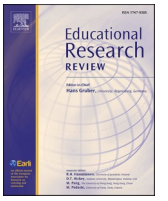
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Review



Adolescent flourishing in a digitally connected world: A qualitative systematic review and meta-synthesis

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ABSTRACT

Learning, playing and socialising through online technologies and platforms is an important part of growing up in a post-digital world. Schools and education systems are increasingly expected to respond to these shifts, ensuring that adolescents are supported to engage with digital technologies in ways that promote flourishing. Yet, global policy responses are increasingly dominated by interventionist policies that emphasise risk reduction and harm prevention. While important, it is equally critical to understand how digital technologies can be harnessed to support positive psychological, social and educational development. To address this need, we conducted a systematic review and qualitative meta-synthesis of 90 studies published since 2014 across 26 countries, examining how adolescents experience flourishing through their engagement with digital technologies. The review was limited to qualitative studies that directly captured adolescent voices through their own narrative accounts, ensuring that young people's perspectives were foregrounded. Guided by the tenets of Self-Determination Theory, the analysis generated ten subthemes organised under the core categories of autonomy, competence, and relatedness. This synthesis demonstrates how these conceptually distinct dimensions are interconnected and collectively contribute to adolescent flourishing (as an SDT-informed form of wellbeing) in digitally connected contexts. A recurring theme was the distinctive value of online spaces for underrepresented adolescents, who frequently relied on them for identity expression, supportive peer networks, and meaningful friendships. The findings highlight the diverse opportunities digital technologies afford for adolescent flourishing and underscore the need for policies and pedagogical practices that create supportive, accessible, and welcoming digital spaces.

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1. Introduction

1.1. Digital technologies in adolescents' learning and development

In technologically advanced nations, most adolescents have access to the internet. For instance, in the United States, most adolescents (13- to 17-year olds) have or had access to a smartphone (95%), a desktop or laptop computer (88%), or a gaming console (83%), and nearly all adolescents (96%) say they use the internet at least daily (Pew Research Center, 2024).

There has been considerable societal debate about the potential harms of digital technologies, particularly social media, on adolescent wellbeing, including exposure to inappropriate content and hurtful comments (Prkno, Grafe, Schulz, Kiess, & Poulain, 2025). This debate is not new, with similar concerns occurring throughout history in relation to disruptive technologies such as the radio, television, novels, computers, and video games (Haddon, 1993; Orben, 2020; Wartella & Reeves, 1985). Much of the academic literature reflects this focus, emphasising risks and negative outcomes (Modecki et al., 2022; Schönning et al., 2020). However, findings remain contested, with ongoing debate about the strength and nature of associations between technology use and mental health (Appel et al., 2020; Dickson et al., 2018; Jensen et al., 2019; Vuorre & Przybylski, 2024).

For education, these debates are significant because schools and school systems are increasingly expected to support adolescents' digital wellbeing through curricula in digital citizenship, online safety, and social-emotional learning (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2025; National Centre for Computing Education, 2021). This paper responds by moving beyond deficit-focused perspectives (i.e., where the focus is on risks, problems, and harms), to understanding adolescents' positive experiences of digital technologies. Although risks must be acknowledged (Third et al., 2019), a balanced approach in policy, research and practice is needed, that recognises both benefits and harms (Livingstone, 2002; Modecki et al., 2022; Notley, 2009).

In this paper, wellbeing relates to "quality of life" and "contribut[ing] to the world with a sense of meaning and purpose" (World Health Organisation, 2025). It is treated as an overarching, multidimensional construct. Within this broad concept, flourishing refers more specifically to a eudaimonic form of wellbeing, concerned with optimal functioning and the realisation of human potential (Chaves, 2021). Guided by Self-Determination Theory (SDT), flourishing is operationalised through the satisfaction of the basic psychological needs for autonomy, competence, and relatedness (Ryan, 2023).

Learning, playing and socialising through digital technologies are key aspects of adolescent life in today's post-digital world (Jandrić et al., 2018). Supporting adolescents to use these tools positively can enhance their flourishing. In this review, 'online technologies' refers to all internet-enabled tools, such as online games, smartphones, social media (Vuorre & Przybylski, 2023), generative Artificial Intelligence (AI) used for learning, creative tasks, or question answering, and AI chatbots (Siddals et al., 2024; Third et al., 2019).

1.2. Understanding flourishing through a Self-Determination Theory perspective

Flourishing takes a strengths-based view of human development, focusing on the conditions that enable people to thrive in life and learning (Marciano & Viswanath, 2023; Seligman, 2019; VanderWeele, 2017). SDT provides a well-established framework for understanding these processes (Ryan, 2023). Within SDT, flourishing refers to the "blossoming of capacities and wellness" (i.e., flourishing as conceptualised in this review; Ryan, 2023, p. 592).

According to SDT, flourishing occurs when the basic psychological needs for autonomy, competence, and relatedness are satisfied. Autonomy refers to a sense of agency and acting in ways aligned with one's values. Competence involves feelings of mastery and effectiveness, while relatedness reflects connection, belonging, and meaningful relationships (Ryan & Deci, 2020). These needs are especially salient during adolescence, as young people strive to make decisions that reflect their own values and interests, develop new skills and independence, and establish meaningful relationships beyond the family (Parent, 2023; Popat & Tarrant, 2023).

The socio-technological environment can independently or interactively support or hinder the satisfaction or frustration of basic psychological needs, shaping the conditions that make flourishing more or less likely (Parent, 2023). An emerging concept in the literature, digital flourishing, refers to positive perceptions of online experiences, such as feeling connected and supported by online communities and finding inspiration through social comparisons on social media (Janicke-Bowles et al., 2023). However, research exploring this phenomenon from adolescents' perspectives remains limited.

In this review, SDT was selected as the theoretical framework because it offers a eudaimonic account of flourishing grounded in the satisfaction of universal psychological needs that operate across contexts, cultures, and developmental stages (Ryan & Deci, 2017). This universality makes SDT particularly well-suited to examining adolescent flourishing (within the broader domain of wellbeing) across the diverse digital contexts captured in this review. Importantly, SDT conceptualises social and technological environments as active contributors to need satisfaction, emphasising how contextual features can create conditions that support psychological growth and wellbeing (Ryan & Deci, 2020). This positions SDT as particularly generative for studying digital environments, where platform affordances and design features, such as anonymity, asynchronicity, and algorithmic curation, directly shape how adolescents pursue autonomy, competence, and relatedness. Although SDT-informed research has begun to explore these dynamics in digital contexts (Allsop, 2024; van de Casteele et al., 2024; West et al., 2024), much of the existing literature relies on quantitative methods and focuses predominantly on problematic and negative outcomes.

Adolescence is a critical developmental period for developing the basic psychological needs outlined in SDT, namely autonomy, competence and relatedness, which align closely with key developmental tasks such as identity formation, increasing autonomy from parents, and building peer relationships (Bonnie et al., 2019; Ryan & Deci, 2020). Digital technologies are not peripheral to these

processes; they are often central contexts in which they unfold. Although SDT has been applied to adolescent development and digital engagement (Allsop, 2024; van de Casteele et al., 2024; West et al., 2024) there has been little synthesis of qualitative research using SDT to examine adolescents' own accounts of flourishing online. This is a notable gap, as qualitative studies provide insight into how young people experience and understand need satisfaction in ways not captured by quantitative research (Ryan & Deci, 2020). The present review addresses this gap by applying SDT as both an organising and interpretive framework to synthesise adolescents' accounts of positive digital experiences.

1.3. Centring adolescents' voices in educational contexts

Educational researchers increasingly emphasise the importance of student voice and agency in shaping pedagogical and policy decisions (Kucirkova et al., 2024). Listening to adolescents' perspectives is particularly vital in digital contexts, given the significant differences between adolescents and adults in how they adopt and respond to different forms of media (Burns & Gottschalk, 2019; Livingstone, 2002). Accordingly, this review focuses on synthesising the qualitative literature that reports adolescents' perceptions of their online experiences. While recent understandings have expanded the definition of adolescence to encompass ages 10-24 (Sawyer et al., 2018), our interest was in applications for secondary-school aged students. For this reason, we focused on adolescents aged 12-19.

Given the abundance of literature on the risks and harms associated with online technology use (Schonning et al., 2020), this review instead emphasised adolescents' positive online experiences, with a focus on digital flourishing. Because digital flourishing is an emergent and likely complex phenomenon, a comprehensive understanding of adolescents' situated experiences was needed. To achieve this, the systematic review examined qualitative evidence to identify broader patterns across existing studies, providing nuanced insights to inform policy development.

1.4. Overview of existing literature reviews

Several meta-syntheses have focused on adolescents' negative experiences online, including engagement with self-harm content (Stänicke et al., 2024a), online child sexual abuse (Stänicke et al., 2024b), problematic use of social media on outcomes including depression, anxiety, eating and neurobiological issues, (Cataldo et al., 2021), and internet addiction (Douglas et al., 2008). More recent reviews (e.g., Sala et al., 2024) have begun to examine both the harms and benefits of online engagement, as well as reviews focused exclusively on the benefits (e.g., Gudka et al., 2023), as outlined below.

Sala et al. (2024) synthesised findings from 24 reviews on the effects of social media on adolescents' wellbeing and mental health, published between 2015 and 2023. Of these, three were reviews of qualitative studies (Cataldo et al., 2021; Popat & Tarrant, 2023; Shankleman et al., 2021). Popat and Tarrant (2023), and Shankleman and colleagues (2021) both highlighted the complex and nuanced relationship between adolescent social media use and wellbeing, identifying how social media can both contribute to and hinder wellbeing in the areas of relationships, identity construction, learning, and emotions. Both studies identified a gap in the literature regarding the roles that gender, ethnicity, and culture may play in shaping adolescents' experiences on social media. Cataldo and colleagues (2021) highlighted the rapid evolution of social media platforms, noting that the evidence base must be continually updated to keep pace.

Marciano et al. (2024), in a meta-analysis of 78 primarily cross-sectional studies, reported positive associations between social media communication and both hedonic and social wellbeing, although their focus on binary gender categories limits broader applicability. Gudka et al. (2023) adopted a strengths-based lens, examining approaches to social media use that support flourishing across the lifespan. However, their operationalisation of wellbeing was relatively narrow, relying on search terms related to wellbeing and happiness, and excluding broader constructs such as eudaimonia, thriving, flourishing, and basic psychological needs satisfaction. While the review included 118 studies, relatively few employed qualitative or mixed methods, highlighting the need for research that centres young people's lived experiences. A key finding was the bi-directional relationship between themes, with wellbeing appearing both as an outcome variable and as a key condition enabling flourishing through social media use. In this review, we treat flourishing as a specific form of wellbeing rather than a separate or parallel construct.

From an educational perspective, existing reviews provide an important foundation but also reveal areas for further development. Collectively, this literature has established that digital technologies can play both supportive and potentially problematic roles in adolescents' lives. At the same time, opportunities remain to further extend this work in ways that are particularly relevant for education. Many studies focus on social media alone, despite adolescents engaging across a wider range of technologies. In addition, qualitative syntheses that centre adolescents' own perspectives remain relatively limited. Building on this literature, the present review offers a complementary, theory guided qualitative synthesis that examines how adolescents experience flourishing through digital technologies, informed by Self Determination Theory.

1.5. Contribution to educational research

The main aim of this systematic review is to understand adolescents' perceptions of their positive experiences through their engagement with the internet and digital technologies, with a specific focus on flourishing in a connected world. To capture lived experiences, findings from qualitative studies were synthesised and interpreted. We focused exclusively on qualitative research due to the predominance of quantitative studies in previous reviews and to ensure adolescent voices were prioritised. Qualitative research is especially valuable for highlighting diverse perspectives, including those of underrepresented groups such as sexual and gender

minorities and ethnically and racially minoritised youth (Wilson & Cariola, 2020). Earlier reviews, such as Marciano et al. (2024), identified the lack of attention to these groups as a key limitation.

Our review builds on and extends the findings from earlier reviews in several ways. First, only qualitative studies capturing adolescents' own narrative accounts were included. Second, the focus was broadened to all internet-enabled technologies, not just social media, reflecting the diverse ways adolescents engage online. Third, the review adopts a positive lens, emphasising flourishing as defined by the three core tenets of SDT: autonomy, competence, and relatedness (Ryan & Deci, 2020). This focus does not aim to deny or discount the reality of negative experiences, but rather to contribute balance to a conversation that has been largely deficit-focused. This contribution was considered important given comparatively little research on how adolescents can flourish through their engagement with online technologies. This review sought to address that gap by adopting a strengths-based perspective. Fourth, a comprehensive search strategy conceptualised wellbeing broadly to capture literature relevant to flourishing (see Appendix 1), ensuring relevant studies were captured. Finally, the review focuses on adolescents aged 12–19 as this captures secondary school students, acknowledging the unique developmental characteristics and vulnerabilities of this age group. By synthesising adolescents' qualitative accounts, this study makes visible how autonomy, competence, and relatedness are described in adolescents' everyday use of digital technologies. Guided by SDT and informed by gaps in the existing literature, this study was guided by the following overarching research question: How do adolescents aged 12-19 experience flourishing via digital technologies?

2. Methods

2.1. Design and research question

Reporting was guided by both the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA 2020) guidelines (Page et al., 2021) and the Enhancing transparency in reporting the synthesis of qualitative research (ENTREQ) guidelines (Tong et al., 2012). This protocol is registered with the Open Sciences Framework (OSF): https://osf.io/j48k5/?view_only=647f846ed1e3410cb823099739c973b2.

2.2. Eligibility of studies

Eligible studies included published studies that employed qualitative data collection methods such as interviews and focus groups, and qualitative methods for data analysis such as content and thematic analysis. Mixed-methods studies with a clear qualitative data component were also included (only the qualitative data were considered). The focus was on secondary school-aged adolescents (12-19 years), with studies required to present disaggregated data for adolescents when other age groups were included. Studies had to capture adolescents' perspectives on online experiences, with a specific focus on flourishing. Studies focusing on clinical outcomes, such as online treatments for eating disorders, were excluded. The SPIDER tool (i.e., Sample, Phenomenon of Interest, Design, Evaluation, Research type) was used to guide the design of our search strategy (Table 1).

2.3. Information sources

The search was completed in the following databases: MEDLINE Complete, ERIC, APA PsycInfo, CINAHL Complete, Web of Science Core Collection, Scopus and SocINDEX with Full Text. Reference lists of included studies were checked for backward citation searching, and Scopus' 'Cited by' function was used for forward searching to identify more recent studies.

2.4. Search strategy

A draft search strategy was developed, and an initial search was conducted in the Web of Science Core Collection. The strategy employed key terms based on the SPIDER eligibility criteria, specifically the sample (adolescents), the phenomenon of interest (digital technologies and flourishing), and the research type (qualitative literature). Terms were informed by preliminary internet searches and previous reviews of adolescent wellbeing and media use (Shankleman et al., 2021). A 10-year limit was applied, focusing on studies published between 2014 and 2024 to reflect contemporary internet use, including changes in social media and online gaming platforms most commonly used by adolescents, as well as the frequency of their use. For example, in the US, Pew Research Center data show that by 2014 adolescents were beginning to shift away from Facebook, then the most popular platform, in favor of alternatives

Table 1
Research question framework (SPIDER).

Sample	School-aged adolescents
Phenomena of interest	a) Experiences that relate to flourishing both online and offline, as defined by Self-Determination Theory (Ryan & Deci, 2020). For example, experiences of autonomy, competence, and relatedness. b) All technologies enabled by the Internet, such as online games, smartphones, and social media (Vuorre & Przybylski, 2023).
Design	Meta-synthesis of qualitative research, including, but not exclusive of, interviews and focus groups with adolescents.
Evaluation	Thematic synthesis of adolescents' positive connected experiences.
Research type	Qualitative research published 2014 - 2024.

such as YouTube, TikTok, Instagram, and Snapchat (Duggan et al., 2015; Pew Research Center, 2024). The final search, conducted on 27 August 2024, is provided in Appendix 1.

2.5. Study records

Search results were imported into Covidence, which was used to manage records and identify duplicates. Any duplicates missed by the software were removed manually. The remaining articles were screened in duplicate against the inclusion and exclusion criteria using titles and abstracts. Articles meeting these criteria then underwent full-text screening in duplicate. The screening was shared amongst the authorship team (all articles were screened by two authors independently).

Interrater reliability was assessed using Prevalence-Adjusted Bias-Adjusted Kappa (PABAK), which accounts for chance agreement

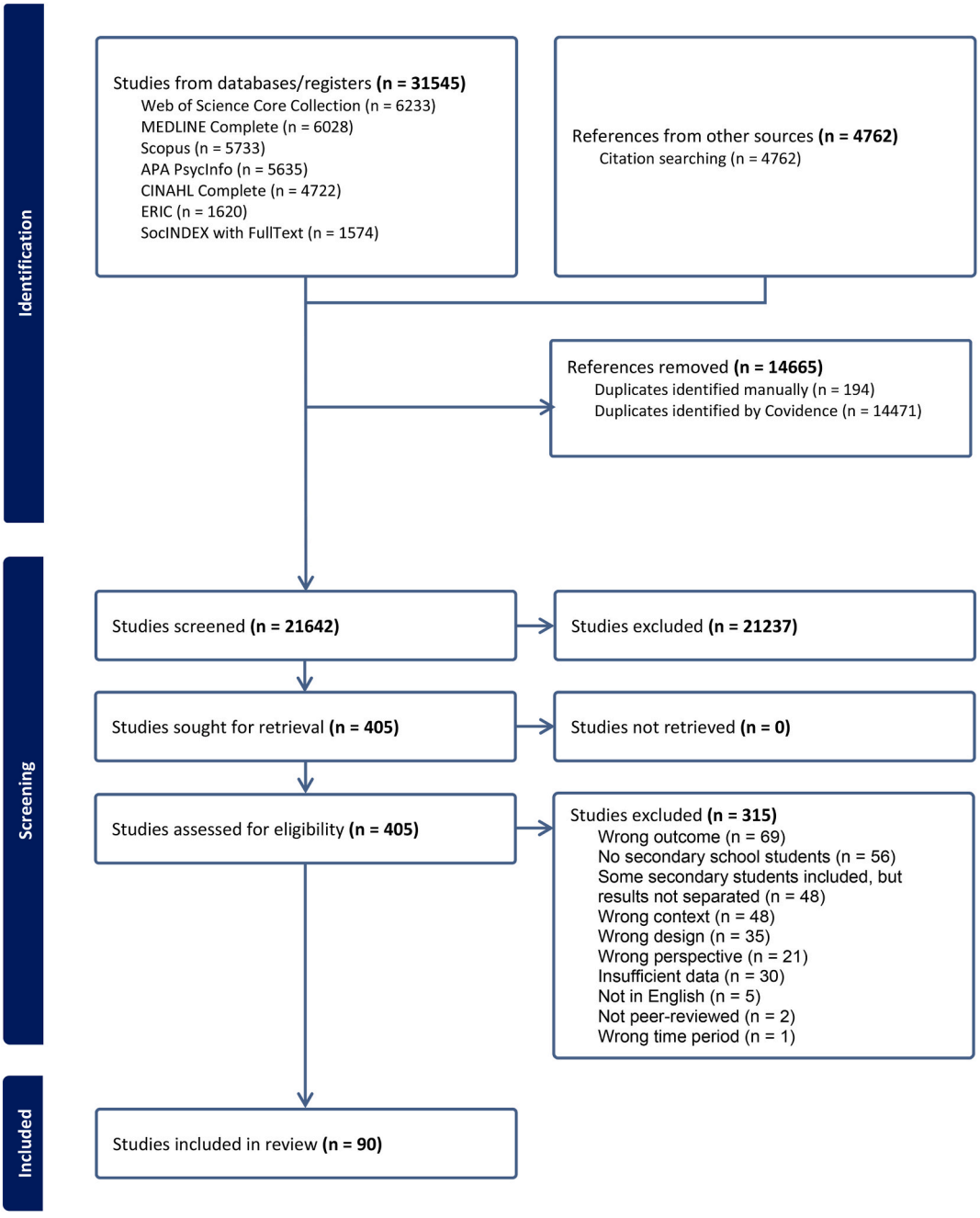


Fig. 1. Flow chart of retrieved, excluded and included items.

and corrects for distortions caused by empty or sparse agreement cells. At the title and abstract stage, agreement between reviewers was 96% ($\kappa = .91$), indicating a high level of interrater agreement (Landis & Koch, 1977). At full-text screening, the 80 articles meeting the initial criteria were assessed in the same way, with an observed agreement of 82.3% ($\kappa = .64$), indicating a substantial level of interrater agreement between reviewers.

Conflicts at each stage were resolved through discussion or by a third reviewer.

Full-text articles unavailable through university resources were requested via inter-library loans or from corresponding authors. Forward and backward citation searches were conducted for the 80 included studies on 14 May 2025. Fig. 1 presents the screening process.

2.6. Analysis

As this review focused on qualitative studies, the meta-synthesis aimed to examine key themes, concepts, and ideas across the papers. To enable insights and account for the interpretative nature of qualitative studies, a descriptive-interpretative approach was taken. This approach recognised the significance of understanding adolescents' positive experiences with online environments, as reflected across various sections of qualitative reporting (Booth et al., 2022). It also provided a comprehensive means to describe and synthesise these experiences while interpreting significant themes and concepts (Gjerstad et al., 2024).

In Stage One, researchers extracted key study information using a standardised data extraction form, which was piloted before full implementation. The extracted data included: (a) year of publication; (b) study location; (c) study design; (d) sample size; (e) age range; (f) mean age and standard deviation; (g) percentage female; (h) percentage gender diverse; (i) additional relevant demographics; (j) qualitative design; (k) data sources; (l) average duration of data collection; (m) analytic method and citation; and (n) theoretical or conceptual framework and citation.

In Stage Two, the included studies were uploaded into NVivo version 15 for analysis. Consistent with a descriptive-interpretive approach, reflexive thematic analysis was used to synthesise findings across first-order constructs (i.e., participant quotes included in the original papers) and second-order constructs (i.e., author interpretations expressed as concepts or themes; Braun & Clarke, 2019). This approach encouraged an intersection between the research team's positionality and experience, and the qualitative data. Two researchers completed the analysis following Braun and Clarke's six-phase process: generating initial codes, identifying potential themes, developing and refining themes, and including developed themes in a written report (Braun & Clarke, 2019, 2022).

During Stage Two, it became evident that some studies did not sufficiently report original participant views, which were central to this review. As a result, an additional exclusion criterion was applied: studies containing fewer than two meaningful participant quotes were excluded. These papers were reviewed by two authors before a final exclusion decision was made. See Appendix 2 for a list of studies excluded at this stage.

A combination of deductive and inductive coding was used, with the three core tenets of SDT (relatedness, autonomy, and competence) as the organising framework. Coding was iterative, with regular discussions between the two coders and the broader research team to refine interpretations and ensure rigour. Under Autonomy, twelve initial codes were consolidated into four subthemes; Competence had five codes grouped into three subthemes; and Relatedness had fourteen codes refined into four subthemes. To enhance trustworthiness, a primary author whose study appeared at least three times in the synthesis was invited to comment on the themes and contribute as a co-author (Timulak, 2017). They confirmed that the themes and codes accurately reflected both their study data from the intended meanings of Ryan and Deci's (2020) core SDT tenets, which were also used to analyse these three studies.

2.7. Research team and reflexivity

Our international, interdisciplinary research team includes academics from education, psychology, and communication. Theme development was discussed at multiple stages to support collaborative reflexivity, helping to identify and address potential blind spots in the coding process (Olmos-Vega et al., 2022). Contextual reflexivity was also important, particularly in recognising the unique historical moment during which this study was conducted, amid national policy discussions in Australia on banning adolescent use of social media (eSafety Commissioner, 2024). Internationally, parents and politicians were calling on researchers to determine the "right age" for children to use social media (Livingstone & Sylwander, 2025). This broader context influenced the impetus for the study, with the researchers, who are based in Australia and the United Kingdom, aiming to offer an alternative perspective to the dominant discourse. It is therefore important to acknowledge that this research intentionally sought to explore positive accounts of adolescents' online experiences. By emphasising positive experiences, we do not deny or discount negative experiences, but in contrast bring a sense of balance to a conversation that has been largely deficit-focused.

2.8. Quality assessment of eligible studies

The Critical Appraisal Skills Programme (CASP, 2018), endorsed by Cochrane and the NHMRC, was used to assess study quality (see Appendix 3). Overall, quality was mixed. Several studies clearly described methodology, purposeful sampling, and analytic procedures, while others lacked transparency in participant recruitment or only provided brief details on analysis. Limited attention to researcher reflexivity and positionality was common, with few studies reflecting on the researcher's potential influence, a factor that can enrich qualitative interpretation (Olmos-Vega et al., 2022). Ethical reporting was inconsistent, and formal approval was sometimes unclear. Despite these limitations, the studies offered valuable insights into adolescents' experiences with digital technologies.

3. Results

3.1. Study characteristics

The included studies were published between 2014 and 2025, with more than half (n = 70) appearing from 2019 onwards. Of the 90 studies, 26 countries were represented across Europe (n = 34), North America (n = 23), Oceania (n = 13), Asia (n = 5), the Middle East (n = 3), South America (n = 1), and Africa (n = 1), with six studies having an international focus. Majority of studies (n = 65) were conducted in OECD countries, reflecting research in contexts with well-established digital infrastructures (OECD, 2024). The majority were qualitative, while 16 used mixed-methods designs. Data collection predominantly involved interviews only (n = 52), followed by focus groups only (n = 20), combined interviews and focus groups (n = 7), and written responses (n = 6). The most common analytic method was thematic analysis (n = 52). Other approaches included grounded theory (n = 8), content analysis (n = 7), constant comparative analysis (n = 6), phenomenological or interpretative approaches (n = 4), and nine studies did not report their method. Slightly more than half of the studies focused on social media platforms, while approximately one-fifth addressed broader internet use. Detailed information is presented in Table 2. Fourteen of the 90 studies explicitly indicated they were conducted during or related to the COVID-19 pandemic.

3.2. Study participants

Sample sizes ranged from one to 3665 participants (median = 29; IQR = 15–39), indicating that most studies involved relatively small samples, typical of qualitative research. The largest study (3665 participants) analysed open-ended survey responses. Participant ages ranged from 8 to 31 years (median = 16, mean ≈ 16, IQR = 15–17), indicating most studies focused on adolescents; only quotes from the 12-19 age group were included in our synthesis. For the 69 studies reporting female participants, the mean percentage was approximately 52.7%, indicating that samples were generally balanced in terms of gender. Of note, 13 studies included gender diverse participants, including non-binary and transgender participants.

Additional demographic details highlight diverse participant characteristics, including cultural and socio-economic backgrounds and geographic locations (urban, rural, immigrant communities). Several samples focused on sexual and gender minority adolescents, including LGBTQI+ and queer participants, while others included individuals with additional support needs such as autism spectrum condition, cerebral palsy, or social, emotional, and behavioural difficulties. Participants represented a range of ethnic and racial backgrounds, including White, African American, Latinx, Asian, and multiracial youth, as well as first- and second-generation immigrants. Some studies targeted clinical populations, including adolescents receiving cancer treatment, those with diabetes, or those accessing mental health services. Many studies purposely sampled for diversity in race, gender, socio-economic status, and technology use, demonstrating a broad and inclusive approach to understanding youth experiences. Further details for study characteristics and participants can be found in Appendix 4.

3.3. Synthesis

The synthesis resulted in three overarching themes and ten subthemes. Each theme was supported by evidence from the reviewed articles, with between five and 57 studies contributing to each theme (see Table 3). Although presented as three overarching themes, the synthesis showed that these themes are not discrete. Instead, they reflect interconnected and overlapping aspects of adolescents' digital experiences, with several subthemes connecting to more than one domain of flourishing. To make these relationships explicit, Fig. 2 presents a layered concept map that visually represents the structure of the synthesis. We aimed to present a visual display that avoided a rigid structure and instead highlighted the fluid and overlapping nature of the themes. Themes are grouped by theoretical domain, with colours indicating alignment with autonomy, competence and relatedness, and circle size reflecting the relative prominence of each theme or subtheme across the reviewed studies.

Table 2
Types of digital technologies examined in included studies.

Category	Definition	Number of papers
Social media	Platforms primarily designed for social interaction, content sharing, and networking (e.g., TikTok, Instagram, Facebook, Snapchat)	50
The internet	Broad, general internet use not tied to a specific platform or purpose; includes online engagement without a defined context	18
Online gaming	Video games played online, including Massively Multiplayer Online Role-Playing Games (MMORPGs), Minecraft, Pokémon Go, and other multiplayer or single-player games	13
Online community	Internet-based groups focused on shared interests, creative projects, or peer support (e.g., Queeryouth.com, Scratch programming communities, fandom communities, online peer support)	8
Health-focused internet use	Online activities or tools aimed at supporting physical or mental health (e.g., health apps, telehealth platforms, technology use in healthcare)	3

3.3.1. Main theme 1 - autonomy: agency and ownership over actions

3.3.1.1. Sub-theme 1.1 online environment as a sanctuary for self-discovery, self-expression, and seeking support. Across the included studies, adolescents described using online environments to explore and clarify identity, particularly when offline contexts were experienced as judgemental or unsupportive. Within this sub-theme, autonomy was reflected as agency over actions and self-presentation, including decisions about where to participate, what to disclose, and which content to engage with. Adolescents searched for identity-related information, learnt terminology, compared experiences, and engaged with representations that supported self-understanding. In studies focused on LGBTQI + adolescents, online environments were frequently described as enabling self-acceptance and expression, including the ability to "come out without fear" (Fisher et al., 2024, p. 3).

Seeking emotional support occurred via direct interaction and indirect exposure to others' experiences. Adolescents reported gaining reassurance from reading posts, comments and shared stories from people with similar identities, as well as from observing content creators or public figures who shared mental health or identity-related experiences. This included engagement with light or humorous content that "make me smile, lift me up" (17-year-old lesbian cisgender female; Escobar-Viera et al., 2022, p. 4). Online groups and communities were also used to access lived experiences, feedback, and validation, helping to reduce feelings of isolation.

Across multiple studies, anonymity and audience management were described as supporting self-expression while protecting privacy. Adolescents referred to platform choices and features as shaping who could see their content and which audiences they could avoid, such as family members. Selective disclosure practices included omitting identifying images while sharing personal information such as preferred names and interests. These affordances enabled more open emotional expression, allowing thoughts and feelings to be articulated without fear of judgement: "… People don't know that it's me. I can say whatever I want, and I don't have to worry about people judging me …." (17-year-old queer bisexual White woman; Craig et al., 2025, p. 9).

Adolescents described using online spaces for venting, journalling, documenting feelings, and expressing views, often framed as a way to relieve stress or reduce emotional tension. These practices reflected adolescents' active efforts to manage emotions, "to calm me down" (West et al., 2023, p. 8), and maintain a sense of control over their experiences.

Overall, adolescents described online technologies as supporting self-discovery, self-expression, and support seeking by providing access to spaces, information, and audiences outside of their immediate offline environments. These online spaces were described as enabling adolescents to manage disclosure, express emotions, and connect with validating content or communities in ways that felt safer or more supportive than some offline contexts.

3.3.1.2. Sub-theme 1.2 online environment as a way to unwind, escape stress, and find emotional relief. Many adolescents depicted online technologies as part of their everyday strategies for managing stress and finding temporary emotional relief. Across studies, these practices were framed as intentional ways to pause, reset, or take a break from academic, social, or family pressures. For example, participants described taking a break after prolonged periods of schoolwork or revision, where "if you've been revising for like hours then you can take your mind off it or whatever by getting on your phone or listening to music" (Yr 10 student, UK; O'Reilly et al., 2023, p. 673). These activities were embedded within daily routines and commonly involved engaging with content such as videos, music, games, or online communication.

For some adolescents, emotional relief was closely linked to the immersive qualities of particular platforms or activities, especially gaming and streaming. Participants described becoming absorbed into these environments, which made them "feel more important … more relaxed than real life" (18-year-old male; Forsyth et al., 2017, p.E12). Immersion enabled adolescents to focus their attention away from immediate concerns, providing a temporary break from everyday worries.

In more challenging circumstances, such as periods of illness, pain, or social separation, online spaces were also described as helping maintain a sense of normalcy and emotional steadiness. Even brief interactions with content, such as watching "a funny video", could help adolescents "forget about the pain" (15-year-old female with Acute Lymphoblastic Leukaemia; Daniels et al., 2021, p. 228).

Overall, this subtheme shows that adolescents use online technologies as accessible, short-term ways to manage emotions in everyday life. These practices provided moments of calm, escape, or enjoyment within their daily rhythms of life.

3.3.1.3. Sub-theme 1.3 online environment as a "gateway" to the world, providing agency and empowering information seeking. Adolescents described using online technologies to interact with people, and access information and opportunities beyond their immediate physical and social environments. Across the studies, these environments were described as supporting greater independence in everyday activities, particularly in organising and maintaining social connections. Adolescents noted that online platforms made it easier to coordinate interactions and make plans, for example, "make[ing] it a lot easier to make plans … whereas in primary school your mum would have to ring up their mum" (West et al., 2025, p. 13).

Outside social coordination, adolescents portrayed online spaces as sources of inspiration and exposure to new ideas, interests, and possibilities. Engaging with content related to hobbies, creative pursuits, and current events was often experienced as motivating, with adolescents describing how seeing others' activities or achievements encouraged them to try new things, including wanting to "do it yourself" (16-year-old male; Holmberg et al., 2019, p. 1351).

Online technologies were also experienced as accessible sources of information that felt immediate and relevant to adolescents' lives, placing "everything [at their] fingertips" (17-year-old female; Radovic et al., 2018, p. 3). This included school related learning, general knowledge, and health information. Online searching and video-based content were described as allowing adolescents to explore questions at their own pace and in their own time, particularly for sensitive or personal topics. Being able to reflect independently was seen as important, with adolescents noting that "you can do it on your own time … it's completely on your own terms …

Table 3
Sources representing each theme/subtheme.

Main Theme	Subtheme	Sources	Illustrative quote
1. Autonomy - Agency and ownership over actions	1.1. Self-discovery, self-expression, and support seeking	Craig et al., 2025, Escobar-Viera et al., 2022, Fisher et al., 2024, McInroy & Craig, 2020, O'Reilly et al., 2019, Paceley et al., 2022, Selkie et al., 2020, Vacca, 2024, Weinstein et al., 2021, West et al., 2025, West et al., 2023, Wilf & Wray-Lake, 2024, Wong & McLellan, 2024, Zaeske et al., 2022	"… People don't know that it's me. I can say whatever I want, and I don't have to worry about people judging me …." (17-year-old queer bisexual White woman; Craig et al., 2025, p. 9).
	1.2. Unwind, escape stress, and find emotional relief	Craig et al., 2025, Daniels et al., 2021, Dunne et al., 2025, Forsyth et al., 2017, Johnson & Francis, 2022, Kline et al., 2023, O'Reilly et al., 2019, O'Reilly et al., 2023, O'Reilly, 2020, Paceley et al., 2022, Paudel & Rana, 2022, Pavlopoulou et al., 2022, Purboningsih et al., 2023, Razum & Huić, 2024, Seok et al., 2018, Thomas et al., 2021, Throuvala et al., 2019, Tkacova et al., 2021, Tzavela et al., 2015, Urbanova et al., 2023, Uzuegbunam, 2022, van der Wal et al., 2024, West et al., 2025, West et al., 2023, Winstone et al., 2021, Wong & McLellan, 2024	"if you've been revising for like hours then you can take your mind off it or whatever by getting on your phone or listening to music," (Yr 10 student, UK; O'Reilly et al., 2023, p. 673)
	1.3. "Gateway" to the world	Babbage et al., 2020, Holmberg et al., 2019, Hynan et al., 2015, Keles et al., 2024, Mahdizadeh et al., 2017, O'Reilly et al., 2023, Pereira et al., 2019, Radovic et al., 2018, Rimel et al., 2023, Selkie et al., 2020, Simpson, 2020, Singleton et al., 2016, Throuvala et al., 2019, Tzavela et al., 2015, Urbanova et al., 2023, Uzuegbunam, 2022, Vacca, 2024, Valtchanov & Parry, 2017, West et al., 2025, West et al., 2023, West et al., 2024, Wong & McLellan, 2024	"everything [at their] fingertips" (17-year-old female; Radovic et al., 2018, p. 3)
	1.4. Opportunity to choose purposeful content	Dunne et al., 2025, Ellison, 2017, Goodyear et al., 2019, Keles et al., 2024, Kline et al., 2023, Lai & Cai, 2023, Leurs, 2014, Liang et al., 2023, Lüders, 2025, Mahdizadeh et al., 2017, Marchi & Clark, 2021, McInroy, 2020, McLean et al., 2024, Moran & Mapedzahama, 2021, O'Reilly et al., 2021, O'Reilly et al., 2019, Paceley et al., 2022, Pavlopoulou et al., 2022, Radovic et al., 2018, Rides et al., 2025, Selkie et al., 2020, Singleton et al., 2016, Steineck et al., 2022, Thomas et al., 2021, Urbanova et al., 2023, Vacca, 2024, Valtchanov & Parry, 2017, van der Wal et al., 2024, Vella et al., 2019, Weinstein et al., 2021, West et al., 2025, Wong & McLellan, 2024, Zaeske et al., 2022, Tan & Kim, 2019	"I realized you can basically remove people you don't want to hear anymore, so I began unfollowing people, I began deleting apps, and I began following people who kind of brought me happiness …" (Liang et al., 2023, p. 8)
2. Competence - Feelings of mastery	2.1. Opportunity to feel proud of achievements	Craig et al., 2025, Marchi & Clark, 2021, McInroy, 2020, Pereira et al., 2019, Uzuegbunam, 2022, Valtchanov & Parry, 2017, van der Wal et al., 2024, West et al., 2023	"you feel like you're proud of it; you can't hide it. I think that's really good" (Valtchanov & Parry, 2017, p. 347).
	2.2. Growth in social confidence	Kasperski & Blau, 2023, Kruskopf et al., 2021, Liang et al., 2023, West et al., 2023, Winstone et al., 2021	"I was actually extremely shy as a kid until I got social media and my confidence grew … and I'm actually very confident now" (West et al., 2023, p. 7).
	2.3. Opportunity to build creative confidence	Brennan, 2021, Ellison, 2017, McInroy, 2020, Paudel & Rana, 2022, Roque & Rusk, 2019, West et al., 2023, Zaeske et al., 2022	"It's creative confidence. Feeling empowered … Being able to say, I have good ideas, I can make them … I will get there …" (15-year-old; Roque & Rusk, 2019, p. 345).
3. Relatedness - Sense of belonging and connection	3.1. Spaces for support & reducing distress	Bengtsson et al., 2021, Berger et al., 2021, Chalmers et al., 2022, Craig et al., 2025, Escobar-Viera et al., 2022, Hughes & Nguyen, 2024, Hynan et al., 2015, Keles et al., 2024, Kline et al., 2023, Le Bourdon, 2025, McInroy, 2020, O'Reilly et al., 2023, Paceley et al., 2022, Purboningsih et al., 2023, Radovic et al., 2018, Razum & Huić, 2024, Rimel et al., 2023, Singleton et al., 2016, Steineck et al., 2022, Tzavela et al., 2015, van der Wal et al., 2024, Weinstein et al., 2021, West et al., 2025, Wilf & Wray-Lake, 2024, Wong & McLellan, 2024	"The internet gave me an outlet, let me know I wasn't alone … It was a sense of community I wasn't able to have in person, and it gave me the strength to last …" (18-year-old, non-binary, pansexual, mixed-ethnicity participant; Craig et al., 2025, p. 14).
	3.2. Place to meet, see and be around people "like me"	Bannon et al., 2015, Berger et al., 2021, Chalmers et al., 2022, Craig et al., 2025, Ellison, 2017, Fisher et al., 2024, Gallup et al., 2016, Hanckel & Morris,	"… just people sharing their stories … knowing that I'm not alone in what I'm feeling has really helped me to not feel isolated …" (16-year-old female,

(*continued on next page*)

Table 3 (*continued*)

Main Theme	Subtheme	Sources	Illustrative quote
		2014, Holmberg et al., 2019, Lai & Cai, 2023, Levine & Stekel, 2016, Lüders, 2025, McInroy & Craig, 2020, McInroy, 2020, Moran & Mapedzahama, 2021, O'Reilly et al., 2023, Paceley et al., 2022, Pellegrino & Patlamazoglou, 2024, Singleton et al., 2016, Thomas et al., 2021, Tkacova et al., 2021, Vacca, 2024, Weinstein et al., 2021, West et al., 2025, West et al., 2023, West et al., 2024, Wong & McLellan, 2024, Zaeske et al., 2022	African American and White, heterosexual; Rimel et al., 2023, p. 8).
	3.3. Authenticity and better offline relationships	Andersson et al., 2015, Bannon et al., 2015, Barcelos & Rossi, 2014, Bengtsson & Jensen, 2024, Berger et al., 2021, Brown, 2014, Carlquist et al., 2019, Craig et al., 2025, Daneels et al., 2020, Escobar-Viera et al., 2022, Forsyth et al., 2017, Gillespie-Smith et al., 2021, Hughes & Nguyen, 2024, Kasperski & Blau, 2023, Lai & Cai, 2023, Lucero, 2017, Mao, 2014, McInroy, 2020, McLean et al., 2024, O'Reilly et al., 2021, O'Reilly et al., 2019, Paceley et al., 2022, Pavlopoulou et al., 2022, Rimel et al., 2023, Seok et al., 2018, Singleton et al., 2016, Throuvala et al., 2019, Tzavela et al., 2015, Vella et al., 2019, West et al., 2023, West et al., 2024, Wong, 2020	"intensify things", and mean "you end up getting to know them more quickly" (17-year-old male; Barcelos & Rossi, 2014, p. 282).
	3.4. Local and global hub for social capital	Abolfathi et al., 2022, Andersson et al., 2015, Babbage et al., 2020, Bannon et al., 2015, Barcelos & Rossi, 2014, Bell, 2019, Bengtsson & Jensen, 2024, Bengtsson et al., 2021, Berger et al., 2021, Borca et al., 2015, Brown, 2014, Carlquist et al., 2019, Craig et al., 2025, Daneels et al., 2020, Daniels et al., 2021, Fisher et al., 2024, Gallup et al., 2016, Gillespie-Smith et al., 2021, Hjetland et al., 2021, Hughes & Nguyen, 2024, Hynan et al., 2015, Johnson & Francis, 2022, Keles et al., 2024, Kline et al., 2023, Kruskopf et al., 2021, Leurs, 2014, Levine & Stekel, 2016, Liang et al., 2023, Mahdizadeh et al., 2017, Mao, 2014, Maor & Mitchem, 2020, Moran & Mapedzahama, 2021, O'Reilly et al., 2021, O'Reilly et al., 2023, O'Reilly, 2020, Paceley et al., 2022, Paudel & Rana, 2022, Purboningsih et al., 2023, Razum & Huić, 2024, Simpson, 2020, Steineck et al., 2022, Taddeo & Tirocchi, 2021, Throuvala et al., 2019, Tzavela et al., 2015, Urbanova et al., 2023, Uzuegbunam, 2022, Valtchanov & Parry, 2017, van der Wal et al., 2024, Vella et al., 2019, Weinstein et al., 2021, West et al., 2025, West et al., 2023, West et al., 2024, Winstone et al., 2021, Wong & McLellan, 2024, Wong, 2020, Zaeske et al., 2022	"Many of the Internet forums I have visited have been international … I have communicated with people from many different countries … This has definitely improved my ability to co-operate with others" (Andersson et al., 2015, p. 120).

which can be really important to some people" (Group 3, 12–15 years; Babbage et al., 2020, p. 6).

Overall, adolescents described online technologies as broadening their everyday experiences by supporting social organisation, exposure to new interests, and access to information that was difficult, uncomfortable, or impractical to obtain offline. These experiences were described across a range of everyday contexts, including learning, personal interests, and managing health-related concerns.

3.3.1.4. Sub-theme 1.4 online environment as an opportunity to choose purposeful content that fosters positivity and builds emotional resilience. Adolescents described actively shaping their online environments by selecting, curating, and customising content to reflect their interests, identities, and emotional needs. This included choosing platforms, accounts, and media that aligned with their humour, values, and hobbies, as well as deliberately avoiding content they found upsetting or unhelpful. Adolescents also described being aware of how platform algorithms responded to their interactions and using this knowledge to influence what appeared in their feeds. This involved unfollowing accounts, deleting apps, and prioritising content that felt positive or affirming, such as removing "people you don't want to hear anymore" and following those "who kind of brought me happiness" (Liang et al., 2023, p. 8).

Engaging with positive, entertaining, or uplifting content was commonly described as contributing to enjoyable and affirming online experiences. Adolescents reported seeking creative, entertaining, and interest-based content, which they reported as helping them feel happier or more relaxed. Exposure to such content was also described as sparking curiosity and interest in new topics or activities, and learning new skills, with some adolescents noting that this content could "motivate us to do something" (Urbanova et al.,

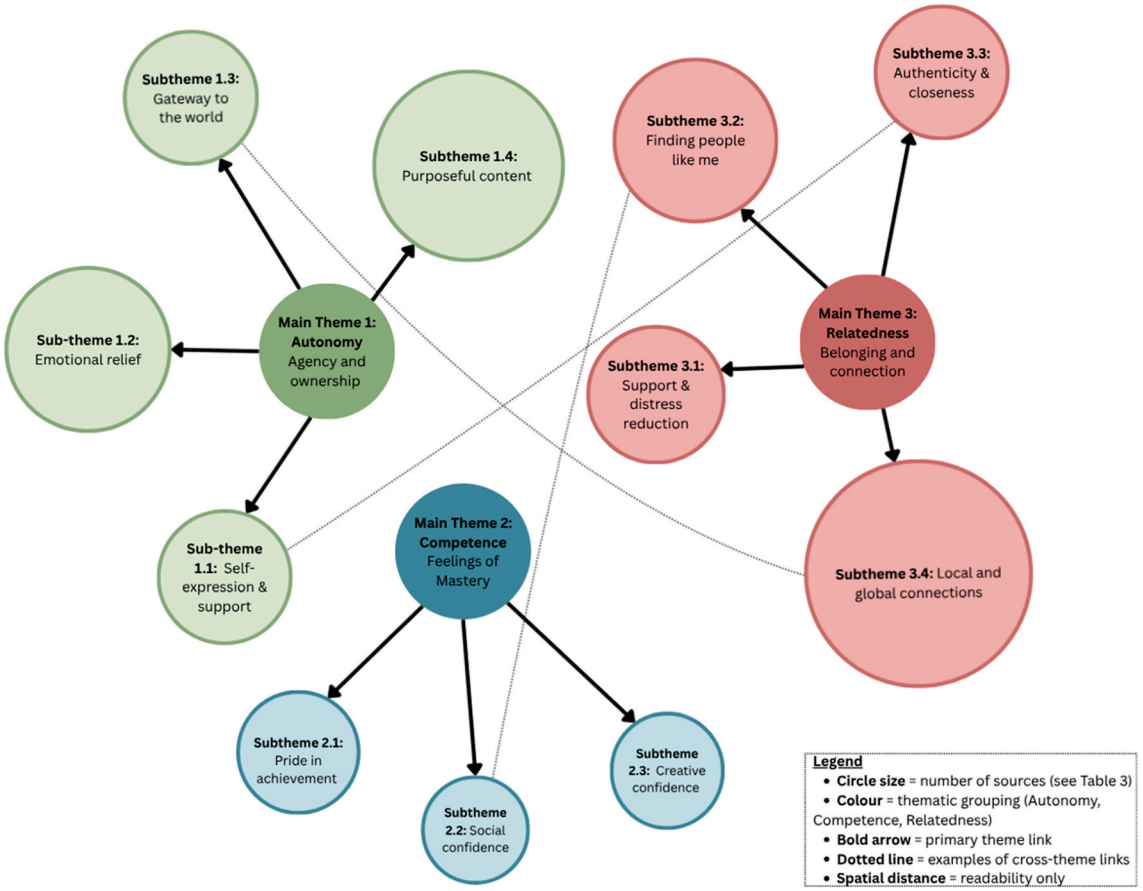


Fig. 2. Layered concept map of the themes.

2023, p. 5). For some adolescents, seeing others share achievements or everyday experiences was described as motivating or inspiring rather than provoking envy.

Adolescents also described making intentional choices about how they presented themselves online and which representations they engaged with. This included selecting avatars or game characters that reflected their identities, following creators or communities they felt represented by, and sharing content that affirmed who they were. Such practices included posting images that signalled belonging within valued social or cultural groups, for example sharing photos so that others could "see that I'm part of them too" (17-year-old female, Kenyan–Sudanese; Moran & Mapedzahama, 2021, p. 39). These practices were described across diverse contexts, including fandoms, gaming environments, and social media spaces, where adolescents engaged with content and communities that felt supportive, relatable, or meaningful.

Overall, adolescents described selecting and curating content as a way of influencing what they encountered online. These practices supported engagement with positive material, exploration of interests, and identity-affirming forms of participation across a range of digital spaces.

3.3.2. Main theme 2 - competence

3.3.2.1. Sub-theme 2.1 online environment as an opportunity to feel proud of achievements. Across the studies, online environments functioned as spaces for learning, skill development, and achievement, where adolescents often experienced pride in what they were able to do. These experiences were described across a range of contexts, including leadership roles in online communities, learning new skills through digital resources, and using digital knowledge to contribute to others.

A key source of pride involved taking on leadership or mentoring roles in online spaces. Adolescents described moderating forums, guiding others, and supporting peers, particularly within interest-based or identity-focused communities. These experiences were described as contributing to personal growth and confidence, including the opportunity to "grow as a person, as a leader, as a person who's involved with the LGBT community outside of the internet" (16-year-old White cisgender lesbian; Craig et al., 2025, p. 9).

Pride was also evident in descriptions of cultural and creative achievement. Some adolescents described using online platforms to learn skills connected to their cultural identities and then sharing these skills with others offline. For example, learning a Kenyan dance through YouTube and teaching it at school was described as an experience that carried personal meaning, where "you feel like you're

proud of it; you can't hide it. I think that's really good" (Valtchanov & Parry, 2017, p. 347).

Developing and sharing digital skills was another common source of accomplishment. Adolescents taught themselves how to use technologies, games, or applications and then applied this knowledge to support others, including family members. Others engaged in online learning aligned with future aspirations, often expressing enjoyment in building skills connected to planned careers. Engaging with online content was framed as a way of "training myself for the future" and "going further", with learning itself experienced as a source of joy (Male participant, Nigerian; Uzuegbunam, 2022, p. 161).

Overall, adolescents viewed online environments as spaces where they could build skills, show their achievements, and feel proud of what they had done. Through leadership, learning, and skill sharing, online participation was associated with feelings of pride and accomplishment across educational, cultural, and everyday contexts.

3.3.2.2. Sub-theme 2.2 online environment as an opportunity to grow in social confidence, leading to better relationships. Adolescents described how social media, in particular, can support the development of social confidence, especially among those who identify as shy or socially reserved. These platforms were seen to offer alternative avenues for self-expression and enable greater authenticity, especially in contexts where face-to-face interactions might feel intimidating. For some adolescents, this shift was associated with noticeable changes in confidence over time, including feeling "extremely shy as a kid until I got social media", followed by growing confidence and recognising shared experiences with others online (West et al., 2023, p. 7).

Online communication was sometimes perceived as a more comfortable or lower-pressure way of initiating relationships, for students who have a "difficult time opening-up" so it was easier to communicate "first via Facebook" or other platforms, which could serve as a bridge to stronger offline connections (Kasperski & Blau, 2023). A key aspect of this ease was having more time to consider and craft their responses, which reduced the social pressure typically associated with face-to-face interactions. This was reflected in the ability to rethink and adjust messages when typing, rather than risking awkward moments or judgment in person.

For many adolescents, confidence developed through online interaction extended into offline relationships. Increased familiarity and communication online were linked to stronger face-to-face connections, including feeling "better friends with people because I've spoken to them more online and therefore in real life, we're better friends" (Winstone et al., 2021, p. 5). In this way, online environments supported gradual and self-paced engagement in relationships, particularly for adolescents who found direct social interaction challenging due to shyness, social anxiety, or discomfort in unfamiliar situations.

Overall, online communication functioned as a space where adolescents could practise social interaction, build confidence, and strengthen relationships over time. By offering flexible and less pressured ways to connect, online environments supported the development of social confidence that often carried into everyday offline interactions.

3.3.2.3. Sub-theme 2.3 online environment as an opportunity to build creative confidence. Leading to resilience. Online environments were experienced as spaces that supported creative exploration and skill development, allowing adolescents to experiment, make, and learn through imaginative activity. Adolescents highlighted how online programs enabled them to "explore [their] imagination" and engage creatively without fixed outcomes or limits (12-year-old; Brennan, 2021, p. 588). These spaces were often characterised as open-ended, where the "possibilities are endless", encouraging continued experimentation and persistence over time (12-year-old; Brennan, 2021, p. 588).

Creative confidence was closely linked to making ideas tangible, learning through trial and error, and persisting when things did not work at first. This process was illustrated through engagement with platforms such as Scratch, a free, block-based online programming platform that allows children and young people to create interactive stories, games, and animations. Participation in Scratch supported confidence through creating, testing, and refining ideas, with creative engagement described as "being able to say, I have good ideas, I can make them and I have the power to do that … I can get things wrong … but I will get there if I just keep going" (15-year-old; Roque & Rusk, 2019, p. 345).

Creative participation was also experienced as a source of resilience and personal strength, particularly for adolescents navigating marginalisation. In online fandom spaces, creative engagement was described as extending past enjoyment to supporting coping and emotional wellbeing. One adolescent reflected on drawing "creativity from my fandom and strength", explaining that creative participation helped them deal with difficult situations and contributed to resilience as a queer young person, giving them "a backbone" (17-year-old; McInroy, 2020, p. 1882).

Overall, online environments functioned as spaces where adolescents could develop creative confidence through making, experimenting, and persisting. Through creative exploration and participation, online engagement supported feelings of capability and strength that adolescents carried into everyday life.

3.3.3. Main theme 3 - relatedness

3.3.3.1. Sub-theme 3.1 online environments as spaces for support & reducing distress. Online environments were experienced as accessible spaces where adolescents could connect with others and receive emotional support during difficult times. For many, these spaces functioned as virtual youth centres, offering familiar and dependable places to gather and interact, even when face-to-face contact was not possible. This was reflected in adolescents' descriptions of having "a place to congregate, even if it's not a physical setting" (16-year-old transgender man; Berger et al., 2021, p. 425).

Support sometimes came from others with shared experiences. At other times, it was the affordances of the online environment, anonymity, asynchronicity, and instant connectivity, that enabled connection, offering "people a click away" to "confide in" (Paceley

et al., 2022, p. 50), and reassurance that "y'know you're alright within seconds" (Singleton et al., 2016, p. 399). These spaces were diverse, ranging from multiplayer gaming platforms and online group chats, to social media, fan communities and discussion forums.

For underrepresented adolescents in particular, online support was experienced as especially important when offline environments felt unsupportive or isolating. Online spaces provided access to care, validation, and community that was not always available in person, including participation in identity affirming groups and connections with supportive peers. Experiences of engaging in nonbinary and other supportive online groups were framed as providing reassurance and belonging, where the internet "gave me an outlet, let me know I wasn't alone and I wasn't delusional", offering "a sense of community I wasn't able to have in person" and "the strength to last until I was able to get into a better situation" (18-year-old nonbinary, pansexual participant; Craig et al., 2025, p. 14).

Overall, adolescents experienced online environments as spaces where care, reassurance, and validation could be accessed during periods of distress. Through connection with peers, shared experiences, and responsive communication, online engagement supported reduced feelings of isolation and provided comfort during challenging circumstances.

3.3.3.2. Sub-theme 3.2 online environment as a place to meet, see and be around people "like me". Online environments were experienced as important spaces for encountering others with shared interests, identities, or experiences and fostering a sense of belonging. While online interactions did not always lead to close friendships, they were often essential for connecting with like-minded individuals or those with shared experiences; people who felt "like me" (Fisher et al., 2024, p. 108194). These encounters supported feelings of connection and inclusion, particularly when adolescents struggled to relate to peers in their offline settings.

Online environments were often contrasted with offline groups where adolescents struggled to find peers they could relate to. For example, school contexts were sometimes experienced as socially limiting, while online groups provided access to people with "similar interests" and experiences. One adolescent reflected that school felt difficult to relate to, whereas online LGBTQ-focused groups enabled connection with others who shared common ground (Berger et al., 2021, p. 424). Similarly, digital platforms supported the development of meaningful relationships across distance, including a long-term friendship formed through Instagram that began with mutual commenting and continued over several years: "I've known her since I was 12 … we started talking and now we've been friends for 6 years" (Moran & Mapedzahama, 2021, p. 42).

For adolescents with chronic health conditions, online environments also provided access to experiential knowledge and shared understanding that was not always available offline. Adolescents with Type 1 diabetes described connecting with others who could "speak Type 1 diabetes", highlighting the value of shared lived experience and mutual understanding within these spaces (Chalmers et al., 2022, p. 861).

Importantly, being around people "like me" did not always require direct interaction. For some adolescents, simply seeing and reading posts from others with similar experiences provided reassurance and reduced feelings of isolation. Exposure to others sharing their stories was experienced as comforting, with adolescents noting that "knowing that I'm not alone in what I'm feeling has really helped me to not feel isolated" (16-year-old female; Rimel et al., 2023, p. 8).

Overall, adolescents experienced online environments as spaces where shared identities, interests, and experiences could be encountered across geographic and social boundaries. By connecting with others, sharing experiences, or simply knowing support was available, online engagement supported a sense of belonging by enabling adolescents to meet, see, and be around people who felt familiar and relatable.

3.3.3.3. Sub-theme 3.3 online environment fostering authenticity and facilitating offline connections. Adolescents described online spaces as enabling more intimate and authentic social interactions. Online communication was often experienced as less judgemental and less confrontational than face-to-face- interaction, particularly when discussing personal or sensitive topics. Affordances such as asynchronous communication, anonymity, and diverse modes of expression (e.g., emojis, images, text) created environments perceived as safer, less judgmental, and less confrontational. Adolescents valued having time to compose responses and greater freedom in self-expression. Constant connectivity could also "intensify things", and mean "you end up getting to know them more quickly" (17-year-old male; Barcelos & Rossi, 2014, p. 282).

For many adolescents, particularly those who found in-person interaction challenging, these online interactions supported the development of relationships that extended beyond the digital space. Gaming environments provided opportunities for conversations that moved beyond the activity itself. While playing together, adolescents talked not only about the game, but also about everyday experiences and personal concerns, including events from school or aspects of their day that they did not feel comfortable sharing in person. This made it easier to talk about "how your day has been" or "something that happened in school" in a space where others were not listening in (15-year-old; Bengtsson & Jensen, 2024, p. 8).

Overall, adolescents experienced online environments as places where relationships could become more personal and open over time. Being able to communicate more freely and stay in touch helped them feel closer to others, and for many, these online connections continued or became stronger in their offline relationships.

3.3.3.4. Sub-theme 3.4 online environment as local and global hubs for social capital. Online environments were experienced as important spaces for maintaining and extending adolescents' social connections across different contexts. Adolescents described using social media, messaging platforms, and online games to stay in touch with friends and family when face-to-face contact was not possible, including during periods of hospitalisation, the global pandemic, or geographical separation. Being able to communicate online helped them feel close to others despite distance, described as helping them "feel closer, even though they are on the other side of the world" (17–18-year-old female; Hjetland et al., 2021, p. 6), and acting as "a medium for staying in contact with people and our

friends and family" during national lockdowns (16-year-old; Keles et al., 2024, p. 105).

Existing relationships were also reinforced through shared online activities. Adolescents described strengthening group bonds through gaming, creative projects, and humour based exchanges on social media, where interactions involved "creating memories" and "having fun" together (West et al., 2024, p. 551). These everyday interactions supported ongoing connection and helped adolescents maintain a sense of togetherness outside of school or in person settings.

Online environments also enabled adolescents to form new connections beyond their immediate surroundings. Adolescents spoke about meeting people they would not otherwise have encountered, including peers from different regions, countries, and cultural backgrounds. This was particularly important for adolescents in rural or isolated communities, where social media allowed them to "meet a whole lot more people … that you never would have met" otherwise (12–15-year-old; Babbage et al., 2020, p. 8). Some adolescents reflected on how interacting with people internationally expanded their perspectives and supported cooperation and shared activity, including communicating with people from "many different countries" and working together with others in online games, experiences they noted they "would never have done if the Internet did not exist" (18-year-old male; Andersson et al., 2015, p. 120).

Overall, adolescents experienced online environments as spaces that expanded access to local and global interactions with diverse groups. Through maintaining existing relationships and forming new connections across distance, online engagement supported cultural awareness, social confidence, and opportunities to cooperate with others.

4. Discussion

4.1. An interconnected web: online environments enabling flourishing through autonomy, competence, and relatedness

This review synthesised a large body of academic literature published in the last decade to address the research question: *How do adolescents aged 12-19 experience flourishing* via *digital technologies?* By centring adolescent perspectives, we aimed to bring greater balance to a body of research that has largely focused on online risks and pathology (Modecki et al., 2022; Schonning et al., 2020). Flourishing, from an SDT perspective, is understood as the satisfaction of three basic psychological needs that underpin wellbeing and positive development (Ryan & Deci, 2020). These needs provide a useful lens for examining how adolescents experience digital technologies beyond risk-based framings. Using SDT as an interpretive framework (Ryan, 2023), the synthesis found that autonomy, competence and relatedness are deeply interconnected in digital contexts, working simultaneously to support adolescents' flourishing.

Ten subthemes illustrated how the affordances of digital technologies can foster flourishing. Across the synthesis, online environments supported adolescents' sense of autonomy by providing opportunities for choice, control, and self-directed engagement, particularly through practices of identity expression, self-discovery, and content curation identified in Sub-themes 1.1 and 1.4. Adolescents exercised agency in deciding where to go online, what content to engage with, and how to present themselves, particularly when exploring identity, managing emotions, or seeking information (e.g., Escobar-Viera et al., 2022; Radovic et al., 2018). Features such as anonymity, asynchronicity, and the ability to curate online spaces enabled adolescents to act on their own terms, free from immediate social pressure or judgement (e.g., Craig et al., 2025; Selkie et al., 2020). However, achieving these positive experiences often involved complex forms of negotiation, such as learning to curate social media feeds to highlight preferred content (e.g., Liang et al., 2023; Urbanova et al., 2023). This autonomy was especially salient when adolescents sought support, explored sensitive topics, or disengaged from content that negatively affected their wellbeing (including flourishing, as conceptualised here; e.g., Babbage et al., 2020; Paceley et al., 2022). In these contexts, online environments allowed adolescents to make decisions aligned with their values, interests, and readiness, reinforcing a sense of ownership over their experiences. This finding aligns with a meta-analysis of 1429 Swiss adolescents, which found that both drawing inspiration from others' posts and activities and serving as a source of inspiration for others were associated with higher levels of adolescent flourishing (Marciano & Viswanath, 2023).

Online engagement also supported adolescents' sense of competence by enabling skill development, confidence building, and feelings of effectiveness, reflecting subthemes related to achievement, social confidence, and creative engagement (Sub-themes 2.1-2.3) (e.g., Craig et al., 2025; Valtchanov & Parry, 2017). These feelings of mastery were supported through opportunities to learn new skills, develop expertise, and take on leadership or mentoring roles in digital spaces (e.g., Pereira et al., 2019; Uzuegbunam, 2022). These experiences fostered pride and enjoyment, as well as growing belief in their ability to help others or prepare for future goals (e.g., Marchi & Clark, 2021). Competence was not limited to technical or creative skills but extended to social and emotional competencies, such as communicating more confidently or expressing themselves more clearly (e.g., West et al., 2023; Winstone et al., 2021). Adolescents often described online spaces as safe environments due to their asynchronous nature and the freedom to experiment, make mistakes and persist, particularly in gaming and coding platforms (e.g., Brennan, 2021; Roque & Rusk, 2019). Over time, these competences often extended into offline contexts, strengthening adolescents' confidence in navigating relationships and challenges beyond digital spaces (e.g., West et al., 2023; Winstone et al., 2021). Hammond et al.'s (2024) meta-ethnography described this as a Yin–Yang relationship between online risks and opportunities. Similarly, research with young people aged 12-22 experiencing mental health difficulties found that experimentation and peer learning online helped them develop skills that supported flourishing (Livingstone et al., 2025).

Relatedness emerged as a central and pervasive need supported through online engagement, particularly through subthemes relating to support, belonging, and connection with similar others (Sub-themes 3.1-3.2). Adolescents consistently described online platforms as vital spaces for belonging, connection and support, particularly when such connections were limited or unavailable offline (Craig et al., 2025; McInroy, 2020). These spaces transcended geographic boundaries, enabling young people to find like-minded peers and build support networks (e.g., Abolfathi et al., 2022; Andersson et al., 2015). This aligns with Marciano and Viswanath's (2023)

finding that having multiple people to turn to when feeling lonely was the social media experience most strongly associated with adolescent flourishing. Adolescents highlighted the affordances of online technologies as key to fostering these connections, describing them as more inclusive, less judgmental, and less confrontational. Such benefits were especially significant for underrepresented adolescents, who often face exclusion in offline contexts (e.g., Hanckel & Morris, 2014; Paceley et al., 2022). Odgers and Jensen's (2020) review similarly emphasised the benefits of social media for vulnerable adolescents and suggested these could be enhanced further through improved digital platform design. For educational research, this highlights the importance of conceptualising digital environments as informal learning ecologies that can expand adolescents' opportunities for participation, inclusion, and peer-to-peer learning, particularly for those underrepresented in traditional school contexts (Sangrà et al., 2019).

Taken together, the findings suggest that autonomy, competence, and relatedness worked together within adolescents' online experiences, rather than operating as separate processes. This pattern aligns with SDT, which conceptualises autonomy, competence, and relatedness as complementary and mutually supportive psychological needs, such that their satisfaction is most conducive to wellbeing when experienced together rather than in isolation (Ryan & Deci, 2017). For example, Subtheme 2.2 (social confidence) intersected with Theme 3.2 (finding people like me), as being around people who felt "like me" created emotionally safe spaces where adolescents could practise communication and gradually build confidence. Similarly, Subtheme 1.1 (autonomy through self-expression) overlapped with Subtheme 3.3 (authenticity and closeness), where having choice over how and when to express oneself supported more genuine and emotionally open relationships. A further intersection was evident between Subtheme 1.3 (agency through expanded access) and Subtheme 3.4 (local and global connections), as increased social reach enabled adolescents to choose environments where they could both connect with others and feel capable of navigating diverse social contexts. Rather than fulfilling a single psychological function, online environments operated as multifaceted spaces in which adolescents could simultaneously satisfy needs for autonomy, competence, and relatedness in ways that supported their overall flourishing.

4.2. Practical implications

4.2.1. Implications for policy

Drawing directly on the synthesised qualitative findings, several implications for policy and practice emerge. Findings highlight the centrality of social connection in adolescent flourishing online, consistent with the interdependence of SDT's three psychological needs (Kluwer et al., 2020; Ryan & Deci, 2017). As adolescents, particularly those from marginalised groups, describe online environments as critical sites of socialisation, blanket restrictions on access risk undermining key pathways to wellbeing by limiting access to important support networks.

Instead, there is a need to develop policies and regulatory approaches that prioritise safe, equitable, and inclusive digital environments. This includes shifting from approaches that seek to protect young people *from* online spaces towards those that protect them *within* these environments, allowing them to connect and participate alongside appropriate safeguards (Dezuanni et al., 2023).

4.2.2. Implications for practice (educators and practitioners)

For educators and practitioners, these findings highlight the breadth of ways adolescents use online spaces for self-expression, self-discovery, and support. This involves working with, rather than restricting, adolescents' digital practices and supporting them to maximise benefits while mitigating potential harms.

In the included studies, these benefits were often linked not just to internet use, but to adolescents' media literacy capabilities, including their ability to actively curate online environments (e.g., Liang et al., 2023). Accordingly, practice should focus on building these capabilities by supporting young people to critically evaluate online content, make informed decisions about engagement, and shape their digital environments in ways that support their wellbeing (Gordon et al., 2025).

4.2.3. Implications for curriculum and pedagogy

For curriculum and pedagogy, findings underscore the importance of embedding flourishing-oriented approaches into digital literacy and citizenship education. From a Self-Determination Theory perspective, this involves designing learning experiences that actively support autonomy through choice and self-directed digital engagement, competence through purposeful use of digital tools and skill development, and relatedness through fostering respectful online interaction and a sense of belonging. Together, these elements support motivation, wellbeing, and healthy development in digital contexts (Ryan, 2023; Ryan & Deci, 2017, 2020). Practically, this can include creating opportunities for collaborative digital projects, integrating creative uses of online tools, and recognising students' digital identities as part of their learning journeys.

4.3. Theoretical implications

Similar to Valkenburg et al. (2022), this review challenges dichotomous perspectives that frame digital engagement as either active or passive; positive or negative. Even seemingly passive practices such as scrolling can actively support flourishing when adolescents intentionally manipulate algorithms to align content with personal values and goals. From an SDT perspective, what matters is not the activity itself but the degree of autonomous self-regulation underlying it (Ryan & Deci, 2020). Scrolling experienced as volitional, interest driven, and aligned with personal values is more likely to support need satisfaction than scrolling experienced as habitual or compulsive. This distinction is relevant for both research design and pedagogy. Supporting adolescents to engage with digital content reflectively and purposefully, rather than reactively, may be key to ensuring that online engagement supports rather than undermines flourishing. Moreover, as the current findings demonstrated, intentionally scrolling can satisfy all three basic psychological needs. For

example, adolescents may choose to scroll as a means to regulate emotions (autonomy), discover creative inspiration (competence), and foster local and global connections (relatedness).

For education research, these findings underscore the importance of theorising digital engagement as a complex, situated learning process. These findings emphasise the importance of examining how the affordances of online platforms support or undermine adolescents' psychosocial, emotional, developmental and informal educational needs. This is pertinent given that SDT asserts that need-supportive environments are essential for promoting optimal development, whereas need-thwarting environments threaten healthy development (Ryan & Deci, 2019). Importantly, because need satisfaction in adolescence has long-term cascading effects into adulthood (National Academies of Sciences, Engineering, and Medicine, 2019), the school years represent a critical period in which educational environments, both physical and digital, can influence flourishing trajectories. Longitudinal SDT research shows that the quality of need-supportive experiences during formative periods influences enduring motivational orientations, psychological well-being, and relational capacities (Ryan, 2023; Ryan & Deci, 2017). Understanding adolescents' digital contexts is therefore theoretically important for appreciating how flourishing can be supported over time.

While the synthesis focused on positive experiences, the findings also point to the dual nature of digital experiences: the same affordances that support flourishing may also expose adolescents to risks. SDT's dual-process model draws a clear theoretical distinction between need satisfaction and need frustration. These are not opposite ends of a single continuum but functionally independent processes with distinct developmental consequences (Bong et al., 2024; Ryan & Deci, 2019). Within digital environments, this distinction has practical significance, the same platform affordance, such as anonymity, may simultaneously support need satisfaction (enabling authentic self-expression) and frustrate it (reducing accountability and relational depth). Need satisfaction and need frustration can therefore operate concurrently, with multiple needs potentially being supported and thwarted at the same time. Future research should therefore examine how basic psychological needs are simultaneously satisfied and thwarted across digital contexts online, rather than treating flourishing and harm as mutually exclusive outcomes.

Applying SDT in this way offers a valuable framework for education researchers seeking to understand adolescents' digital lives. It highlights the need for theoretical models that examine flourishing in informal digital contexts. Future theoretical work could examine how adolescents' basic psychological needs are simultaneously satisfied and thwarted across school-based and non-school digital environments.

Finally, while SDT provides a coherent framework for understanding adolescent flourishing, it is not without limitations. For example, it's primary focus on individual psychological needs may underrepresent the broader socio-cultural and contextual influences shaping digital experiences beyond individual-level motivation. Complementary perspectives, such as Bronfenbrenner's (1979) ecological systems theory and media literacy (Hobbs, 2026; Rasi et al., 2019), may therefore deepen understanding of adolescents' digital flourishing. Ecological system's theory highlights how development is shaped by interconnected systems, ranging from immediate contexts such as family relationships to broader institutional and policy contexts (Holmarsdottir et al., 2024). In addition, media literacy is a lifelong educational process that supports individuals to navigate and critically engage with media across diverse contexts (Hobbs, 2026; Rasi et al., 2019). Emerging research has begun to explore links between media literacy and wellbeing, although further work is needed to better understand this relationship (Gordon et al., 2025).

4.4. Strengths and limitations of the review

A key strength of this review lies in centring adolescent voices, an approach recognised as essential for developing policies that are responsive to adolescents' lived realities (Chhabra et al., 2025). The synthesis also incorporated perspectives from adolescents of diverse genders, extending beyond earlier reviews that only included male and female participants (e.g., Marciano et al., 2024). This contribution was valuable for capturing the experiences of adolescents who may experience marginalisation.

Another strength of the review was the comprehensive and holistic search strategy, conceptualising wellbeing using a wide range of terms, thereby ensuring a thorough exploration of relevant literature. It also extended beyond examining social media use to capture the myriad ways in which adolescents experience autonomy, competence, and relatedness through online interactions.

Nevertheless, several limitations must be acknowledged. First, by focusing on flourishing through the SDT lens, studies that conceptualised wellbeing differently may have been overlooked. Second, our emphasis on positive experiences excludes harms that can undermine adolescent flourishing and broader wellbeing. Although some included studies addressed both positive and negative experiences, the latter were beyond our scope. These include cyberbullying and online harassment, exposure to harmful or sexualised content, and psychological distress linked to social comparison, discrimination, or excessive use (e.g., depression, anxiety, and sleep disruption) (e.g., Abolfathi et al., 2022; Fisher et al., 2024; Gillespie-Smith et al., 2021). Adolescents' online experiences are shaped by context and available supports, with vulnerable young people more likely to encounter escalating risks, highlighting the importance of strengthening protective environments rather than relying solely on restriction (Hammond et al., 2024). Third, as with all meta-syntheses, our analysis relied on interpretations provided in the original studies; while these were critically examined, we were not able to probe underlying meanings or contexts directly with adolescents.

4.5. Directions for future research

Mixed-methods designs that combine qualitative accounts with validated measures, such as the Digital Flourishing Scale (Janicke-Bowles et al., 2023), could provide more robust insights into how digital experiences map onto SDT's three basic needs. Particular attention should be paid to the role of AI, which was included as a search term but not represented in the studies reviewed. Given adolescents' increasing engagement with AI-driven systems, both indirectly through algorithmic curation, and directly through

tools such as chatbots and adaptive learning platforms (Strielkowski et al., 2025), this represents a significant gap. Finally, future research should explore how the affordances of digital technologies can both support and hinder flourishing, providing a more nuanced and balanced understanding of how adolescents navigate online risks and opportunities, as well as informing potential policy interventions.

Declaration of generative AI in scientific writing

During the preparation of this manuscript, the authors used ChatGPT at the proofreading stage to improve readability. All content was subsequently reviewed and edited by the authors, who take full responsibility for the final published version.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.edurev.2026.100808.

Data availability

Data will be made available on request.

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Note. References marked with an asterisk (*) were included in the meta-synthesis.

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