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Indicators of Healthy Digital Technology Use in Adolescents: A Qualitative Perspective

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A B S T R A C T

Objective: This study aimed to explore the indicators of healthy digital technology use among adolescents.

Methods and Materials: A qualitative research design with an exploratory approach was employed to capture adolescents' lived experiences and perceptions of healthy digital technology use. Nineteen adolescents aged 13–18 years from Tunisia participated, selected through purposive sampling to ensure diverse socio-demographic representation. Semi-structured, in-depth interviews were conducted until theoretical saturation was reached, with each interview lasting 45–60 minutes. All sessions were audio-recorded, transcribed verbatim, and analyzed using thematic analysis supported by NVivo 14 software. The analysis followed an inductive coding process, identifying categories, subcategories, and open codes that reflected participants' narratives. Ethical procedures, including informed consent and confidentiality, were strictly observed.

Findings: Analysis revealed three overarching themes: Balanced and Mindful Technology Engagement, Positive Social and Emotional Outcomes, and Critical and Safe Digital Literacy. Subthemes included setting usage boundaries, purposeful digital use, time management skills, recognizing overuse signs, mindful online habits, healthy online communication, strengthening offline relationships, emotional self-regulation, digital empathy and support, positive digital identity, inspiring content exposure, evaluating online information, privacy and security awareness, managing online risks, technical problem-solving skills, responsible content creation, understanding digital footprints, and adherence to cyber ethics. Participants described strategies such as device-free times, prioritizing educational content, proactive privacy management, and selective exposure to motivational resources.

Conclusion: Healthy adolescent digital technology use is shaped less by the quantity of screen time and more by the intentionality, quality, and contextual appropriateness of engagement.

Keywords: *Healthy digital technology use; adolescents; digital well-being; online safety; digital literacy*

1. Introduction

The rapid proliferation of digital technologies over the past two decades has fundamentally transformed the daily lives of adolescents, shaping how they communicate, learn, and form their identities. While digital devices and online platforms offer unprecedented opportunities for social connection, educational enrichment, and self-expression, their pervasive integration into adolescent routines raises questions about how to ensure healthy, balanced, and safe engagement. Understanding the indicators of healthy digital technology use has become a critical area of inquiry, especially given the evolving patterns of screen-based behaviors in youth populations worldwide (Marciano et al., 2022; Odgers et al., 2022). The COVID-19 pandemic, which intensified reliance on technology for education, leisure, and social interaction, further underscored the need for nuanced perspectives on digital well-being, particularly among adolescents navigating formative developmental stages (Anne Eppinger Ruiz de et al., 2023; Buerger et al., 2023).

The concept of adolescent well-being in the digital era is multidimensional, encompassing psychological, emotional, social, and behavioral aspects. Scholars have argued that healthy digital technology use cannot be understood solely through metrics such as screen time, but must be contextualized within broader life patterns, including movement behaviors, social support, and emotional regulation (Chao et al., 2025; Tejada-Gallardo et al., 2024). This perspective aligns with research emphasizing the importance of differentiating between active, purposeful engagement and passive or compulsive consumption (Chan et al., 2025; Volkova & Sorokoumova, 2024). For instance, using digital tools for creative projects, skill development, or collaborative learning may foster eudaimonic well-being, whereas excessive, unstructured browsing or exposure to harmful online environments can exacerbate risks to mental health (Jacob & Reddy, 2024; Kaur & R., 2024).

Empirical findings on the relationship between digital engagement and adolescent well-being reveal considerable complexity. Some studies have found beneficial associations between moderate, structured technology use and indicators of life satisfaction, social connectedness, and self-esteem (Rosič, 2025; Singh et al., 2024), while others highlight the negative outcomes of excessive or unregulated use, such as increased loneliness, emotional distress, and risky behaviors (Jokić et al., 2024; Zhang et al., 2024). In this regard, conceptual models of digital well-being increasingly stress the role of mediating and moderating factors—such as individual coping strategies, parental guidance, and socio-cultural norms—that shape the impact of technology on adolescent development (Rahaman & Saidi, 2024; Santos et al., 2023).

The interplay between screen time and broader lifestyle patterns has emerged as a key determinant of healthy technology use. Research incorporating the 24-hour movement guidelines demonstrates that integrating adequate physical activity, sufficient sleep, and limited recreational screen exposure contributes to optimal psychological well-being (Chao et al., 2025; Joana Marcela Sales de et al., 2022). Conversely, sedentary behavior linked to prolonged device use is associated with reduced health-related quality of life and diminished emotional vitality (Garrido-López et al., 2025; Mihajlović et al., 2023). The challenge lies in establishing balanced digital routines that accommodate adolescents' educational and social needs while minimizing potential harms (Danmaisoro & Mozayani, 2024; EkİNcİ, 2024).

Beyond physical and mental health considerations, the quality of online interactions significantly shapes adolescents' social well-being. Positive online communication—characterized by respect, empathy, and constructive dialogue—can reinforce offline relationships and promote social support networks (Marciano et al., 2022; Volkova & Sorokoumova, 2024). However, exposure to cyberbullying, harassment, or unrealistic social comparisons may undermine self-esteem and exacerbate vulnerability to anxiety or depression (Kaur & R., 2024; Odgers et al., 2022). These mixed outcomes emphasize the need to identify behavioral markers and psychosocial competencies that signal healthy digital engagement, including emotional self-regulation, critical information evaluation, and responsible content creation (Jacob & Reddy, 2024; Rosič, 2025).

Gender and socio-demographic factors further complicate the understanding of digital well-being. Studies have reported that male and female adolescents often differ in their patterns of screen use, content preferences, and susceptibility to specific online risks (Garrido-López et al., 2025; Vekara et al., 2024). Cultural contexts also play a pivotal role, influencing parental mediation styles, educational priorities, and perceptions of acceptable technology use (Buerger et al., 2023; Volkova & Sorokoumova, 2024). Such diversity necessitates context-sensitive approaches that account for the unique environmental and cultural dynamics shaping adolescent

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experiences (Joana Marcela Sales de et al., 2022; Santos et al., 2023).

Psychological resilience and mindfulness have been identified as protective factors in fostering healthier digital habits. Mindfulness-based interventions, for example, have been shown to reduce academic anxiety and promote more intentional technology use among adolescents (Jaismin et al., 2025). Similarly, cultivating eudaimonic well-being—defined as a sense of meaning, purpose, and self-realization—may buffer against the negative psychological effects of unbalanced digital engagement (Jacob & Reddy, 2024; Singh et al., 2024). This aligns with findings that adolescents with higher self-esteem and self-efficacy are more likely to set appropriate boundaries and use technology to support personal growth (Rosič, 2025; Tejada-Gallardo et al., 2024).

Emerging research also points to the bidirectional nature of the relationship between digital behaviors and well-being. For instance, poor mental health can increase vulnerability to compulsive online activities, which in turn may exacerbate psychological distress (Marciano et al., 2022; Rahaman & Saidi, 2024). Conversely, structured and meaningful engagement with digital tools can contribute to recovery and personal development among adolescents facing social or emotional challenges (Chan et al., 2025; Mihajlović et al., 2023). Understanding this reciprocity is essential for developing indicators that capture not only the quantity but also the quality and intentionality of digital technology use (Anne Eppinger Ruiz de et al., 2023; Odgers et al., 2022).

While screen time has often been the primary metric in public debates and policy discussions, scholars increasingly advocate for more comprehensive frameworks that integrate psychological, social, and ethical dimensions (EkİNcİ, 2024; Volkova & Sorokoumova, 2024). Such frameworks may encompass indicators like the ability to critically assess online information, awareness of digital footprints, adherence to cyber-ethical principles, and maintenance of balanced offline activities (Danmaisoro & Mozayani, 2024; Santos et al., 2023). Identifying these indicators is particularly relevant for educators, parents, and policymakers seeking to design interventions that are preventive, developmental, and culturally responsive (Buerger et al., 2023; Joana Marcela Sales de et al., 2022).

In addition, adolescent digital experiences are shaped by broader systemic and technological trends, including the rise of algorithm-driven content delivery and the blurring of boundaries between online and offline life (Mihajlović et al., 2023; Zhang et al., 2024). Algorithmic recommendations may amplify both beneficial and harmful content exposure, reinforcing the importance of digital literacy and critical thinking skills (Marciano et al., 2022; Volkova & Sorokoumova, 2024). As such, understanding the contextual variables that mediate these interactions becomes integral to any framework aimed at promoting healthy digital technology use (Garrido-López et al., 2025; Tejada-Gallardo et al., 2024).

Given these complexities, qualitative research offers unique strengths in uncovering the lived experiences, subjective perceptions, and nuanced strategies adolescents employ to manage their digital engagement. Unlike quantitative approaches that may rely on fixed variables, qualitative inquiry enables the identification of contextually rich indicators grounded in adolescents' own narratives (Jaismin et al., 2025; Rosič, 2025). This perspective is vital for developing actionable definitions of healthy digital technology use that reflect both universal principles and culturally specific realities (Santos et al., 2023; Volkova & Sorokoumova, 2024).

The present study addresses this gap by exploring the indicators of healthy digital technology use among adolescents from a qualitative perspective.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a qualitative research design with an exploratory approach, aiming to gain an in-depth understanding of the indicators of healthy digital technology use among adolescents. The qualitative approach was selected to capture the complex, context-dependent, and nuanced perspectives of participants, which are not easily measurable through quantitative methods. The study population comprised adolescents residing in Tunisia, representing diverse socio-economic and educational backgrounds to ensure the inclusion of varied experiences and viewpoints. Purposive sampling was used to identify participants who were actively engaged with digital technologies in their daily lives and who could provide rich, relevant insights on the phenomenon under investigation. A total of 19 adolescents participated in the study, with the final sample size determined by the principle of theoretical saturation—where no new themes or significant insights emerged from additional data collection.

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2.2. *Measures*

Data collection was conducted through semi-structured, in-depth interviews, allowing for both consistency in the core topics discussed and flexibility to explore emerging themes during conversations. An interview guide was developed based on existing literature and preliminary observations, covering areas such as patterns of technology use, perceived benefits and risks, strategies for maintaining balance, and influences from family, peers, and school. The interviews were carried out in settings convenient and comfortable for participants to encourage open and candid responses. Each interview lasted approximately 45 to 60 minutes and was audio-recorded with the consent of the participants and their guardians. Ethical considerations, including informed consent, voluntary participation, confidentiality, and the right to withdraw at any stage, were strictly observed throughout the research process.

2.3. *Data Analysis*

Data analysis followed a thematic analysis framework, enabling the identification and interpretation of recurrent patterns and relationships within the narratives. All interviews were transcribed verbatim and reviewed for accuracy. The transcribed data were imported into NVivo software version 14 to facilitate systematic coding and organization. Initial codes were generated inductively from the data, then grouped into categories and broader themes through an iterative process of comparison and refinement. Memo-writing and constant comparison were employed to ensure analytical rigor and coherence between data and emerging interpretations. Throughout the process, reflexivity was maintained by the research team to minimize bias, and peer debriefing was conducted to validate coding decisions and thematic structures. The final thematic framework represented a synthesis of participants' lived experiences and the research team's analytical insights.

3. Findings and Results

The study sample consisted of 19 adolescents from Tunisia, aged between 13 and 18 years, with a mean age of 15.6 years (SD = 1.4). Among them, 10 participants (52.6%) were female and 9 participants (47.4%) were male. In terms of educational level, 7 participants (36.8%) were in lower secondary school, 9 participants (47.4%) were in upper secondary school, and 3 participants (15.8%) were enrolled in preparatory university courses. Participants were recruited from both urban and semi-urban areas, with 12 (63.2%) residing in urban centers and 7 (36.8%) in semi-urban locations. The majority (14 participants, 73.7%) reported daily access to personal smartphones, while 5 participants (26.3%) primarily used shared family devices. Additionally, 11 participants (57.9%) indicated that they used digital technology for more than four hours per day, 5 participants (26.3%) reported usage between two and four hours, and 3 participants (15.8%) reported using it less than two hours daily.

Table 1

Themes, Subthemes, and Concepts

Category (Main Theme)	Subcategory	Concepts (Open Codes)
1. Balanced and Mindful Technology Engagement	Setting Usage Boundaries	Daily screen-time limits; Scheduled offline periods; Device-free zones at home; Parental monitoring; Self-monitoring apps
	Purposeful Digital Use	Using tech for learning; Research for schoolwork; Creative content production; Educational gaming; Language learning tools
	Time Management Skills	Prioritizing homework before tech use; Using timers; Allocating leisure vs. academic tech time; Avoiding multitasking online
	Recognizing Overuse Signs	Sleep disruption awareness; Eye strain; Fatigue from prolonged use; Increased irritability
	Mindful Online Habits	Taking breaks every hour; Avoiding tech during meals; Practicing digital mindfulness; Limiting notifications
2. Positive Social and Emotional Outcomes	Healthy Online Communication	Respectful messaging; Avoiding cyberbullying; Active listening in video calls; Using supportive language
	Strengthening Offline Relationships	Family bonding without devices; In-person meetups with friends; Group sports instead of online gaming
	Emotional Self-Regulation	Logging off during stress; Avoiding arguments online; Seeking face-to-face support; Practicing patience before responding
	Digital Empathy and Support	Encouraging peers; Sharing positive content; Offering help in online study groups
	Building a Positive Digital Identity	Using real photos responsibly; Avoiding harmful self-comparisons; Sharing achievements instead of showing off

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	Exposure to Inspiring Content	Following motivational accounts; Watching educational documentaries; Engaging with cultural content
3. Critical and Safe Digital Literacy	Evaluating Online Information	Fact-checking news; Comparing multiple sources; Identifying fake news; Recognizing bias
	Privacy and Security Awareness	Strong password practices; Avoiding sharing personal info; Using privacy settings; Recognizing phishing
	Managing Online Risks	Avoiding harmful forums; Reporting inappropriate content; Blocking strangers
	Technical Problem-Solving Skills	Updating apps; Troubleshooting device errors; Using secure networks
	Responsible Content Creation	Avoiding plagiarism; Giving credit to sources; Creating original media
	Understanding Digital Footprint	Awareness of permanence of posts; Managing old content; Considering audience before posting
	Cyber Ethics	Respecting copyright; Avoiding online harassment; Fair use of resources

Balanced and Mindful Technology Engagement

Setting Usage Boundaries.: Participants frequently emphasized the importance of establishing clear boundaries to maintain a balanced digital lifestyle. They described practices such as setting daily screen-time limits, designating device-free zones in the home, and adhering to scheduled offline periods. Several adolescents mentioned the role of parental monitoring and self-regulation tools. As one 16-year-old participant stated, *"In my family, after 9 p.m., all devices stay in the living room. It helps us talk more and sleep better."* Another noted, *"I use an app that reminds me when I've been on my phone too long. At first it was annoying, but now I'm used to it."*

Purposeful Digital Use.: A recurring theme was the intentional use of technology for productive and enriching activities. Participants described engaging with educational platforms, creative content production, language learning tools, and academic research. One interviewee shared, *"I love using YouTube for learning guitar, not just for random videos. It feels like I'm investing my time."* Another explained, *"When I search for school topics online, I make sure I focus on trusted websites, not just the first link."*

Time Management Skills.: Effective time management emerged as a critical skill for healthy technology use. Adolescents reported prioritizing academic tasks before recreational use, employing timers to manage sessions, and avoiding multitasking while online. As a 15-year-old participant noted, *"I finish my homework first and then reward myself with some gaming time."* Another reflected, *"If I try to chat with friends and do my homework at the same time, I end up doing both badly."*

Recognizing Overuse Signs.: Many participants were able to identify early indicators of excessive technology use, such as disrupted sleep patterns, eye strain, fatigue, and irritability. One adolescent remarked, *"When I can't sleep because I was scrolling for too long, I know it's time to stop."* Another added, *"If my eyes start hurting, I take a break — it's my body telling me enough is enough."*

Mindful Online Habits.: Practicing conscious and intentional digital habits was highlighted as a way to reduce negative impacts. Participants described taking regular breaks, limiting notifications, and avoiding device use during meals. As one participant put it, *"Turning off notifications helps me stay calm and not check my phone every minute."* Another said, *"Dinner is for talking to my family, not for scrolling."*

Positive Social and Emotional Outcomes

Healthy Online Communication.: Adolescents expressed the importance of respectful and considerate online interactions. They reported avoiding hostile exchanges, engaging in active listening during video calls, and using supportive language in chats. One participant explained, *"If I'm angry, I wait before replying so I don't say something I'll regret."* Another added, *"I try to use emojis and kind words so people know I mean well."*

Strengthening Offline Relationships.: Participants valued face-to-face interactions and saw technology as a tool that should not replace physical presence. They spoke about organizing in-person meetups and family bonding activities without devices. As one 17-year-old mentioned, *"On weekends, we play football instead of gaming all day. It feels more real."* Another recalled, *"Family nights without phones are the best — we talk and laugh more."*

Emotional Self-Regulation.: Many participants reported logging off when feeling stressed or upset to prevent conflict and maintain emotional balance. One adolescent said, *"If a group chat is getting too heated, I just close it and come back later."* Another explained, *"Taking a break from my phone helps me calm down and think clearly."*

Digital Empathy and Support.: Offering encouragement, sharing positive content, and helping peers in online study groups were noted as valuable practices. One participant reflected, *"When my friend posted about feeling down, I sent*

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her a motivational video instead of ignoring it." Another remarked, *"I like to help classmates by explaining things in our online group — it makes us all do better."*

Building a Positive Digital Identity.: Participants recognized the long-term value of maintaining a respectful and authentic online presence. They avoided harmful comparisons, shared achievements, and exercised caution with personal images. One participant commented, *"I only post things I wouldn't mind my teachers or future employers seeing."* Another stated, *"I don't compare myself to influencers — most of it isn't even real."*

Exposure to Inspiring Content.: Adolescents actively sought content that motivated and educated them, such as cultural programs, documentaries, and self-improvement channels. One participant shared, *"Following educational accounts keeps me motivated to learn new things."* Another noted, *"Documentaries online open my mind to other cultures and ideas."*

Critical and Safe Digital Literacy

Evaluating Online Information.: The ability to critically assess online sources was frequently cited. Participants described comparing multiple references, checking for credibility, and identifying bias. One adolescent said, *"I don't believe everything I see — I always check at least two other sites."* Another remarked, *"If a news story sounds too extreme, I know I need to verify it."*

Privacy and Security Awareness.: Maintaining personal privacy and security was a strong concern among participants. They discussed using strong passwords, enabling privacy settings, and avoiding the sharing of sensitive information. One participant explained, *"I never give my phone number to strangers online."* Another stated, *"Changing passwords regularly makes me feel safer."*

Managing Online Risks.: Adolescents identified strategies to avoid harmful online spaces, such as blocking strangers, reporting inappropriate content, and steering clear of risky forums. A participant commented, *"If someone sends me something weird, I block them immediately."* Another shared, *"I reported a fake account pretending to be my friend — it's important to act fast."*

Technical Problem-Solving Skills.: Some participants demonstrated confidence in handling technical issues, from troubleshooting device errors to using secure networks. One stated, *"When my laptop wouldn't connect, I searched for the solution instead of waiting for help."* Another added, *"I know how to check if a Wi-Fi is safe before connecting."*

Responsible Content Creation.: Participants discussed producing original work, avoiding plagiarism, and giving credit to sources when sharing media. As one explained, *"If I use someone's photo, I always tag them."* Another remarked, *"I try to make my own videos instead of copying others."*

Understanding Digital Footprint.: Awareness of the long-term impact of online activity was common. Adolescents spoke about reviewing old posts, managing visibility, and considering their audience before posting. One participant said, *"I deleted posts from when I was younger — they didn't represent who I am now."* Another noted, *"Before I post, I think: would I be okay if my parents saw this?"*

Cyber Ethics.: Finally, participants highlighted the importance of ethical online behavior, including respecting copyright and avoiding harassment. One adolescent stated, *"If it's not my work, I don't claim it as mine."* Another added, *"I never send mean messages — it's just not right."*

4. Discussion and Conclusion

The findings of this study revealed three overarching themes that together form a nuanced understanding of healthy digital technology use among adolescents: Balanced and Mindful Technology Engagement, Positive Social and Emotional Outcomes, and Critical and Safe Digital Literacy. These themes emerged from adolescents' lived experiences, reflecting both the benefits and challenges of navigating a highly digitalized environment. The qualitative accounts demonstrated that healthy digital habits are not merely a product of reduced screen time, but are instead deeply embedded in the intentionality, quality, and contextual appropriateness of technology use (Odgers et al., 2022; Volkova & Sorokoumova, 2024). This supports recent arguments that the binary framing of technology as simply "good" or "bad" is insufficient to capture the complexity of adolescent digital engagement (Marciano et al., 2022; Rosič, 2025).

The first theme, Balanced and Mindful Technology Engagement, underscores the importance of deliberate strategies to regulate screen exposure, including setting usage boundaries, prioritizing educational content, and practicing time management. Adolescents in this study described conscious efforts to maintain device-free periods and to structure technology use around academic and creative activities. These findings align with studies suggesting that self-regulatory practices and parental mediation are key protective factors against the potential harms of excessive screen use (Chao et al., 2025; Tejada-

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Gallardo et al., 2024). Furthermore, the ability to recognize physical and emotional signs of overuse—such as eye strain, disrupted sleep, and irritability—mirrors earlier research indicating that awareness of bodily cues is integral to fostering digital self-control (EkİNcİ, 2024; Rosič, 2025). Importantly, the adolescents' emphasis on mindful use resonates with recommendations for balanced technology routines that integrate physical activity, sleep hygiene, and social interaction (Danmaisoro & Mozayani, 2024; Joana Marcela Sales de et al., 2022).

The second theme, Positive Social and Emotional Outcomes, highlights that technology can be a facilitator of supportive relationships, empathy, and emotional self-regulation when used constructively. Participants valued respectful online communication and leveraged digital platforms to maintain and enhance offline friendships. This reflects previous findings that positive digital interactions can enhance social connectedness and buffer against feelings of isolation (Marciano et al., 2022; Santos et al., 2023). Adolescents also reported withdrawing from online spaces when conflicts arose, indicating an awareness of the emotional toll of negative exchanges and the importance of disengagement as a coping strategy. Such behaviors are consistent with evidence that emotional regulation skills are crucial for mitigating the negative psychosocial effects of online stressors (Jacob & Reddy, 2024; Singh et al., 2024). The present study also found that exposure to inspiring and educational content contributed to participants' sense of motivation and aspiration, supporting the notion that intentional content selection is a significant determinant of positive digital well-being (Kaur & R., 2024; Mihajlović et al., 2023).

The third theme, Critical and Safe Digital Literacy, emphasizes the role of evaluative skills, privacy awareness, and ethical conduct in promoting healthy technology use. Adolescents described practices such as fact-checking information, managing privacy settings, and avoiding risky online spaces, reflecting competencies identified as central to digital resilience (Odgers et al., 2022; Volkova & Sorokoumova, 2024). These findings are in line with research highlighting that digital literacy extends beyond technical know-how to encompass the capacity to critically assess content and anticipate long-term consequences of online behavior (Buerger et al., 2023; Rahaman & Saidi, 2024). Participants' commitment to responsible content creation and adherence to cyber ethics is noteworthy, particularly in light of studies documenting the prevalence of copyright infringement and cyber aggression in adolescent populations (Marciano et al., 2022; Zhang et al., 2024). This indicates that fostering ethical responsibility can serve as a protective factor against harmful online conduct (Jokić et al., 2024; Vekara et al., 2024).

Taken together, these findings challenge the reductionist approach of evaluating adolescent digital engagement solely through quantitative indicators such as daily screen time. Instead, they align with a more holistic framework that considers behavioral patterns, psychosocial competencies, and contextual influences (Chao et al., 2025; Tejada-Gallardo et al., 2024). For instance, the adolescents in this study demonstrated that high levels of technology use do not necessarily equate to poor well-being if that usage is purposeful, balanced, and supported by critical literacy skills. This perspective resonates with the notion of "differential susceptibility" in media effects research, which posits that individual traits and environmental factors mediate the impact of media exposure (Rosič, 2025; Santos et al., 2023).

Moreover, the emphasis participants placed on offline activities—such as sports, family interactions, and hobbies—supports the view that technology should complement, rather than replace, real-world experiences (Garrido-López et al., 2025; Joana Marcela Sales de et al., 2022). This balanced approach aligns with studies suggesting that well-being outcomes are optimized when digital and non-digital activities are integrated in a complementary manner (Buerger et al., 2023; Mihajlović et al., 2023). The qualitative narratives also underscore the importance of autonomy in managing technology use, echoing findings that self-determination and agency are central to sustainable digital habits (Jacob & Reddy, 2024; Jaismin et al., 2025).

Importantly, the strategies adolescents described for protecting their privacy and ensuring online safety indicate that they are not passive consumers of technology, but rather active agents in shaping their digital environments. This is consistent with literature showing that adolescents who engage in proactive online safety behaviors report lower exposure to cyber risks (Odgers et al., 2022; Volkova & Sorokoumova, 2024). The focus on cyber ethics in this study also complements calls for embedding ethical reasoning within digital literacy curricula, an approach that has been shown to strengthen both individual well-being and community standards in online spaces (Marciano et al., 2022; Santos et al., 2023).

These findings also have cross-cultural implications. Given that participants in this study were Tunisian

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adolescents, the results may reflect sociocultural norms that value family cohesion, educational achievement, and collective responsibility—factors that may reinforce mindful and socially constructive technology use (Garrido-López et al., 2025; Vekara et al., 2024). However, the similarities between these findings and those from other cultural contexts suggest that certain indicators of healthy digital engagement, such as self-regulation, empathy, and critical literacy, may have universal relevance (Chao et al., 2025; Tejada-Gallardo et al., 2024).

In line with previous research, this study highlights the importance of considering both risks and opportunities in adolescent technology use. For example, while prolonged screen exposure has been linked to negative outcomes such as social withdrawal and reduced life satisfaction (Danmaisoro & Mozayani, 2024; Kaur & R., 2024), it can also facilitate skill development, cultural engagement, and social participation when used purposefully (Jacob & Reddy, 2024; Rosič, 2025). This duality reinforces the argument for adopting a "balanced use" paradigm in policy and practice, one that prioritizes quality of engagement over sheer quantity (Buerger et al., 2023; Marciano et al., 2022).

From a developmental standpoint, the indicators identified in this study align with core competencies proposed in adolescent well-being frameworks, including self-management, social awareness, and responsible decision-making (Jaismin et al., 2025; Singh et al., 2024). By situating digital behaviors within these broader developmental competencies, stakeholders can better assess whether adolescents' technology use supports or undermines their holistic well-being. This integrated perspective is essential for developing interventions that are responsive to both the opportunities and challenges of the digital age (Odgers et al., 2022; Volkova & Sorokoumova, 2024).

5. Limitations & Suggestions

This study's findings should be interpreted with caution due to several limitations. First, the qualitative design, while valuable for capturing depth and richness of adolescent perspectives, limits the generalizability of the results to broader populations. The sample was restricted to 19 participants from Tunisia, which may reflect sociocultural specificities not applicable to adolescents in other regions. Second, data collection relied on self-reported accounts, which may be subject to recall bias or social desirability bias, particularly when discussing potentially sensitive topics such as online safety practices or exposure to inappropriate content. Third, while theoretical saturation was achieved, the relatively small and demographically specific sample means that additional perspectives—such as those from rural adolescents, individuals with disabilities, or those with limited internet access—may not have been fully captured. Finally, the study focused on adolescents' perceptions and self-reported behaviors, without triangulation from parents, educators, or objective digital usage data, which could have provided a more comprehensive picture of healthy technology engagement.

Future studies should aim to build on these findings by incorporating larger and more diverse adolescent populations, enabling comparisons across cultural, socioeconomic, and geographic contexts. Quantitative or mixed-methods designs could complement qualitative insights by measuring the prevalence and correlates of identified indicators on a broader scale. Longitudinal research would also be valuable in tracking how adolescents' digital habits and competencies evolve over time, particularly in response to technological changes and life transitions. Moreover, future studies could explore the perspectives of parents, teachers, and mental health professionals to better understand the alignment or divergence between adolescent self-perceptions and adult observations. Finally, integrating digital trace data or usage analytics could help validate self-reported behaviors and provide more objective evidence on the relationship between digital habits and well-being outcomes.

The results of this study point to several practical implications for educators, parents, and policymakers. Educational settings can integrate digital literacy curricula that not only teach technical skills but also emphasize ethical reasoning, critical evaluation of information, and strategies for emotional regulation in online environments. Parents can support healthy digital habits by modeling balanced technology use, establishing clear household guidelines, and maintaining open communication about online experiences. Policymakers and youth-focused organizations can develop programs that promote access to enriching digital resources while safeguarding against harmful content and practices. Interventions should be designed to empower adolescents as active, informed, and responsible participants in digital spaces, ensuring that technology serves as a tool for growth, connection, and well-being rather than a source of harm.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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