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Perpetrators' Identity in Online Crimes Against Children: A Meta-Analysis

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Abstract

Public and police concern about internet crimes against children has been primarily typified as a stranger danger problem. However, existing research suggests a variety of perpetrator ages and relationships to the victim. A more accurate estimate will help inform prevention efforts. This study provides a meta-analysis examining the identity of perpetrators in internet crimes against children. Databases were searched for published and unpublished studies using a detailed search strategy. In total, 32 studies met full inclusion criteria. Inclusion criteria was the following: (1) the victim sample consisted of children under the age of 18 years or young adults (18–25) asked to respond retrospectively; (2) the study victims experienced abuse through the use of technology; (3) the study reported the identity of the perpetrator, either the relationship to the victim or the age of the perpetrator; (4) the study was available in English. The overall proportion of offenders under the age of 18 as a proportion of all identified offenders was 44% (95% CI: 0.28–0.60). The overall proportion of acquaintance and family offenders as a proportion of all identified offenders was 68% (95% CI: 0.62–0.75). Between study variability was explained by data source, with higher proportion of juvenile offenders in studies using survey data. This meta-analysis confirms that most perpetrators of online crimes against children are not strangers to their victims and a large portion of perpetrators are juveniles. Prevention education needs to focus more on inappropriate behavior from anyone in addition to the dangers about communicating with strangers.

Keywords

online child sexual abuse, Internet crimes against children, online grooming, image-based sexual abuse, technology facilitated abuse of children

Introduction

There has been considerable police and public concern about internet sex crimes against children. The image of these crimes has been defined by shows such as *To Catch a Predator* (2004–2007), in which adult strangers stalk and manipulate children online for the purpose of sexually abusing them (Fritz & Altheide, 1987; Wodda, 2018). Highly publicized cases, such as the various "Craigslist killers" and the *TallHotBlond* (Schroeder, 2009) murder documentary, further cemented the idea that the Internet threats to children are primarily from adult strangers (Parker & Slate, 2014). However, this typification is too narrow.

The research literature shows that a variety of dynamics feature differing perpetrator ages and relationships to the victim. While research about online sexual abuse against children lacks a clear operationalization for such abuse, most studies include but are not limited to offline acquaintances and family members who use the internet to seduce and groom children (Ashurst & McAlinden, 2015), the non-consensual taking and distribution of images by intimate partners and other acquaintances including peers (Zvi & Bitton, 2021), and the distribution of child sexual abuse material (CSAM) by family and acquaintance sex abusers (Mitchell et al., 2005). Some studies have quantified this diversity; a recent publication by Finkelhor et al. (2022) found a large proportion of online violence against children was perpetrated by offline acquaintances or peers, across multiple categories of online victimization.

The primary emphasis on stranger danger has a long history in the public awareness about and prevention of sexual abuse and other crimes against children. Playground molesters were showcased as the stereotypical sexual abusers up until the 1970s. Stranger abductors were made iconic by famous cases such as the kidnapping and murder of the Lindberg baby in the 1930s, and more recently, cases such as Adam Walsh and Etan Patz (Wodda, 2018). Media

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and advocacy groups compounded this misunderstanding by providing exaggerated estimates of the number of children abducted by strangers (Best, 1993).

However, the typification of the playground molester or street abductor receded starting in the 1980s when the publicity grew about family sexual abuse, clergy sexual abuse, teen date rape and family abduction, which was accompanied by new epidemiologic data (Finkelhor, 1979; Russell, 1983; Sedlak, 2002; Snyder, 2000). While many understand that risks toward children are primarily committed by someone known to the child, rather than strangers, there are still occasions of stranger related alarmism among media outlets. There are numerous news articles from the early 2020s that urge parents to educate their children about the dangers of unknown adults after an attempted child abduction by a stranger (Morrison, 2022; Newbould, 2023; Pace, 2023; Pelletiere, 2023).

The over-typification of crimes against children as stranger danger may prove to be an endemic bias in crime perception. The stranger danger archetype ties crimes against children to more threatening images of unalloyed, unknown evil. Offenders who are family members, acquaintances or authority figures have other dissonant connotations that complicate the ability to visualize them as threats.

Typifying crimes against children as stranger danger also comports with an easy prevention recommendation. "Don't talk to strangers" has become a prevailing warning to children. Well-known organizations, such as the National Crime Prevention Council, also support the idea of stranger danger. Scholastic, the world's largest publisher and distributor of children's books, provides parents with a guide on how to talk to children about strangers (Scholastic Parents Staff, n.d.). While this is still one danger to educate children about, an over-emphasis on strangers may undermine vigilance about family and acquaintance threats.

Prominent internet education programs, such as Australia's eSafety Commissioner and England's Childline, also continue to emphasize the message of stranger danger. A recent report by the World Health Organization (WHO) examined the information prominent online safety programs provide about various online risks for children. It found that 37 of the 57 programs reviewed (65%) characterized online grooming primarily in terms of stranger perpetrators. Messages such as, "Do not communicate with strangers you meet online," "People aren't who they pretend to be," and "Never meet in person with someone who you only know online" are just some examples of messages used by these prominent online safety programs. (WHO, 2022). A large number of the internet safety programs either do not or only peripherally reference other types of perpetrators.

An emphasis on stranger oriented messages can be problematic for effective prevention. It fails to orient the police and public to the multiple and varied sources of danger. These messages associate danger with the fact that someone is unknown rather than with particular problematic behaviors by any correspondent, known or unknown (Finkelhor et al., 2021).

The stranger danger typification not only stresses the idea that sexual abuse was committed by persons unknown to the child-victim, but it also promotes the idea that it is primarily committed by adults. For example, the Australian Bureau of Statistic's Personal Safety Survey defines child sexual abuse as "any act, by an adult, involving a child under the age of 15 years in sexual activity" (Richards, 2011). Questions used in child sexual abuse surveys often specifically mention only adults or older persons when asking victims about their experiences (Greene-Colozzi et al., 2020; Saewyc et al., 2003). This presumption also holds true for the typification of online offenders. Studies of online offenders have heavily relied on samples of convicted adult offenders, finding their age range to be 25-50 years (Bryce, 2013; Caffo et al., 2021; Davidson & Gottschalk, 2011; Kloess et al., 2019; Ramiro et al., 2019). However, these convict samples promote an inaccurate stereotype of online offenders as the samples are not representative of all offenders.

The influence of an adult offender orientation can also be seen in internet education programs. Messages about grooming often include the presumption that it is a process conducted by an adult, often using deception to lure the child. However, this message does not include the possibility of peer involvement in online harm, through pressure, threat, deceptive solicitation, and non-consensual sharing of intimate images (Ashurst & McAlinden, 2015).

Despite the stereotype, there are an increasing number of sources that suggest that large portions of online offenders are online acquaintances (including family) and other youth (Ibrahim, 2022; Wolak et al., 2011; ECPAT 2021-2022). These include adults met in offline contexts who use private online communications and social media to seduce and manipulate youth. It includes friends and intimate partners who take photos non-consensually and share them with others to humiliate or retaliate against the victims. Peers also use threats and deceptions to acquire images from vulnerable youth. A more thorough inventory of the existing literature is needed to test how frequently the cases of online abuse involve acquaintance or stranger perpetrators, adults or other youth.

The purpose of the current meta-analysis is to provide a clearer assessment of the current findings on the proportion of the online offenders who are acquaintances or juveniles. As there appears to be a mismatch between education prevention program messages and current research, a comprehensive summary of current research will be helpful to inform future prevention efforts.

Methodology

This meta-analysis was based on standards and recommendations set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Page et al., 2021). To provide timely information and to complement the WHO report about prevention education programs, this

Table 1. Data Extraction Coding Schedule for Study Variables.

Variable	Coding	Description
Study characteristics		
Study year		Continuous
Geography	1 Europe	
	2 Asia	
	3 North America	
	4 South America	
	5 Africa	
Data source	1 Survey	
	2 Police	
	3 Newspaper	
Sample type	1 Snowball	
	2 Nationally representative	
	3 Cross-sectional	
	4 All cases in jurisdiction	
Sample characteristics		
Victimization type	1 Online sexual abuse general	
	2 Sexual solicitation	
	3 Image-based sexual abuse	
	4 Grooming	
	5 Cyberstalking	
Victim age range		Continuous
Perpetrator characteristics		
Online only perpetrator		Continuous (%)
Acquaintance (including family) perpetrator		Continuous (%)
Peer (under 18) perpetrator		Continuous (%)
Adult (over 18) perpetrator		Continuous (%)

meta-analysis was conducted as a rapid review with searches taking place over the course of approximately 3 months. Searches were conducted in PsychINFO, PubMed, Criminal Justice Abstracts, and Google Scholar for published and unpublished studies up to September 2022. Google Scholar searches were limited to the first four pages of results. Database-specific subject headings were selected for the concepts of "online victimization of children" and "perpetrator identity" (see Appendix A for detailed search strategy). All victimization and perpetrator terms were combined with the Boolean "OR." These two sets of terms were then combined with the Boolean "AND." Truncation symbols were used in text word searches, when appropriate, to capture variant endings of the search terms.

Studies were included for analysis if they met all of the following criteria: (1) the victim sample consisted of children under the age of 18 years or the victim sample consisted of young adults (18-25) asked to respond retrospectively; (2) the study victims experienced technology facilitated abuse; (3) the study reported the identity of the perpetrator, either in the form of the relationship of the perpetrator to the victim or the age of the perpetrator; (4) the study was published between 2000-September 2022; (5) the study was available in English. In the cases where a study had multiple publications from the same dataset, the study with the largest sample size and most comprehensive data was included to avoid including overlapping samples in the analysis.

Titles and abstracts identified in the search strategy were reviewed for the inclusion criteria. If the titles and abstracts were not sufficient to determine inclusion criteria, full articles were retrieved. As a further search method, reference lists of relevant articles were scanned for inclusion of additional studies.

Studies meeting the inclusion criteria were coded using a standard data extraction form (see Table 1) developed to record study-level and sample-level factors, including type of online victimization, victim age range, sample size, proportion of online-initiated relationship, proportion of offline-initiated relationship, numbers of juvenile perpetrators, numbers of adult perpetrators, data source, study year, and geographical location. Studies were reviewed by a second coder to ensure accuracy and reliability.

All data extracted were analyzed using a proportional meta-analysis, also known as *metaprop_one* (Nyaga et al., 2017). Random effect models, which assume that random differences exist in the study settings and methods of data collecting (Barker et al., 2021), were selected to calculate the effect sizes.

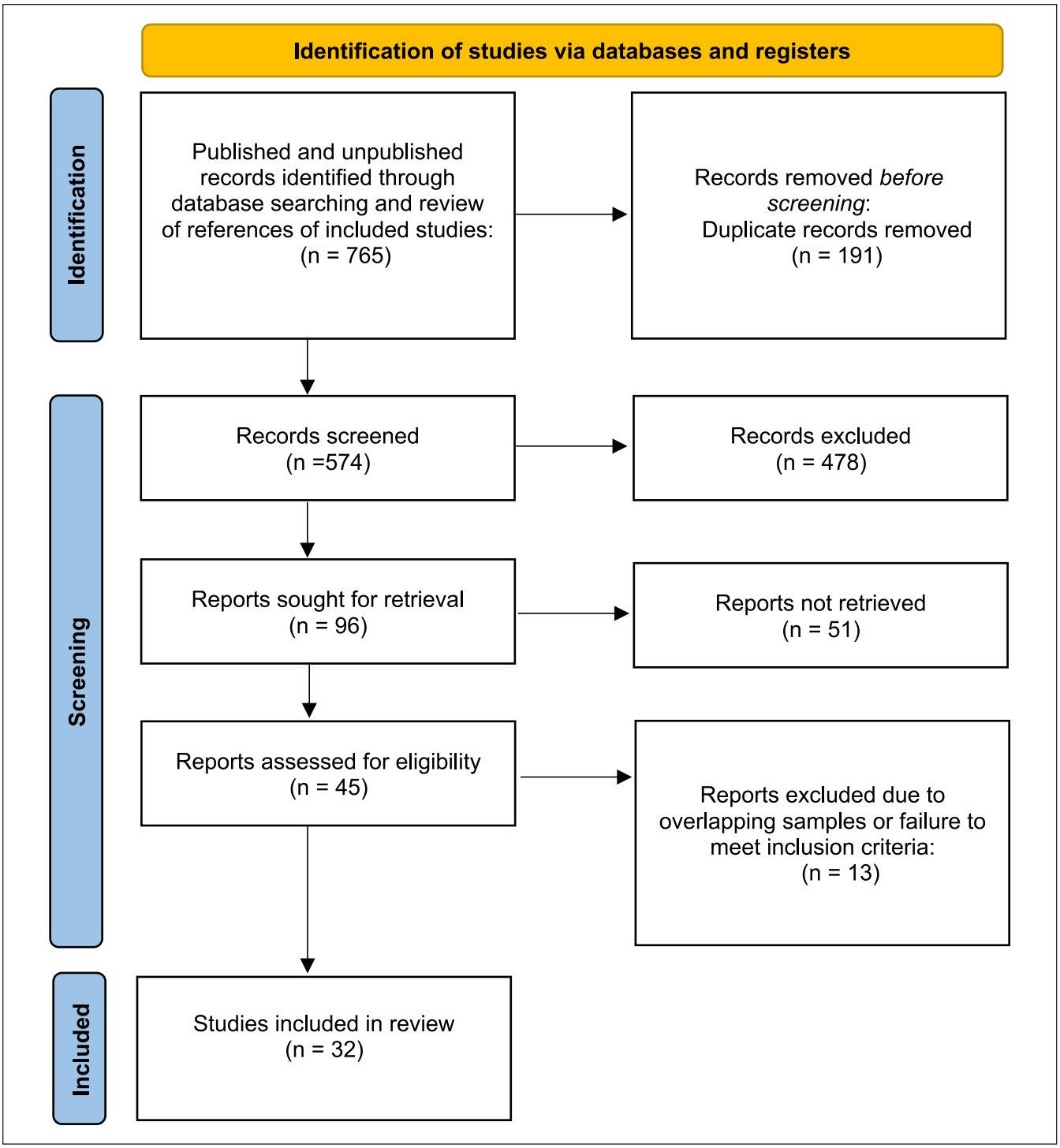

Figure 1. PRISMA flow used to identify studies for detailed analysis of the proportion of online child abuse.

Results

As detailed in the PRISMA diagram (Figure 1), the electronic search yielded 765 articles. Once duplicate articles were removed, there were 574 articles for review. Ninety-six articles were identified as potentially meeting study inclusion criteria and full articles were retrieved. A total of 32 studies met full inclusion criteria.

Study characteristics are reported in Table 2. Included studies were published between 2004 and 2022, with sample sizes ranging from 19 to 5,962 (M=585.94; SD=1123.71). The sample sizes reported by this study are only those relevant to the

Table 2. Characteristics of Studies Included in the Meta Analysis of Online Child Abuse Perpetrator Identities.

Study	Online Sexual Abuse Type	Country	Data Source	Sample Type	Population	N[a]	Online Only Perpetrator (%)	Acquaintance (Including Family) Perpetrator (%)	Peer (Under 18) Perpetrator (%)	Adult (Over 18) Perpetrator (%)
Bergen et al. (2014)	Online sexual abuse general	Europe	Survey	Snowball	18+	776	—	—	17.5	82.5
Davidson et al. (2016)	Sexual solicitation	Europe	Survey	Nationally representative	18–25	1004	29	61	82	18
DH Ethiopia (2022a)	Sexual solicitation	Africa (Kenya)	Survey	Nationally representative	12–17	84	18	82	—	—
DH Kenya (2021a)	Sexual solicitation	Africa (Ethiopia)	Survey	Nationally representative	12–17	101	25	75	—	—
DH Philippines (2022b)	Sexual solicitation	Asia (Philippines)	Survey	Nationally representative	12–17	145	49	51	—	—
DH Tanzania (2022c)	Sexual solicitation	Africa (Tanzania)	Survey	Nationally representative	12–17	19	21	79	—	—
DH Thailand (2022d)	Sexual solicitation	Asia (Thailand)	Survey	Nationally representative	12–17	72	18	82	—	—
DH Uganda (2021b)	Sexual solicitation	Africa (Uganda)	Survey	Nationally representative	12–17	126	34	66	—	—
Finkelhor et al. (2022)	Online sexual abuse general	North America	Survey	Nationally representative	18–28	331	16	84	45	55
Guerra et al. (2021)	Online sexual abuse general	South America (Chili)	Survey	Cross-sectional	12–17	2273	—	—	63	37
Helweg-Larsen et al. (2011)	Sexual solicitation	Europe (Denmark)	Survey	Nationally representative	14–17	103	—	—	51	49
Ibrahim (2022)	Image-based sexual abuse	North America	Police	All cases in jurisdiction	—	1181	11	89	—	—
Ibrahim (2022)[b]	Grooming	North America	Police	All cases in jurisdiction	—	5962	39	61	—	—
Jones et al. (2013)	Online sexual abuse general	North America	Survey	Nationally representative	10–17	171	31	69	84	16
Mitchell et al. (2011)	Sexual solicitation	North America	Police	Nationally representative	—	296	41	59	—	—
Patchin and Hinduja (2020)	Image-based sexual abuse	North America	Survey	Nationally representative	12–17	274	21	79	—	—
Pereira and Matos (2016)	Cyberstalking	South America (Portugal)	Survey	Nationally representative	12–16	388	36	64	86	14
Pereira et al. (2016)	Online sexual abuse general	South America (Portugal)	Survey	Nationally representative	12–16	451	39	61	75	25
Reed et al. (2019)	Online sexual abuse general	North America	Survey	Cross-sectional	15–19	109	24	76	—	—
Scott et al. (2022)	Image-based sexual abuse	Australia	Survey	Nationally representative	16-20	83	18	82	—	—
Shannon (2008)	Grooming	Europe (Sweden)	Police	All cases in jurisdiction	—	315	79	21	13	87
Shelton et al. (2016)	Online sexual abuse general	North America	Police	All cases in jurisdiction	—	70	21	89	2	98

(continued)

Table 2. (continued)

Study	Online Sexual Abuse Type	Country	Data Source	Sample Type	Population	N[a]	Online Only Perpetrator (%)	Acquaintance (Including Family) Perpetrator (%)	Peer (Under 18) Perpetrator (%)	Adult (Over 18) Perpetrator (%)
Sklenarova et al. (2018)	Sexual solicitation	Europe (Germany)	Survey	Cross-sectional	14–17	108	—	—	53	47
Vakhitova et al. (2018)	Online sexual abuse general	Australia	News reports	Systematic search of news reports	—	75	12	88	9	91
Van Ouytsel et al. (2021)	Image-based sexual abuse	Europe (Belgium)	Survey	Nationally representative	11–17	235	23	77	—	—
Villacampa and Gómez (2017)	Grooming	Europe (Catalonia)	Survey	Nationally representative	14–18	111	29	71	48	52
Wolak and Finkelhor (2013)	Online sexual abuse general	North America	Police	All cases in jurisdiction	—	282	51	49	12	88
Wolak et al. (2005)	Image-based sexual abuse	North America	Police	All cases in jurisdiction	—	122	27	73	3	97
Wolak et al. (2011)	Image-based sexual abuse	North America	Police	All cases in jurisdiction	—	1034	8	92	4	96
Wolak et al. (2018)	Image-based sexual abuse	North America	Survey	Snowball	18–25	572	41	59	52	48
Ybarra et al. (2004)	Sexual solicitation	North America	Survey	Nationally representative	10–17	214	—	—	67	33
Ybarra et al. (2006)	Online sexual abuse general	North America	Survey	Nationally representative	10–17	106	55	45	72	28

[a]*N* used in analyses.
[b]Duplicate due to two different online sexual abuse types being reported.

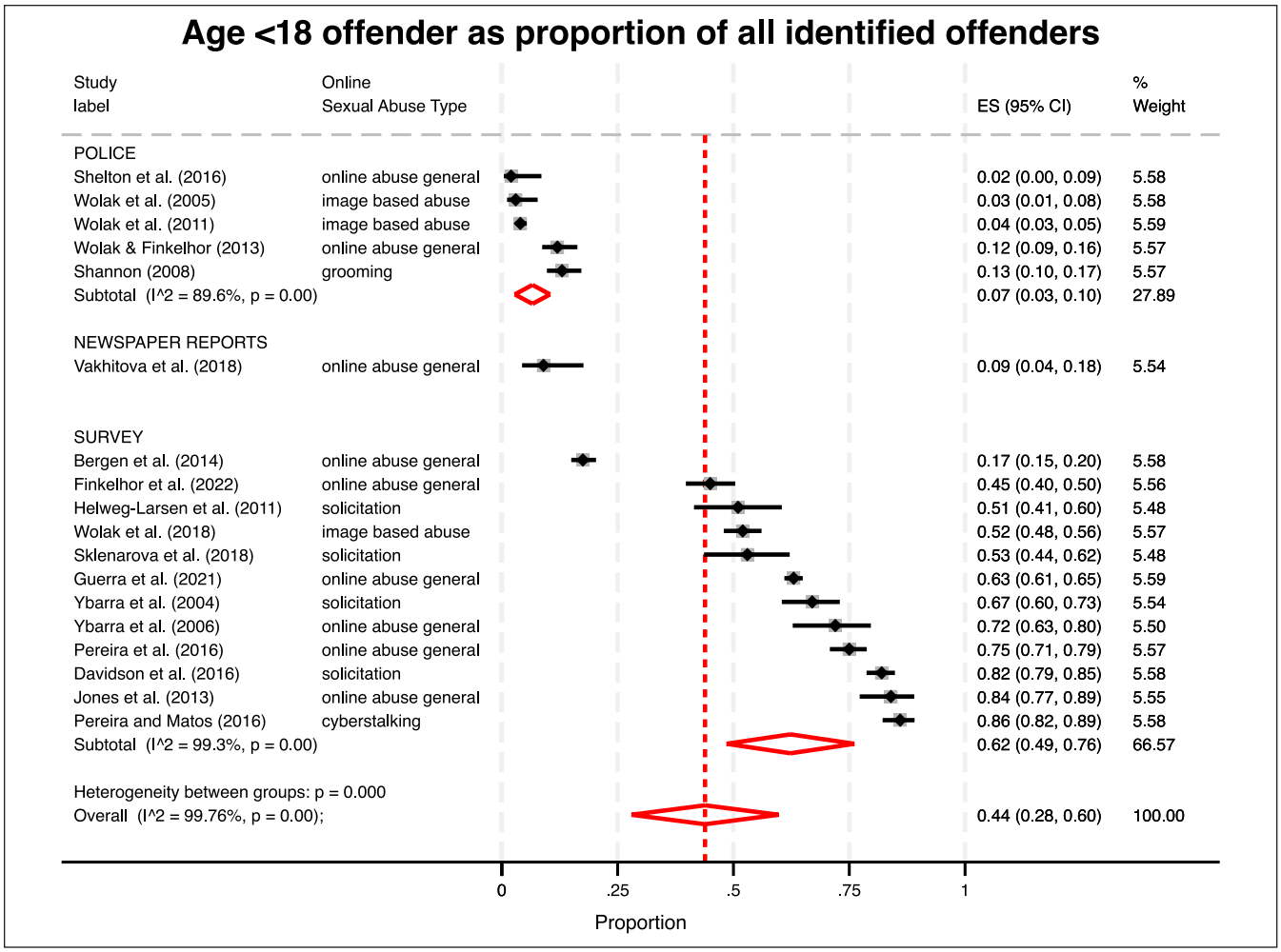

Figure 2. Forest plot of the effect sizes for each study included in the meta-analysis by proportion of offenders under the age of 18.

analysis. Many of the studies utilized a large national sample in which not every participant reported experiencing online facilitated abuse. The largest number (44%) of the studies were conducted in North America, followed by Europe (28%), and then Africa (13%). The majority of the studies used survey data (72%) while the remaining studies used data from police reports. Of the 32 studies that met the full inclusion criteria, 26 included information about online and offline relationships, while 18 of the studies included information about the perpetrator's age. Approximately one-third of the studies investigated violence against children online in the form of solicitation (34%) and online sexual abuse in general (31%). The remaining online crimes were cyberstalking (3%), grooming (9%), and image-based sexual abuse (22%), respectively.

Meta-Analysis

The overall proportion of offenders under the age of 18 as a proportion of all identified offenders was 44% (95% CI: 0.28, 0.60; I^2=99.76%; see Figure 2). Significant between-study differences were detected (Q=7084.11; p=0.00). There was also significant heterogeneity between types of data subgroups (Q=58.29; p=0.00). For survey data, the proportion of juvenile offenders was 62% (95% CI: 0.49, 0.76; I^2=99.3%). For police data, the proportion of juvenile offenders was 7% (95% CI: 0.03, 0.10; I^2=89.6%).

The overall proportion of acquaintance offenders (including family members) as a proportion of all identified offenders was 68% (95% CI: 0.62, 0.75; I^2=98.30%; see Figure 3). Significant between-study differences were detected (Q=1415.63; p=0.00). There was also significant heterogeneity between types of data subgroups (Q=17.94; p=0.00). For survey data, the proportion of acquaintance offenders 70% (95% CI: 0.64, 0.75; I^2=93.0%). For police data, the proportion of acquaintance offenders was 63% (95% CI: 0.47, 0.79; I^2=99.5%)

Discussion

This study is a meta-analysis of research conducted to date that reports on the age and relationship status of online perpetrators against children. The synthesis of 32 studies showed

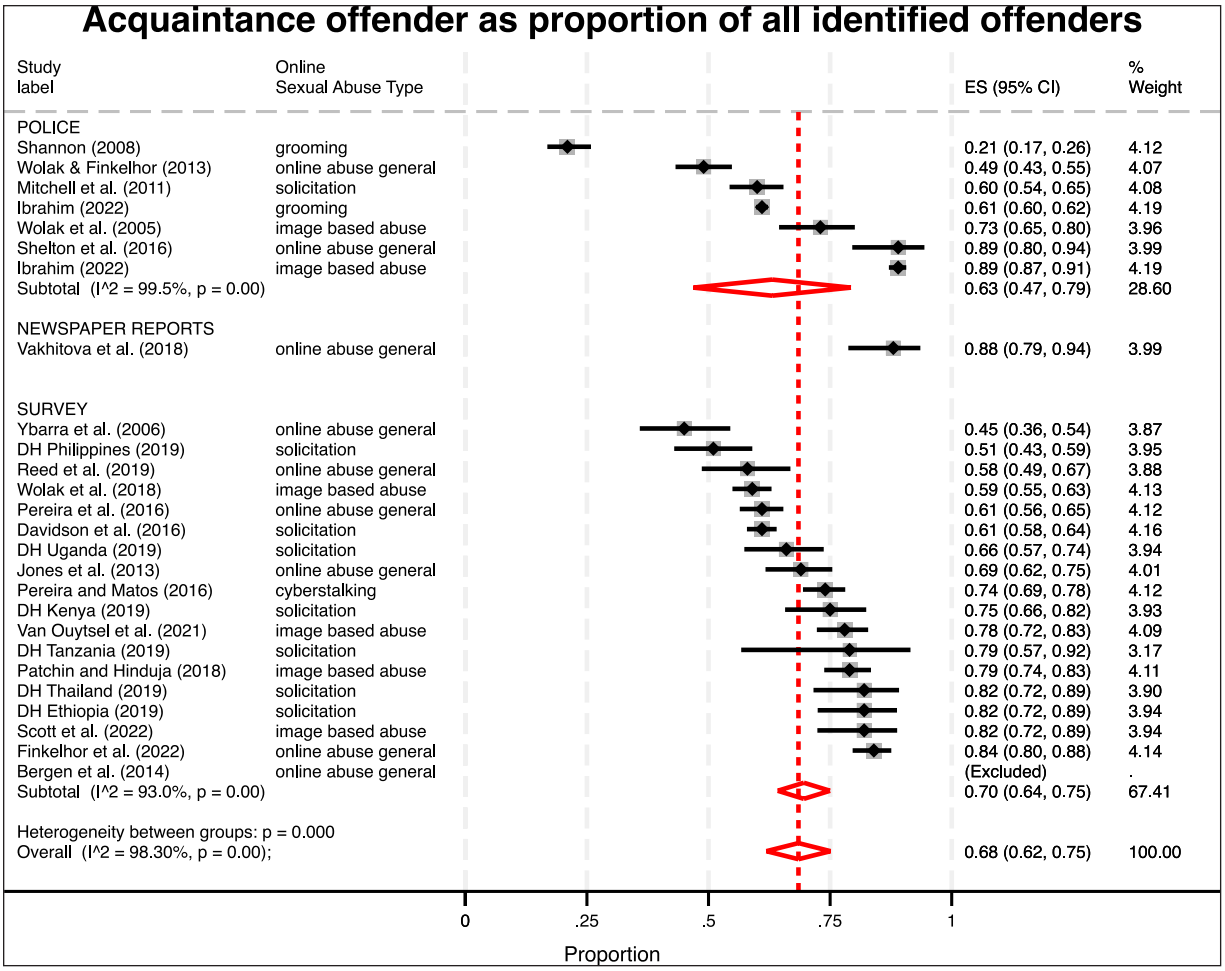

Figure 3. Forest plot of the effect sizes for each study included in the meta-analysis by proportion of acquaintance (including family) offenders.

that 44% of internet offenders were under the age of 18 and 68% of internet offenders were acquaintances of their victim. The large disproportion of acquaintance perpetrators was consistent in both police samples and survey samples, although there was a small difference 63% compared to 70%, respectively. In the case of juvenile offenders, however, the data source made a big difference. Only 7% of offenders were juveniles in the police samples compared to 62% juveniles in the survey samples. This likely reflects greater reluctance of schools and families to report juvenile offenses to police and a greater likelihood of police handling juvenile offenses in an informal way. But this explanation suggests that police samples and perhaps police perspectives on the problem may overlook the contribution of juvenile offenders. Police and others may have the perception that juvenile offenses are less harmful to victims. While this has not been well researched, some comparisons suggest that harms are equivalent (Finkelhor et al. 2023; Purcell et al., 2009; Umbreit & Bradshaw, 1997).

The findings from the current study regarding the identity of online perpetrators parallel the literature regarding the identity of offline perpetrators of child sexual abuse (Barbaree & Marshall, 2008; Finkelhor et al., 2009; Pratt et al., 2012; Vizard et al., 1995). In terms of offline acquaintance offenders, many studies using surveys and police data show an acquaintance predominance (Bolen, 2000; Russell, 1983; Saunders et al., 1992). One study using survey data regarding offline abuse found approximately 66% of male victims and 79% of female victims were abused by an acquaintance (Gewirtz-Meydan & Finkelhor, 2020). In terms of police data, a 1996 Department of Justice study showed that more than 90% of inmates serving time for the sexual assault of a child knew the victim prior to the assault (Weiss, 2002). Snyder (2000), also using police data, found approximately 86% of all juvenile victims were raped by an acquaintance or family member. This study also noted that 60% of all sexual assault offenders were classified by law enforcement as acquaintances of the victim (Snyder, 2000).

Studies of offline sexual abuse also show large proportions of peer perpetrators. The above-mentioned survey by Gewirtz-Meydan and Finkelhor (2020) found that 59% of male victims and 64% of female victims were abused by a juvenile acquaintance. Another survey study from the United Kingdom found that approximately two-thirds of contact sexual abuse against 0–17-year-olds was committed by peers (Radford et al., 2011).

However, there also appears to be discrepancies between survey data and police data in offline offenses, like the discrepancies noted in the current study. While police data also shows considerable percentages of peer perpetrators, the findings using police data are markable lower than those reported using survey data. One example from police data found juveniles were the offender in approximately 27% of sexual assaults of minors aged 12 to 17 (Snyder, 2000). Police data outside of the United States have cited similar estimates, with Boyd and Bromfield (2006) stating that one-third of all children referred to an Australian service provider for sexual abuse were abused by an individual under the age of 18.Warner and Bartels (2015) found similar discrepancies between survey and police data for offline sexual offenses in Australia. They note that, as acquaintance crimes are notoriously under-reported, victim surveys are an important information source when examining this type of offending. Police data, as demonstrated in this study, appears to be a biased subsample of online child sexual assault or abuse. It is important to recognize the differences in findings between the survey data and the police data since much prevention education derives from police perceptions and characterizations.

The implication for practice is clear for the findings about acquaintance and peer perpetration. Many, if not most education programs about online abuse rely heavily on emphasizing the adult stranger danger message (WHO, 2022). But this message does not adequately reflect the diverse reality of online crimes against children. Without some reference to and training about acquaintance and peer perpetrators, children may not recognize the signs of danger when they are occurring. Furthermore, research has shown that when children did have some basic knowledge of stranger danger, they still had difficulty applying this concept to online situations. Children would make distinctions between strangers and "virtual friends" (Davidson & Martellozzo, 2005).

The important point may be that risk is not only about the identity of the person, but the behaviors and requests that are inappropriate. For example, programs could highlight the kinds of strategies that groomers use to befriend, isolate, and seduce victims such as exaggerated flattery, guilt induction, insisting on secrecy and denigrating friends and family. The programs could also discuss certain warning signs such as individuals asking children questions about their body and sexual experiences and pressuring the children when they hesitate to respond. There are many characteristics of grooming that can be highlighted without specifying the identity of the perpetrator. The emphasis needs to also include how to detect these characteristics in any situation, rather than just a caution about stranger adults.

Limitations and Future Research Directions

This meta-analysis expands the current knowledge of perpetrators of online violence against children and offers information for prevention education programs. However, there are several limitations that should be acknowledged. The strength of the review is dependent on individual study methodology (Madigan et al., 2014). Comparisons are complicated by the variations in operational definitions of online violence against children as well as differences in sample characteristics and study designs. There is currently no agreed upon definition for violence against children online (WHO, 2022). The categories that are considered violence against children online are subject to variation both within a country and internationally (May-Chahal & Palmer, 2018). For example, grooming and solicitation have been used interchangeably, despite the differences between the two terms. Furthermore, as juveniles are a protected population, some researchers rely on older samples to provide retrospective accounts of their childhood experiences. As it may have been years since an incident of online violence occurred, the participants' recounts may be flawed.

Additionally, as this study is a rapid review and the search for literature occurred over a shortened period, the studies included in the analysis are likely not an exhaustive list. Furthermore, other types of data collection, such as studies that reviewed newspaper reports, are not represented in this review. Future research should attempt to conduct a thorough and inclusive search of studies in this area as well. Moreover, future research should investigate perpetrator type distribution in different categories of online sexual abuse. It would be useful to break out perpetrators into more granular categories such as familial or dating partners. While this study attempted to be inclusive by including international studies, future research could benefit from analyzing violence against children online from a more diverse viewpoint, such as non-heterosexual relationships or the effect of certain ethnicities and cultures.

Conclusion

This meta-analysis advances the current understanding regarding perpetrators of online violence against children. Contrary to the prevailing stranger danger narrative, the majority of perpetrators are known to the victim offline. Furthermore, approximately two-fifths of the perpetrators were juveniles. Online violence prevention programs are still overwhelmingly using the stranger typification of online violence and the findings of this study suggest this is not congruent with the reality of online violence against children. The findings of this study can inform the direction of prevention education practices, with the ultimate goal of providing helpful information to keep children safe on the internet.

Summary of Critical Findings

- 44% of offenders of online abuse against children were under the age of 18.
- 68% of offenders of online abuse against children were known to the victim.
- The data source made a big difference for proportion rates of juvenile offenders. Only 7% of offenders were juveniles in the police samples compared to 62% juveniles in the survey samples.

Implications of the Review for Research, Practice, and Policy

Implications for research

- A more thorough review of current literature should be conducted that includes various data sources such as newspaper and blog posts.
- Perpetrator type distribution should be investigated in different categories of online sexual abuse of children.
- A review that investigates perpetrators in more granular categories such as familial or dating partners should be conducted.
- Data source should be considered when conducting future research in this area.

Implications for practice and policy

- Education programs should rely on current research findings to inform their curriculum.
- Internet safety programs should include education on peer and acquaintance offenders, not just on the dangers of strangers.
- Internet education programs should place more emphasis on inappropriate behaviors and requests.

Appendix A

PubMed Search

("child"[mesh] OR "infant"[mesh] OR "adolescent"[mesh] OR "minors"[mesh] OR Teen*[tiab] OR Child[tiab] OR Childhood[tiab] OR Children[tiab] OR Youth*[tiab] OR Adolescen*[tiab] OR Student*[tiab] OR Underage*[tiab] OR Minors[tiab] OR School[tiab] OR Young[tiab])

AND ("Child Abuse, Sexual"[mesh] OR "Cyberbullying"[mesh] OR ((cyber[tiab] OR online[tiab] OR technology[tiab] OR digital[tiab] OR virtual[tiab] OR mobile[tiab] OR internet[tiab]) AND ("sexual abuse"[tiab] OR solicitation[tiab] OR grooming[tiab] OR sextortion[tiab] OR stalking[tiab] OR bullying[tiab] OR Sexting[tiab]))) AND (stranger[tiab] OR acquaintance[tiab] OR offender*[tiab]) AND (Survey [tiab] OR prevalence[tiab] OR characteristics[tiab] OR arrests[tiab])

PsychINFO and Criminal Justice Abstract Search

(Teen*OR Child OR Childhood OR Children OR Youth* OR Adolescen* OR Student* OR Underage* OR Minors OR School OR Young) AND ((cyber OR online OR technology OR digital OR virtual OR mobile OR internet) AND ("sexual abuse" OR solicitation OR grooming OR sextortion OR stalking OR bullying OR Sexting)) AND (stranger OR acquaintance OR offender*) AND (survey OR prevalence OR characteristics OR arrests)

Google Scholar Search

(Teen*OR Child OR Youth* OR Adolescen*) AND ((cyber OR online OR technology OR mobile OR internet) AND (solicitation OR grooming OR sextortion OR stalking OR bullying OR Sexting)) AND (stranger OR acquaintance) AND (report OR survey OR meta-analysis)

Rogue Search

Online child sexual abuse AND perpetrator relationship
Online child sexual abuse AND perpetrator age

Declaration of Conflicting Interests

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*References marked with an asterisk indicate studies included in the meta-analyses.

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