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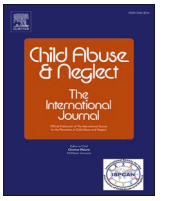

Prevalence and characteristics of online child sexual victimization: Findings from the Australian Child Maltreatment Study

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ABSTRACT

Background: Online child sexual victimization is increasingly facilitated by technology, but evidence of its prevalence and characteristics remains scarce. Reliable population-based data is critical to understand the magnitude and nature of the problem, and inform evidence-based prevention.

Objective: To determine the prevalence of nonconsensual sharing of sexual images of the child by any perpetrator, and of online sexual solicitation by any adult perpetrator; and to determine the characteristics of these experiences.

Participants and setting: A nationally representative sample of 3500 individuals aged 16–24 years in Australia, comprising a sub-sample of participants in the Australian Child Maltreatment Study (ACMS).

Methods: We administered the Juvenile Victimization Questionnaire-R2: Adapted Version (ACMS). Survey items captured self-reported information from participants about whether, before age 18, they had experienced nonconsensual sharing of sexual images of themselves by any perpetrator, and online sexual solicitation by an adult. Follow-up items generated information about the characteristics of these experiences. We generated weighted national prevalence

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estimates for each experience, and estimated chronicity (number of times the experience occurred), age at onset, and perpetrator characteristics.
Results: National prevalence of nonconsensual sharing of sexual images of the child before age 18 was 7.6 % (95 % CI 6.6–8.6 %), and of online sexual solicitation by an adult was 17.7 % (95 % CI 16.3–19.2 %). Girls were significantly more likely than boys to experience both nonconsensual image sharing victimization (10.9 % v 3.8 %) and online sexual solicitation by an adult (26.3 % v 7.6 %) before age 18. Gender diverse individuals experienced higher online sexual solicitation (47.9 %), although cell sizes were small. Chronicity of online sexual solicitation (median: $n = 5$) was higher than nonconsensual image sharing victimization (median: $n = 2$). Median ages at onset were 15 (image sharing) and 14 (sexual solicitation). Most perpetrators of nonconsensual image sharing were other known adolescents (48.8 %) and adolescents who were current or former romantic partners (23.4 %), while perpetrators of online sexual solicitation were typically unknown adults (86.7 %).
Conclusions: Online childhood sexual victimization is widespread in Australia, especially for girls. Many children's experiences begin in middle childhood, and events are often chronic. Results can inform enhanced targeted prevention efforts.

1. Background

Increased access to the internet and technological advances have created new ways for children to be sexually victimized by diverse perpetrators. Perpetrators of online child sexual victimization may be known or unknown to their victims, and can include both adolescents and adults. Perpetrators can act in an environment cloaked in unprecedented anonymity from anywhere across the globe. Technology provides additional, uniquely pervasive ways in which perpetrators can access, abuse, and control victims, for example, via sweet-talk, pressure, deception, blackmail (Joleby et al., 2021, b; Wolak, Finkelhor, Walsh, & Treitman, 2018), and even through caregivers (Hamilton-Giachritsis, Hanson, Whittle, & Beech, 2017; Minihan et al., 2024; Teunissen, Thomsen, Napier, & Boxall, 2024). This form of sexual victimization can take place at any time and in any place there is online access.

The diverse manifestations of online sexual victimization have informed the generation of an array of terminology to describe specific acts. Depending on their nature and motivation, these online or technology-facilitated acts may variously constitute one or more of: online child sexual *exploitation*, due to the presence of a transactional element (Australian Government Royal Commission Into Institutional Responses to Child Sexual Abuse, 2017); *extortion*, due to the general presence of threatened adverse consequences for noncompliance with a demand (ECPAT International, 2017); *sextortion*, in the specific circumstance of threats to expose sexual images of the child in order to coerce the provision of additional images, sex, or other favors (Wolak et al., 2018); *sexual abuse*, if the acts are sexual, and are done for the purpose of sexual gratification, and are done without full, free and voluntary consent (Mathews & Collin-Vézina, 2019); *image based sexual exploitation and abuse*, covering a range of acts involving sexual images (Finkelhor, Turner, Colburn, Mitchell, & Mathews, 2023), and which can involve the generation of child sexual abuse material; *grooming*, through use of a deceptive process to facilitate sexual contact with the child (Winters, Kaylor, & Jeglic, 2021); or other forms of online child sexual victimization.

Across their various forms and despite their differences, online child sexual victimization carries elements of permanence that catalyse negative pathways via shame, blame, fear, re-victimization, distrust, and isolation (Hanson, 2017). Evidence of associated outcomes to date is sparse, but online child sexual victimization has been linked to a wide range of negative consequences affecting the victim's health, wellbeing, and relationships (Finkelhor et al., 2023; Ortega-Barón et al., 2022; Pampati, Lowry, Moreno, Rasberry, & Steiner, 2020). Studies report adverse outcomes such as psychological distress, difficulties at school, sleeping problems, low mood, self-harm, and anxiety (Joleby et al., 2021, b; Schmidt, Varese, & Bucci, 2023).

Because of their potential for significant harm, and because of the scale of their prevalence, several categories of online child sexual victimization present significant concerns for contemporary societies worldwide. One important type of victimization is *image-based sexual victimization,* of which nonconsensual sharing of sexual images of the child is a prominent form (Finkelhor, Turner, & Colburn, 2024). Nonconsensual sharing of sexual images of the child, whether perpetrated by another adolescent or by an adult, breaches the child's autonomy and dignity, and creates an immediate and enduring risk to the child's reputation, online security, and health. Its seriousness is reflected by the enactment in many jurisdictions of new criminal laws prohibiting these acts (Mathews, 2019). A second important type of victimization is *online sexual solicitation*, which involves a request made online by an adult (aged 18 or more) to a child (aged under 18) to provide sexual information, conversation, or images (Madigan et al., 2018; Mitchell, Finkelhor, & Wolak, 2001). While online sexual solicitation between similar-aged peers aged under 18 years may in some instances be coercive, many other instances will be developmentally normative and unlikely harmful; in contrast, when inflicted by an adult against a child the difference in status and age more readily indicates coercion and exploitation of a power differential.

Although online child sexual victimization is increasingly facilitated by technology (Finkelhor, Turner, & Colburn, 2022), its prevalence, nature, and consequences remain under researched. Reliable data on the prevalence of online child sexual victimization in the general population are critical for understanding the magnitude and nature of the problem, and for building evidence-based prevention initiatives. In addition, it is important to understand the characteristics of these experiences, such as: the typical age these experiences first occur (age at onset), how many times it happens to a child who experiences it (chronicity; Jonson-Reid, Kohl, & Drake, 2012), and who inflicts it (perpetrators). Understanding these characteristics provides essential information about the nature of the problem, facilitating development of nuanced public prevention policy spanning diverse sectors and audiences including schools,

and informing responses at home so parents and young people can maintain safety online.

A robust national evidence base about the magnitude and nature of the problem also enables comprehensive reporting against United Nations Convention on the Rights of the Child (UNCRC) obligations, and Sustainable Development Goals (SDGs) indicators. Preventing online child sexual victimization, in all its forms, is a core objective of these fundamental international human rights instruments and public health policies. The UNCRC article 19 requires States Parties to "take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse … maltreatment or exploitation, including sexual abuse", and article 34 compels States Parties to "undertake to protect the child from all forms of sexual exploitation and sexual abuse" (United Nations General Assembly, 1989). Similarly, Goal 16 of the SDGs promotes peaceful and inclusive societies, with Target 16.2 aiming to "End abuse, exploitation, trafficking and all forms of violence against and torture of children" and Indicator 16.2.3 creating a reportable measure of the proportion of young women and men aged 18–29 years who experienced sexual violence before age 18 (United Nations General Assembly, 2015).

In this research, we investigate two important types of online child sexual victimization: (i) nonconsensual sharing of sexual images of the child, by any perpetrator (referred to generally hereafter as *nonconsensual sharing of sexual images*), and (ii) requests by an adult to the child to talk about sex or to send sexual images of themselves (referred to generally hereafter as *online sexual solicitation by an adult*). We aim to answer the following research questions about these two forms of online child sexual victimization experiences in Australia:

1. What is the prevalence of (i) nonconsensual sharing of sexual images of the child by any perpetrator; and (ii) online sexual solicitation of a child by an adult?
2. What are the characteristics – chronicity, age at onset, and perpetrators – of (i) nonconsensual sharing of sexual images of the child; and (ii) online sexual solicitation of a child by an adult?

2. Method

2.1. Research design

This analysis draws upon data from the Australian Child Maltreatment Study (ACMS), a nationally representative cross-sectional epidemiological survey conducted from April to October 2021. ACMS methods have been reported previously (Haslam et al., 2023) including methods specific to the analysis of the overall prevalence of offline (or in-person) child sexual abuse (Mathews et al., 2023), and methods specific to analysing prevalence of in-person child sexual abuse by distinct perpetrator classes (Mathews et al., 2024). The two forms of online child sexual victimization reported here were not included in previous ACMS data analyses reporting the overall prevalence of child sexual abuse in Australia (Mathews, Pacella, et al., 2023) and of trends in child sexual abuse perpetration over time (Mathews et al., 2024). Australia provides a useful setting for the study of online child sexual victimization, given the high level of internet use and device ownership; official data collections have estimated that approximately 97 % of Australian households with children aged under 15 years had internet access, with an average of 7.8 devices per household (Australian Bureau of Statistics [ABS], 2017).

2.2. Participants

The ACMS recruited a nationally representative random sample of 8503 Australians aged 16 years and older, comprising 3500 participants aged 16–24, and 1000 participants in each of five age-decade strata (25–34, 35–44, 45–54, 55–64, and 65 years and above). Invitations to participate in a computer-assisted telephone interview were distributed via an initial text message and subsequent call to mobile (cell) phones, using random digit dialing. Respondents provided informed verbal consent. All respondents in the sample provided retrospective self-report data on a wide range of lifetime child maltreatment experiences up to age 18, along with providing information on a series of other measures related to health and mental health outcomes.

The sub-sample of 3500 participants aged 16–24 years form the focal sub-sample for the current analyses. This sub-sample closely matches the Australian population distribution on key demographic features (ABS, 2017; Haslam et al., 2023, pp. S8-S9; see also Supplementary Material). This sub-sample included $n = 1662$ young women, $n = 1748$ young men, and $n = 90$ participants with diverse gender identities; for this latter class, small cell sizes generally precluded meaningful analysis, but are included throughout the analysis. A full table of sample demographics is available in the Supplementary Material (Table 1).

These participants were asked questions about online child sexual victimization, given that they grew up at a time in which access to the internet, mobile phones, and smart-phone technologies became widespread and normalised. Most participants aged 16–24 ($n = 3123$) could provide responses about the entire span of their childhoods up to age 18, because most were aged over 18 at the time of data collection. These participants were born in the years 1997–2005, and their childhoods spanned 1997–2015 (in the case of 24-year-olds) to 2003–2021 (in the case of 18-year-olds). Those participants aged 16 ($n = 151$) or 17 ($n = 226$) at the time of data collection, were born in the years 2004 or 2005, with childhoods spanning 2004–2021, and while not being able to provide data on experiences up to age 18, they could nevertheless provide data about the greater proportion of their childhoods (up to age 16 or 17) when interviewed.

2.3. Measures

The ACMS administered the *Juvenile Victimization Questionnaire – R2: Adapted Version (Australian Child Maltreatment Study)*, which

is based on the Juvenile Victimization Questionnaire (JVQ) – R2 (Finkelhor, Turner, Shattuck, & Hamby, 2015). Instrument adaptation, validation, and testing is reported elsewhere (Mathews et al., 2023). Survey items and administration mode were designed to ensure minimisation of participant distress (Mathews et al., 2022). The ACMS collected retrospective self-report data about the experience of two forms of online sexual victimization at any time in childhood up to age 18. The two forms – non-consensual sharing of a sexual image of the participant, and sexual solicitation of the participant by an adult – were based on the JVQ-R2 instrumentation and were informed by the experience of the JVQ research team in determining which were the most salient types of online child sexual victimization experiences to capture. Two dichotomous behaviourally-specific screener questions were administered to all respondents aged 16–24: (i) "Did anyone ever use the internet or a mobile phone to share sexual images of you without your consent?" (non-consensual sharing of sexual images) and (ii) "Did an adult ever ask you over the internet or a mobile phone to talk about sex or send sexual images?" (online sexual solicitation by an adult). Response options were yes/no/don't know/refuse. Interviewers prefaced the questions with a briefing that each item referred to experiences that occurred before they reached 18 years of age, and involved the use of mobile phones, texts, social media, or the internet.

Participants who answered "yes" to one or both these screener questions were then asked a series of follow-up questions about the characteristics of these experiences. These questions included: "How many times did this happen?" (chronicity), "About how old were you the first time this happened?" (age at onset), and "Who were all the people who ever did this to you?" (perpetrators). Interviewers coded responses in situ.

2.4. Statistical analyses

Data from the computer-assisted telephone interview (CATI) software platform were imported into SAS version 9.4. Data cleaning was completed by project statisticians (DL, EM, MM, KP). Prevalence rates for the whole sample were calculated and stratified by gender. Prevalence of each type of online child sexual victimization was calculated by counting participants who endorsed each respective screener: non-consensual sharing of a sexual image of the participant (by any other person); and online sexual solicitation (being asked by an adult to talk about sex or send a sexual image). In line with other studies (Finkelhor, Turner, & Colburn, 2024), no frequency cut off or thresholds were employed. A participant was counted as having experienced the particular form of online child sexual victimization if it had ever happened (i.e., at least one time) before age 18.

Chronicity of each form of online child sexual victimization was calculated by counting the number of times a participant experienced each form before age 18. Informed by approaches elsewhere (Jonson-Reid et al., 2012), and as applied to prior research with this dataset (Mathews, Pacella, et al., 2023), these counts were then classified into five groups: 1 time; 2–5 times; 6–10 times; 11–50 times; >50 times.

Age at onset data were summarised using case numbers and percentages for each individual year of age from 10 to 17. Case numbers and percentages for the years of age below 10 were aggregated.

Perpetrators of each form of online child sexual victimization were recorded from a list of 42 specific perpetrator codes. Using approaches adopted by the ACMS team for analyses on child sexual abuse perpetration (Mathews et al., 2024), these 42 perpetrator codes were then collapsed into eight perpetrator classes. The eight perpetrator classes included four classes of *adult* perpetrators (parents/adult family members; institutional adult caregivers; other known adults; unknown adults) and four classes of *adolescent* perpetrators (siblings; adolescents who were current or former romantic partners; other known adolescents who were not current or former romantic partners; and unknown adolescents). For nonconsensual sharing of sexual images, perpetrator classes were summarised using case numbers and percentages for each class, using all eight perpetrator classes. For online sexual solicitation by an adult, we summarised case numbers and percentages for the four adult perpetrator classes. We generated further detailed analyses of individual perpetrator types within classes to identify the extent of multiple perpetrator classes and types.

Online child sexual victimization types and characteristics were summarised using case numbers and survey-weighted percentages, and 95 % confidence intervals (CIs) were calculated using a Taylor series method (Wolter, 2007). All data analyses were undertaken using the statistical program, STATA (Version 17) (StataCorp., 2021). All analyses were checked independently by two co-authors through random spot checking of the STATA coding.

Results are presented by: Total (comprising all participants in this sub-sample); and disaggregated for girls, boys, and participants who identified with diverse genders (comprising self-reported data as retrospectively reported by these groups of participants when they were aged 16–24, about experiences before age 18); those with diverse genders identified with genders other than girls or young women, or boys or young men (Higgins et al., 2024).

2.5. Ethics approval

The ACMS was approved by the Queensland University of Technology Human Research Ethics Committee (#1900000477).

3. Results

3.1. Prevalence of two forms of online child sexual victimization in Australia

As shown in Table 1, we found the national prevalence of any online sexual victimization in childhood was 21.3 % (95 % CI 19.8–22.9). Considering each sub-type of online sexual victimization, we found the national prevalence of nonconsensual sharing of sexual images of the child by any perpetrator was 7.6 % (95 % CI 6.6–8.6), and the national prevalence of online sexual solicitation by

Table 1
Prevalence of online child sexual victimization (%, 95 % CI).

Online child sexual victimization	Total	Girls	Boys	Diverse genders
Nonconsensual sharing of sexual images of the child	7.6 % (6.6–8.6)	10.9 % (9.3–12.6)	3.8 % (2.8–5.1)	19.8 % (11.7–31.4)
Online sexual solicitation by an adult	17.7 % (16.3–19.2)	26.3 % (24.0–28.8)	7.6 % (6.3–9.1)	47.9 % (36.8–59.2)
Either type	21.3 % (19.8–22.9)	30.7 % (28.3–33.3)	10.6 % (9.0–12.4)	48.9 % (37.3–68.9)
Both types	4.0 % (3.4–4.8)	6.5 % (5.3–8.0)	0.8 % (0.5–1.4)	18.7 % (10.8–30.4)

an adult was 17.7 % (95 % CI 16.3–19.2). Approximately 4.0 % (95 % CI 3.4–4.8) of participants experienced both online sexual victimization subtypes in childhood. Full details with numbers of responses are in Supplementary File, Table 3.

Overall, comparison by gender showed significant difference in prevalence of each type of online sexual victimization. Nonconsensual sharing of sexual images of the child was experienced by a significantly higher proportion of girls (10.9 %; 95 % CI 9.3–12.6) than boys (3.8 %; 95 % CI 2.8–5.1). Similarly, online sexual solicitation by an adult was experienced by a significantly higher proportion of girls (26.3 %; 95 % CI 24.0–28.8) than boys (7.6 %; 95 % CI 6.3–9.1). Participants with diverse gender identities experienced significantly higher prevalence of online sexual solicitation by adults, as indicated by non-overlapping confidence intervals, although cell sizes were small.

3.2. Characteristics of online child sexual victimization experiences

3.2.1. Nonconsensual sharing of sexual images of the child

Chronicity. Table 2 shows how many times nonconsensual sharing of sexual images occurred before age 18 (by any perpetrator). Overall, almost half of those who experienced nonconsensual sharing of sexual images reported that this occurred 2–5 times (46.8 %, 95 % CI 39.8–53.9). Single episodes occurred for over one-third of the sub-sample (39 %, 95 % CI 32.4–46.1 %). For almost one in ten, however, this experience occurred 6–10 times (9.2 %, 95 % CI 5.9–13.9). The median number of episodes was two. Chronicity findings by gender showed no statistically significant differences between girls and boys. Small cell sizes precluded meaningful analysis for participants identifying with diverse genders. Full details with numbers of responses are in Supplementary File, Table 4.

Age at onset. Table 3 shows the age at which nonconsensual sharing of sexual images of the child first occurred. The median age at onset for nonconsensual sharing of sexual images was 15 years. Among all who had this experience, 8.7 % (95 % CI 5.6–13.1) had first experienced it at age 11 or younger, 56.6 % (95 % CI 49.8–63.2) had experienced this as 12–15-year-olds, and 34.7 % (95 % CI 28.7–41.2) as 16–17-year-olds. A small portion of children experienced nonconsensual sharing of sexual images before they were 10

Table 2
Chronicity of nonconsensual sharing of sexual images (%, 95 % CI).

Chronicity	Total (n=245[a])	Girls (n = 169)	Boys (n = 60)	Diverse genders (n = 16)
1 time	39.0 % (32.4–46.1)	33.6 % (26.5–41.5)	51.4 % (36.3–66.3)	49.1 % (23.6–75.1)
2–5 times	46.8 % (39.8–53.9)	56.2 % (47.9–63.9)	23.9 % (14.3–37.1)	35.4 % (15.2–62.7)
6–10 times	9.2 % (5.9–13.9)	8.1 % (4.7–13.6)	11.7 % (5.1–24.2)	10.8 % (1.0–48.6)
11–50 times	2.9 % (1.3–5.7)	2.1 % (0.8–5.2)	5.7 % (1.8–16.1)	–
>50 times	2.1 % (0.4–10.7)	–	7.2 % (1.0–36.5)	4.6 % (0.6–2.7)
Median number of times	2	2	1	1

[a] 256 participants reported this experience; n = 245 provided information about how many times it occurred and n = 11 stated that they did not know how many times it occurred.

Table 3
Age at onset of nonconsensual sharing of sexual images (%, 95 % CI).

Age at onset	Total (n = 256)	Girls (n = 178)	Boys (n = 62)	Diverse genders (n = 16)
Before age 10	2.8 % (1.3–5.9)	3.2 % (1.3–7.6)	2.4 % (0.5–9.4)	–
10	2.2 % (0.9–4.2)	2.0 % (0.7–5.3)	3.0 % (0.7–12.0)	–
11	3.7 % (1.8–7.3)	3.8 % (16–8.4)	0.7 % (0.1–5.0)	15.1 % (3.5–46.3)
12	6.2 % (3.1–11.8)	4.1 % (1.9–8.2)	12.5 % (3.9–33.5)	4.6 % (0.6–27.7)
13	11.1 % (7.1–17.0)	9.9 % (6.1–15.5)	15.5 % (5.8–35.3)	6.9 % (0.9–36.9)
14	18.3 % (13.7–24.2)	21.1 % (15.3–28.3)	7.1 % (2.9–16.0)	32.3 % (11.1–64.6)
15	21.0 % (15.8–27.2)	19.6 % (13.5–27.6)	23.7 % (14.2–36.6)	25.7 % (9.9–51.8)
16	20.5 % (15.8–26.2)	22.3 % (16.6–29.2)	18.0 % (9.9–30.4)	10.6 % (0.1–47.3)
17	14.2 % (10.2–19.4)	14.0 % (9.3–20.5)	17.0 % (9.4–28.9)	5.0 % (1.1–19.8)
Median age	15	15	15	15

Note: due to small cell sizes, gender diverse participants are not shown separately, but are included in the total.

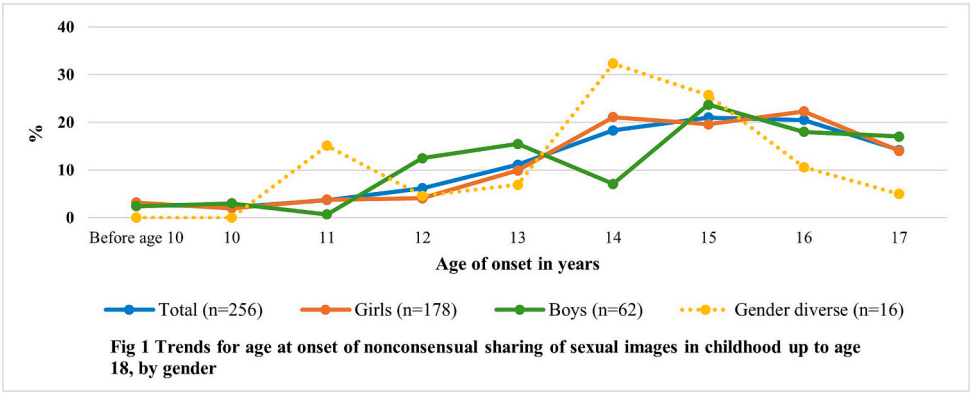

Fig. 1. Trends for age at onset of nonconsensual sharing of sexual images, by gender.

Table 4
Nonconsensual sharing of sexual images, by perpetrator class (%, 95 % CI).

Perpetrator class	Total (n=247[a])	Girls (n = 174)	Boys (n = 58)	Diverse genders (n = 15)
Parents/adult family members	4.5 % (2.3–8.4)	2.8 % (1.2–6.2)	4.9 % (1.5–15.2)	24.2 % (6.0–61.4)
Institutional caregivers	0.6 % (0.2–2.5)	0.9 % (0.2–3.6)	–	–
Other known adults	3.8 % (1.9–7.2)	4.9 % (3.4–11.5)	1.3 % (0.2–9.1)	–
Unknown adults	10.4 % (6.2–16.9)	10.5 % (6.1–17.3)	11.5 % (3.1–34.1)	5.2 % (0.7–30.4)
Known adolescents (siblings)	0.8 % (0.2–32.7)	1.2 % (0.3–4.6)	–	–
Known adolescents (romantic relationships)	23.4 % (17.7–30.4)	22.2 % (15.9–30.2)	26.2 % (13.9–43.7)	26.7 % (9.3–56.3)
Known adolescents (non-romantic relationships)	48.8 % (41.9–55.8)	49.9 % (41.8–57.9)	48.2 % (33.2–63.5)	37.7 % (15.6–66.6)
Unknown adolescents	7.6 % (4.6–12.3)	7.7 % (4.2–13.4)	7.9 % (2.8–20.5)	6.1 % (0.8–33.9)

[a] 256 participants reported this experience; n = 5 did not know the perpetrator type and n = 4 declined to answer.

years of age (2.8 %, 95 % CI 1.3–5.9). Full details with numbers of responses are in Supplementary File, Table 5.

Fig. 1 shows the onset of nonconsensual sharing of sexual images increased with the advancing age of children, with different patterns for girls and boys. The first occurrence of nonconsensual sharing of girls' sexual images rose progressively to age 14 and remained high through age 16, with a decline to age 17. For boys, the age at onset varied before peaking at age 15, and then with a decline.

Perpetrators of nonconsensual sharing of sexual images. Table 4 shows the proportion of nonconsensual sharing of sexual images inflicted by eight classes of perpetrator. Overall, among those who experienced nonconsensual sharing of sexual images, it was most often inflicted by known adolescents (non-romantic relationships, i.e., adolescents with whom they were not and had never been romantically involved): 48.8 % (95 % CI 41.9–55.8); and by known adolescents (romantic relationships, i.e., adolescents with whom they were either currently or formerly romantically involved): 23.4 % (95 % CI 17.7–30.4). Smaller proportions of all cases were perpetrated by unknown adults: 10.4 % (95 % CI 6.2–16.9), and unknown adolescents: 7.6 % (95 % CI 4.4–12.3). Girls experienced significantly higher prevalence of nonconsensual sharing of sexual images by known adolescents in non-romantic relationships: 49.9 % (95 % CI 41.8–57.9), compared with that by known adolescents in romantic relationships: 22.2 % (95 % CI 15.9–30.2). Some participants reported more than one perpetrator of this form of online sexual victimization, mostly occurring within the same class; full details with numbers of responses are in Supplementary File, Table 6.

3.2.2. Online sexual solicitation by an adult

Chronicity. Table 5 shows how many times online sexual solicitation by an adult occurred before age 18. Overall, almost half of those who experienced online solicitation reported that it occurred 2–5 times (49.3 %, 95 % CI 44.7–53.9), with similar chronicity for girls (50.5 %, 95 % CI 45.0–55.9) and boys (53.0 %, 95 % CI 43.3–62.4). Approximately one-fifth (18.1 %, 95 % CI 14.9–21.9) experienced online solicitation 11–50 times; and 5.0 % (95 % CI 3.3–7,3) reported >50 episodes. The median number of episodes was five. Comparison by gender showed no significant differences. Full details with numbers of responses are in Supplementary File, Table 8.

Table 5
Chronicity of online sexual solicitation by an adult (%, 95 % CI).

Chronicity	Total (n=560[a])	Girls (*n* = 390)	Boys (*n* = 130)	Diverse genders (*n* = 14)
1 time	14.0 % (11.1–17.5)	11.2 % (8.1–15.3)	21.3 % (14.9–29.8)	21.0 % (9.8–39.3)
2–5 times	49.3 % (44.7–53.9)	50.5 % (45.0–55.9)	53.0 % (43.3–62.4)	23.0 % (11.9–39.8)
6–10 times	13.7 % (10.8–17.2)	14.9 % (11.3–19.4)	10.5 % (6.1–17.2)	10.7 % (0.4–24.3)
11–50 times	18.1 % (14.9–21.9)	19.9 % (15.9–24.6)	8.4 % (4.2–16.1)	30.7 % (17.8–47.5)
>50 times	5.0 % (3.3–7.3)	3.6 % (2.2–6.0)	6.8 % (2.9–14.9)	14.6 % (5.9–31.3)
Median number of times	5	5	3	5

[a] 576 participants reported this experience; n = 16 stated that they did not know how many times it had occurred.

Table 6
Age at onset of online solicitation by an adult (%, 95 % CI).

Age at onset	Total (*n* = 576)	Girls (*n* = 401)	Boys (*n* = 134)	Diverse genders (*n* = 41)
Before age 10	3.0 % (1.8–5.1)	2.6 % (1.4–4.9)	3.7 % (1.3–10.4)	5.7 % (1.1–23.6)
10	4.1 % (2.7–6.3)	4.4 % (2.6–7.2)	3.0 % (1.3–6.7)	5.1 % (1.3–18.6)
11	5.1 % (3.4–7.5)	5.3 % (3.3–8.4)	3.9 % (1.4–10.4)	6.2 % (1.9–17.8)
12	13.1 % (10.3–16.5)	11.1 % (8.2–14.9)	15.4 % (9.3–24.5)	28.5 % (15.2–46.9)
13	15.4 % (12.4–19.0)	16.4 % (12.7–20.8)	13.5 % (8.1–21.9)	11.3 % (3.9–27.2)
14	21.5 % (18.5–25.4)	23.2 % (18.9–28.1)	16.8 % (11.3–24.4)	17.5 % (8.2–33.3)
15	17.3 % (14.0–21.0)	18.8 % (14.9–23.5)	13.9 % (8.5–21.9)	10.1 % (4.0–23.2)
16	14.6 % (11.7–18.7)	13.8 % (10.5–17.8)	18.7 % (12.3–27.2)	10.8 % (4.6–23.2)
17	5.9 % (4.1–8.1)	4.4 % (2.8–6.9)	11.0 % (6.5–18.1)	5.0 % (1.5–15.1)
Median age	14	14	14	14

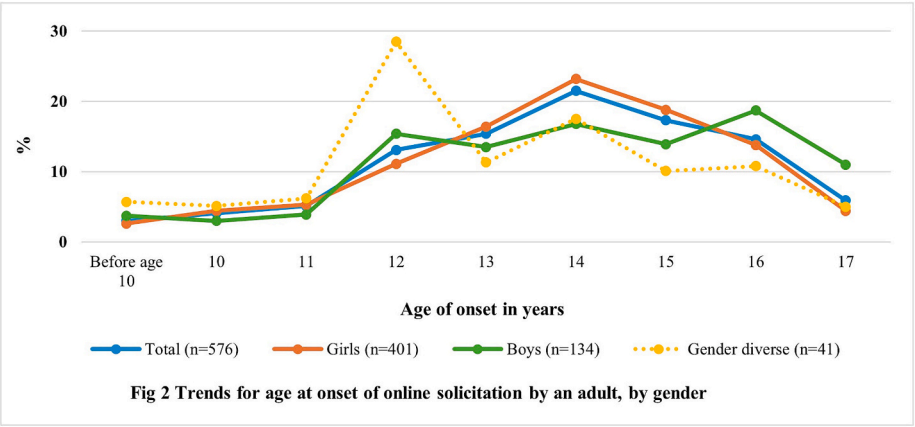

Fig. 2. Trends for age at onset of online solicitation by an adult, by gender.

Age at Onset. Table 6 shows the age at which online sexual solicitation by an adult first occurred. Among all participants who experienced this, 12.2 % (95 % CI 9.6–15.5) experienced it before age 12, 67.3 % (95 % CI 62.9–71.3) experienced it when aged 12–15-years, and 20.5 % (95 % CI 17.2–24.3) experienced it when aged 16–17 years. A small proportion of children experienced online sexual solicitation by an adult before age 10 (3.0 %, 95 % CI 1.3–5.9). Full details with numbers of responses are in Supplementary File, Table 7.

Fig. 2 shows trends in online sexual solicitation by an adult, by age. Rates of online sexual solicitation for both girls and boys increased as the age of the child increased, rising more steeply from 11 years of age. For girls, onset peaked at age 14 and then gradually declined. For boys, onset remained steady from 12 years, peaked at 16 years, and then declined.

Perpetrators of online sexual solicitation. Table 7 shows the proportion of online sexual solicitation inflicted by four classes of adult perpetrator. Overall, among all participants who experienced online sexual solicitation, the vast majority was inflicted by unknown adults (i.e., a person the participant did not know, but knew or believed was an adult): 86.7 % (95 % CI 83.5–89.5). However, 11.8 % (95 % CI 9.2–15.1) of all cases were inflicted by those classed as other known adults (i.e., an adult the child knew who was not a parent, adult family member, or an institutional adult). No significant differences were evident by gender. Some participants reported

Table 7
Online sexual solicitation by an adult, by perpetrator class (%, 95 % CI).

Perpetrator class	Total (n=520[a])	Girls (n = 369)	Boys (n = 114)	Diverse genders (n = 37)
Parents/adult family members	0.5 % (0.02–1.5)	0.5 % (0.01–1.8)	0.8 % (0.01–5.5)	–
Institutional caregivers	1.0 % (0.4–2.8)	0.7 % (0.02–2.3)	0.02 % (0.003–1.4)	6.7 % (0.1–34.6)
Other known adults	11.8 % (9.2–15.1)	12.8 % (9.6–16.8)	9.5 % (5.2–16.8)	8.2 % (2.9–20.5)
Unknown adults	86.7 % (83.5–89.5)	86.1 % (81.9–89.4)	89.5 % (82.1–94.1)	85.1 % (65.5–94.5)

[a] 576 participants reported this experience; n = 36 (0.06 %) stated they did not know the perpetrator type (these are excluded from this perpetrator analysis); a further n = 20 did not provide information on the perpetrator (n = 7 declined to answer, and n = 13 (0.02 %) identified someone other than an adult).

more than one perpetrator of this form of online sexual victimization, mostly occurring within the same class; full details with numbers of responses are in Supplementary File, Table 9.

4. Discussion

This study analysed retrospective self-report data from a large representative sample of youth to identify the national prevalence and characteristics of two specific forms of online sexual victimization in childhood: non-consensual sharing of a sexual image of the child, by any perpetrator; and online sexual solicitation by an adult perpetrator. Four major findings were evident: the concerning prevalence of these online experiences; the gendered disparity, with girls experiencing several times higher prevalence than boys; the early age at onset; and the different perpetrator profiles for each type of victimization.

4.1. Online child sexual victimization is concerningly common

The two types of online child sexual victimization were prevalent in Australia, with the prevalence of non-consensual sharing of a sexual image of the child, by any perpetrator being 7.6 %, and the prevalence of online sexual solicitation by an adult perpetrator being 17.7 %. We found one in five (21.3 %) of the sample had experienced one or both of the two types of victimization. Few studies have utilized comparable items, although broadly comparative evidence from other nations indicates the prevalence reported by this study is similarly high. For example, in a United States (US) sample of 18–28-year-olds (n = 2639), Finkelhor et al. (2024, b) found prevalence of nonconsensual image-sharing was 4.9 %, and prevalence of online solicitation by adults was 22.5 %. A meta-analysis of nine studies from the US and Europe found 11.5 % of youth aged 12 to 16.5 experienced online sexual solicitation (defined as requests to engage in unwanted sexual talk or activities, or provide sexual information) (Madigan et al., 2018). A study from Spain with school students (n = 1029) aged 12–15, asked questions about five sub-types of adult solicitation (including any incident where an adult transmitted images to the child), and found incidence over a 13-month period was 23 % (Ortega-Barón et al., 2022). Another study in Taiwan with school students (n = 19,556) with a mean age of 15, asked about online sexual solicitation (including sexual talk, appeals for personal sexual information, requests to engage in sexual activities, and attempts to arrange offline meetings), and found prevalence of 15.4 % for any online solicitation (Hsieh, Wei, Lin, et al., 2023), again, slightly lower than the current study. Although subtypes of online child sexual victimization have been differently operationalised in each of these existing studies, and previous studies on prevalence of nonconsensual sharing of sexual images with child victims are lacking, these data suggest that Australian children experience online sexual victimization at rates that are high and within the order of findings from previous studies.

4.2. Girls are far more likely to experience each type of online sexual victimization

We identified a clear gendered disparity in online child sexual victimization. Girls were nearly three times as likely as boys to experience both forms of online sexual victimization before age 18: nonconsensual sharing of sexual images of the participant by any perpetrator (10.9 %; 3.8 %), and online sexual solicitation by adults (26.3 %; 7.6 %). This equates to 1 in 10 girls having experienced nonconsensual sharing of their sexual images by either an adult or adolescent perpetrator, and 1 in 4 girls having experienced online sexual solicitation by an adult. People with diverse genders are more likely to have experienced each form of online victimization.

These findings are consistent with the gendered nature of in-person child sexual abuse more broadly in Australia, as perpetrated both by adults and by adolescents aged under 18 (Mathews et al., 2024), and with broader trends in certain forms of technology-facilitated adult sexual victimization such as sexual coercion, nonconsensual sexual image taking, and having received an unwanted sexual image from someone else (Flynn, Powell, & Hindes, 2024; Powell & Flynn, 2023; Powell & Henry, 2017). The findings reinforce the urgent need for reorientation of social norms against gendered violence generally, and against gendered sexual violence in particular. From a prevention standpoint, measures to reduce the likelihood of perpetration of these forms of sexual violence need to be intensified, including through comprehensive sexuality education (Schneider & Hirsch, 2020) beginning long before puberty, given that social norms are established in early in childhood and consolidated thereafter.

4.3. Online child sexual victimization experiences begin in early adolescence

This study also found that most online child sexual victimization commences in early adolescence. Of all those who experienced

nonconsensual sharing of sexual images, 15 % reported this began before age 12, and a notable proportion (2.8 %) commenced before age 10. Similarly, of all those who experienced online sexual solicitation by an adult, 25 % reported this began before age 12; and 3.0 % were aged under 10. For each type of online sexual victimization, the vast majority of experiences began by age 15. To our knowledge, no previous study has established prevalence of nonconsensual sharing of sexual images in children younger than 12 years. However, research in the US has found nearly one in five children aged 9–17 years, including one in eight children aged 9–12 years, had been shown someone else's intimate images without that person's consent (Thorn, 2023). In addition, a Spanish study with high school students (n = 2731) found 3.8 % of all 12-year-olds had experienced online sexual solicitation (De Santisteban & Gámez-Guadix, 2018), a finding similar to ours.

Our findings can be considered alongside the practice of consensual sending and consensual receiving of sexual images (often referred to in scientific literature as *sexting*), which is known to be common among young adolescents as a digital form of early sexual debut, and to be more regularly engaged in by those in adolescent relationships (Frøyland, Tokle, Burdzovic Andreas, & Brunborg, 2024; Power, Kauer, Fisher, Bellamy, & Bourne, 2022). Evidence indicates sexting is generally seen positively by adolescents who engage in it (Power et al., 2022; Van Ouytsel, Van Gool, Walrave, et al., 2017), and is not of itself associated with adverse health and behavioural outcomes (Frøyland et al., 2024), although there may be associated risks and negative consequences if those images are then non-consensually shared (see for example, Mori, Temple, Browne, & Madigan, 2019; Van Ouytsel, Lu, & Temple, 2022). Additionally, early sexual experimentation and risk taking may broaden the risk of online sexual victimization, including by adults (Finkelhor, Sutton, Turner, Finkelhor, & Colburn, 2024). These findings have implications for prevention education programs, including the need to address online sexual experimentation practices at an early age. These findings support the conclusions made by others that education systems and health programs should promote approaches to safe online sexual practices for adolescents, as opposed to abstinence approaches, with material included on consent, and understanding grooming strategies and lures (Döring, 2014; Finkelhor, Sutton, Turner et al., 2024; Patchin & Hinduja, 2020; Woodley, Green, & Jacques, 2024).

4.4. *Different types of online sexual victimization tend to have different perpetrators*

This study found that perpetrators vary by type of online sexual victimization. Of all who experienced it, nonconsensual sharing of sexual images was predominantly perpetrated by known adolescents — either an adolescent with whom the victim had a dating-type relationship (23.4 %), or with whom there was no such relationship (48.8 %) — with the latter category occurring at more than twice the rate as the first category; in sum, over 80 % of all instances of nonconsensual sharing of sexual images of the child were perpetrated by adolescents. This finding adds weight to conclusions made by others (e.g., Finkelhor et al., 2023) about the need to recognise the diversity of image-based sexual abuse, and supports the general need recognised elsewhere for intensified prevention efforts for children and adolescents (Mathews et al., 2024; Schneider & Hirsch, 2020). In contrast, online sexual solicitation of the child, which we restricted to adult-perpetrated acts, was predominantly perpetrated by unknown adults (86.7 %).

4.5. *Implications*

Overall, the concerning prevalence and early onset of online sexual victimization for children in Australia has significant implications for a range of stakeholders. As an example of this, the findings on prevalence provide further support for policy leaders in Australia, such as the eSafety Commissioner, 2020, in seeking regulatory controls on technology platforms through legislative measures (for example, to promote safety-by-design) and policy and practice measures (for example, encouraging reporting of perpetrators to regulatory bodies and law enforcement). The prevalence and age at onset findings are also important in informing development of educational efforts in school systems in relation to online safety education addressing online solicitation contexts, strategies, and responses (Finkelhor et al., 2022; WHO, 2022), and comprehensive sexuality education addressing consent and safe digital sexual experimentation practices, including sexting. Community awareness-raising is needed to build knowledge among parents and youth-serving professionals about the nature and prevalence of these online forms of sexual victimization, and to encourage more proximal preventative efforts in places where children live, learn, play, and work (Kardefelt-Winther & Maternowska, 2020).

This rapidly advancing field presents many important avenues of future research. Studies could identify protective factors which mitigate the likelihood of online victimization, and, similarly, could explore risk factors at the individual, familial, school, and societal level. Future research should also give further consideration to specific forms of online sexual victimization is also warranted, since some of these online experiences – such as coerced sexual acts online – would constitute child sexual abuse (Mathews & Collin-Vézina, 2019), and this has significance for understanding the population-wide prevalence and characteristics of child sexual abuse (Finkelhor, Turner, & Colburn, 2024).

4.6. *Limitations*

Strengths of the ACMS include its large representative sample, conceptual rigor, and detailed instrument validation and testing to capture experiences of two important forms of online child sexual victimization. However, several types of online sexual victimization were not captured; some of these, such as non-consensual image taking, have been found to be common (Finkelhor et al., 2023), and others, such as the creation of deepfake images and digitally altered images, are rapidly emerging and serious concerns (Flynn, Powell, Scott, & Cama, 2022). Although a more comprehensive understanding of different types of online sexual victimization would be informative, the current study demonstrates the high prevalence and the very early age at onset. Future studies must measure a broader range of online sexual victimization subtypes, using consistent labelling and operationalization (e.g., using United Nations Children's

Fund, 2023) and must continue to gather information on chronicity, age at onset, and perpetrators (including other adolescents), such as in ways recommended elsewhere (Finkelhor et al., 2024, b; Turner et al., 2024).

In addition, in relation to online sexual solicitation, it is possible that some participants may have recalled instances in which they were approaching 18 years of age and were interacting online with someone they knew to be aged 18 or perhaps slightly older, and they perceived the solicitation experience to be desired and consensual. However, the online sexual victimization items were sequenced within the overall context of the ACMS screening questions that were clearly focused on situations that were unwanted and nonconsensual; moreover, 80 % of all instances of this experience began when aged before 16. Other instances of online solicitation, which can occur in diverse settings including gaming, may involve interactions in which the participant may have thought the other person was an adult, without being sure of their status; similarly, some incidents may have involved a perpetrator who was not sure of the recipient's age. As well, some of these interactions may not have been perceived as particularly harmful by the participant, and the contextual characteristics and dynamics of such interactions mean these experiences occur on a wide spectrum. Further research is warranted into the nature and characteristics of online solicitation, including adolescents' perceptions of these experiences, and associated harms.

In relation to nonconsensual sharing of sexual images, we captured data on chronicity by asking: "How many times did this happen?" after the participant endorsed the screener question "Did anyone ever use the internet or a mobile phone to share sexual images of you without your consent?". It is possible that some participants reported chronicity in relation to the number of times a single image of them was nonconsensually shared, while other participants may have reported chronicity in relation to the number of times multiple different images of them were nonconsensually shared.

Finally, it should be noted that the ACMS captured data in 2021 about 16–24-year-old participants' experiences before age 18. Even in the few years since data collection, new domains of online sexual victimization of children have appeared, including AI-enabled capacity to generate and distribute nude images and other sexual images (see Flynn et al., 2022). In rapidly evolving technological environments, there is an imperative to obtain meaningful data on relevant experiences in agile ways in as close to real time as is possible.

5. Conclusion

This study found concerning prevalence of online child sexual victimization, with 1 in 13 Australians aged 16–24 (7.6 %) experiencing nonconsensual image sharing before age 18, and one in six (17.7 %) experiencing online sexual solicitation by an adult. Girls have significantly higher victimization, with 1 in 10 having experienced nonconsensual image sharing, and 1 in 4 experiencing online sexual solicitation by an adult. People with diverse gender identities are particularly likely to be the subject of online sexual solicitation by adults, although cell sizes were small; further research with larger samples of these individuals is warranted. Of enormous concern, many children have these experiences at a time in life of high developmental vulnerability, with limited ability to protect themselves. In addition, for many children the experiences are chronic.

The prevalence and nature of these experiences justify a proactive and preventative approach to embed safety into online environments likely to be accessed by children. This approach should embed Safety by Design principles into the design, development and deployment of online technologies. It should also consider the use of emerging and innovative tools such as AI-assisted prevention messaging to youth who are most vulnerable to image sharing, online exploitation and internet-initiated victimization, and coordinate prevention efforts involving all members of children's social ecology. These efforts must include more intensive and targeted education of children and young people, parents/caregivers, and child serving workforces, about online sexual victimization prevention and response. Preventing and responding to children's online sexual victimization and promoting children's online safety must be a continuing priority issue for public policy in Australia, and other nations. Likewise, taking a proactive and preventive approach is essential for technology corporations, which have both the capacity and duty to ensure that online environments are safe for children.

CRediT authorship contribution statement

Kerryann Walsh: Writing – review & editing, Writing – original draft, Supervision, Project administration, Funding acquisition, Conceptualization. **Ben Mathews:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Conceptualization. **Kausar Parvin:** Writing – review & editing, Formal analysis, Data curation. **Rhiannon Smith:** Writing – review & editing, Project administration, Investigation. **Melanie Burton:** Writing – review & editing, Investigation. **Mariesa Nicholas:** Writing – review & editing, Investigation. **Sarah Napier:** Writing – review & editing, Investigation. **Timothy Cubitt:** Writing – review & editing, Investigation. **Holly Erskine:** Writing – review & editing, Investigation. **Hannah J. Thomas:** Writing – review & editing, Investigation. **David Finkelhor:** Writing – review & editing, Investigation. **Daryl J. Higgins:** Writing – review & editing, Investigation. **James G. Scott:** Writing – review & editing, Investigation. **Asher Flynn:** Writing – review & editing. **Jennie Noll:** Writing – review & editing, Investigation. **Eva Malacova:** Writing – review & editing, Formal analysis, Data curation. **Ha Le:** Formal analysis, Data curation. **Nam Tran:** Formal analysis, Data curation.

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Declarations of interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.chiabu.2024.107186.

Data availability

Data will be made available on request.

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