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Early Digital Media Initiation and Current Exposure Profiles Among European Adolescents: A Descriptive Secondary Analysis of Flash Eurobarometer FL579

Early digital media initiation and adolescent exposure profiles

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Abstract

Background: The developmental timing of first access to social media and personal smartphones has become a key issue in European debates on child online safety. Current policy frameworks emphasize age-appropriate safeguards, safer digital-service design, and shared responsibilities across platforms, public institutions, families, and young people. Empirical evidence on digital-media use and adolescent health is heterogeneous, and little is known about

whether adolescents with early versus late access show different current exposure profiles. This study descriptively compared current screen-time and perceived-overuse profiles according to the reported age of social media initiation and first personal smartphone ownership among adolescents in the European Union.

Methods: We conducted a descriptive secondary analysis of published, survey-weighted aggregate subgroup tabulations from Flash Eurobarometer FL579, Impact of excessive screen time and social media on young people's mental health. The survey included 26,297 adolescents aged 13–18 years across the 27 EU Member States. For the primary policy-oriented comparison, early access was operationalized as access before or around age 13 years by combining the available categories "below 10 years" and "10–13 years", later access was defined as access at age 14–18 years. Outcomes were reported screen-time thresholds on typical school and weekend days and self-reported perceptions that total screen time or social media time was too high. Published survey-weighted percentages, approximate combined-group percentages, and absolute percentage-point differences between groups are reported. No individual-level, inferential, or causal analyses were performed.

Results: Current weekend screen-time profiles differed by the reported age of social media initiation. Adolescents reporting social media initiation before or around age 13 years, compared with those reporting initiation at age 14–18 years, more frequently reported at least 6 hours (50.6% vs. 40.0%), 8 hours (29.9% vs. 23.0%), and 10 hours (16.5% vs. 11.0%) of screen time on a typical weekend day. Differences on school days were small or absent. Descriptive comparisons by age at first personal smartphone ownership showed a similar weekend pattern: 49.1% versus 39.0% reported at least 6 hours of weekend screen time. A higher proportion of adolescents in the before/around-age-13 social-media-initiation group rated their total screen time as too high (42.8% vs. 39.0%) and their social media time as too high (41.0% vs. 37.0%).

Conclusions: In these aggregate European data, social media initiation before or around age 13 years was descriptively related to a more intensive current weekend exposure profile and to somewhat more frequent perceptions of overuse. Comparable descriptive patterns for first personal smartphone ownership were weaker, particularly for school-day screen time and perceived social-media overuse. Findings should not be interpreted as evidence that earlier access causes later intensive use. Rather, they highlight the relevance of considering developmental timing alongside family media practices, platform design, and broader social contexts in research and prevention.

Keywords: Adolescents; social media; smartphone; screen time; age of initiation; online safety; parental mediation; Eurobarometer

Background

Digital environments form an important part of adolescents' social, educational, and recreational lives. They provide opportunities for communication, learning, creativity, information seeking, and social participation, while also exposing minors to age-inappropriate content, harmful interactions, commercial pressures, and potentially harmful design features. The policy question is therefore not limited to how much time young people spend online. It also concerns whether digital environments and access conditions are appropriate for different developmental stages, how services are designed, and how responsibilities are distributed among digital-service providers, public institutions, families, professionals, and young people themselves [1].

The report Child Safety Online: Protecting and Empowering Minors in a Digital World, prepared by the co-chairs of the European Commission's Special Panel on Child Safety Online, frames online child safety through a developmental and rights-based approach. Its guiding principles address developmental appropriateness, equality and diversity, protection of minors, accountability of digital services and consumer rights, empowerment and media education, and children's rights and participation [1]. The report recommends age-appropriate regulation, differentiated guidance, effective age-assurance systems, and safety-by-design measures. These recommendations provide a policy framework for protecting and empowering minors; they do not constitute an empirical evaluation of a specific minimum-age policy or establish that one age threshold is universally optimal.

Köhler-Dauner et al. [2] similarly discuss age verification and age-tiered regulation as approaches for linking age assurance to differentiated participation and protection in social-network environments. Their proposed model should be understood as a normative and regulatory framework rather than as evidence that specific age thresholds improve developmental outcomes. Its relevance to the present study lies in the shared focus on developmental timing and the need to connect access conditions with concrete safeguards rather than treating age verification as a stand-alone intervention.

The empirical literature does not support a simple or uniform account of digital-media effects on adolescent mental health. Sanders et al. [3] synthesized evidence from more than 100 meta-analyses and reported both positive and negative associations between young people's interactions with electronic screens and educational or health outcomes. The review identified substantial heterogeneity and methodological limitations across the evidence base. Valkenburg et al. [4] similarly concluded that the evidence concerning social media use and adolescent mental health is mixed and that associations vary across individuals, types of use, outcomes,

and study designs. These findings support distinguishing between screen time, specific activities, content, context, and problematic use rather than treating total screen time as a direct proxy for harm or psychiatric disorder.

Developmental timing may nevertheless be relevant to digital-media trajectories. In a cross-sectional analysis of 384,591 15-year-olds from 55 countries, later initiation of digital-device use was associated with a lower likelihood of regular use of several screen-media activities at age 15, particularly social forms of use [5]. Because the study was cross-sectional and relied on retrospective reporting of age at first use, it does not establish that delaying access causes lower later use. In an observational study of early adolescents, smartphone ownership and age at smartphone acquisition were examined in relation to depression, obesity, and insufficient sleep [6]. These findings provide a rationale for further developmental research but do not establish that smartphone access causes these outcomes.

The interpretation of early access requires attention to social and family contexts. The available evidence cannot fully disentangle age at access from family resources, parental practices, peer environments, local norms, or technological cohort effects. A systematic review identified parental mediation as a potentially relevant protective factor in relation to excessive internet use, gaming dependence, and cyberbullying, while also describing heterogeneity in the available evidence [7]. Köhler-Dauner [8] further discusses parental responsiveness and interaction quality as relevant concepts for understanding digital-media use in early childhood. These perspectives support treating age at access as one component of a broader developmental and relational context rather than as an isolated risk factor.

Flash Eurobarometer FL579 provides a timely European basis for describing these patterns. The survey was conducted among 26,297 adolescents aged 13–18 years and 12,750 parents across all 27 EU Member States between 30 March and 16 April 2026 [9]. The dataset contains aggregate estimates on screen time, social media use, age at social media initiation, and age at first personal smartphone ownership. The broader survey also documented health-related complaints among adolescents: across the EU27, 30% to 34% reported sleep problems, headaches, tired eyes, concentration difficulties, or feeling very tired or overwhelmed during the preceding 30 days. These complaints were more frequently reported by older adolescents and, across all five indicators, by female adolescents [10]. However, the publicly available aggregate tables do not link these complaints to age at social media initiation or first personal smartphone ownership. They are therefore treated as contextual indicators of adolescent wellbeing rather than outcomes of early digital access in the present study.

The present study does not test whether early digital access causes later mental-health problems, nor does it evaluate a specific age-verification policy. Instead, it addresses a more limited descriptive question: Do current screen-time and perceived-overuse profiles differ between European adolescents who reported early versus late social media initiation or early versus late personal smartphone ownership? We additionally examine whether differences are more pronounced on weekend than on school days. By distinguishing between social media initiation and smartphone ownership, and by limiting the analysis to aggregate descriptive comparisons, the study contributes cautiously to the broader European discussion on developmentally appropriate online protection, platform responsibility, and family-oriented media education.

Methods

Study design and data source

This study is a descriptive secondary analysis of Flash Eurobarometer FL579, Impact of excessive screen time and social media on young people's mental health. The survey was conducted in the 27 European Union Member States between 30 March and 16 April 2026. According to the accompanying European Commission materials, the survey included 26,297 adolescents aged 13–18 years and 12,750 parents [9]. The unit of analysis in this manuscript is the published aggregate subgroup, not the individual respondent; the reported total youth sample size is the underlying survey sample, not the number of independent observations used in the present comparisons.

The present study used published survey-weighted percentages from the youth subgroup tabulations; no individual respondent records or respondent-level survey weights were available to the present analysis. The analytic material did not contain respondent-level records. Analyses were therefore restricted to descriptive comparisons of published weighted group percentages. The study did not estimate individual-level associations, adjust for confounding factors, or assess causal relationships.

Developmental timing of digital access

Two indicators of reported timing of digital access were examined separately. The first was age at social media initiation. The second was age at first ownership of a personal smartphone. For each indicator, early access was defined as initiation or ownership before or around age 13 years, and late access was defined as initiation or ownership at age 14–18 years. The categories refer to retrospectively reported age at first use/ownership and should not be interpreted as a prospective measurement of access timing.

The analyses do not imply that either measure is a direct or complete indicator of digital-media exposure.

Current exposure profile

The current exposure profile included reported screen time on a typical school day and a typical weekend day. The tabulations provided thresholds of at least 6 and at least 8 hours on school days and at least 6, 8, and 10 hours on weekend days. The thresholds were created from the response categories reported in the publicly available tabulations.

Two subjective indicators were additionally examined: the perception that total screen time was "too much" and the perception that social media time was "too much." These indicators are described as perceived overuse. They do not constitute diagnostic measures of problematic use, behavioral addiction, impaired control, or functional impairment.

Statistical analysis

Published subgroup percentages were survey-weighted estimates. For the combined before/around-age-13 group, percentages were approximated by averaging the published "below 10 years" and "10–13 years" subgroup percentages using their reported subgroup sample sizes as weights. This sample-size-weighted combination is not equivalent to recomputing the estimate using respondent-level survey weights; its accuracy depends on differences between subgroup survey-weight totals. Differences were calculated as early-group percentage minus late-group percentage, in percentage points. Published percentages and the calculated combined values were rounded to one decimal place. No independent reanalysis of microdata or application of a complex-survey variance estimator was performed.

Because the analytic inputs were published aggregate percentages and subgroup sample sizes, rather than respondent-level records and survey-design information, we did not estimate confidence intervals, conduct hypothesis tests, or fit adjusted models. Estimates are descriptive, cannot determine whether differences exceed sampling variability, and should not be interpreted as independent, adjusted, individual-level, or causal associations. The subgroup-specific denominators and precise response-category treatment should be checked against the original tabulation before final submission.

Results

Current screen-time profiles by social media initiation

The weighted proportions reporting longer screen time differed between adolescents who reported social media initiation before or around age 13 years and those who reported initiation at age 14–18 years. On a typical school day, 25.0% of both groups reported at least 6 hours of screen time. For at least 8 hours on a typical school day, the percentage was slightly lower in the before/around-age-13 group than in the 14–18 group (13.4% vs. 14.0%). Descriptive differences were more pronounced for weekend days. Among adolescents reporting social media initiation before or around age 13 years, 50.6% reported at least 6 hours of screen time on a typical weekend day, compared with 40.0% among those reporting initiation at age 14–18 years. The corresponding percentages were 29.9% versus 23.0% for at least 8 hours and 16.5% versus 11.0% for at least 10 hours. Perceived overuse was also somewhat more frequent in the before/around-age-13 social-media-initiation group. 42.8% rated their total screen time as too high, compared with 39.0% in the 14–18 group. The corresponding percentages for rating social media time as too high were 41.0% and 37.0%.

Current screen-time profiles by first personal smartphone ownership

Descriptive patterns by age at first personal smartphone ownership were less consistent on school days. The percentage reporting at least 6 hours of screen time on a typical school day was lower among adolescents who first owned a smartphone before or around age 13 years than among those who first owned one at age 14–18 years (24.0% vs. 28.0%). For at least 8 hours on a typical school day, the percentages were 12.0% and 17.0%, respectively. On weekend days, higher weighted proportions of longer screen time were observed in the before/around-age-13 ownership group. 49.1% reported at least 6 hours of weekend screen time, compared with 39.0% in the 14–18 group. The corresponding percentages were 28.9% versus 22.0% for at least 8 hours and 16.2% versus 11.0% for at least 10 hours. Perceived overuse was only modestly more common among adolescents reporting first personal smartphone ownership before or around age 13 years. The percentages rating total screen time and social media time as too high were 42.4% versus 39.0% and 39.9% versus 38.0%, respectively.

Table 1

Current screen-time and perceived-overuse profiles by reported age at social media initiation and first personal smartphone ownership

Indicator	Social media initiation before/around age 13 (%)	Social media initiation age 14–18 (%)	Difference (percentage points)	First personal smartphone before/around age 13 (%)	First personal smartphone age 14–18 (%)	Difference (percentage points)
Screen time ≥6 h, typical school day	25.0	25.0	0.0	24.0	28.0	−4.0
Screen time ≥8 h, typical school day	13.4	14.0	−0.6	12.0	17.0	−5.0
Screen time ≥6 h, typical weekend day	50.6	40.0	+10.6	49.1	39.0	+10.1
Screen time ≥8 h, typical weekend day	29.9	23.0	+6.9	28.9	22.0	+6.9
Screen time ≥10 h, typical weekend day	16.5	11.0	+5.5	16.2	11.0	+5.2
Total screen time rated as too high	42.8	39.0	+3.8	42.4	39.0	+3.4
Social media time rated as too high	41.0	37.0	+4.0	39.9	38.0	+1.9

Note. Original subgroup percentages are published survey-weighted estimates; combined early-group estimates are sample-size-weighted approximations. The group labelled "before/around age 13" combines the available categories "below 10 years" and "10–13 years"; combined percentages were calculated from the published subgroup estimates using subgroup sample sizes as weights. Because the category "10–13 years" may include respondents who were exactly 13 years old, this operationalization does not reconstruct a strict "under 13 years" threshold. Screen-time thresholds exclude the response categories "Don't Know" and "Count of valid cases." Differences were calculated as the combined early-access percentage minus the late-access percentage. Estimates are descriptive and are not adjusted for current age, gender, country, socioeconomic circumstances, family media practices, or other potential confounders.

Discussion

Principal findings

This descriptive secondary analysis found that current screen-time and perceived-overuse profiles differed according to the reported age at social media initiation. Differences were concentrated on typical weekend days: adolescents who reported social media initiation before or around age 13 years more frequently reported at least 6, 8, and 10 hours of weekend screen time than adolescents reporting initiation at age 14–18 years. By contrast, school-day differences were absent or small. The before/around-age-13 social-media-initiation group also somewhat more frequently rated both total screen time and social media time as too high. A similar weekend pattern was observed for first personal smartphone ownership. However, school-day screen time was not higher in the before/around-age-13 ownership group, and differences in perceived overuse were small. This contrast reinforces the importance of distinguishing between first smartphone ownership and social media initiation as non-interchangeable indicators of entry into digital environments. The results do not establish that earlier access causes later intensive use. The observed profiles may reflect differences in current age, technological cohort, family media practices, household rules, social circumstances, peer contexts, or other factors that cannot be addressed using aggregate subgroup data. The findings should therefore be interpreted as descriptive group patterns and as a basis for more rigorous individual-level research.

Positioning the findings in prior research

The observed differences are compatible with observational research suggesting that earlier first use of digital devices is related to more frequent screen-media use in adolescence. Slater et al. [5], analyzing data from 384,591 15-year-olds across 55 countries, reported that a later age of first digital device use was associated with a lower likelihood of regular screen-media use at age 15, particularly for social use. The present data extend this descriptive perspective by differentiating between social media initiation and first personal smartphone ownership and by comparing school-day and weekend-day screen-time profiles.

The present findings should not be interpreted as confirming a causal effect of access timing. Barzilay et al. [6] reported associations between smartphone ownership, younger age at acquisition, and depression, obesity, and insufficient sleep in early adolescence. However, the authors' observational findings do not establish causality. Similarly, the evidence reviewed by Sanders et al. [3] and Valkenburg et al. [4] indicates that relationships between digital-media use and youth health or wellbeing are heterogeneous and are not adequately represented by a single, uniform concept of screen time.

The prominent weekend pattern may be relevant for future research. The present data cannot establish whether this reflects lower external time structure, differences in family routines, peer communication, leisure opportunities, or self-regulatory processes. These possibilities should be considered as hypotheses for individual-level, longitudinal research rather than as explanations established by the present study.

Family context and parental media education

The timing of access to digital devices and services occurs within family contexts. The present analysis does not include measures of parental mediation, co-use, household routines, family resources, or parents' own digital-media practices. It cannot therefore determine whether these factors account for any of the observed group differences.

Nevertheless, family-oriented considerations are relevant to the interpretation and prevention context. The systematic review by Flaibam Giovanelli et al. [7] identifies parental mediation as a potentially relevant protective factor in relation to excessive internet use, gaming dependence, and cyberbullying, while also noting heterogeneity in the available evidence. Köhler-Dauner [8] highlights parental responsiveness, interaction quality, and technoference as relevant concepts for understanding digital-media use in early childhood. Although these findings cannot be transferred directly to adolescents or tested with the current data, they provide a conceptual basis for viewing early digital access within relational and developmental environments.

Accordingly, parental media education should not be conceptualized solely as enforcing time limits or delaying device provision. Developmentally appropriate support may include discussing digital experiences, gradually expanding autonomy, agreeing on routines, modelling balanced use, and maintaining an open channel for discussing distressing content, peer interactions, privacy, and commercial influences. These implications are consistent with a relational approach to media education, but the effectiveness of specific strategies cannot be inferred from the present descriptive analysis.

Implications for online child safety policy

The findings should be interpreted in relation to, but not as direct evidence for, current European online-safety policy. The report Child Safety Online: Protecting and Empowering Minors in a Digital World frames child online safety through a developmental approach and highlights the roles of age-appropriate safeguards, age assurance, digital-service accountability, empowerment and media education, and children's participation [1]. The present results are relevant to this framework because adolescents reporting very early social media initiation displayed a distinct current exposure profile in the available EU-wide data. This observation

does not establish a causal effect of early access, but it illustrates why the timing and conditions of entry into digital environments are relevant questions for policy and prevention.

The European Commission's proposed EU KIDS Act provides a current example of how this developmental principle may be translated into a graduated regulatory model. Rather than relying on a single uniform access rule, the proposal differentiates between stages of digital autonomy. Children under 13 years would not be permitted to access the relevant social-media and video-sharing services through autonomous accounts. Adolescents aged 13 to under 15 years could use restricted "mini accounts" created and supervised by a parent or guardian, whereas adolescents aged 15 years and older would be able to create autonomous accounts within a safe-by-design framework [11]. In this respect, the proposal is conceptually relevant to the present study because it treats chronological age as one basis for differentiating levels of protection, supervision, and autonomy.

The available FL579 data cannot, however, evaluate this regulatory model directly. The aggregate age categories do not permit an exact reconstruction of all proposed thresholds, and the dataset does not identify whether respondents used parentally supervised mini accounts or autonomous accounts. The present findings therefore neither confirm nor refute the proposed age boundaries. They also do not identify an optimal age for social media access, demonstrate the effectiveness of age assurance, or justify any specific age-based restriction. In particular, the observed group differences may reflect unmeasured differences in current age, technological cohort, family practices, peer environments, or other contextual factors. Whether postponing access or introducing graduated account types changes subsequent screen-time trajectories requires individual-level, longitudinal, and policy-evaluation research.

This limitation is important because age assurance should not be understood as a stand-alone solution. Köhler-Dauner et al. [2] similarly discuss age verification and age-tiered regulation as mechanisms for linking developmental stages to differentiated participation conditions and protections. Their proposed model is a normative and regulatory framework rather than an evaluated intervention. The relevance of both the EU KIDS Act and the Köhler-Dauner et al. proposal therefore lies less in providing empirical thresholds than in illustrating a broader policy direction: younger users may require more structured and developmentally appropriate conditions of access, while protection should gradually be combined with increasing autonomy.

The Special Panel's emphasis on platform responsibility is particularly important in this context. Age-based access rules and parental media education should complement, rather than replace, obligations for digital services to implement age-appropriate design, effective safeguards, and protections against foreseeable risks. A balanced prevention approach should

therefore combine developmentally differentiated access, platform accountability, family support, school-based media education, and accessible counselling and mental-health resources [1]. Such a layered approach is more consistent with the available evidence than interpreting the present descriptive group differences as support for a single legal age threshold.

Strengths and limitations

This study has several strengths. It draws on a large EU-wide survey of adolescents across all 27 EU Member States [9]. It distinguishes between reported age at social media initiation and first personal smartphone ownership, compares school-day and weekend-day screen-time profiles, and includes adolescents' own perceptions of excessive screen time and social media time.

The study also has substantial limitations. Most importantly, the differences are not accompanied by measures of sampling uncertainty, and the combined early-access estimates approximate rather than reproduce survey-weighted group estimates. First, it uses cross-sectional and retrospectively reported information. Second, screen time and perceived overuse are self-reported. Third, the available analyses rely exclusively on aggregate weighted subgroup percentages. Consequently, no confidence intervals, statistical tests, multivariable models, or adjustments for current age, gender, country, socioeconomic circumstances, family media practices, or other confounders could be undertaken. For the primary policy-oriented comparison, the categories "below 10 years" and "10–13 years" were combined using subgroup sample sizes as weights. Because the available material did not provide respondent-level survey weights or weighted cell counts, the resulting combined percentages are descriptive approximations. In addition, the available age-at-access categories do not correspond exactly to the thresholds proposed in the EU KIDS Act. The category "10–13 years" may include adolescents who were exactly 13 years old, and the category "14–18 years" includes adolescents who reported access at age 14. Consequently, the data do not permit separate analyses corresponding exactly to the proposed groups below age 13, aged 13 to under 15, and aged 15 years and older. [11]. They also do not permit the identification of parental "mini accounts," autonomous accounts, or the specific forms of supervision proposed in the legislative draft. Fourth, early and late access groups may differ in age and in their technological cohort experiences. Fifth, screen-time measures do not distinguish educational, social, creative, passive, or harmful activities. Sixth, perceived overuse is not a clinical measure of problematic use, behavioral addiction, impaired control, or functional impairment.

The results should consequently be regarded as hypothesis-generating. Future individual-level and longitudinal research should examine whether access timing remains related to later

exposure profiles after adjustment for demographic, family, and contextual factors. It should also include measures of use quality, sleep, wellbeing, impairment, online risks, parental mediation, and platform design.

Conclusions

In the available aggregate European data, adolescents reporting social media initiation before or around age 13 years more frequently reported long screen time on typical weekend days and somewhat more often rated their total screen time and social media time as too high than adolescents reporting initiation at age 14–18 years. Comparable descriptive weekend patterns were observed for first personal smartphone ownership, whereas school-day differences were absent, small, or inconsistent. These findings do not show that earlier access causes later intensive use. They indicate that the timing of entry into digital environments merits consideration in research and prevention alongside family media practices, social circumstances, platform design, and age-appropriate safeguards. In this respect, the findings are relevant to the developmental rationale underlying the proposed EU KIDS Act, which envisages graduated conditions of access and autonomy [11]. However, the present aggregate data do not permit an evaluation of the proposed thresholds, account types, or supervisory arrangements and should not be interpreted as evidence for any specific age-based restriction. Consistent with the framework set out by Fegert and Melchior (2026), child online safety policies should seek to protect and empower young people through a layered approach that combines platform responsibility, developmentally appropriate design, age assurance, media education, and support for families and professionals.

Declarations

Ethics approval and consent to participate

This study analysed previously published, aggregated and non-identifiable survey tabulations. No new recruitment, participant contact, or primary data collection was undertaken. Ethical approval and consent arrangements for the original Flash Eurobarometer 579 survey should be confirmed against the official survey documentation.

Consent for publication

Not applicable. The manuscript does not contain identifiable individual-level information, images, or other material requiring consent for publication.

Availability of data and materials

The analysis reported here used publicly available youth subgroup tabulations from Flash Eurobarometer FL579. The underlying survey is archived at GESIS – Leibniz Institute for the Social Sciences as study ZA9166 (https://doi.org/10.4232/1.14818), subject to repository

access conditions. The aggregate source tables, subgroup sample sizes, and the calculation worksheet or code used to reconstruct the composite percentages should be supplied as a supplementary reproducibility file. https://doi.org/10.4232/1.14818

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

LP and FKD conceptualised the study. EL prepared and analysed the aggregate tabulations and contributed to data visualisation. LP interpreted the findings and drafted the manuscript. JMF and FKD supervised the work, interpreted the findings, and critically revised the manuscript. All authors must review and approve the submission version and agree to be accountable for the work.

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