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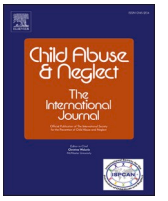

The increase in online child sexual solicitation and abuse: Indicator 16.2.3 of the UN Sustainable Development Goals (SDG) documents a hidden and growing pandemic. Population-based surveys fail to capture the full picture

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ABSTRACT

Background: The United Nations' Sustainable Development Goals (SDGs) call for systematic monitoring of the prevalence of sexual violence against children and young people. The rise of the internet has facilitated the risk of online child sexual solicitation and abuse (OCSSA), a critical issue that warrants particular attention and must not be overlooked.
Objective: This study examines the prevalence of OCSSA, distinguishing between online child sexual abuse (OCSA) and online sexual solicitation (OSS) in Germany, and explores generational differences.
Participants and setting: A representative German sample of 3098 participants aged 18–96 was assessed. The 18–29 age group was oversampled, and the results were weighted accordingly.
Method: Participants completed screening questions on OCSSA experiences. Descriptive statistics, Chi^2-tests, and logistic regression were used to analyze age-related differences, controlling for socio-demographic and -economic factors.
Results: In the general population, 10.3 % reported experiencing at least one form of OCSSA, with 2.8 % reporting OCSA, and 9.3 % OSS. Among younger participants aged 18–29, prevalence was significantly higher at 31.6 % for OCSSA, 3.5 % for OCSA, and 29.6 % for OSS. The most common experiences among younger participants were exposure to pornographic material (21.1 %) and sexualized conversation (15.0 %). Age was the main predictor of OCSSA.
Conclusion: OCSSA is significantly more prevalent among younger generations in Germany, likely due to increased exposure to digital environments during childhood coupled with the proliferation of the internet and social media in recent decades. These findings highlight the urgent need for targeted prevention efforts addressing online risks.

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1. Introduction

Child sexual abuse (CSA) is a global problem with a worldwide prevalence of 12.7 % (Stoltenborgh et al., 2011). It has far-reaching consequences not only for the individuals involved (Bürgin et al., 2023; Fegert et al., 2021), but also for society as a whole, such as follow-up costs of trauma that result in economic burdens (Habetha et al., 2012). The United Nations has identified ending violence against children as a central goal in its 2030 agenda and has included it in the Sustainable Development Goals (SDGs) (United Nations, 2024). Specifically, this is outlined in Goal 16.2: "End the abuse, exploitation, trafficking and all forms of violence and torture against children". To monitor progress towards this goal, indicator 16.2.3 has been defined, which specifies that the age group 18–29 should be used to measure experiences of abuse before the age of 18. This indicator has prompted studies to reveal important developments in the area of child maltreatment and abuse. For example, Witt et al. (2020) showed an increase in disclosure of CSA over an eight-year period within the age group defined by that indicator. Monitoring such data is essential for evaluating interventions and prevention programs, allowing stakeholders to better assess the effectiveness of their efforts. It also facilitates international comparisons of trends, providing a broader understanding of the problem and informing necessary changes to combat CSA. The emergence of online child sexual solicitation and abuse (OCSSA) is a phenomenon closely linked to the rise of the internet. Its growing influence has changed the way children interact with the world, creating new opportunities but also significant risks. Sexual offenses in a digital and online context encompass a wide range of different acts, for example, sexual image violations, such as sending sexual material, online grooming, sexual extortion ("sextortion") or commercial extortion, and sexual solicitations such as requests for sexual information, among others. The process of defining sexual solicitation and abuse in the digital and online context is still in its infancy and requires further differentiation. Technology-assisted child sexual abuse (TA-CSA) can hereby be used as an overarching term that encompasses all forms of child sexual abuse in a digital context – whether the perpetrator is online and/or offline. Online child sexual abuse (OCSA) specifically refers to offenses where the perpetrator is exclusively online, not physically present, and where the situation is clearly abusive in nature, meaning coercive and nonconsensual (Chauviré-Geib et al., in preparation; ECPAT International, 2016; Finkelhor et al., 2024; Hamilton-Giachritsis et al., 2020). OCSSA, on the other hand, is an umbrella term for behavior and offenses that take place exclusively online. In addition to clearly abusive acts such as OCSA, OCSSA also includes potentially abusive behaviors such as online sexual solicitation (OSS). Although such acts may be perceived as uncomfortable and unwanted, they do not necessarily constitute sexual abuse if a refusal is accepted and no coercion is used (Finkelhor et al., 2024).

To date, the study of CSA has focused primarily on offline contexts, such as family settings or institutions, with research indicating that approximately 18 % of girls and 8 % of boys experience some form of CSA before the age of 18 (Pereda et al., 2009). With the increased use of the internet, however, the nature of CSA has evolved. Perpetrators can now exploit digital platforms to reach children anonymously, across borders, and in greater numbers. Existing studies have largely focused on the broader term of TA-CSA so far and highlight its magnitude. Fry et al. (2024) estimated that, over the past year, >300 million children globally have experienced TA-CSA. Global reports also indicate increasing numbers of TA-CSA cases over the past decade (Bentley et al., 2019; EUROPOL, 2020b; Jeney, 2015; Ly et al., 2016). The number of daily posts to the helpline organization INSAFE, which serves as an international network of support services addressing harmful online behavior and child sexual abuse material, increased from approximately 9000 in 2016 to 15,000 at the beginning of 2020 (EUROPOL, 2020a). In Germany, the number of cases of TA-CSA documented in official police crime statistics has been multiplied by seven between 2016 and 2023 (Bundeskriminalamt, 2024). As children's access to the internet continues to expand, this rise of TA-CSA highlights the need for governments, social institutions, and researchers to address the magnitude of OCSSA. Understanding OCSSA is crucial because it highlights unique patterns of online exploitation that require targeted prevention strategies that are distinct from those aimed at broader TA-CSA. Prevalence studies of different forms of OCSSA have also increased in recent years (Madigan et al., 2018; Patchin & Hinduja, 2020). Globally, approximately 17 % of children reported having ever experienced at least one form of OCSSA while the past year recall prevalence was 8.1 %. Online solicitation and the nonconsensual taking, sharing, and exposure to sexual images and videos were reported with a lifetime prevalence of 12.1 % and 4.0

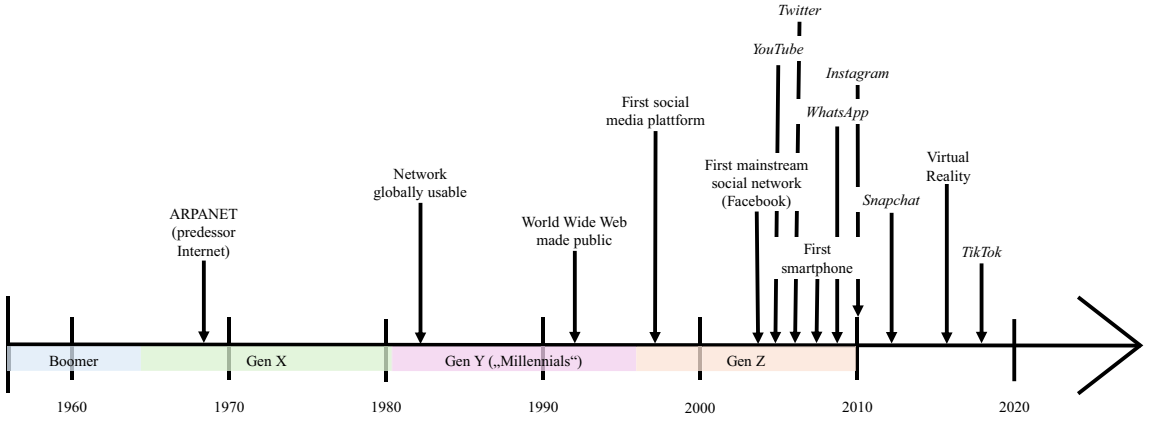

Fig. 1. Main technology developments related to the internet across generations.

%, respectively. Globally, 5.5 % of children experienced online commercial sexual exploitation, while 4.7 % reported sextortion. The prevalence rates between continents were partially different and, for example, varied between 1.8 % and 25.5 % for online solicitation (Fry et al., 2024).

An important, yet underexplored aspect of OCSSA is generational differences. The internet and digital technologies have developed rapidly, with each generation experiencing different levels of exposure, literacy, and vulnerability (Chrillesen, 2023; Debb et al., 2020; Pratama et al., 2023; Rokach, 2020; Stickel, 2017). Fig. 1 provides an overview of the main digital technology developments related to the Internet, along with a breakdown of generations.

Generation "Z" ("Gen Z", born between 1995 and 2010) has grown up surrounded by the internet and is typically more adept at using technology but may also be more exposed to online risks due to its constant presence in digital spaces, including smartphones. Digital natives, "Gen Y" ("Millennials", born 1981–1994), grew up with the internet, too, but not as intense as "Gen Z" (Jeney, 2015; Joiner et al., 2013; Twenge, 2023). In contrast, older generations did not grow up with access to the internet during their childhood, and thus without any exposure to OCSSA. However, they could have been affected by TA-CSA in the sense that CSA was recorded through photographs or analog video. It is assumed that younger generations are exposed to more risks in the virtual world, as the internet continues to make its way into children's lives with the advancement of technology (e.g., smartphones, smartwatches). Therefore, the goals of the present study are twofold: First, general prevalences of OCSSA and its forms will be presented in a German sample of adults aged 18–96 years. Second, age differences in experiencing OCSSA will be investigated. We expect that younger participants (ages 18–29) will report more OCSSA experiences than older generations.

2. Method

2.1. Procedure

Data collection was carried out between October 2023 and April 2024 by USUMA, a German market and social research institute (www.usuma.com). The study used a sampling framework, which utilized a network of 258 German regional areas. Target households within these regions were selected using the random route procedure, i.e., for each regional area, a starting address (referred to as the sample point) and a step interval for the random selection of households were provided. Data collectors listed doorbell names according to the predetermined step interval and random route walking instructions to ensure proper sample coverage. Identified households were then contacted and asked to participate in the interviews. The oversampling was carried out using the quota sampling method in a subsequent round of the survey. The weighted data of 18- to 29-year-olds from the main survey served as the statistical

Table 1
Sociodemographic characteristics of the weighted sample.

	Total sample (N = 2486)
	n (%)
Age (*M, SD*)	50.52 (18.283)
Gender	
Female	1275 (51.3)
Male	1209 (48.6)
Diverse	2 (0.1)
Family status	
Married, living w/ partner	973 (39.1)
Married, not living w/ partner	32 (1.3)
Single	817 (32.9)
Divorced or widowed	661 (26.5)
Not stated	4 (0.2)
Highest level of education	
Still in school	27 (0.9)
No school graduation	53 (2.1)
Volks- or Hauptschulabschluss (year 9 lower secondary school certificate)	650 (26.2)
Mittlere Reife (year 10 lower secondary school certificate)	936 (37.7)
Graduated from PHS (Polytechnical high school)	156 (6.3)
Graduated from technical college with no accreditation	125 (5.0)
Entrance qualification for technical college/university	301 (12.1)
College/university degree	246 (9.9)
Other degree	1 (0.1)
Not stated	6 (0.2)
Net household income	
Under €500	7 (0.3)
€500 to €999	99 (4.0)
€1000 to €1499	304 (12.3)
€1500 to €2499	760 (30.5)
€2500 to €3499	558 (22.5)
€3500 to €4999	480 (19.3)
€5000 and over	241 (9.7)
Not stated	36 (1.5)

anchor. The survey was conducted using a structured questionnaire, with respondents completing the main part independently and anonymously using a self-administered paper-pencil form. Data collectors provided assistance only when requested. The study was approved by the Ethics Committee of the University of Leipzig (no. 278/23-ek).

2.2. Sample

A total of $N = 3098$ participants were included in the study. In line with indicator 16.2.3 of the UN's SDGs (United Nations, 2015), participants in the 18–29 age group were oversampled, i.e., a total of 1006 respondents were recruited in that age group. This was done to ensure that there would be enough cases in this age group, which is assumed to have experienced most OCSSA, for a detailed description of the different forms of OCSSA.

Weighting factors were applied to ensure that the sample was representative of the German population. The weighting process was divided into three levels: the household level, the individual level, and a subsequent standardization of the oversample. At the household level, the distribution of household sizes was first adjusted to match known micro census data, followed by the calculation of the weighting factor and the random selection of the target person within the household. At the individual level, the weights were corrected to compensate for bias, and iterative calculations were performed to ensure that the weighted distribution of age, gender, and place of residence matched the target values. The cases of the oversample were adjusted to the proportional share of the age group in the main sample to be able to analyze the results for all participants, especially by age group. The analysis of the 18- to 29-year-olds is therefore based on all completed surveys, which leads to smaller error tolerances and narrower confidence intervals.

After applying the weighting factors, the adjusted sample was $N = 2486$ participants. Sociodemographic characteristics of the weighted sample are provided in Table 1.

2.3. Measures

Socio-demographic and -economic data were collected, including gender, age, education, and net household income. To assess online child sexual solicitation and abuse (OCSSA), the screening questions developed by Finkelhor et al. (2022) were used. They were translated into German by the first and second authors of this study, both of whom are native German speakers and fluent in English, using a back-translation process. Following this, the screening questions were expanded to include an additional item on exposure to pornographic material, since this constitutes a distinct criminal offense under German law (see Table 2). If one of the screening questions was answered with "yes," additional questions were asked about the frequency of the abuse and the ages at which the abuse began and ended. A positive response to at least one of the screening questions was defined as having experienced at least one form of OCSSA. A positive response to questions about non-consensual sharing or taking/making of sexualized material, forced sexualized material, sextortion, or any form of commercial exploitation was categorized as having experienced at least one form of online child sexual abuse (OCSA). A positive response to questions about unwanted sexualized talk or questions, requests to engage in unwanted sexual acts, or exposure to pornographic/sexualized material was categorized as having experienced at least one form of online sexual solicitation (OSS).

This study is the first to use the screening questions by Finkelhor et al. (2022) in a German sample and is also the first representative assessment of OCSSA in this population.

2.4. Statistical analysis

All analyses were conducted using SPSS (Version 29.0.0) statistical analysis software. Descriptive analyses were used to determine the prevalence of OCSSA and its different forms across the entire sample. To examine generational differences, a binary variable of age groups (18–29 vs. 30–41 years) was created and analyzed using (exact) Chi^2-Tests. This variable includes all participants born in 1983

Table 2
Screening questions assessing different forms of online child sexual solicitation and abuse (OCSSA) by Finkelhor et al. (2022), expanded by one question.

OCSSA1	Has someone ever shared with other people a sexual picture or video of you without your permission before the age of 18?
OCSSA2	Has someone ever taken or made a sexual picture or video of you without your permission before the age of 18?
OCSSA3	Has someone ever threatened, tried to force you, or strongly pressured you to provide sexual pictures or videos online or through a cell phone before the age of 18?
OCSSA4	Has someone ever threatened to share a sexual picture or video of you to get you to do something— like take or send other sexual pictures of yourself, have a sexual relationship with them, pay them money, or something else before the age of 18?
OCSSA5	Did anyone ever use the internet or a cell phone to try to get you to talk about sex when you did not want to before the age of 18?
OCSSA6	Did anyone ever use the internet or a cell phone to ask you for sexual information about yourself when you did not want to answer those questions? This means very personal questions, like what your body looks like or sexual things you have done before the age of 18?
OCSSA7	Did anyone ever use the internet or a cell phone to ask you to do something sexual that you did not want to do before the age of 18?
	Have you done any of the following things over the internet or a cell phone (including texting) in exchange for money, drugs, or other valuable items before the age of 18?
OCSSA8	… sexual talk
OCSSA9	… making, sending, or posting sexual pictures or videos of oneself
OCSSA10	… any other sexual activity
OCSSA11	Have you ever had unwanted contact with sexual or pornographic material on the internet or via mobile phone before the age of 18?

or later, as they could potentially have been affected by child sexual solicitation and abuse in an online context. The significance level was set at $p = .05$. Cramer's V was used as effect size, with effects up to $V = 0.1$ indicating small effects, $V = 0.3$ medium effects, and $V = 0.5$ large effects (Cohen, 1988). Binary logistic regression analysis was used to examine the relationship between age group and the experience of at least one form of OCSSA, OCSA, or OSS, controlling for gender, education, and net household income. No assumptions of multicollinearity or outliers were violated. Odds ratios' (OR) confidence intervals and *p*-values were adjusted for multiple testing using Bonferroni correction (VanderWeele & Mathur, 2019). Since the percentage of missing data was very low across all variables included in the present study (between 0.3 and 1.0 %), missing data were excluded from the present analyses.

3. Results

3.1. Descriptive statistics

Within the weighted sample, 10.3 % ($n = 257$; female = 10.3 %, male = 10.3 %) of participants reported experiencing OCSSA. Among participants aged 18 to 29, 31.6 % ($n = 133$; female = 34.0 %, male = 29.3 %) reported having experienced at least one form of OCSSA, while the rate for those aged 30 to 41 was 14.9 % ($n = 69$; female = 14.6 %, male = 15.3 %). For both the overall sample as well as the 18–29 and 30–41 age groups, unwanted exposure to pornographic or sexualized material was the most commonly reported event (6.6 % in the overall sample; 21.1 % among ages 18–29 years; 10.0 % among ages 30–41 years), followed by sexualized talk (overall sample = 4.1 %; 18–29 years = 15.0 %, 30–41 years = 5.9 %). A detailed breakdown of all OCSSA forms across the overall sample and two age groups is presented in Table 3.

If a distinction was made between forms that clearly constitute sexual abuse, i.e. OCSA, and those that may only be boundary violations but are not necessarily abusive, i.e., OSS, the prevalence was as follows. In the overall sample, 2.8 % ($n = 70$) of respondents reported experiencing OCSA and 9.3 % ($n = 232$) reported experiencing OSS. In the 18–29 age group, 9.0 % ($n = 38$; female = 12.6 %, male = 5.6 %) reported experiencing OCSA, compared to 3.5 % ($n = 16$; female = 6.2 %, male = 0.8 %) in the 30–41 age group. For OSS, 29.6 % ($n = 125$; female = 32.0 %, male = 27.1 %) of 18–29-year-olds reported such experiences, compared with 13.6 % ($n = 63$; female = 12.0 %, male = 14.8 %) of 30–41-year-olds.

3.2. Generational differences

In this sample, individuals aged 18 to 29, the age group defined by the SDG's indicator 16.2.3, experienced OCSSA, as well as OCSA and OSS significantly more frequently than those aged 30 to 41, both overall and across the following forms: forced sexualized material, sextortion, sexualized talk, sexualized questions, requests to engage in sexual acts, and confrontation with pornographic/sexualized material. For a detailed breakdown of all OCSSA forms across two age groups, see Table 4.

Looking at Gen Z and Gen Y (only from year of birth 1983) individuals in this sample, there is a clear upward trend in the data collected: The younger the participants were, the more likely they were to report having experienced OCSSA. It is important to note that the older members of these groups were already 24 years old when the first smartphone was released in 2007. However, they had

Table 3
Forms of online child sexual solicitation and abuse.

Online child sexual solicitation and abuse	Total sample ($N = 2486$)			18–29 years old ($n = 421$)			30–41 years old ($n = 462$)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
	n (%)			*n* (%)			*n* (%)		
Any form of OCSSA	257 (10.3)	125 (10.3)	131 (10.3)	133 (31.6)	63 (29.3)	70 (34.0)	69 (14.9)	36 (15.3)	33 (14.6)
Any form of OCSA	70 (2.8)	22 (1.8)	48 (3.8)	38 (9.0)	12 (5.6)	26 (12.6)	16 (3.5)	2 (0.8)	14 (6.2)
Any form of OSS	232 (9.3)	113 (9.4)	118 (9.3)	125 (29.6)	58 (27.1)	66 (32.0)	63 (13.6)	35 (14.8)	27 (12.0)
Non-consensual sharing of sexualized material	16 (0.6)	3 (0.2)	13 (1.0)	9 (2.1)	2 (0.9)	7 (3.4)	5 (1.1)	0	5 (2.2)
Non-consensual taking/making of sexualized material	30 (1.2)	8 (0.7)	22 (1.7)	12 (2.9)	5 (2.3)	8 (3.9)	11 (2.4)	1 (0.4)	10 (4.5)
Forced sexualized material	24 (0.9)	6 (0.5)	18 (1.4)	17 (4.1)	5 (2.4)	12 (5.8)	4 (0.9)	0	4 (1.8)
Sextortion	24 (1.0)	5 (0.4)	18 (1.4)	15 (3.6)	4 (1.9)	11 (5.3)	5 (1.1)	0	5 (2.2)
Unwanted sexualized talk	103 (4.1)	39 (3.2)	64 (5.0)	63 (15.0)	21 (9.9)	42 (20.4)	27 (5.9)	13 (5.5)	14 (6.3)
Unwanted sexualized questions	82 (3.3)	32 (2.7)	50 (3.9)	51 (12.1)	15 (7.0)	35 (17.0)	23 (5.0)	12 (5.1)	11 (4.9)
Request to engage in unwanted sexual acts	42 (1.7)	14 (1.2)	28 (2.2)	27 (6.5)	10 (4.7)	18 (8.7)	8 (1.7)	3 (1.3)	5 (2.2)
Commercial sexual talk	10 (0.4)	5 (0.4)	5 (0.4)	2 (0.5)	0	1 (0.5)	2 (0.4)	1 (0.4)	1 (0.4)
Commercial sexualized material	2 (0.1)	2 (0.2)	0	0	0	0	1 (0.2)	1 (0.4)	0
Commercial other sexual activity	7 (0.3)	3 (0.2)	4 (0.3)	1 (0.2)	0	1 (0.5)	1 (0.2)	1 (0.4)	0
Unwanted confrontation with pornographic/sexualized material	164 (6.6)	86 (7.1)	78 (6.1)	89 (21.1)	43 (20.2)	45 (21.8)	46 (10.0)	27 (11.4)	19 (8.5)

Note. OCSSA = online child sexual solicitation and abuse; OCSA = online child sexual abuse; OSS = online sexual solicitation.

Table 4
Forms of online child sexual solicitation and abuse within the weighted sample by victim age group.

Online child sexual solicitation and abuse	18–29 years old (n = 421)	30–41 years old (n = 462)	Chi^2-Test
	n (%)		
Any form of OCSSA	**133 (31.6)**	**69 (14.9)**	**$\chi 2 = 34.638$, $p < .001$, $V = 0.198$**
Any form of OCSA	**38 (9.0)**	**16 (3.5)**	**$\chi 2 = 11.873$, $p < .001$, $V = 0.116$**
Any form of OSS	**125 (29.6)**	**63 (13.6)**	**$\chi 2 = 33.654$, $p < .001$, $V = 0.195$**
Non-consensual sharing of sexualized material	9 (2.1)	5 (1.1)	$\chi 2 = 1.573$, $p = .210$, $V = 0.042$
Non-consensual taking/making of sexualized material	12 (2.9)	11 (2.4)	$\chi 2 = 0.174$, $p = .677$, $V = 0.014$
Forced sexualized material	**17 (4.1)**	**4 (0.9)**	**$\chi 2 = 9.618$, $p = .002$, $V = 0.104$**
Sextortion	**15 (3.6)**	**5 (1.1)**	**$\chi 2 = 6.151$, $p = .013$, $V = 0.084$**
Unwanted sexualized talk	**63 (15.0)**	**27 (5.9)**	**$\chi 2 = 19.838$, $p < .001$, $V = 0.150$**
Unwanted sexualized questions	**51 (12.1)**	**23 (5.0)**	**$\chi 2 = 14.533$, $p < .001$, $V = 0.128$**
Request to engage in unwanted sexual acts	**27 (6.5)**	**8 (1.7)**	**$\chi 2 = 12.653$, $p < .001$, $V = 0.120$**
Commercial sexual talk	2 (0.5)	2 (0.4)	$\chi 2 = 0.008$, $p = 1.000$, $V = 0.003$
Commercial sexualized material	0	1 (0.2)	$\chi 2 = 0.910$, $p = 1.000$, $V = 0.032$
Commercial other sexual activity	1 (0.2)	1 (0.2)	$\chi 2 = 0.004$, $p = 1.000$, $V = 0.002$
Unwanted confrontation with pornographic / sexualized material	**89 (21.1)**	**46 (10.0)**	**$\chi 2 = 21.148$, $p < .001$, $V = 0.155$**

Note. OCSSA = online child sexual solicitation and abuse; OCSA = online child sexual abuse; OSS = online sexual solicitation; $\chi 2$ = Chi^2; $p < .05$ indicates statistical significance; V = Cramer's V.

access to the internet through other devices during their childhood. See Fig. 2 for a graphical representation of OCSSA experience as a function of age at the time of data collection.

Binary logistic regression analysis was used to test whether the binary variable of age group was indeed the determining factor in experiencing OCSSA, OCSA, and OSS, controlling for gender, education, and net household income. Good model fit was indicated across the three models. Model 1, examining OCSSA, showed Nagelkerkes $R^2 = 0.076$ and a Hosmer-Lemeshow test result of $p = .787$. Model 2, focusing on OCSA, showed Nagelkerkes $R^2 = 0.084$ and a Hosmer-Lemeshow test result of $p = .637$. Model 3, assessing OSS, showed Nagelkerkes $R^2 = 0.076$ and a Hosmer-Lemeshow test result of $p = .623$. Model 1 showed a significant, positive relationship between age group and OCSSA exposure, with individuals aged 18 to 29 years having an increased likelihood of experiencing any form of OCSSA compared to those aged 30 to 41 years (OR = 2.49, $p < .001$) (see Table 5). Neither gender nor net household income significantly increased the likelihood of experiencing OCSSA. Education yielded a significant p-value ($p = .004$) and its 98.3 % confidence interval did not include 1. However, the OR of 1.14 indicated minimal practical impact.

Model 2 showed a significant positive relationship between age group and OCSA exposure, with individuals aged 18 to 29 having a

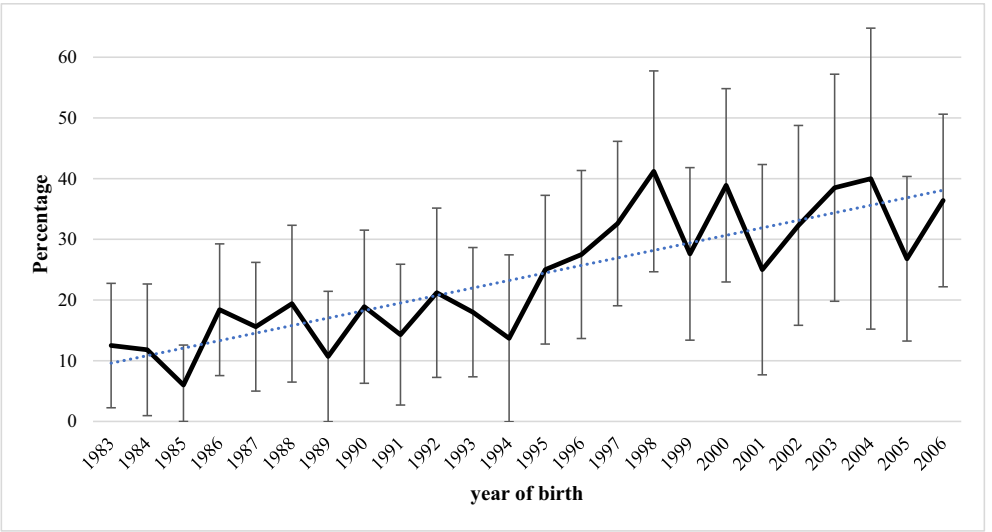

Fig. 2. Percentage of OCSSA experience in relation to year of birth with 95 % confidence interval.

Table 5
Results of logistic regression analysis investigating the relationship between OCSSA, OCSA, and OSS experience and age group, controlled for gender, education, and net household income.

	OCSSA (11 items)					OCSA (7 items)					OSS (4 items)				
	OR	*Adj. [98.3 % CI]*	*p*	*B*	*SE*	OR	*Adj. [98.3 % CI]*	*p*	*B*	*SE*	OR	*Adj. [98.3 % CI]*	*p*	*B*	*SE*
Age group	2.49	0.268 0.602	< 0.001	0.911	0.169	2.85	0.167, 0.737	< 0.001	1.046	0.310	2.51	0.262, 0.604	< 0.001	0.921	0.175
Gender	1.08	0.728, 1.598	0.645	0.076	0.165	3.15	1.481, 6.678	< 0.001	1.146	0.316	1.03	0.687, 1.541	0.864	0.029	0.169
Education	1.14	1.021, 1.260	0.004	0.126	0.044	1.01	0.839, 1.213	0.906	0.009	0.077	1.13	1.016, 1.261	0.006	0.124	0.045
Net household income	1.04	0.904, 1.029	0.187	0.036	0.027	1.01	0.895, 1.131	0.912	0.005	0.049	1.05	0.896, 1.021	0.101	0.045	0.027

Note. OCSSA = online child sexual solicitation and abuse; OCSA = online child sexual abuse; OSS = online sexual solicitation; OR = Odds Ratio, ORs were reversed to facilitate interpretation of results; *Adj. [98.3 % CI]* = confidence intervals adjusted for multiple testing (α/3), as the hypothesis was tested $n = 3$ times; $p < .017$ indicates statistical significance; *B* = regression coefficient; *SE* = standard error.

higher likelihood of experiencing OCSA than those aged 30 to 41 (OR = 2.85, $p < .001$). The analysis also revealed that gender was a significant factor (OR = 3.15, $p < .001$), with females more likely to experience OCSA than males. Education and net household income showed no association with experiencing OCSA.

Model 3 revealed a significant, positive relationship between age group and OSS exposure, with individuals aged 18 to 29 reporting a greater likelihood of experiencing OSS compared to those aged 30 to 41 (OR = 2.51, $p < .001$). The analysis demonstrated that neither gender nor net household income significantly affected the likelihood of experiencing OSS. Although education yielded a significant p-value ($p = .006$), its 98.3 % confidence interval included the value 1, contradicting significance, and the odds ratio (OR = 1.13) suggested no practical impact. These results underscore that the age group emerged as the main influencing factor for online child sexual solicitation and abuse (OCSSA) and online sexual solicitation (OSS). In addition to age group, gender was identified as a factor influencing the experience of online child sexual abuse (OCSA).

4. Discussion

To our knowledge, this is the first study to investigate the prevalence of online child sexual solicitation and abuse (OCSSA) in a representative sample of the German population, while also exploring generational differences and accounting for the age group specified in the SDG indicator 16.2.3. About one in ten German adults has had experiences with OCSSA during childhood and adolescence. A significant difference in the frequency of OCSSA experiences was observed, with those under thirty years old showing a significantly higher prevalence compared to those thirty years and older. Participants aged 18 to 29 reported OCSSA twice as often as those aged 30 to 41. Significant differences in the experience were also found across the various forms of OCSSA for the two age groups with younger participants reporting them significantly more often: Forced sexualized material, sextortion, sexualized talk, sexualized questions, request to engage in sexual acts, and confrontation with pornographic/sexualized material. Crimes related to commercial exploitation of children were reported at lower rates compared to the other forms of OCSSA and did not show significant differences between age groups. The results for young adults aged 18 to 29 reflect those of a U.S. American study that used the same screening questions (Finkelhor et al., 2022), regarding sextortion, sexualized and commercial sexualized talk, images, and other sexual activities. Non-consensual image sharing (U.S. = 4.9 % vs. Germany = 2.1 %), sexualized questions (U.S. = 18.8 % vs. Germany = 12.1 %), and requests for sexual activity (US = 14.3 % vs. Germany = 6.5 %) were reported more frequently by young adults in the U.S. than by their German counterparts between the ages of 18–29. This could be due to cultural differences in the way sexual communication is perceived and practiced, especially in casual or anonymous online environments. Non-consensual image taking was reported slightly more frequently by individuals aged 18–29 in the German population albeit with a smaller difference (US = 2.0 % vs. Germany = 2.9 %) (Finkelhor et al., 2022).

Compared to the general population, the prevalence of OCSSA is significantly higher in the 18–29 age group, highlighting the need for targeted monitoring within this population according to the SDG indicator 16.2.3. While around a third of young adults (aged 18–29) in Germany report experiencing at least one form of OCSSA, the prevalence of such incidents in the general population is only 10.3 %. This difference highlights a critical gap in traditional population-wide representative surveys, where young adults are proportionally under-represented and therefore fail to capture emerging trends that disproportionately affect younger generations (Kasinger et al., 2024). To accurately assess current developments in OCSSA, it is essential to conduct studies with targeted samples of younger cohorts according to the SDG indicator 16.2, such as students, recent graduates, or young adults. International comparative studies, such as the widely cited work by Stoltenborgh et al. (2011), often rely on nationally representative samples spanning multiple generations, inadvertently masking emerging phenomena and reducing the visibility of issues that require urgent political and professional responses in today's digital and online landscape. Comparing the 18–29 age group with those aged 30–41, the earliest generations potentially affected by OCSSA during childhood or adolescence, provides a relevant basis for tracking developments over a period in which the internet has become ubiquitous. This approach contrasts sharply with the common practice of examining prevalence rates among all adults, as this broader view does not sufficiently take into account the specific risks and experiences of young adults. The present study thus makes a crucial contribution by providing the first comparison between the generation that grew up with the internet in Germany (30–41 years) and the age group currently proposed for indicator 16.2.3 (18–29 years). This approach highlights the evolving dynamics of the issue, presents methodological implications for monitoring across countries, and calls for action to effectively address and prevent technology-facilitated child sexual abuse.

The forms of OCSSA most often reported by young adults in this sample were unwanted confrontation with pornographic material (21.1 %), unwanted sexualized talk (15.0 %), and unwanted sexualized questions (12.1 %). As defined so far, these constitute online sexual solicitation (OSS). Using the internet as a facilitator environment to abuse, gaining access to children, and initiating persuasion are grooming strategies of perpetrators (De Santisteban et al., 2018). Sexualized talk and questions as well as unwanted confrontation with pornographic material could be the start of a grooming process. Perpetrators often try to gain access to a large number of potential victims at the same time before focusing on a few (De Santisteban et al., 2018), which could explain the high frequencies observed. OCSSA encompasses a broad range of behaviors and offenses, from ambiguous situations to the most severe forms of abuse. Especially OSS often involves ambiguous situations where the behavior may occur without explicit intent to abuse or cause harm and may even occur within the scope of adolescent relationships. However, it can also be abusive. Factually, OSS is a form of sexual advance that can range from an unwanted attempt at intimacy to outright abuse. In many cases, the sexualized talk, questions, and confrontation with sexualized material could originate from peers, not necessarily adult perpetrators. The present survey did not assess the abusive person, such that it might also have been instances of sexualized bullying, peer advances, or inappropriate content posted in digital spaces such as a class chat. Dekker and Koops (2016) describe that unwanted solicitation can include differently severe actions, i.e., thoughtless flirting by peers and classmates to the preparation of serious crimes by adult perpetrators. Finkelhor et al. (2022), who

used the same screening questions as the present study, assessed the age of the perpetrator, and the results showed that almost 30 % were minors themselves. A further consideration is the distinction between different types of behavior that may not be considered abuse in an offline context, but which are nonetheless carefully recorded and examined in research on OCSSA. Certain behaviors, such as persistent catcalling or lewd comments, are generally not recorded or classified as abuse in standardized measurements such as the Childhood Trauma Questionnaire (CTQ). However, in online contexts, even these actions are often captured in detailed assessments and can sometimes be labeled as abusive. This suggests a possible blind spot in current academic discourse and raises the question of whether digital and online contexts warrant an expanded or distinct definition of abuse. The unique conditions of online interactions – such as the anonymity of the other party and the longevity of unwanted advances, like a sexualized comment on a public post – may indeed require a nuanced definition of abuse that recognizes these contextual differences. It is important to note that, based solely on these survey items alone, it is not possible to definitively categorize OSS as abuse or merely unwanted advances. In adolescent relationships and sexual exploration, sexual advances are part of both online and offline experiences. The mere fact that one party perceives an advance as unwanted does not automatically qualify it as abuse, provided the other party respects the rejection and no coercion is used. Further differentiation among unwanted sexual advances, peer violence, and child sexual abuse by adults – particularly within the domain of online child sexual solicitation and abuse – will be needed to better examine and delineate the cases.

In the present study, an additional item was included regarding exposure to pornographic material, alongside the screening questions originally developed by Finkelhor et al. (2022), since this constitutes a distinct criminal offense under German law. This additional item on unwanted exposure to pornographic or sexualized material revealed the highest prevalence rates among the different forms of OCSSA in the German survey, although it is important to note that these prevalence rates do not necessarily indicate that the experience was traumatizing for all individuals. One possible explanation is the widespread availability and accessibility of pornographic content on the internet, particularly through platforms and websites that lack strict age verification measures or pornographic online advertisements. Younger people, especially minors, may inadvertently encounter such material while surfing the internet, or they may be intentionally exposed to it by perpetrators or peers. The ubiquity of smartphones and other internet-enabled devices further increases the likelihood of such encounters and contributes to the increased prevalence of this particular form of OCSSA. This study provides comparable data, as called for by the United Nations (United Nations, 2024), to gain a more comprehensive understanding of the extent of OCSSA. Such data is essential to accurately assess the prevalence and dynamics of OCSSA, allowing for more informed policy decisions and targeted interventions.

Another key finding is the significant difference in gender distribution between OCSSA and more traditional forms of CSA. In contrast to more conventional forms of CSA, where girls are affected about twice as often as boys (Witt et al., 2017, 2018, 2020), the gender ratio in overall OCSSA, as well as OSS cases, is much more balanced, with almost equal representation of males and females. This shift highlights the unique nature of OCSSA and OSS and suggests that both genders are equally vulnerable to online exploitation, underscoring the need for tailored prevention strategies that address this broader range of victims. Further research is needed, however, as gender differences re-emerged when focusing on cases involving clearly abusive behaviors (OCSA), similar to the gender distribution typically observed in traditional CSA. This pattern suggests that while OCSSA may present differently across genders in general, certain more severe forms are consistent with established trends in offline abuse, suggesting potentially similar underlying dynamics that merit further exploration.

The analysis of this study shows that the problem of OCSSA has escalated significantly in recent years. This increase can be attributed to rapid digitalization and the emergence of a generation of “digital natives” growing up with easy access to technology and the internet. As a result, the opportunities for OCSSA have expanded, leading to rising incident rates. Our findings support the notion that young adults are at increased risk for OCSA.

4.1. Limitations

A possible limitation of the present study is that it is based on retrospective reports of OCSSA. The possibility of bias in retrospective reports, such as recall bias or non-disclosure, has been discussed previously in the literature (Hardt & Rutter, 2004). The internet, as it is used today, is still young, about 25 years old. It is evolving rapidly, so the insights gathered from (young) adults about their childhood and adolescence are not directly transferable to current children and adolescents, even if the age difference is only a few years.

Further, the random route procedure of the data collection systematically excludes institutional residents, who often belong to high-risk groups of childhood trauma, i.e., children in out-of-home care are underrepresented, although they can be at higher risk (Allroggen et al., 2017).

4.2. Implications for future research

These findings highlight the need for research that prioritizes the experience of online violence among younger cohorts. The 18–29 age group, as specified in the SDG indicator 16.2.3, has significantly higher rates of overall OCSSA experiences as well as OCSA and OSS, suggesting that recent technological advances and digital behaviors among young people may be creating a distinct risk environment. As the younger generation reports more OCSSA than previous cohorts, future research should focus on nuanced patterns of perpetration, distinguishing between peer-on-peer assault and abuse by adult perpetrators. This distinction is essential for designing effective prevention and intervention programs that are sensitive to the dynamics of both, peer sexualized bullying and OCSSA by adults. Furthermore, by maintaining a focus on SDG indicator 16.2.3, future studies can monitor these evolving trends over time in a way that allows for timely responses to technological developments that impact digital safety.

5. Conclusion

This study presents the prevalence of OCSSA in the German population and highlights the particularly high prevalence among 18–29-year-olds. This focus on the 18–29 age group, in line with indicator 16.2.3 of the SDGs, demonstrates the importance of this indicator in capturing current trends in digital and online abuse. As a globally applicable indicator, it allows for meaningful comparisons, thus enhancing the feasibility of worldwide surveys. In addition, the indicator is closely linked to experiences of violence in childhood and adolescence, which supports the need for ongoing monitoring at intervals of 5 to 10 years to allow for responsive adjustments to technological and societal changes. These findings underscore the central role of SDG monitoring in the area of justice, highlighting the importance of a robust approach to tracking and addressing OCSSA, and provide a basis for informed national action plans on this evolving issue.

CRediT authorship contribution statement

Katrin Chauviré-Geib: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Jelena Gerke:** Writing – review & editing, Supervision, Conceptualization. **Ann-Christin Haag:** Writing – review & editing, Validation, Supervision. **Cedric Sachser:** Writing – review & editing, Data curation. **David Finkelhor:** Writing – review & editing. **Miriam Rassenhofer:** Writing – review & editing. **Jörg M. Fegert:** Writing – review & editing, Supervision, Project administration, Data curation, Conceptualization.

Declaration of competing interest

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Data availability

The data that has been used is confidential.

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