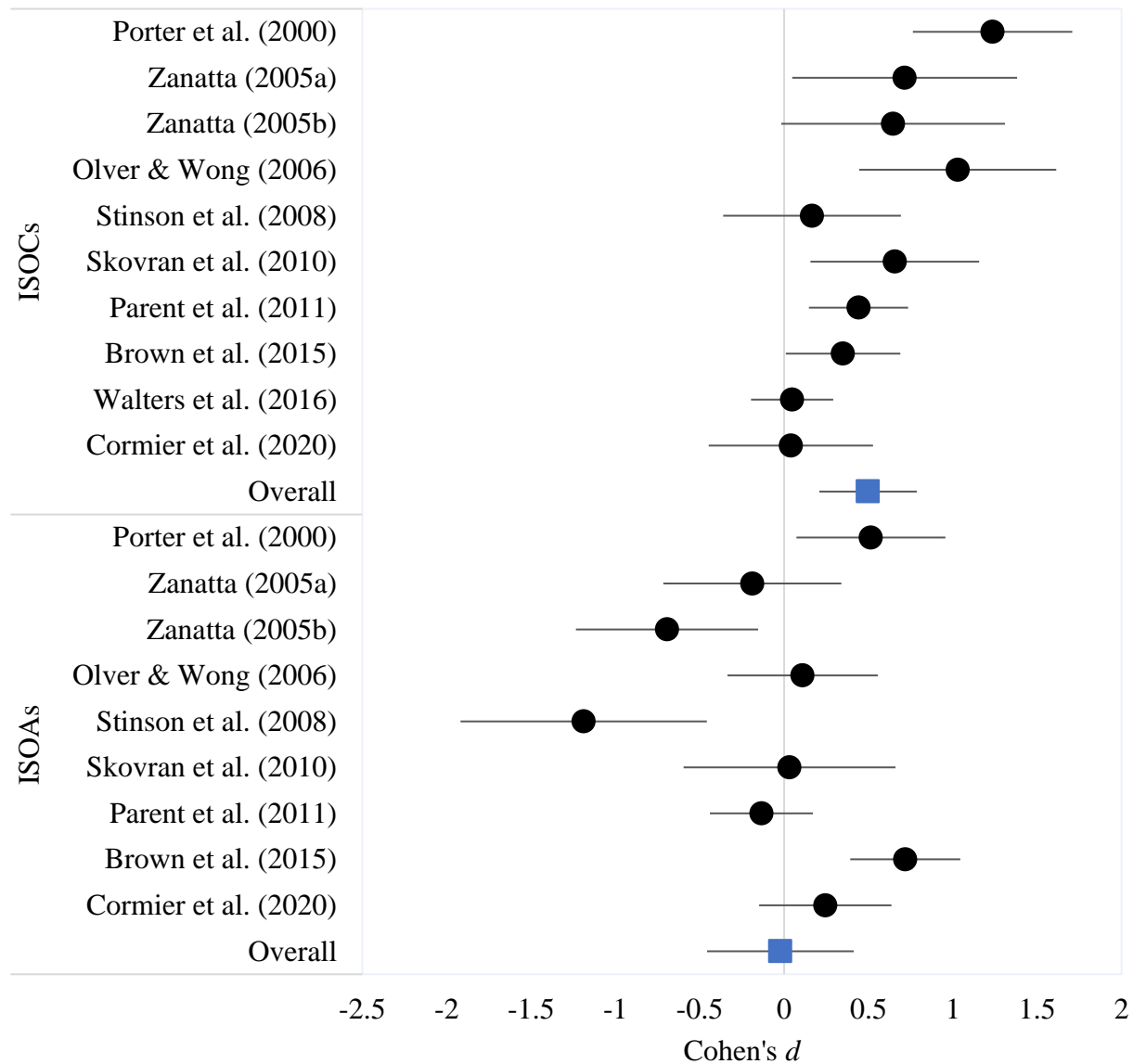
Figure 4

Forest Plot of Total PCL-R Score Effect Sizes

Note. k = 10. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Cohen's *d* indicates positive relationship between total PCL-R scores and victim age polymorphism. Negative Cohen's *d* indicates negative relationship between total PCL-R scores and victim age polymorphism. ISOVAPs scored significantly higher on the PCL-R than ISOCs.

Figure 5

Forest Plot of Factor 1 PCL-R Effect Sizes
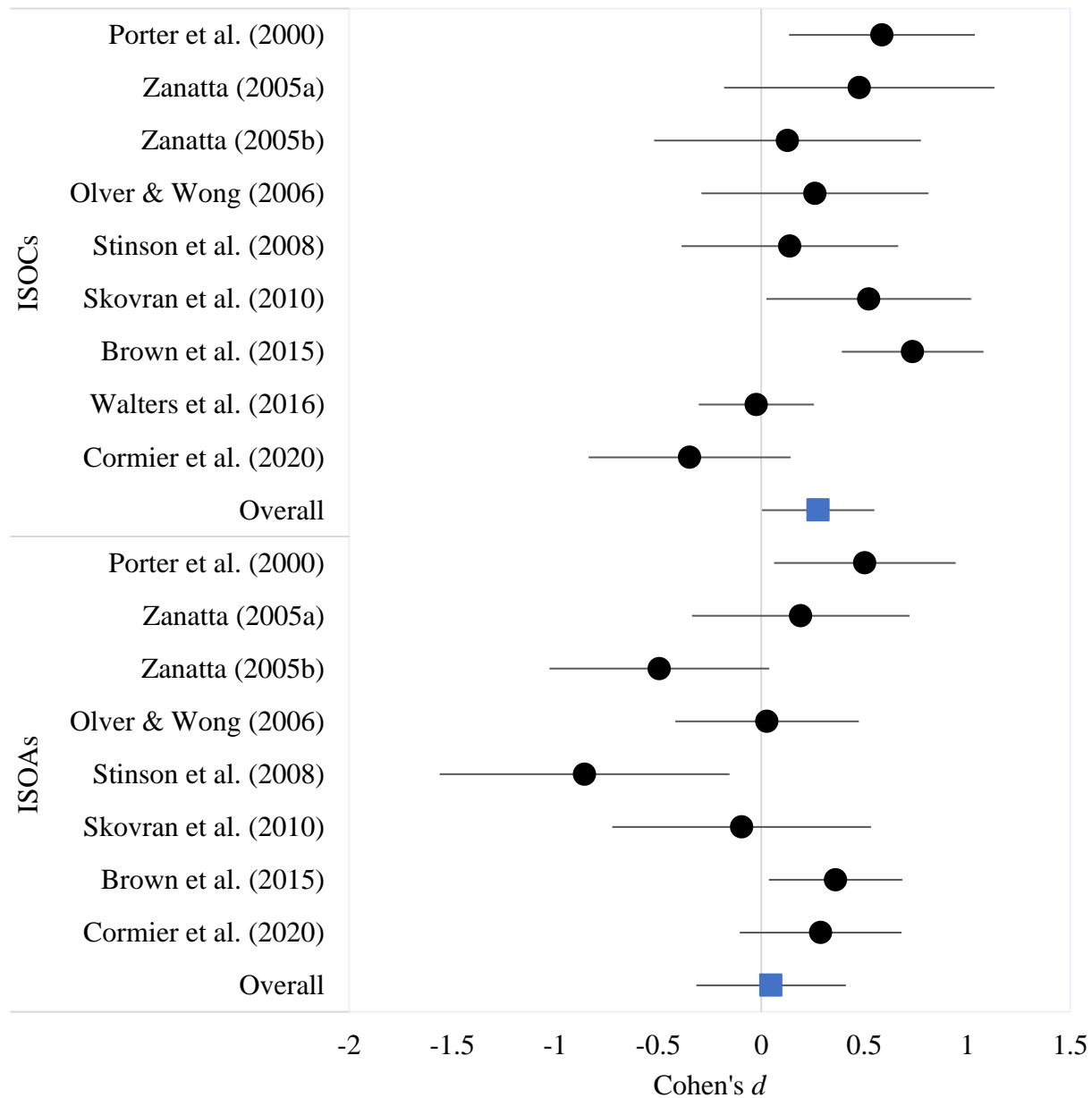
Note. $k = 9$. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Cohen's *d* indicates positive relationship between Factor 1 scores and victim age polymorphism. Negative Cohen's *d* indicates negative relationship between Factor 1 scores and victim age polymorphism.

Figure 6

Forest Plot of Factor 2 PCL-R Effect Sizes
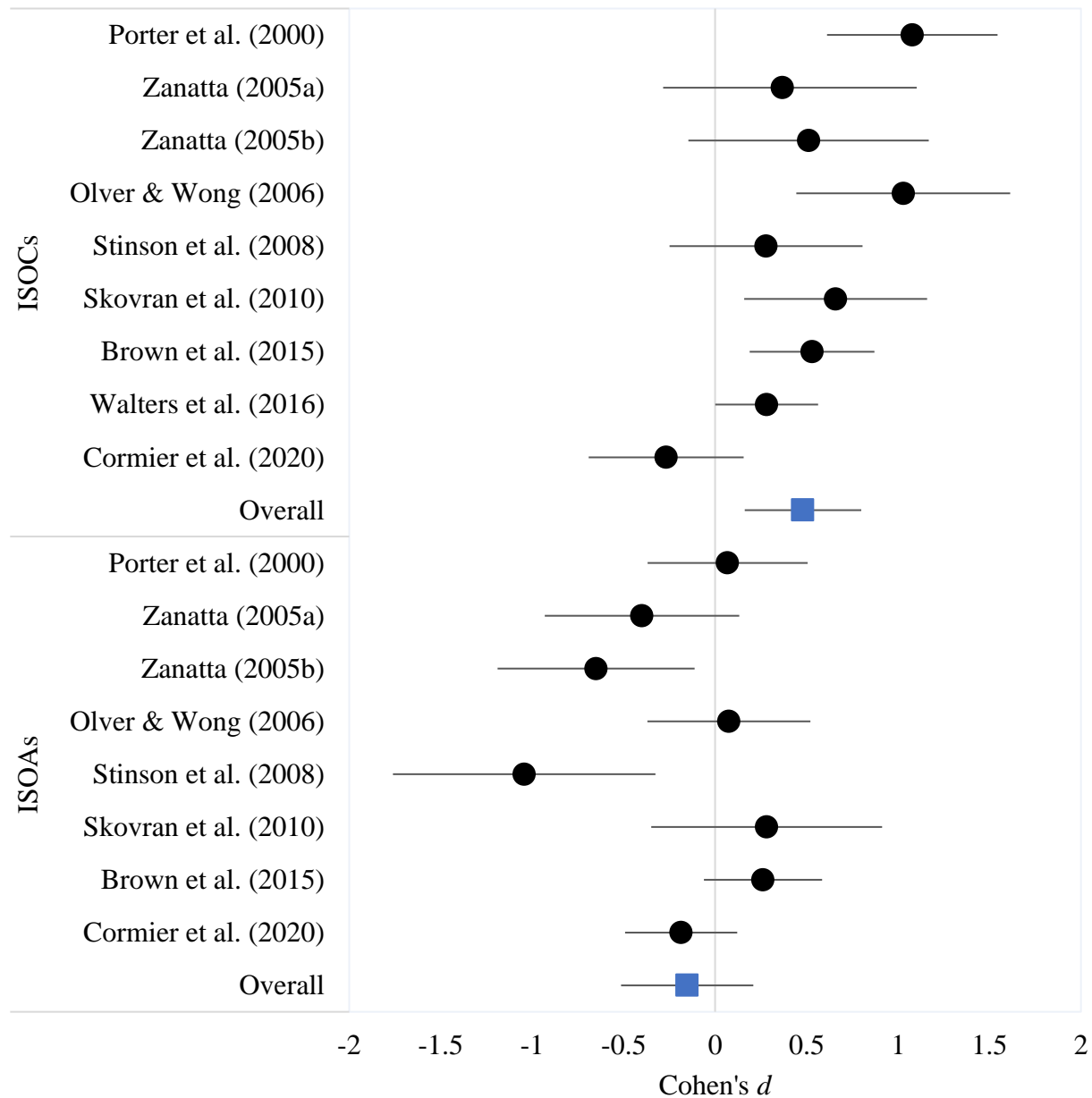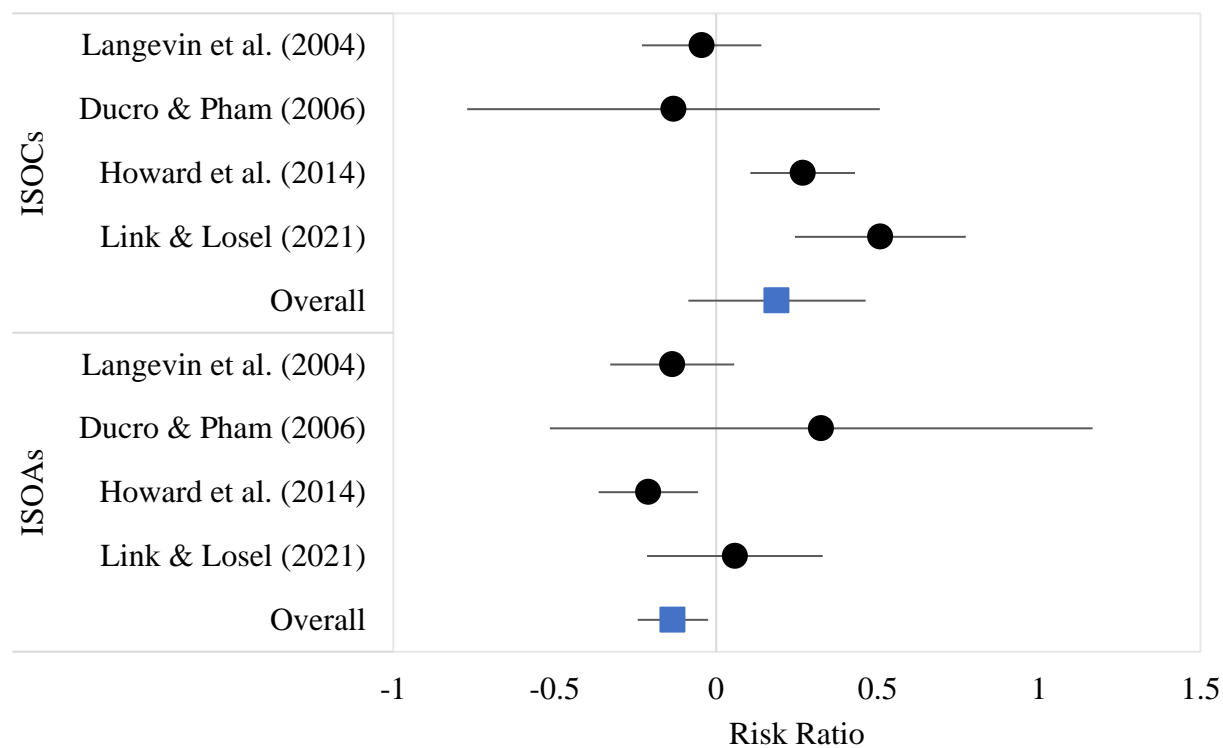

Note. $k = 9$. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Cohen's *d* indicates positive relationship between Factor 2 scores and victim age polymorphism. Negative Cohen's *d* indicates negative relationship between Factor 2 scores and victim age polymorphism. ISOVAPs scored significantly higher on Factor 2 than ISOCs.

Figure 7

Forest Plot of Overall Recidivism Effect Sizes

Note. $k = 4$. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Risk Ratios (*RR*) indicate increased likelihood of overall recidivism in the ISOVAP group. Negative *RR*s indicate decreased likelihood of overall recidivism in the ISOVAP group. ISOVAPs were significantly less likely to recidivate than ISOAs. The results of the fixed effects model for the ISOAs comparison are reported here due to low heterogeneity across the studies.

Figure 8

Forest Plot of Sexual Recidivism Effect Sizes

Note. $k = 10$. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Risk Ratios (*RR*) indicate increased likelihood of sexual recidivism in the ISOVAP group. Negative *RR*s indicate decreased likelihood of sexual recidivism in the ISOVAP group.

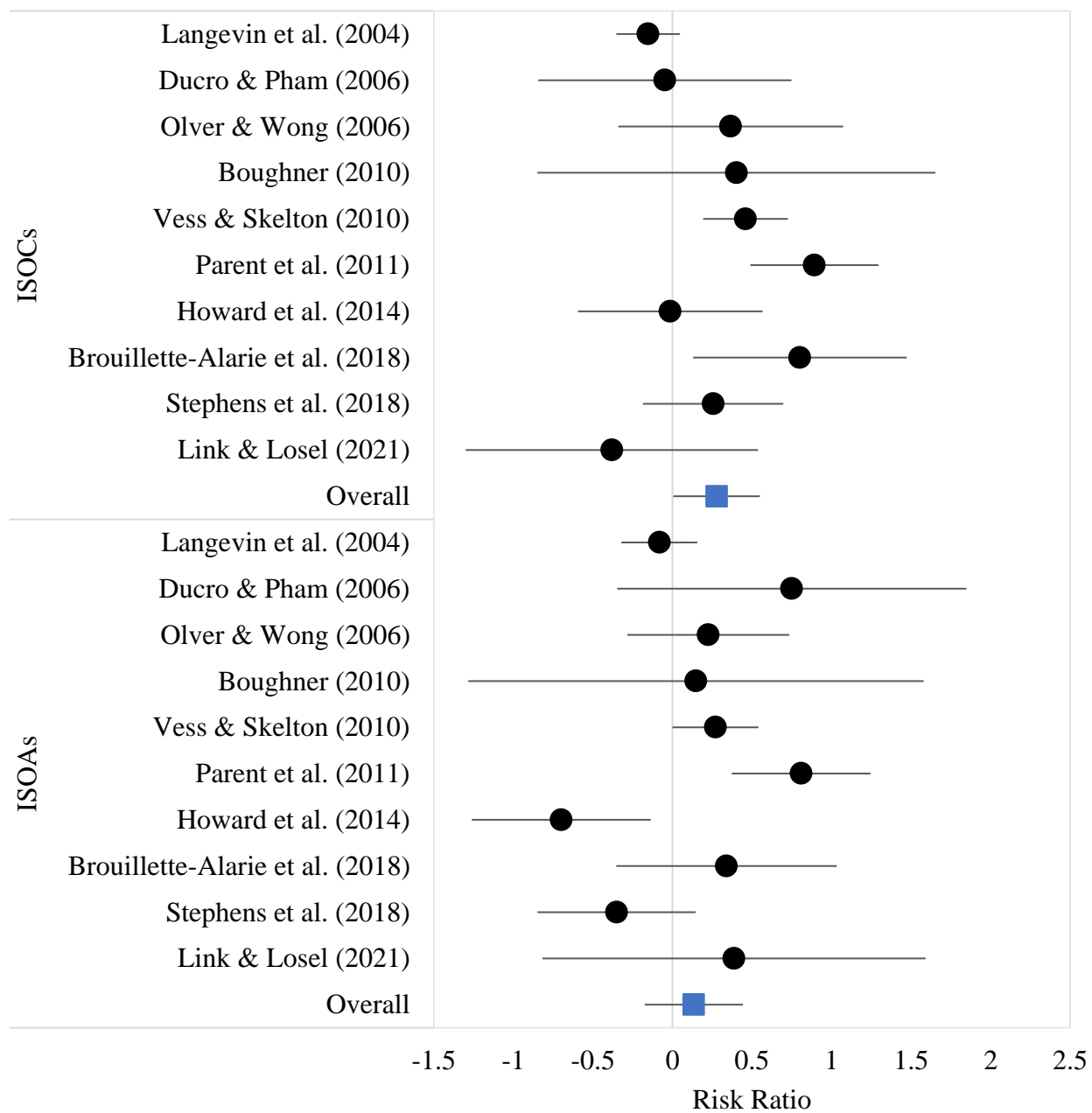**Figure 9**

Forest Plot of Violent Recidivism Effect Sizes
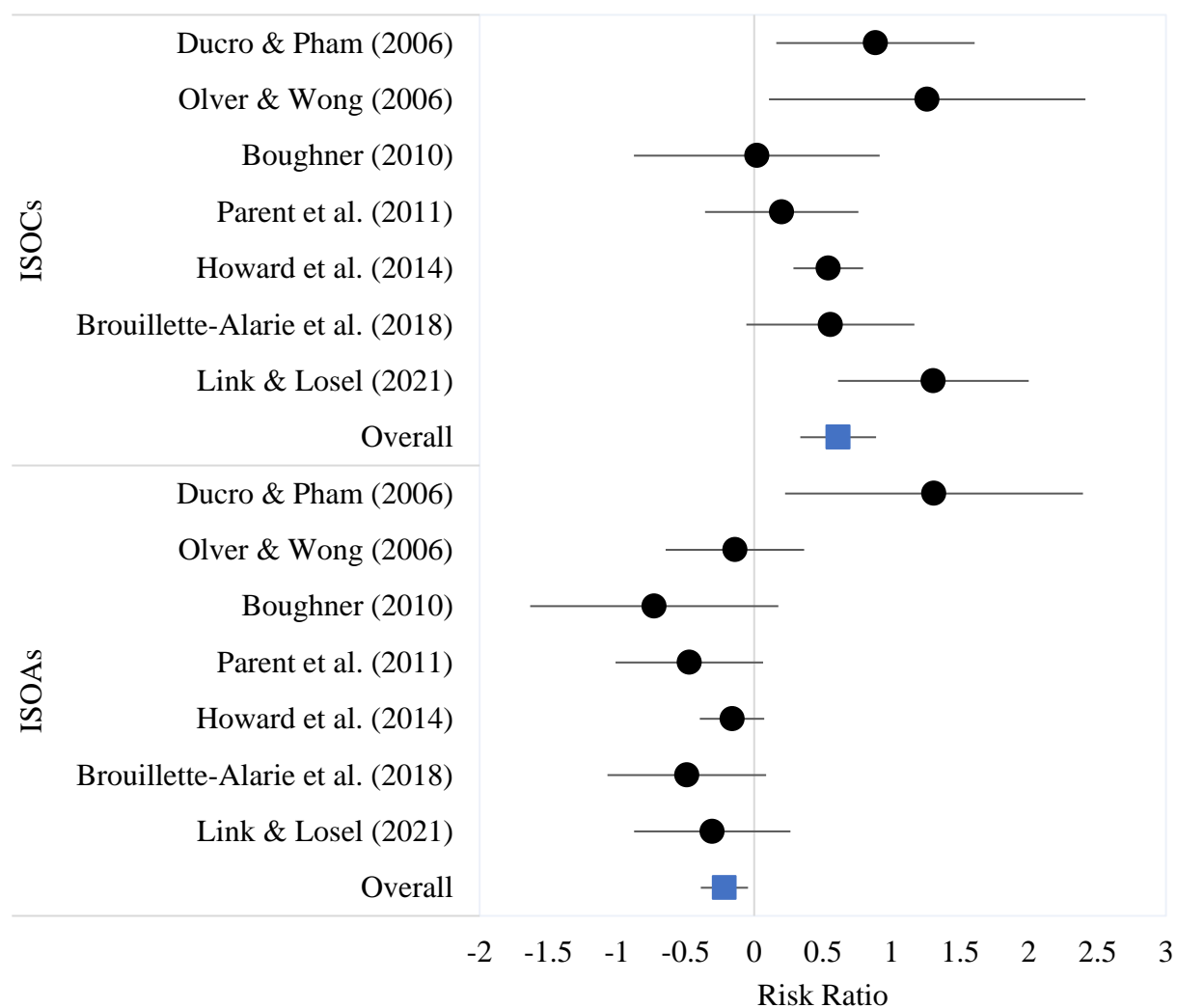
Note. $k = 7$. ISOVAPs were used as the comparison group; control group is indicated on vertical axis. Positive Risk Ratios (*RR*) indicate increased likelihood of nonsexual violent recidivism in the ISOVAP group. Negative *RR*s indicate decreased likelihood of nonsexual violent recidivism in the ISOVAP group. ISOVAPs were significantly more likely to recidivate violently compared to ISOCs and significantly less likely to recidivate violently than ISOAs. The results of the fixed effects model for the ISOAs comparison are reported here due to low heterogeneity across the studies.

Appendix A: Coding Manual

Polymorphism Meta Coding Manual

Please print this manual and have it with you at all times during coding.

Background Information

This meta-analysis is investigating the risk-related correlates and recidivism of adults with offences that are victim age polymorphic (i.e., ISOVAPs). As a coder, you will be responsible for extracting required information from studies that have been deemed relevant. Please note that all articles have been screened for relevance using the following criteria: The study must

➢ Include a sample of male ISOVAPs in adulthood (i.e., not a juvenile sample)

➢ Report new data (e.g., no reviews or book chapters)

➢ Be published after the year 2000

AND report at least one of the following:

➢ A measure of atypical sexual interest within ISOVAPs, such as multiple paraphilias (e.g., diagnosis, phallometric assessment of sexual interest), indiscriminate arousal (e.g., phallometric assessment of sexual interest), or sexual preoccupation (e.g., STABLE-2007; include similar constructs such as hypersexuality).

➢ Total, Factor 1 and/or Factor 2 PCL-R scores within ISOVAPs

➢ Sexual, violent, violent-sexual, or total recidivism of ISOVAPs (cannot be combined with another type of recidivism)

General Instructions

This manual is to be used in tandem with the Covidence extraction template. If you notice that there is something wrong with the extraction template or you need more space as you are coding, please mention this to Sam ASAP.

Please read through the study methodology and look for the requested information. Report everything exactly as it appears in text (e.g., same number of decimal places) and if you copy and paste from the text, include the page number you have pulled the information from. Always be overly inclusive with the information you code (e.g., include all variables that could be relevant; include all types of effect sizes reported). If there is no information available for a variable because it does not apply to the study, please leave that part of the coding form blank. If

the information is missing/incomplete but should be reported (as indicated by * in the variable list), please code as 999. This will signify that we need to contact the authors for this information. If you need to leave notes for the person who reviews your coding, please use the 'NOTES' textbox at the end of each section on the extraction template. Be mindful that the comment function on Covidence is not visible to anyone else.

Please do not enter information you are not sure about! If at any point you have questions about the coding process, please contact Sam (samantha.williams@smu.ca).

Coding Variables

Study Information

Title: The title of the manuscript.

ID: The study project number as listed in the excel sheet.

Authors: The last names of the author(s) of the study in order and without punctuation.

Published: Published projects include studies from scientific journals (including online-first copies). Pre-prints that are under review are not considered published.

- 0 = No
- 1 = Yes

PeerReviewed: Peer reviewed projects include those from published sources as well as theses, dissertations, and conference presentations. Pre-prints that are under review are not considered peer reviewed.

- 0 = No
- 1 = Yes

PublicDomain: A project is public domain if it is available through online/institution sources and was not sent to us by the author.

- 0 = No
- 1 = Yes

Year: The original year of publication. If it is an online-first copy, please indicate the date available online. Unpublished studies will not have a publication date. If possible, please code the pre-print or document post date.

Sample Size

N_Initial: The total sample that was initially recruited.

N_Final: The total sample that is included in the analyses after dropouts and exclusion criteria are applied.

N_VAP: The number of victim age polymorphic (VAP) offenders in the final sample.

Prevalence_VAP: The % of the final sample that is victim age polymorphic.

N_CVO: The number of offenders with only child victims (CVO) in the final sample.

Prevalence_CVO: The % of the final sample that has only child victims.

N_PCVO: The number of offenders with only pubescent child victims in the final sample.

Prevalence_PCVO: The % of the final sample that has only pubescent child victims.

N_TVO: The number of offenders with only teenaged victims in the final sample.

Prevalence_TVO: The % of the final sample that has only teenaged victims.

N_AVO: The number of offenders with only adult victims in the final sample.

Prevalence_AVO: The % of the final sample that has only adult victims.

N_NonadjVAP: The number of offenders in the final sample who are victim age polymorphic according to a non-adjacent categorization method.

Prevalence_NonadjVAP: The % of the final sample who are victim age polymorphic according to a non-adjacent categorization method.

Sample Characteristics

InclusionCriteria: Identifying information for the sample. This includes the criteria for participant eligibility as well as any reasons participants were excluded from analysis.

SampleType: This indicates what setting the participants were drawn from.

- 0 = Federal corrections/prison
- 1 = Civil commitment centre
- 2 = Forensic inpatient
- 3 = Forensic outpatient
- 4 = Maximum security
- 5 = Remand/jail
- 6 = State prison

Country: This is the country from which the sample was recruited.

- 0 = Canada
- 1 = USA
- 2 = Germany

- 3 = New Zealand

- 4 = Belgium

- 5 = England & Wales

- 6 = Australia

M_Age: The mean age at assessment for the total sample.

SD_Age: The SD age at assessment for the total sample.

Range_Age: The range of the age at assessment for the total sample.

Percent_Ethnicity: The % breakdown of ethnic groups for the total sample of offenders.

N_Ethnicity: The n breakdown of ethnic groups for the total sample of offenders.

RiskLevel: The risk level according to Static-99R scores (-3 to 0 = low; 1-3 = moderate; 4+ = high) or if Static scores not available, sample type (Forensic outpatient, remand/jail = low; State prison = moderate; Federal corrections, civil commitment, maximum security, forensic inpatient = high).

- 0 = Low

- 1 = Moderate

- 2 = High

Methodology Variables

VAPDefinition: The verbatim definition of victim age polymorphism used in the study.

N_VictimCategories: The number of the victim age categories that are used in the study.

- VictimCategories: The labels of the victim age categories.

- Op_VictimCategories: The exact age range (or definition) of each victim age category.

SVOsExcluded: The study excluded offenders with one victim (SVO) from the analysis.

- 0 = No; SVOs were included

- 1 = Yes; SVOs were excluded

Adjacency: Offenders were considered victim age polymorphic if the victim age categories were adjacent, non-adjacent, or both.

- 0 = Adjacent categories considered

- 1 = Non-adjacent categories considered

- 2 = Both were considered

AgeGapRequired: The study requires a minimum age gap between victims for offenders to be considered polymorphic, regardless of which age groups the victims fall into.

- 0 = No
- 1 = Yes

Op_AgeGap: The exact age gap required between victims and any other relevant details.

InfoSource: The source(s) of information used to identify and categorize polymorphic offenders. Official records include information gathered from legal, medical and/or other official documents. Self-report sources include any sources (including therapy records) in which the offender has admitted to an offence or offences.

- 0 = Official
- 1 = Self-report
- 2 = Both

OffencesConsidered: The offences that are included in the information source, which were used to categorize offenders according to victim age.

- 0 = Index
- 1 = Past/History
- 2 = Both

Atypical Sexual Interests

ASI: The study includes an assessment of atypical sexual interest.

- 0 = No
- 1 = Yes

MP: The study assessed the number of paraphilias.

- 0 = No
- 1 = Yes

Op_MP: Exactly how multiple paraphilias was operationalized.

Phallometry: A phallometric assessment is used to identify arousal patterns.

- 0 = No
- 1 = Yes

Type_Phallometry: The name of the phallometric device used.

- 0 = Volumetric
- 1 = Strain Gauge

ValidProfile_Phallometry: The criteria used to determine what results indicated a valid response, such as baseline response and % full erection details.

Stimuli_Phallometry: Information on the types of stimuli used (e.g., audio and/or visual), a description of the stimuli (e.g., consensual sex with adult woman, etc.), and how they were presented (e.g., when penile response returned to baseline).

Op_Phallometry: Any additional operationalization information that is not included above.

SP: Sexual preoccupation (or similar construct like hypersexuality, sexual compulsivity, high sex drive, dysregulated sex drive) is assessed.

- 0 = No
- 1 = Yes

Assessment_SP: The assessment(s) and version(s) used in the study.

- 0 = SCS
- 1 = Brouillette-Alarie et al. (2018) scale
- 2 = Clinician judgment

Op_SP: The exact definition and/or parameters of sexual preoccupation.

OtherASI: A measure of atypical sexual interest that is not listed above is assessed.

- 0 = No
- 1 = Yes

Assessment_OtherASI: The assessment(s) and version(s) used in the study.

Op_OtherASI: The exact definition and/or parameters of atypical sexual interest.

Antisociality

Psychopathy: The study includes an assessment of psychopathy.

- 0 = No
- 1 = Yes

PCL: The study assesses the sample with the PCL.

- 0 = No
- 1 = Yes

PCLVersion: The version of the psychopathy assessment used, in-text citation (e.g., Psychopathy Checklist – Revised; Hare, 2003), and any modifications made to the instrument.

Total_PCL: The study assesses the Total scores of the PCL.

- 0 = No

- 1 = Yes

Factors_PCL: The study assesses Factors 1 (Interpersonal/Affective) and 2 (Lifestyle/Antisocial) of the PCL.

- 0 = No
- 1 = Yes

Facets_PCL: The study assesses Facets 1 (Interpersonal), 2 (Affective), 3 (Lifestyle), and 4 (Antisocial) of the PCL.

- 0 = No
- 1 = Yes

Classification_PCL: The PCL-R was used as a continuous variable (i.e., total score) or for categorical classification.

- 0 = Categorical
- 1 = Continuous
- 2 = Both

ThresholdPCL: The cut-off score used to separate participants into psychopathic and non-psychopathic groups if categorical classification was used.

- 0 = 25
- 1 = 30
- 2 = Both

Op_PCL: Any other relevant operationalization information about how the PCL was used in the study.

MMPI-2-Scale4: The study assessed the VAP sample with the Psychopathic Deviate Scale of the MMPI-2.

- 0 = No
- 1 = Yes

MMPI-2-Scale4_Version: The assessment name, version, and in-text citation with any modifications made to the instrument.

Classification_MMPI-2-Scale4: The MMPI-2 was used as a continuous variable (i.e., total score) or for categorical classification.

- 0 = Categorical
- 1 = Continuous

- 2 = Both

Op_MMPI-2-Scale4: Include any other relevant operationalization information about how the measure was used in the study here.

MCMI-Antisocial: The study assessed the VAP sample with the MCMI Antisocial subscale.

- 0 = No
- 1 = Yes

MCMI-AntisocialVersion: The assessment name, version, and in-text citation with any modifications made to the instrument.

Classification_MCMI-Antisocial: The MCMI was used as a continuous variable (i.e., total score) or for categorical classification.

- 0 = Categorical
- 1 = Continuous
- 2 = Both

Op_MCMI-Antisocial: Include any other relevant operationalization information about how the measure was used in the study here.

MPQ-BF_FD_IA: The study assessed the VAP sample with the MPQ-BF Fearless Dominance and Impulsive Antisocial subscales.

- 0 = No
- 1 = Yes

MPQ-BF_FD_IA_Version: The assessment name, version, and in-text citation with any modifications made to the instrument.

Classification_MPQ-BF_FD_IA: The MPQ-BF was used as a continuous variable (i.e., total score) or for categorical classification.

- 0 = Categorical
- 1 = Continuous
- 2 = Both

Op_MPQ-BF_FD_IA: Include any other relevant operationalization information about how the measure was used in the study here.

Recidivism

Recidivism: The study includes an examination of recidivism in the polymorphic sample.

- 0 = No

- 1 = Yes

Follow up: A fixed follow up period means that every participant was followed up for the same time length. A variable follow up period means every participant was followed up at different time periods after release.

- 0 = Fixed
- 1 = Variable

Op_Recidivism: What the researchers considered to be recidivism.

- 0 = Charge
- 1 = Conviction
- 2 = Self-Report

OverallRecid: The association between victim age polymorphism and overall recidivism.

- 0 = No
- 1 = Yes

OverallRecid_Op: How the researchers defined overall recidivism.

- 0 = Charge or caution
- 1 = Conviction
- 2 = Charge/caution & conviction

SexualRecid: The association between victim age polymorphism and sexual recidivism.

- 0 = No
- 1 = Yes

SexualRecid_Op: How the researchers defined sexual recidivism (e.g., only contact offences).

- 0 = Charge or caution
- 1 = Conviction
- 2 = Charge/caution & conviction
- 3 = Detected & undetected offences

NoncontactIncluded

- 0 = No
- 1 = Yes

ViolentRecid: The association between victim age polymorphism and violent recidivism.

- 0 = No

- 1 = Yes

<u>ViolentRecid_Op</u>: How the researchers defined violent recidivism (e.g., homicide and assault)

- 0 = Charge or caution

- 1 = Conviction

- 2 = Charge/caution & conviction

<u>OtherRecid</u>: Use this section to report combinations of the above types of recidivism included in the study, such as violent sexual recidivism, sexual non-contact recidivism, general recidivism, etc.

- 0 = No

- 1 = Yes

<u>Op_OtherRecid</u>: How the researchers defined the type of recidivism.

Miscellaneous

<u>Contact Authors</u>: Select yes if the authors need to be contacted for additional data.

<u>Additional Variables</u>: Suggestions for including another variable, especially if there are additional methodological/classification strategies employed in this study.

<u>Notes</u>: Additional questions or concerns about the study or coded information.

Effect Size Calculation Sheets

<u>Means</u>: The association between polymorphism and a continuous variable is included in the study. Please report the associations for the comparison group(s) you've identified in chronological order by victim age.

<u>Binary Data</u>: The association between polymorphism and a binary DV measure is included. If the association is reported as an Odds Ratio, include which group was the reference group in the notes below the table. Remember to complete the table on the following page if frequencies are also reported. Please report the associations for the comparison group(s) you've identified in chronological order by victim age.

<u>Cox Regression</u>: Victim age polymorphism is the only predictor, and the outcome is time to recidivate.

<u>AUC</u>: A continuous variable is measured in its ability to classify individuals into the VAP and non-VAP samples.

<u>Correlations</u>: While it is possible that correlations may be reported in the study, it is unlikely. Please discuss with Sam prior to coding.

Appendix B: Covidence Extraction Template

ALWAYS CONSULT THE CODING MANUAL WHILE COMPLETING THIS FORM

Study Information

Study ID:	
Study Authors:	
Published (Y/N):	
Peer Reviewed (Y/N):	
Public Domain (Y/N):	
Publication Year:	

Sample Size

Sample	N	%
Initial:		
Final:		
VAP:		
Comparison Group 1 (Specify):		
Comparison Group 2 (Specify):		
Comparison Group 3 (Specify):		

Sample Characteristics

Inclusion/exclusion criteria:

_____

_____

Sample Type (Select all that apply):

- ☐ Remand/Jail
- ☐ Civil commitment centre
- ☐ Forensic inpatient

- ☐ Correctional community centre
- ☐ Federal corrections/prison

- ☐ Unknown
- ☐ Other (Specify):

Country of Recruitment: _____

	M	SD	Range
Age at assessment			
	N	**%**	
Ethnicity			

Sample Risk

- ☐ Yes; risk scores provided (complete below)
- ☐ No; risk scores not provided (continue to next section)

Measure Name	M	SD

Methodology Variables

VAP Definition:

_____

_____

_____

Victim Category	Operationalization

Single victim offenders:

☐ Included

☐ Excluded

Adjacent categories:

☐ Non-adjacent VAP

☐ Adjacent VAP

Age gap:

☐ Required (Specify):

☐ Not required

Sources of information:

☐ Official

☐ Self-report

☐ Both

Offences considered:

☐ Index

☐ Past/History

☐ Both

Atypical Sexual Interests

Multiple Paraphilias

☐ Yes (Operationalize):

☐ No

Sexual Preoccupation:

☐ Yes (Assessment/Operationalize):

☐ No

Phallometric Assessment:

☐ Yes (Operationalize):

☐ No

Other Atypical Sexual Interest:

☐ Yes (Assessment/Operationalize):

☐ No

Antisociality

PCL-R (Version):

☐ Total

☐ Factor 1

☐ Factor 2

Operationalization:

☐ Continuous (Operationalize):

☐ Categorical (Cut-off score):

Other Antisociality:

☐ Yes (Specify):

☐ No

Operationalization:

☐ Continuous (Operationalize):

☐ Categorical (Cut-off score):

Recidivism

Follow up period:

    ☐ Fixed (Timeframe):

    ☐ Variable (M/SD):

Operationalize (Select all that apply):

    ☐ Investigation

    ☐ Arrest

    ☐ Charge

    ☐ Conviction

    ☐ Other (Specify):

Overall Recidivism:	Violent Recidivism:
☐ Yes (Define):	☐ Yes (Define):
☐ No	☐ No
Sexual Recidivism:	Other Recidivism:
☐ Yes (Define):	☐ Yes (Define):
☐ No	☐ No

Miscellaneous

Contact authors:

    ☐ Yes (Specify):

    ☐ No

Additional Variables:	
Notes:	

Effect Sizes

Means (Association between VAP and a continuous variable)

Variable/Measure	VAP			Comparison group (Specify):			Effect Size		
	N	M	SD	N	M	SD	Value	Statistic	Page #

Binary (Association between VAP and a dichotomous variable)

Variable/Measure	VAP		Comparison Group (Specify):		Effect Size		
	Success	Failure	Success	Failure	Value	Statistic	Page #

Cox Regression (Outcome variable is time to recidivate and polymorphism is the only predictor)

Variable/Measure	Sample	Sample N	Recidivists N	Recidivism Rate (%)	HR	95% CI Lower	95% CI Upper	Page #