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From Digital Risk to Relational Gaps: Conceptualising Youth Sexual-Digital Literacy in European Platform Societies

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Abstract

In contemporary European platform societies, adolescents increasingly learn about intimacy, sexuality, and relationships through digitally mediated environments. Although European initiatives such as the Digital Services Act and the Better Internet for Kids (BIK+) strategy have reinforced debates on child protection, platform accountability, and digital literacy, less attention has been paid to how research conceptualises adolescents' sexual-digital learning. This scoping review, conducted following the PRISMA-ScR guidelines, maps how European scholarship published between 2015 and 2025 has addressed digital consent, sexting, image-based sexual abuse, and platform-mediated sexual cultures. Fifty-two studies identified through Scopus and PsycInfo were coded against a five-cluster analytical matrix through AI-assisted content analysis (Claude, Anthropic), with reliability assessed against independent coding by two human coders. Risk and harm frameworks were the dominant analytical orientation (71.2% of studies), whereas platform governance was not the primary framework in any study. Affective and peer-related phenomena, such as shame and peer and influencer dynamics, were addressed substantively in 69.2% of studies but elaborated within explicit conceptual frameworks in only 34.6%. Building on this gap between empirical visibility and theoretical elaboration, the article refines the concept of margins of sexual-digital literacy to describe dimensions of adolescents' digitally mediated intimacy that are documented in the literature but not yet elevated to explanatory frameworks, and argues for relational, platform-informed approaches to sexual-digital literacy.

Keywords: sexual-digital literacy; digital consent; adolescents; digital intimacy; image-based sexual abuse; media literacy; relationships and sex education; informal sexual learning; scoping review; Europe

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1. Introduction

Across Europe, concerns regarding young people's exposure to digital sexual risk, image-based sexual abuse (IBSA), and platform-mediated coercion have increasingly entered policy agendas and public debate. The rapid expansion of European platform societies has transformed how adolescents learn about intimacy, sexuality and relationships, shifting significant aspects of sexual socialisation from schools and families to algorithmically mediated digital environments. Scholars have argued that platform infrastructures amplify sexualised content, intensify peer surveillance and facilitate new forms of non-

consensual image distribution that cannot be adequately addressed through individual responsibility frameworks alone. These developments have generated growing concern among educators, policymakers and civil society organisations regarding the limitations of existing digital literacy and online safety approaches. More fundamentally, they have repositioned digital platforms not simply as communication technologies but as key environments through which young people construct intimacy, sexual identities, and relational norms.

Recent European data illustrate the scale of these developments. In the Health Behaviour in School-aged Children study, which surveyed almost 280,000 adolescents aged 11 to 15 in 2022, more than one-third reported near-constant online contact with friends, rising to 44% among 15-year-old girls, while the proportion of adolescents classified as problematic social media users increased from 7% in 2018 to 11% in 2022 [1]. Sexual communication forms part of this everyday digital sociality: in the EU Kids Online survey of 19 European countries, between 8% and 39% of 12- to 16-year-olds, depending on the country, had received a sexual message in the previous year, and between 21% and 50% of 9- to 16-year-olds had seen sexual images [2]. Meta-analytic evidence indicates that around one in five young people send sexts and around one in three receive them, while approximately one in seven have forwarded a sext without consent [3]. Exposure to online sexual content also begins early: in England, the average age at which young people first encountered pornography was 13, with 10% having done so by the age of nine, and some reported turning to it partly to learn about sex [4]. Together, these figures indicate that digital environments have become a routine, and often unsupervised, context of adolescent sexual socialisation.

One of the most significant institutional responses at the European level has been the adoption of the Digital Services Act (DSA) (Regulation (EU) 2022/2065), enacted by the European Union in 2022. The DSA introduces enhanced obligations for very large online platforms, including risk assessments related to the protection of minors, gender-based violence and systemic online harms. While these regulatory developments strengthen mechanisms for transparency and content moderation, scholars have highlighted an important debate within the field: whether digital sexual harms should primarily be addressed through legal-regulatory approaches focused on risk reduction and content removal or through broader educational and relational interventions capable of addressing gender norms, peer cultures and platformed sexual learning.

Parallel to institutional regulation, European civil society organisations have advocated for stronger child protection and platform accountability measures. The European NGO Alliance for Child Safety Online (eNACSO) has promoted preventive strategies addressing online sexual exploitation and image-based abuse, while youth-centred organisations such as the European Youth Information and Counselling Agency (ERYICA) emphasise the need for accessible information, counselling and safe dialogue spaces for adolescents navigating digital relationships. Complementary initiatives such as the Better Internet for Kids (BIK+) strategy further underscore the growing European consensus that digital safety, literacy and youth empowerment must be addressed together.

Despite this increasing institutional attention, the research field remains conceptually fragmented. Over the past decade (2015–2025), European scholarship has expanded considerably, addressing topics such as sexting, image-based sexual abuse (IBSA), digital consent, online safety, platform governance, and media literacy. Historically, research on adolescents' digital sexuality has been dominated by risk-oriented paradigms centred on sexting, cyberbullying, online victimisation, and image-based sexual abuse. Earlier studies largely interpreted sexting as a harmful or deviant behaviour, whereas more recent work has challenged this protectionist perspective by emphasising trust, privacy, gender norms, and relational negotiation [5,6].

Building on these developments, Setty and Hunt [7] argue that relationships and sex education should move beyond binary models of consent towards a "safe uncertainty" approach that recognises ambiguity, emotional negotiation, and relational dependency. Likewise, research on image-based sexual abuse has progressively shifted from criminalisation towards broader understandings of relational, emotional, and structural harm [8,9].

These developments have coincided with broader transformations associated with European platform societies. Rather than separating online and offline experiences, recent scholarship conceptualises adolescent intimacy as unfolding across hybrid postdigital environments shaped by algorithms, influencer cultures, and platform infrastructures [10]. Concepts such as sexual citizenship [11] and platform governance [12,13] further suggest that digital intimacy should be understood not only as interpersonal behaviour but also as a socio-technical process embedded within commercial digital ecosystems.

Educational responses have evolved in parallel with these transformations. While media literacy and cyber-safety programmes continue to prioritise prevention and behavioural regulation [14], more recent scholarship advocates pedagogical approaches that integrate pornography education, affective literacy, negotiated consent, and critical engagement with digital cultures [7,15,16]. At the same time, growing attention has been paid to peer cultures and affective dynamics, demonstrating how shame, belonging, peer validation, and bystander behaviour shape adolescents' digitally mediated intimacy [9,17]. These studies also show that influencers and algorithmically curated content increasingly function as informal environments through which young people acquire relational norms and sexual scripts, particularly where opportunities for trusted educational dialogue remain limited.

Collectively, these developments suggest that risk-oriented, governance, educational, and relational perspectives have largely evolved in parallel, with relatively limited theoretical integration across traditions. As a result, educational, affective, and peer-dynamic dimensions are increasingly visible within empirical research but rarely occupy a central position within dominant conceptual frameworks. Taken together, these developments suggest that European scholarship has generated a rich body of empirical evidence but comparatively limited conceptual integration across its principal analytical traditions. This conceptual fragmentation provides the starting point for the present review.

Previous reviews have addressed specific aspects of this field. Meta-analytic research has estimated the prevalence of sending, receiving, and non-consensually forwarding sexts among young people [3]; systematic reviews have mapped the outcomes of youth sexting along a continuum ranging from benefits for wellbeing and relationships to stigma and serious harm [18] and have identified the lines of action proposed for sexting prevention and intervention [19]. These reviews, however, focus on prevalence, outcomes, or responses and do not examine how the field conceptualises adolescents' digitally mediated intimacy, nor the extent to which affective, peer-related, and platform-related dimensions are theoretically elaborated rather than merely documented. The present review addresses this question by mapping the analytical frameworks of European scholarship rather than its empirical findings. Its originality lies in this conceptual focus, and its significance in identifying where theoretical integration is needed to inform education, policy, and platform governance.

Building on these developments, this article draws on the notion of the margins of sexual-digital literacy as a sensitising concept [20] through which to examine how contemporary European scholarship has conceptualised adolescents' digitally mediated intimacy. Through a scoping review of peer-reviewed literature published between 2015 and 2025, conducted following the PRISMA-ScR guidelines, the study maps the dominant conceptual approaches through which European research has examined digital consent,

sexting, image-based sexual abuse (IBSA), youth digital literacy, platform governance, and educational responses to digitally mediated intimacy.

Rather than advancing a new theory of adolescent digital sexuality, the article aims to make a conceptual contribution. The notion of the margins of sexual-digital literacy was initially derived from the theoretical framework to designate the educational and relational spaces in which adolescents navigate digitally mediated intimacy with limited institutional guidance. It was subsequently refined through an abductive process [21], in which the initial formulation was confronted with the coding results and revised in light of them, as reported in Section 4.3.

2. Materials and Methods

This study adopts a scoping review methodology to examine how European scholarship has conceptualised youth sexual-digital literacy within platform societies, conducted and reported in accordance with the PRISMA-ScR guidelines [22]. A scoping approach was considered appropriate given the conceptual heterogeneity of this field, which spans risk-oriented, legal-regulatory, educational, affective, and informal-learning traditions rarely integrated within a single analytical framework; unlike systematic reviews oriented towards evaluating intervention effectiveness, scoping reviews are particularly suited to mapping conceptual diversity and surfacing theoretical gaps within a body of literature [23]. The review was conducted between April and June 2026 and was based on peer-reviewed journal articles and one academic book chapter; European institutional and policy documents (e.g., the Digital Services Act, the Better Internet for Kids strategy) informed the theoretical framework (Section 1) but were not treated as coded units of analysis. The search was restricted to studies published between 2015 and 2025, to capture the rapid evolution of platform societies, algorithmically mediated social media environments, and major European policy initiatives.

For the purposes of this review, sexual-digital literacy is understood as the set of critical, relational, and affective capacities through which young people interpret, negotiate, and act upon sexuality and intimacy in digitally mediated environments. It encompasses three interrelated dimensions: (a) a critical understanding of how platform infrastructures, algorithms, and visibility economies shape intimate practices; (b) the relational and affective competences involved in negotiating consent, intimacy, and emotional ambiguity with others; and (c) the capacity to make sense of the informal sexual learning that takes place through peer interaction and digital content. Defined in this way, the concept extends conventional media and digital literacy, which has predominantly been framed in terms of risk avoidance and technical safety, to encompass the relational and affective dimensions of youth digital sexuality [24].

The terms “adolescents” and “young people” are used in accordance with current definitions, which situate adolescence between 10 and 19 years of age and extend the category of young people to 24 years, reflecting the prolonged transition to adulthood in contemporary societies [25]. No fixed age cut-off was applied during screening, as samples, age categories, and reporting practices varied considerably across studies. Instead, studies were retained when their population consisted of adolescents or young people, including emerging adults, and when their object of analysis was situated within youth digital cultures. Theoretical and review articles without an empirical sample were retained when their analytical focus was explicitly youth-oriented. This operationalisation introduces a degree of heterogeneity in the age range covered by the corpus, which is acknowledged as a limitation.

The review addressed the following research questions:

- RQ1. How has recent academic literature conceptualised digitally mediated sexual risk and consent among adolescents in European contexts?

- RQ2. Which theoretical and analytical frameworks dominate current scholarship on youth digital intimacy, sexting, and image-based sexual abuse?
- RQ3. How has existing research conceptualised educational responses to platform-mediated sexual norms and sexual-digital learning?
- RQ4. To what extent does contemporary scholarship incorporate relational, affective, and peer-dynamic dimensions into discussions of youth digital consent and online sexual risk?
- RQ5. To what extent are educational, relational, and platform-informed approaches to sexual-digital literacy theoretically developed within contemporary European scholarship, and where does this development remain limited?

2.1. Search Strategy and Study Selection

The search was conducted across Scopus and PsycInfo (EBSCOhost), the latter accessed through the institutional subscription of the University of Bologna. The Scopus search combined three blocks with AND, searched in titles, abstracts, and keywords: a population block (adolescen* OR youth OR teen* OR "young people"); a digital-sexual-practice block ("digital consent", sexting, "image-based sexual abuse", IBSA, "technology-facilitated sexual violence", "digital intimacy", "sexual-digital literacy", "online sexual risk"); and an educational, relational, and platform block ("media literacy", "relationships and sex education", RSE, "platform governance", "social media", "platform societ*", "sexual citizenship", postdigital, "relational consent", "safe uncertainty", "affective literacy", "peer dynamics", "informal learning", "digital citizenship", datafication). Limiters included publication years 2015–2025, English language, and the exclusion of books, conference papers, short surveys, notes, letters, editorials, and conference reviews. The Scopus Subject Area filter was initially applied but subsequently removed, as it classifies records by journal rather than by content and reduced the results from 169 to five records, excluding relevant studies published in health and computer-science journals. Because every record had to contain at least one term of the third block, which includes terms associated with the educational and relational dimensions of the theoretical framework, the search may have favoured studies engaging with these concepts; if so, the marginal position of these dimensions observed in the corpus would be a conservative estimate. In PsycInfo, the population block was combined with a single block merging the practice and educational, relational, and platform terms, and the search was limited to records indexed under the Methodology category "Literature Review"; PsycInfo was therefore used as a supplementary identification source (115 records, of which 11 met the inclusion criteria at screening and two duplicated records retrieved from Scopus). The Scopus records were exported on 25 June 2026, and the complete database-specific search strings and limiters are reported in Table S3.

Inclusion criteria. Eligible records had to meet the following criteria:

1. Peer-reviewed journal articles or academic book chapters;
2. Published in English between 2015 and 2025;
3. Focused on adolescents or young people, as defined in Section 2;
4. Addressing digitally mediated intimacy, digital consent, sexting, image-based sexual abuse, sexual-digital literacy, platform governance, or educational responses to online sexual cultures;
5. Constituting part of European scholarship on the topic, defined as studies based on European data or situated in European contexts, or, in the case of reviews and conceptual work, studies with European authorship or institutional affiliation or with substantial engagement with European research.

Exclusion criteria. Records were excluded if they: focused exclusively on adult populations without relevance to youth digital cultures; addressed general online safety or cyberbullying without engagement with intimacy, sexuality, or consent; consisted primarily of technical, forensic, or legal analyses disconnected from adolescents' educational, relational, or meaning-making experiences; or did not engage substantially with European contexts (criterion 5 above).

The database searches identified 284 records (Scopus, $n = 169$; PsycInfo, $n = 115$). After the removal of two duplicate records, 282 records were screened by title and abstract, of which 150 were excluded for not meeting the inclusion criteria. The remaining 132 reports were sought for full-text retrieval. Of these, 41 (31.1%) could not be retrieved in full text ("reports not retrieved") despite searches through the institutional library services of Universidad Nebrija and the University of Bologna, academic social networking platforms (e.g., ResearchGate), and open web searches. This non-retrieval rate constitutes a potential source of selection bias. A preliminary classification of the unretrieved records, generated by Claude (Anthropic, San Francisco, CA, USA) on the basis of titles and abstracts and subsequently reviewed manually by the research team, assigned 28 of the 41 (68.3%) to Cluster A, a slightly higher proportion than among the retrieved reports (56 of 91; 61.5%), whereas all key theoretical anchors for Clusters D and E were obtained in full text. However, as this classification could not be verified against the full texts, it indicates, but does not demonstrate, the likely distribution of the missing literature. The remaining 91 reports were assessed in full text (two mislabelled PDFs were identified and corrected at this stage); 39 were subsequently excluded for not meeting inclusion criterion 5, yielding a final corpus of 52 studies. The selection process is reported in the PRISMA-ScR flow diagram (Figure 1).

Of the 52 included studies, 46 (88.5%) were based on European data or situated in European contexts, whereas six (11.5%) were reviews or conceptual works drawing predominantly on international literature; three of these had European authorship, and three, authored in Australia and Canada, were retained on the basis of their substantial engagement with European research.

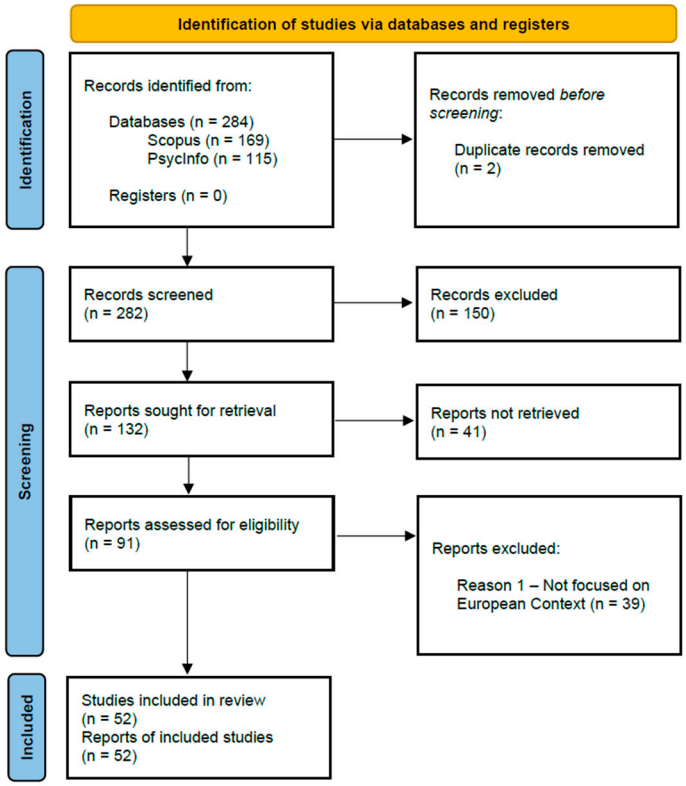


Figure 1. PRISMA-ScR flow diagram of the study identification, screening, and selection process (final corpus: $n = 52$).

2.2. Coding Matrix, AI-Assisted Procedure and Data Analysis

The coding matrix was derived from two complementary theoretical perspectives. First, the bioecological model of human development [26], in its neo-ecological extension to digital environments [27], situates adolescents within nested contexts ranging from immediate microsystems, including peers, families, schools, and virtual spaces of interaction, to the institutional and cultural systems in which regulation and educational policy are defined. This perspective informed the clusters capturing how adolescents' digital intimacy is framed and addressed at different contextual levels: as a matter of individual risk and protection (Cluster A), of institutional and platform regulation (Cluster B), and of educational intervention (Cluster C). Second, sexual script theory [28] conceptualises sexuality as learned through cultural scenarios, interpersonal scripts, and intrapsychic meanings rather than as purely individual behaviour. This perspective informed the clusters capturing how adolescents negotiate and acquire sexual and relational norms: the affective and relational negotiation of intimacy and consent at the interpersonal and intrapsychic levels (Cluster D), and the informal learning of scripts through peers, influencers, and platform content (Cluster E). Table 1 links each cluster to the research questions it addresses.

The corpus was analysed through a deductive coding matrix comprising five theoretically derived clusters—(A) Risk/Harm Frameworks, (B) Legal-Regulatory/Platform Governance, (C) Media Literacy Paradigms, (D) Affective Literacy, and (E) Informal/Peer Digital Sexual Learning— disaggregated into eleven sub-codes (A1–E2) scored Y/N/P, together with a dominant-cluster assignment and qualitative notes, complemented by an inductive component, through which distinctions emerging from the full-text reading of the pilot articles were incorporated into the sub-code definitions (most notably the distinction between peer and digital content treated as a risk factor and as a learning infrastructure, described below). Codes were assigned according to explicit decision rules: Y when a concept was meaningfully developed in at least one of the sections analysed, whether or not the study used the exact terminology of the sub-code; P when it was mentioned only briefly, implicitly, or through a citation without further engagement; and N when it was absent from those sections. The complete codebook, with definitions, decision rules, and examples for each sub-code, is provided in Table S4. The prompt and the codebook labelled Clusters A–C as the frameworks expected to predominate and Clusters D–E as the dimensions under examination; this framing, inherent to the deductive design, was shared by the human coders and is acknowledged as a potential source of expectancy bias.

To examine the relationship between engagement with affective and peer-related phenomena and their theoretical elaboration, studies were further classified, on the basis of their sub-codes, into four mutually exclusive categories: (i) framework-level elaboration, when at least one of the sub-codes capturing the elaboration of these dimensions within an explicit conceptual framework of affective literacy, relational consent, or informal learning (D1, D3, E1) was coded Y; (ii) phenomenon-level engagement only, when at least one of the sub-codes capturing substantive engagement with shame, peer judgement, or peer and influencer dynamics (D2, E2) was coded Y, but none of D1, D3, or E1; (iii) partial only, when all D and E sub-codes were coded P or N, with at least one P; and (iv) absent, when all D and E sub-codes were coded N. The robustness of the main findings was assessed through three sensitivity analyses: (i) excluding studies in which the dominant framework was assigned among tied clusters; (ii) restricting the corpus to studies based

on European data or situated in European contexts; and (iii) treating partial codes as present.

Given the size of the field, some studies that informed the theoretical framework and the codebook's anchor examples were also retrieved by the search and met the inclusion criteria; these studies were retained in the corpus and coded under the same procedure as all other included studies.

Table 1. Conceptual coding matrix (Summary).

Cluster	Analytical Focus	Example Indicators	Related RQ
A—Risk/Harm Frameworks	Harm, coercion, prevention	Sexting risk, IBSA, online risk	RQ1, RQ2
B—Legal-Regulatory/Platform Governance	Platforms as infrastructures	DSA, moderation, algorithms	RQ2, RQ5
C—Media Literacy Paradigms	Educational responses	RSE, media literacy, school interventions	RQ3
D—Affective Literacy	Emotional negotiation and relational ambiguity	Shame, "safe uncertainty," non-binary consent	RQ1, RQ4
E—Informal/Peer Digital Sexual Learning	Peer- and platform-mediated informal learning	Bystanders, influencer scripts, peer validation	RQ4, RQ5

Each cluster was disaggregated into eleven sub-codes (A1–E2) scored Y/N/P (present/absent/partial). Source: Authors' own elaboration.

Given the demonstrated suitability of large language models (LLMs) for classification and structured content analysis in the social sciences [29,30], coding was conducted through Claude (Anthropic, claude-opus-4-8), accessed via the Anthropic API in a Google Colab (Google LLC, Mountain View, CA, USA) environment with automated storage to Google Drive. Within evidence synthesis, LLMs have so far been evaluated mainly for discrete review tasks such as screening and data extraction, where they can approach human performance under carefully designed prompts but are not yet considered suitable for unsupervised use [31,32]; in qualitative research, they have also been applied to deductive coding against predefined codebooks [33]. To the authors' knowledge, however, the use of an LLM as the primary coder of interpretive categories across the full corpus of a scoping review has little direct precedent. The procedure was therefore designed as a supervised application, in which the codebook, the prompt, and the validation criteria were defined by the research team and the model's output was assessed against independent human coding on a held-out subsample (Section 2.3).

The full text of each article was submitted to the model together with a structured prompt instructing it to assign codes A1–E2 exclusively on the basis of the Introduction, Theoretical Framework or Literature Review, Discussion, and Conclusions; Methods and Results sections were consulted only for bibliographic and sample information. This restriction was adopted because the coding targeted how studies frame and theorise adolescent digital intimacy rather than their empirical findings, and it was applied identically by the human coders (Section 2.3). The dominant framework was operationalised as the cluster with the highest number of Y codes. Where two or more clusters were tied, the prompt did not specify a decision rule, and the model assigned the dominant framework among the tied clusters on the basis of its own assessment of relative analytical emphasis; these assignments were not subject to a separate manual review.

The prompt was developed on a pilot subsample of nine articles, independently coded by two human coders (H1, H2). One of these nine articles was subsequently excluded at the eligibility stage (criterion 5), so eight pilot articles remained in the final corpus of 52 studies. Across three iterations, the prompt was refined to improve agreement with their coding, clarifying sub-codes that initially showed greater interpretive ambiguity (A3, B2, D3, E1, E2), most notably by distinguishing peer/digital content treated as a risk factor from the same content treated as informal-learning infrastructure with adolescent agency. This pilot subsample therefore served exclusively as a development set; reliability was subsequently estimated on an independent validation subsample that was not used at any stage of prompt development (Section 2.3). The final (v3) prompt was applied to the 91 full-text reports in June 2026 using the model claude-opus-4-8, with adaptive extended thinking enabled and a high-effort output setting. When a response was truncated, the maximum output length was increased automatically (from 9000 to 16,000 and 24,000 tokens), and a cleaning routine corrected typographic quotation marks and trailing commas before the JSON output was parsed. Sampling parameters were not fixed, so repeated runs of the same prompt on the same article may yield minor variations; such variation was observed when the pilot articles were re-coded within the full corpus run. The full prompt (versions v1–v3), the code, and the raw model outputs are available in the Supplementary Materials. All coding was carried out under the supervision and ultimate responsibility of the research team.

2.3. Validation and Inter-Rater Reliability

A validation phase followed the recommendations of Törnberg [30,34]. To ensure independence from prompt development, a validation subsample of 12 studies was drawn from the 44 studies in the final corpus that had not been included in the pilot (the eight pilot articles, which remained in the corpus, were excluded only from this sampling frame). Sampling was stratified by dominant framework, with Clusters D and E oversampled so that agreement on their sub-codes could be estimated (Cluster A, $n = 6$; Cluster D, $n = 3$; Cluster E, $n = 3$), and studies were selected at random within each stratum (random seed = 2026). Two human coders (H1, H2) coded these studies manually, independently, and blind to the AI-generated codes and to each other's coding, using a codebook revised to incorporate the clarifications introduced during prompt development and restricting coding to the same sections as the model. Coder H1 had been involved in preparing the full-corpus coding matrix; to limit this exposure, the subsample excluded all articles used in prompt development, and the matrix was not consulted during coding. Agreement was calculated using Krippendorff's alpha [35] with the interval metric (N = 0, P = 1, Y = 2), which accounts for the ordered nature of the coding scale, pooling the eleven sub-codes (132 coding decisions per rater pair); 95% confidence intervals (CIs) were obtained by bootstrapping studies (5000 resamples).

Results were H1–H2, $\alpha = 0.569$ (95% CI 0.488–0.646); H1–Claude, $\alpha = 0.648$ (95% CI 0.581–0.708); and H2–Claude, $\alpha = 0.590$ (95% CI 0.438–0.700). These values are consistent with those obtained on the development set (0.616, 0.634, and 0.562, respectively, computed on the eight pilot articles retained in the corpus). Following Krippendorff's benchmarks [35], all three point estimates fall below the $\alpha \geq 0.667$ threshold considered the minimum for drawing tentative conclusions, although the confidence intervals for both AI–human pairs include this threshold. Agreement between the model and each human coder was at least as high as agreement between the two human coders, indicating that AI-assisted coding did not introduce disagreement beyond that observed among human coders; given the size of the subsample, however, this does not establish equivalence between AI-assisted and human coding. Disagreement was largely attributable to differences in coder calibration: H1 assigned Y codes considerably more often (64 of 132 decisions) than H2

(37) and the model (39), particularly for sub-code E1. Accordingly, agreement on the four-category classification described in Section 2.2, which underpins the central argument of the review, was highest between H2 and the model (75% agreement; $\alpha = 0.59$) and considerably lower for the pairs involving H1. Agreement on the dominant framework was lower: the model and H2 assigned the same dominant framework in three of the 12 studies, largely because ties that the model resolved in favour of Cluster A were resolved by the human coders in favour of Clusters C, D, or E. This is consistent with the sensitivity of this indicator to the counting rule (Section 3.5), and the main findings are therefore grounded primarily at the sub-code level. Sub-code-level estimates and ordinal and nominal alternatives are reported in the Supplementary Materials; nominal alpha, which treats all disagreements as equivalent, yielded lower values (0.38–0.41). The frequencies reported in Section 3 should therefore be interpreted with caution. This review analysed exclusively published literature and publicly available policy documents; ethical approval was therefore not required.

Generative AI disclosure. Generative artificial intelligence (GenAI; Claude, Anthropic) was used as a formal coding instrument for the content analysis described in Section 2.2, validated against independent human coding as reported in Section 2.3. GenAI was additionally used for language refinement during manuscript preparation. All decisions concerning the coding matrix, prompt design, validation thresholds, interpretation, and synthesis were made and verified by the authors.

3. Results

The 52 included studies were published between 2015 and 2025, two-thirds of them ($n = 34$; 65.4%) from 2020 onwards. Studies based on European data came predominantly from the United Kingdom ($n = 13$), the Netherlands ($n = 7$), Belgium and Spain ($n = 6$ each), and Italy ($n = 4$), with the remaining ten drawing on data from other European countries; six were reviews or conceptual works (Section 2.1). Study-level characteristics and coding are reported in Table S1, and the full distribution of Y, P, and N codes for the eleven subcodes is shown in Table S2.

Clusters A (Risk/Harm Frameworks) and B (Legal-Regulatory/Platform Governance) represent two variants of the protective paradigm that informed the analytical matrix. The former focuses on victimisation and behavioural prevention, whereas the latter addresses the institutional regulation of digital platforms. Cluster C (Media Literacy Paradigms) brings together educational approaches centred on media and digital literacy as strategies for mitigating digital risk. By contrast, Clusters D (Affective Literacy) and E (Informal/Peer Digital Sexual Learning) correspond to the two dimensions that this article identifies as theoretically marginalised: the emotional and relational negotiation of digital intimacy and the processes of informal sexual learning mediated by peers and influencers.

Each study was coded using the eleven subcodes (A1–E2) according to a Y/N/P (present, absent, partial) system, and the dominant framework was assigned following the procedure described in Section 2.2. This criterion determined the dominant framework directly in 33 studies (63.5%); in the remaining 19 (36.5%), two or more clusters were tied, and the assignment rested on the model's assessment of relative analytical emphasis.

As shown in Table 2, more than 70% of the corpus is centred on Cluster A, confirming that the risk and victimisation paradigm remains the predominant framework in recent European research on adolescent digital sexuality. Taken together, Clusters D and E account for just over 26% of the corpus, indicating that the affective and informal dimensions of digital-sexual learning are present in the literature but remain clearly secondary to the dominant risk framework. By contrast, Clusters B and C are virtually absent as dominant analytical frameworks. Only one study identified media literacy as its dominant

framework for addressing digital risk, whereas none adopted platform regulation or governance as its primary analytical perspective.

Table 2. Distribution of the dominant analytical framework in the corpus (*N* = 52).

Dominant Framework	Frequency (*N*)	Percentage (%)
A—Risk/Harm Frameworks	37	71.2%
D—Affective Literacy	8	15.4%
E—Informal/Peer Digital Sexual Learning	6	11.5%
C—Media Literacy Paradigms	1	1.9%
B—Legal-Regulatory/Platform Governance	0	0%

Source: Authors' own analysis.

3.1. Risk and Harm Frameworks: Predominance and Internal Nuances

The analysis at the subcode level both confirms and qualifies the centrality of Cluster A. Subcode A1 (presence of risk and victimisation frameworks) is coded as present in 90.4% of the studies, indicating that the language of risk constitutes an underlying conceptual framework that is almost ubiquitous across the corpus, even in studies whose dominant analytical framework was not ultimately coded as Cluster A.

However, two analytically distinct logics coexist within this cluster. The protective and cybersecurity discourse (A3) is coded as present in 40.4% of the studies and centres on adult supervision and the promotion of safer uses of digital platforms. By contrast, the punitive or criminalising approach (A2) appears far less frequently as a full code (11.5%), occurring predominantly as a partial code (63.5%). Although the studies acknowledge the existence of a legal framework, they rarely develop it as an analytical focus in its own right.

This asymmetry between the frequencies of Subcodes A2 and A3 suggests that, when the literature addresses digital risk, it does so primarily from a perspective of protection and education rather than punishment or criminalisation. This distinction represents an important nuance that is revisited in the Discussion.

3.2. Platform Governance and Media Literacy: The Regulatory Vacuum

Cluster B is absent as a dominant analytical framework (0%). At the subcode level, Subcode B1—which captures explicit references to European governance instruments such as the Digital Services Act—is coded as present in only one study (1.9%), while partial coding accounts for just 15.4% of the corpus. Subcode B2, which concerns platform affordances and content moderation, shows a slightly higher rate of full coding (25%). However, partial coding remains substantially more frequent (65.4%), with studies typically referring to specific platforms without examining their underlying technical architecture.

This gap is particularly noteworthy within an increasingly robust regulatory landscape. The reviewed studies rarely incorporate these regulatory developments into their analytical frameworks, suggesting a disconnect between the institutional governance agenda and scholarly research on adolescents' digital-sexual learning.

Cluster C exhibits a similar pattern. Only one study identifies media literacy as its dominant analytical framework (1.9%). However, Subcode C1—which is coded as present when a study proposes media literacy approaches in response to digital risk—shows much broader representation across the corpus, being coded as present in 40.4% of the studies and as partial in a further 46.2%. These findings suggest that media literacy is frequently invoked as an educational recommendation across the literature but is only rarely developed into a comprehensive theoretical framework.

3.3. Affective Literacy and Informal Peer Learning: Descriptive Presence and Theoretical Gap

The analysis of Clusters D and E reveals a consistent pattern. Subcodes that merely capture the presence of a phenomenon—peer shame (D2) and peer dynamics and influencer cultures (E2)—are relatively well represented. By contrast, subcodes that elevate these phenomena to the level of an explicit theoretical framework—affective literacy as a concept in its own right (D1), critiques of binary models of consent (D3), and informal learning conceptualised through adolescent agency (E1)—remain systematically underdeveloped. In other words, these themes are frequently acknowledged but are rarely developed as autonomous analytical frameworks.

Within Cluster D, Subcode D2 (shame, humiliation, and peer judgement as mechanisms of social regulation) is the most prevalent, being coded as present in 48.1% of the studies. This finding reflects conceptualisations already well established in the literature, such as the notion of economies of shame surrounding the circulation of intimate images. By contrast, Subcode D1 (affective literacy, understood as the explicit emotional negotiation of intimacy) is coded as present in only 15.4% of the studies, while 53.8% receive partial coding. The contrast is even more pronounced for Subcode D3 (non-binary models of relational consent), which is coded as present in only one study (1.9%), compared with 59.6% receiving partial coding. Across most of the corpus, critiques of affirmative or binary models of consent are acknowledged but not developed into substantive theoretical discussions.

A similar pattern emerges in Cluster E. Alongside Subcode A1, Subcode E2 (peer dynamics and influencer cultures) is one of the most prevalent subcodes in the corpus, being coded as present in 57.7% of the studies. This finding confirms that the literature widely recognises the importance of peers and digital role models in adolescent socialisation. By contrast, Subcode E1 (informal digital-sexual learning explicitly conceptualised as such, with an emphasis on adolescent agency) is coded as present in only 25% of the studies, while 59.6% receive partial coding. Although many studies document that adolescents turn to informal digital environments to learn about sexuality, few conceptualise this process as a legitimate form of learning. Instead, it is typically framed as an incidental by-product of exposure to digital risk.

Taken together, these findings indicate that the asymmetry between descriptive presence and theoretical elaboration is not an isolated feature of individual subcodes but rather a systematic pattern characterising both Clusters D and E.

3.4. Contribution to the Argument for a Conceptual Gap

The coding pattern provides evidence consistent with the proposed distinction between descriptive visibility and theoretical centrality. Table 3 presents the classification of the corpus according to the relationship between phenomenon-level engagement and framework-level elaboration described in Section 2.2, cross-tabulated with the dominant analytical framework.

Table 3. Phenomenon-level engagement and framework-level elaboration of affective and peer-related dimensions, by dominant analytical framework (*N* = 52).

Category	A	B	C	D	E	Total (%)
Framework-level elaboration (D1, D3 or E1 = Y)	5	0	1	6	6	18 (34.6%)
Phenomenon-level engagement only (D2 or E2 = Y; no D1, D3 or E1 = Y)	18	0	0	2	0	20 (38.5%)
Partial only (all D–E sub-codes P or N)	12	0	0	0	0	12 (23.1%)
Absent (all D–E sub-codes N)	2	0	0	0	0	2 (3.8%)

Total	37	0	1	8	6	52 (100%)

Source: Authors' own analysis.

As shown in Table 3, 36 studies (69.2%) engage substantively with shame, peer judgement, or peer and influencer dynamics (D2 or E2 = Y), whereas only 18 (34.6%) elaborate at least one affective or peer-related dimension within an explicit conceptual framework of affective literacy, relational consent, or informal learning (D1, D3, or E1 = Y). Of the 36 studies that engage with these phenomena, 20 (55.6%) do so without such elaboration, and 18 of these 20 adopt risk and harm as their dominant framework. A further 12 studies (23.1%), all dominated by Cluster A, address these dimensions only partially, while two (3.8%) do not address them at all. Framework-level elaboration is therefore present in the field but concentrated in the studies whose dominant framework is D, E, or C (13 of 18), although five studies dominated by Cluster A also elaborate at least one of these dimensions. Overall, the corpus engages with affective and peer-related phenomena twice as often as it elaborates them conceptually.

Taken together, the corpus is characterised by the overwhelming predominance of Cluster A (71.2% as the dominant analytical framework), the near-complete absence of governance frameworks related to European regulation (0% as the dominant framework), and the partial—yet insufficiently theorised—presence of affective and informal dimensions.

Overall, these findings provide a clear picture of the current state of the field. Recent European research does not ignore the relational, affective, or informal dimensions of adolescent digital-sexual learning; however, these dimensions consistently occupy a marginal, residual, or under-theorised position in relation to the dominant paradigm of risk and protection. It is this asymmetry between descriptively coded subcodes (D2, E2) and fully theorised subcodes (D1, D3, E1) that grounds the conceptual proposal of the margins of sexual-digital literacy developed in the Discussion.

3.5. Sensitivity Analyses of the Main Findings

Table 4 presents the results of the three sensitivity analyses described in Section 2.2.

Table 4. Results of the three sensitivity analyses.

Analysis	*n*	Cluster A Dominant	D or E Dominant	Phenomenon-Level Engagement (D2 or E2 = Y)	Framework Level Elaboration (D1, D3 or E1 = Y)
Full corpus	52	37 (71.2%)	14 (26.9%)	36 (69.2%)	18 (34.6%)
Excluding tied dominant-framework assignments	33	25 (75.8%)	8 (24.2%)	20 (60.6%)	11 (33.3%)
European data or contexts only	46	33 (71.7%)	12 (26.1%)	32 (69.6%)	15 (32.6%)
Partial codes counted as present (Y or P)	52	33 (63.5%) *	7 (13.5%) *	49 (94.2%)	47 (90.4%)

* Dominant framework recalculated with Y = 1 and P = 0.5; a further 12 studies (23.1%) were tied, 10 of them involving Cluster A. Source: Authors' own analysis.

As shown in Table 4, the predominance of Cluster A is maintained across all analyses. When tied assignments are excluded, Cluster A accounts for 75.8% of the remaining studies, indicating that its predominance does not depend on how ties were resolved. Restricting the corpus to studies based on European data or contexts produces results almost identical to those of the full corpus, with all sub-code frequencies varying by less than four percentage points. The asymmetry between phenomenon-level engagement and

framework-level elaboration also holds in both analyses, with the former roughly twice as frequent as the latter. When partial codes are treated as present, however, this asymmetry disappears: nearly all studies engage at least partially with affective and peer-related phenomena (94.2%) and refer at least partially to the corresponding conceptual frameworks (90.4%). Rather than contradicting the main finding, this result specifies it: the concepts of affective literacy, relational consent, and informal learning are widely mentioned across the literature, but they are developed substantively in only about one-third of the corpus. The gap identified by this review therefore lies between the acknowledgement of these concepts and their theoretical elaboration. The distribution was also stable over time: studies published between 2015 and 2019 (n = 18) and between 2020 and 2025 (n = 34) showed similar proportions of Cluster A as the dominant framework (72.2% and 70.6%) and of framework-level elaboration (33.3% and 35.3%).

4. Discussion

The findings address each research question. Regarding RQ1, the literature conceptualises digitally mediated sexual risk and consent predominantly through a risk and victimisation lens, within which protective and educational discourse (A3, 40.4%) is considerably more frequent than criminalising approaches (A2, 11.5%), while non-binary conceptualisations of consent are widely acknowledged but rarely developed (D3 coded as present in one study and as partial in 59.6%). Regarding RQ2, risk and harm frameworks constitute the dominant analytical orientation (71.2%), whereas legal-regulatory and platform-governance perspectives are absent as dominant frameworks. Regarding RQ3, media and digital literacy are frequently recommended as educational responses (C1 coded as present in 40.4% of studies) but rarely developed into analytical frameworks (1.9%). Regarding RQ4, affective and peer-related dimensions are addressed at the level of phenomena in more than two-thirds of the corpus (69.2%) but elaborated within explicit conceptual frameworks in only about one-third (34.6%). Regarding RQ5, the development of educational, relational, and platform-informed approaches is therefore limited less by a lack of empirical attention than by their limited theoretical integration. The following subsections discuss these findings in relation to previous research: Section 4.1 addresses RQ1 and RQ2, Section 4.2 addresses RQ3, and Section 4.3 addresses RQ4 and RQ5.

4.1. Beyond Digital Risk: Reframing Youth Sexual-Digital Literacy in European Platform Societies

The coding results demonstrate that risk and victimisation frameworks constitute the dominant analytical orientation across the reviewed literature, accounting for more than two-thirds of the corpus. This predominance reflects the historical development of the field, in which concerns surrounding sexting, image-based sexual abuse (IBSA), technology-facilitated sexual violence, and online exploitation have driven both empirical research and European policy responses. As argued by McGlynn and Rackley [36], platform architectures have fundamentally transformed the production, circulation, and permanence of intimate images, requiring interventions that extend beyond individual responsibility towards platform accountability. Similarly, Killean et al. [37] demonstrate that digital environments not only reproduce sexual violence but also amplify its persistence, visibility, and victimisation dynamics. These contributions help explain why protection-oriented perspectives continue to dominate the literature reviewed. As the results show, however, this predominance takes the form of risk and harm frameworks rather than legal-regulatory analyses: platform governance was not adopted as the dominant analytical framework in any of the included studies.

The prominence of these approaches also runs parallel to broader developments within European digital governance. Initiatives such as the Digital Services Act [38] and

the Better Internet for Kids strategy [39] have strengthened institutional commitments to child protection, platform accountability, and online safety. While these regulatory advances represent significant progress, the policy environment they shape shares the predominantly protective emphasis identified in the reviewed literature, in which education is frequently framed as a mechanism for preventing harm rather than for supporting the development of relational competencies. As policy documents were not coded as units of analysis, the present review does not establish whether this correspondence reflects any influence of regulatory agendas on research priorities; it indicates only that both domains converge on a similar protective orientation.

This interpretation is consistent with broader discussions in digital sexuality research. Döring et al. [24] argue that digital sexual practices extend well beyond risk and victimisation, encompassing identity formation, communication, intimacy, and everyday relationship-building. The findings of the present review support this perspective by showing that although these relational dimensions are increasingly recognised within European scholarship, they rarely constitute the dominant explanatory framework through which adolescents' digitally mediated experiences are interpreted. Consequently, the challenge for future research is not to replace risk-oriented approaches but to integrate them within broader conceptualisations of sexual-digital literacy capable of accounting for the complexity of adolescents' lived experiences in contemporary European platform societies.

4.2. Educational Responses: Literacy as Recommendation Rather than Framework

Regarding RQ3, the review shows that educational responses occupy an ambivalent position within the literature. Media and digital literacy are invoked across most of the corpus, being coded as present in 40.4% of studies and as partial in a further 46.2%, yet only one study adopts literacy as its dominant analytical framework. Education therefore appears predominantly as a recommendation derived from the analysis of risk rather than as a perspective from which adolescents' digitally mediated intimacy is analysed. This pattern is consistent with the prevalence of protective discourse identified in the corpus (A3, 40.4%) and with the preventive orientation of school-based media education described in previous research [14], in which adolescents are positioned primarily as users requiring behavioural guidance.

The single study in which literacy constitutes the dominant framework is nonetheless significant. Vandenbosch [40] conceptualises literacy in digital intimacy as a key competence for youth development that extends beyond traditional media literacy by placing emotional responses and sexuality at its core, and it is also one of the few studies in the corpus to elaborate affective and informal-learning dimensions explicitly. This suggests that the integration of educational, affective, and relational perspectives advocated in recent scholarship on relationships and sex education [7,15,16] has begun to emerge within European research, albeit in an incipient form. Rather than an absence of educational thinking, the findings point to a gap between the frequent invocation of literacy as a response to digital risk and its limited development as a framework for understanding how adolescents learn about intimacy in platform environments.

4.3. From Empirical Visibility to Conceptual Integration: Understanding the Margins of Sexual-Digital Literacy

Perhaps the most significant finding emerging from this review is that educational, relational, and affective dimensions are not absent from the literature; rather, they remain conceptually peripheral within dominant analytical frameworks. Across the studies reviewed, emotions such as shame, embarrassment, trust, peer validation, and belonging, together with informal learning through peers, influencers, pornography, and social

media, are increasingly acknowledged as shaping adolescents' digitally mediated intimacy. Nevertheless, these elements are typically presented as contextual factors rather than as central theoretical constructs through which digital sexuality is interpreted [16,24].

This distinction between empirical visibility and conceptual centrality provides a different perspective on the current state of the field. Recent scholarship has increasingly challenged binary understandings of consent, arguing instead for relational, negotiated, and context-dependent interpretations of adolescents' intimate experiences [7,41]. Likewise, emerging work on digital intimacy highlights that consent is continuously negotiated within platform environments shaped by peer interaction, algorithmic visibility, and evolving social norms rather than through isolated individual decisions [16]. However, the findings of this review suggest that these perspectives have not yet been fully integrated into the dominant conceptual architecture of European scholarship, which continues to privilege explanatory models centred on risk, protection, and governance.

The principal conceptual gap identified by this review is not a lack of empirical evidence but a lack of theoretical integration. From this perspective, the *margins of sexual-digital literacy* should not be understood as areas where research is lacking, but rather as analytical spaces where educational, affective, and relational dimensions remain insufficiently theorised despite their growing empirical visibility. Building upon existing scholarship on sexual-digital literacy, relational consent, and digitally mediated intimacy, the coding results led to a revision of the initial formulation of the margins of sexual-digital literacy: rather than designating spaces where guidance or research is absent, the notion came to describe how these dimensions remain conceptually secondary within dominant conceptualisations of youth digital sexuality.

More precisely, the margins of sexual-digital literacy are defined here as the points at which dimensions of adolescents' digital intimacy are empirically documented but not yet elevated to the status of explanatory frameworks in their own right: spaces that are, in this sense, actively populated rather than empty. This distinguishes the concept from a simple gap or absence of research: the findings of this review show that affective and informal-learning dimensions are neither overlooked nor under-researched in a literal sense but rather consistently subordinated to the risk-and-protection paradigm that continues to organise the field's dominant conceptual architecture. The margins, in other words, name a structural position within the literature rather than a deficit of attention.

Figure 2 represents this structural configuration: the dominant explanatory core organising the field, and the two empirically populated yet interpretively subordinated dimensions that constitute the margins.

Alternative explanations for this pattern should also be considered. The predominance of risk frameworks may partly reflect funding and publication priorities that have historically favoured measurable harms; affective and informal-learning dimensions may be elaborated within qualitative findings without being named as formal theoretical constructs, and would therefore be captured only partially by a coding approach focused on the framing sections of each study; and the absence of governance frameworks partly reflects the review's eligibility criteria, which prioritised youth-centred research over legal and technical analyses. These explanations do not contradict the pattern identified, but they indicate that the margins of sexual-digital literacy describe the conceptual architecture of youth-centred European scholarship as captured by the present design, rather than a fixed property of the field.

Rather than identifying entirely new topics for investigation, this perspective encourages greater dialogue between research on platform governance, image-based sexual abuse, media literacy, relationships and sex education, and affective dimensions of digital life, thereby supporting a more integrated understanding of sexual-digital literacy in European platform societies.

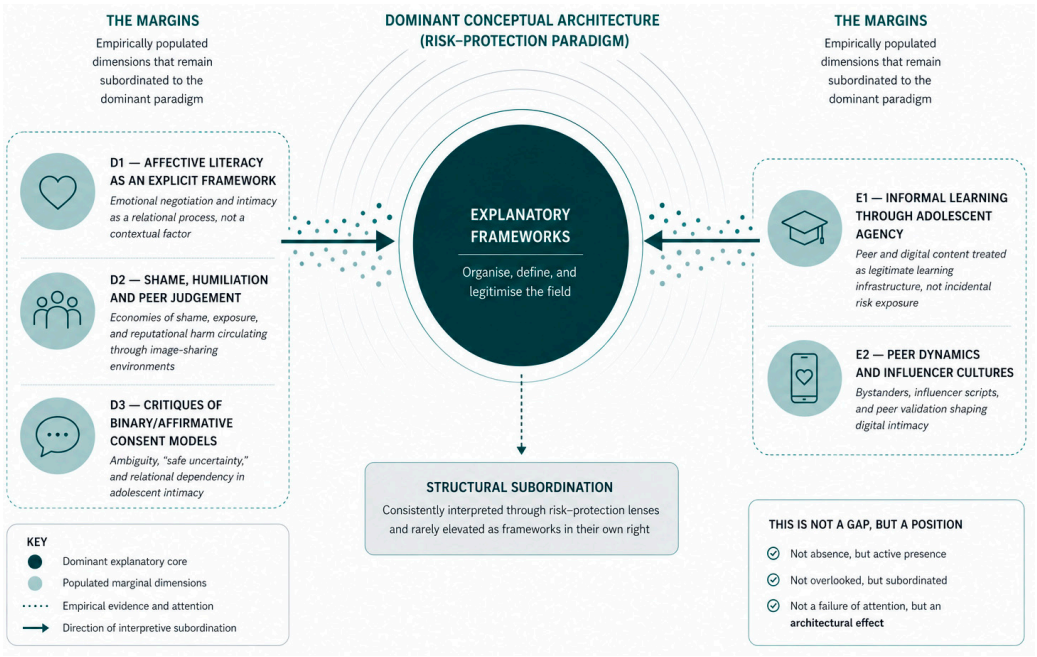


Figure 2. The structural position of the margins of sexual-digital literacy within the dominant conceptual architecture (sub-codes D1–D3, E1–E2). Source: Authors' own conceptual elaboration, based on the coding matrix (Table 1) and findings reported in Section 3. Graphic generated with the assistance of generative AI (OpenAI, San Francisco, CA, USA, ChatGPT; GPT-6/GPT-image; ImageGen).

4.4. Implications for Research, Education, and Platform Governance

The findings suggest that the challenges identified in this review should be understood within the broader transformation of contemporary European platform societies, where intimacy, consent, and sexual learning increasingly emerge through interactions between educational institutions, peer cultures, and platform infrastructures. This broader socio-technical context helps explain why predominantly risk-oriented conceptualisations are no longer sufficient to capture the complexity of adolescents' digitally mediated experiences. Against this backdrop, the findings have important implications for future research, educational practice, and European platform governance. Together, these implications reinforce the need to move beyond fragmented approaches towards more integrated understandings of sexual-digital literacy.

From a research perspective, the review demonstrates the need for conceptual frameworks capable of integrating structural, educational, relational, and affective dimensions of adolescents' digital lives. Rather than continuing to develop risk-oriented, governance, educational, and relational perspectives in parallel, future scholarship should seek greater conceptual integration across these traditions. The article shows that educational, affective, and peer-dynamic dimensions are already empirically visible within European research but remain conceptually secondary. Advancing the field therefore requires analytical frameworks capable of integrating platform infrastructures, relational consent, affective literacy, and informal digital learning into more comprehensive understandings of sexual-digital literacy. Such an approach moves beyond dichotomies that oppose vulnerability to agency or protection to empowerment, recognising that adolescents' digitally mediated intimacy simultaneously constitutes a space of learning, negotiation, experimentation, and risk. In doing so, it recognises adolescents not merely as subjects requiring protection but also as social actors who actively negotiate intimacy, consent, and identity within digitally mediated environments.

Educationally, the review reinforces recent calls to rethink relationships and sex education beyond traditional cyber-safety paradigms [7]. The findings suggest that

preventing digital sexual harm cannot rely exclusively on messages centred on avoidance, surveillance, or legal compliance. Instead, educational responses should incorporate affective literacy, negotiated consent, peer cultures, algorithmic awareness, and informal digital learning as integral components of sexual-digital literacy. Such an approach recognises that adolescents increasingly construct meanings about intimacy, sexuality, and relationships through interactions occurring outside formal educational settings and mediated by social media platforms, influencers, recommendation systems, and peer networks. Strengthening adolescents' sexual-digital literacy therefore requires educational models that acknowledge young people not only as individuals exposed to digital risk but also as active participants in the construction of digitally mediated relationships.

Finally, the review also has important implications for European digital governance. While initiatives such as the Digital Services Act and the Better Internet for Kids strategy have substantially strengthened platform accountability and child protection [38,39], the present review suggests that regulatory responses alone are unlikely to address adequately the relational and educational processes through which adolescents experience digitally mediated intimacy. This complementary role is already partly enacted by European civil society organisations: eNACSO's preventive advocacy on online sexual exploitation and ERYICA's emphasis on accessible information and trusted dialogue spaces both illustrate forms of relational and educational engagement that regulatory instruments alone do not provide. In this respect, platform governance and sexual-digital literacy should be understood as complementary rather than alternative strategies. Effective responses therefore require closer integration between regulation, educational policy, and platform design, recognising that adolescents' digitally mediated intimacy is shaped simultaneously by institutional frameworks, socio-technical infrastructures, and everyday relational practices within contemporary European platform societies.

4.5. Limitations

Several limitations should be considered when interpreting these findings. The search was conducted in Scopus and PsycInfo and restricted to English-language publications; although this combination captures the principal social-scientific and psychological literature on the topic, relevant studies indexed only in other databases, such as Web of Science or ERIC, or published in other European languages may have been omitted. The corpus is also heterogeneous in age range, as no fixed age cut-off was applied (Section 2), and, because primarily technical, forensic, or legal analyses were excluded, the absence of governance frameworks applies to youth-centred scholarship rather than to European governance research as a whole. In addition, 31.1% of the reports sought could not be retrieved in full text. Title and abstract information suggests that these records were concentrated within the risk paradigm, already the most extensively represented in the corpus, which makes it unlikely that their inclusion would have reversed the overall pattern identified, although it could have altered the specific distribution of analytical frameworks.

The coding matrix was deductively derived from the literature, and a deductive approach necessarily directs attention towards the dimensions it specifies. This was addressed by complementing the matrix with inductive identification of emergent themes, by refining the central concept abductively in light of the results (Section 4.3), and by classifying studies according to criteria that allowed the findings to depart from initial expectations (Table 3).

Finally, inter-rater agreement on the independent validation subsample was moderate (α = 0.569–0.648; Section 2.3), and the frequencies reported in Section 3 should therefore be read as indicative of broad patterns in the literature rather than as precise estimates. Disagreement between the human coders was concentrated in the interpretation of

informal learning (E1), to which the four-category classification is sensitive; the agreement observed on this classification between the model and the human coder without prior exposure to the coding matrix nonetheless supports the pattern reported in Table 3. The dominant-framework indicator showed lower agreement and also depends on the counting rule adopted, as the clusters comprise different numbers of sub-codes; for this reason, the main findings are grounded primarily at the sub-code level, a reading supported by their stability across the sensitivity analyses.

Because the use of an LLM as the primary coder of interpretive categories has limited precedent, the procedure should also be regarded as a methodological contribution whose replicability with other models, prompts, and corpora remains to be established.

5. Conclusions

This review set out to examine how recent European scholarship has conceptualised adolescents' digitally mediated intimacy, drawing on a scoping review of 52 peer-reviewed studies coded against a five-cluster analytical matrix. The findings indicate that risk and victimisation frameworks constitute the most frequent dominant framework (71.2% of the corpus), that legal-regulatory and platform-governance perspectives were not adopted as the primary analytical lens in any of the youth-centred, peer-reviewed studies meeting the eligibility criteria, and that affective and peer-related phenomena, although addressed in more than two-thirds of the corpus, are elaborated within explicit conceptual frameworks in only about one-third. This last finding is the central contribution of the review: across Clusters D and E, subcodes capturing the mere descriptive presence of a phenomenon (peer shame and influencer cultures) are considerably more frequent than subcodes capturing its theorisation as an explicit analytical concept (affective literacy, non-binary consent, and agency-centred informal learning). The gap identified by this review is, therefore, not an absence of evidence but an absence of conceptual elaboration.

This finding grounds the central conceptual contribution of the article: the refinement of the margins of sexual-digital literacy as an analytical concept for naming this specific configuration of empirical visibility without theoretical centrality. Unlike accounts that frame the relevant gap as a lack of attention to relational and affective dimensions, the margins framework captures something more precise: these dimensions are already documented throughout the literature, but they occupy a structurally peripheral position relative to the risk-and-protection paradigm that continues to organise the field's dominant conceptual architecture. Understood in this way, the margins are not empty spaces awaiting future research but actively populated areas of the literature that have yet to be theorised on their own terms. This reframing carries implications beyond the present corpus: it offers a transferable analytical lens for identifying similar configurations—descriptive saturation without conceptual centrality—in adjacent fields of youth digital research.

Future research would benefit from explicitly operationalising affective literacy and agency-centred informal learning as primary analytical frameworks, rather than incidental contextual factors, in empirical studies of adolescents' digital intimacy. At the policy and educational levels, the findings support the development of relational and platform-informed models of sexual-digital literacy capable of complementing—rather than replacing—the protective and regulatory achievements of recent European governance initiatives. Addressing the margins identified in this review does not require abandoning risk-oriented approaches but rather integrating them within a broader conceptual architecture that takes seriously the relational, affective, and informal dimensions through which adolescents already navigate digital intimacy.

Abbreviations

The following abbreviations are used in this manuscript:

IBSA	Image-based sexual abuse
DSA	Digital Services Act
BIK+	Better Internet for Kids
RSE	Relationships and sex education
PRISMA-ScR	Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews
eNACSO	European NGO Alliance for Child Safety Online
ERYICA	European Youth Information and Counselling Agency

Supplementary Materials: The following supporting information is available at https://www.mdpi.com/article/10.3390/soc16110421/s1: Table S1: Study-level characteristics and coding of the 52 included studies; Table S2: Distribution of Y, P, and N codes for the eleven sub-codes; Table S3: Database-specific search strings; Table S4: Codebook with definitions, decision rules, and examples; Table S5: Independent validation coding and sub-code-level reliability estimates; File S1: AI coding prompts (versions v1–v3) and code.

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References

1. Boniel-Nissim, M.; Marino, C.; Galeotti, T.; Blinka, L.; Ozoliņa, K.; Craig, W.; Lahti, H.; Wong, S.L.; Brown, J.; Wilson, M.; et al. *A Focus on Adolescent Social Media Use and Gaming in Europe, Central Asia and Canada: Health Behaviour in School-Aged Children International Report from the 2021/2022 Survey*; WHO Regional Office for Europe: Copenhagen, Denmark, 2024; Volume 6.
2. Smahel, D.; Machackova, H.; Mascheroni, G.; Dedkova, L.; Staksrud, E.; Ólafsson, K.; Livingstone, S.; Hasebrink, U. *EU Kids Online 2020: Survey Results from 19 Countries*; EU Kids Online: London, UK, 2020. https://doi.org/10.21953/lse.47fdeqj01ofo.

3. Mori, C.; Park, J.; Temple, J.R.; Madigan, S. Are youth sexting rates still on the rise? A meta-analytic update. *J. Adolesc. Health* **2022**, *70*, 531–539. https://doi.org/10.1016/j.jadohealth.2021.10.016.
4. Children's Commissioner for England. *"A lot of it is Actually Just Abuse": Young People and Pornography*; Children's Commissioner for England: London, UK, 2023.
5. Burén, J.; Lunde, C. Sexting among adolescents: A nuanced and gendered online challenge for young people. *Comput. Hum. Behav.* **2018**, *85*, 210–217. https://doi.org/10.1016/j.chb.2018.02.003.
6. Chatzinikolaou, A.; Lievens, E. A legal perspective on trust, control and privacy in the context of sexting among children in Europe. *J. Child. Media* **2020**, *14*, 38–55. https://doi.org/10.1080/17482798.2019.1697320.
7. Setty, E.; Hunt, J. Safe uncertainty: Rethinking consent and relational intimacies in adolescent post-digital cultures. *Pastor. Care Educ.* **2025**, 1–18. https://doi.org/10.1080/02643944.2025.2576567.
8. McGlynn, C.; Rackley, E. Image-Based Sexual Abuse. *Oxf. J. Leg. Stud.* **2017**, *37*, 534–561. https://doi.org/10.1093/ojls/gqw033.
9. Elmose Jørgensen, K.; Demant, J.J. Shame, shaming and economy: A theory of image-based sexual abuse within different online sharing environments. *First Monday* **2021**, *26*. https://doi.org/10.5210/fm.v26i4.11670.
10. Evans, A.; Ringrose, J.L. More-Than-Human, More-Than-Digital: Postdigital Intimacies as a Theoretical Framework. *Soc. Media Soc.* **2025**, *11*. https://doi.org/10.1177/20563051251317779.
11. Chronaki, D. "Why Internet Doesn't Necessarily Matter": Constructing Sexual Citizenship through Pornographic Literacies. *Dig. J. Divers. Gend. Stud.* **2019**, *6*, 61–74. https://doi.org/10.11116/DiGeSt.6.2.4.
12. Dodge, A. The Problem with "Cyber Safety": Calling for Technosocial Educational Responses to Technology-Facilitated Violence and Bullying. *Can. J. Commun.* **2024**, *49*, 125–145. https://doi.org/10.3138/cjc-2023-0011.
13. Carmi, E.; Nakou, P. Building data citizenship and learning to resist in the datafied society. *Learn. Media Technol.* **2025**, 1–14. https://doi.org/10.1080/17439884.2025.2505553.
14. Bielčiková, K.; Hollá, K. Media education as a means of sexting prevention. *J. Educ. Cult. Soc.* **2022**, *13*, 111–125. https://doi.org/10.15503/jecs2022.1.111.125.
15. Crabbe, M.; Flood, M. School-Based Education to Address Pornography's Influence on Young People: A Proposed Practice Framework. *Am. J. Sex. Educ.* **2021**, *16*, 1–37. https://doi.org/10.1080/15546128.2020.1856744.
16. Rousaki, A.; Seymour-Smith, S.; Kitson-Boyce, R.; Marriott, M. Teachers' Discursive Constructions of Adolescent Sexting, Consent and Gender. *J. Community Appl. Soc. Psychol.* **2025**, *35*, e70002. https://doi.org/10.1002/casp.70002.
17. Barrense-Dias, Y.; Surís, J.C.; Chok, L. "Maybe They Don't Necessarily Realize the Damage They Can Do…": A Qualitative Study on Bystanders to Non-consensual Forwarding of Nudes Among Adolescents in Switzerland. *Int. J. Bullying Prev.* **2025**, *7*, 623–631. https://doi.org/10.1007/s42380-024-00249-2.
18. Doyle, C.; Douglas, E.; O'Reilly, G. The outcomes of sexting for children and adolescents: A systematic review of the literature. *J. Adolesc.* **2021**, *92*, 86–113. https://doi.org/10.1016/j.adolescence.2021.08.009.
19. Ojeda, M.; Del Rey, R. Lines of action for sexting prevention and intervention: A systematic review. *Arch. Sex. Behav.* **2022**, *51*, 1659–1687. https://doi.org/10.1007/s10508-021-02089-3.
20. Blumer, H. What is wrong with social theory? *Am. Sociol. Rev.* **1954**, *19*, 3–10. https://doi.org/10.2307/2088165.
21. Timmermans, S.; Tavory, I. Theory construction in qualitative research: From grounded theory to abductive analysis. *Sociol. Theory* **2012**, *30*, 167–186. https://doi.org/10.1177/0735275112457914.
22. Tricco, A.C.; Lillie, E.; Zarin, W.; O'Brien, K.K.; Colquhoun, H.; Levac, D.; Moher, D.; Peters, M.D.J.; Horsley, T.; Weeks, L.; et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann. Intern. Med.* **2018**, *169*, 467–473. https://doi.org/10.7326/M18-0850.
23. Munn, Z.; Peters, M.D.J.; Stern, C.; Tufanaru, C.; McArthur, A.; Aromataris, E. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med. Res. Methodol.* **2018**, *18*, 143. https://doi.org/10.1186/s12874-018-0611-x.
24. Döring, N.; Krämer, N.; Mikhailova, V.; Brand, M.; Krüger, T.H.C.; Vowe, G. Sexual Interaction in Digital Contexts and Its Implications for Sexual Health: A Conceptual Analysis. *Front. Psychol.* **2021**, *12*, 769732. https://doi.org/10.3389/fpsyg.2021.769732.
25. Sawyer, S.M.; Azzopardi, P.S.; Wickremarathne, D.; Patton, G.C. The age of adolescence. *Lancet Child Adolesc. Health* **2018**, *2*, 223–228. https://doi.org/10.1016/S2352-4642(18)30022-1.
26. Bronfenbrenner, U.; Morris, P.A. The bioecological model of human development. In *Handbook of Child Psychology*, 6th ed.; Damon, W., Lerner, R.M., Eds.; Wiley: Hoboken, NJ, USA, 2006; Volume 1, pp. 793–828.

27. Navarro, J.L.; Tudge, J.R.H. Technologizing Bronfenbrenner: Neo-ecological theory. *Curr. Psychol.* **2023**, *42*, 19338–19354. https://doi.org/10.1007/s12144-022-02738-3.
28. Simon, W.; Gagnon, J.H. Sexual scripts: Permanence and change. *Arch. Sex. Behav.* **1986**, *15*, 97–120. https://doi.org/10.1007/BF01542219.
29. Grimmer, J.; Stewart, B.M. Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts. *Political Anal.* **2013**, *21*, 267–297. https://doi.org/10.1093/pan/mps028.
30. Törnberg, P. Best Practices for Text Annotation with Large Language Models. *Sociologica* **2024**, *18*, 67–85. https://doi.org/10.6092/issn.1971-8853/19461.
31. Khraisha, Q.; Put, S.; Kappenberg, J.; Warraitch, A.; Hadfield, K. Can large language models replace humans in systematic reviews? Evaluating GPT-4's efficacy in screening and extracting data from peer-reviewed and grey literature in multiple languages. *Res. Synth. Methods* **2024**, *15*, 616–626. https://doi.org/10.1002/jrsm.1715.
32. Lieberum, J.-L.; Toews, M.; Metzendorf, M.-I.; Heilmeyer, F.; Siemens, W.; Haverkamp, C.; Böhringer, D.; Meerpohl, J.J.; Eisele-Metzger, A. Large language models for conducting systematic reviews: On the rise, but not yet ready for use—A scoping review. *J. Clin. Epidemiol.* **2025**, *181*, 111746. https://doi.org/10.1016/j.jclinepi.2025.111746.
33. Tai, R.H.; Bentley, L.R.; Xia, X.; Sitt, J.M.; Fankhauser, S.C.; Chicas-Mosier, A.M.; Monteith, B.G. An examination of the use of large language models to aid analysis of textual data. *Int. J. Qual. Methods* **2024**, *23*. https://doi.org/10.1177/16094069241231168.
34. Törnberg, P. Large Language Models Outperform Expert Coders and Supervised Classifiers at Annotating Political Social Media Messages. *Soc. Sci. Comput. Rev.* **2025**, *43*, 1181–1195. https://doi.org/10.1177/08944393241286471.
35. Krippendorff, K. *Content Analysis: An Introduction to Its Methodology*, 2nd ed.; Sage: Thousand Oaks, CA, USA, 2004.
36. McGlynn, C.; Rackley, E. Pornography Platforms, the EU Digital Services Act and Image-Based Sexual Abuse. LSE Media Blog; London School of Economics and Political Science, 2022. Available online: https://blogs.lse.ac.uk/medialse/2022/01/26/pornography-platforms-the-eu-digital-services-act-and-image-based-sexual-abuse/ (accessed on 30 July 2026).
37. Killean, R.; McAlinden, A.-M.; Dowds, E. Sexual Violence in the Digital Age: Replicating and Augmenting Harm, Victimhood and Blame. *Soc. Leg. Stud.* **2022**, *31*, 871–892. https://doi.org/10.1177/09646639221086592.
38. European Parliament; Council of the European Union. *Regulation (EU) 2022/2065 on a Single Market for Digital Services (Digital Services Act)*; Council of the European Union: Brussels, Belgium, 2022.
39. European Commission. *A Better Internet for Kids (BIK+) Strategy for a Better Internet for Children*; European Commission: Brussels, Belgium, 2022.
40. Vandenbosch, L. Conceptual trailer. Literacy in digital intimacy—A key competence for youth development. *Contratexto* **2025**, *43*, 13–22. https://doi.org/10.26439/contratexto2025.n43.7921.
41. Ringmar Sylwander, K. Consent in a Digital Age—Rethinking Sexting Education. British Politics and Policy at LSE; 31 July 2025. Available online: https://blogs.lse.ac.uk/politicsandpolicy/consent-in-a-digital-age-rethinking-sexting-education/ (accessed on 30 July 2026).

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