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Can't stop scrolling! Adolescents' patterns of TikTok use and digital well-being self-perception

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Digital well-being, which refers to a balanced individual experience of digital consumption, has been gaining attention recently in the study of the effects of digital technology use. Social networks are central in debates over digital well-being, as social media overuse is often identified as a primary issue. Teenagers who spend an average of three hours daily on social media especially draw the attention of researchers. Based on statistical evidence, TikTok is the most popular network among young users worldwide. However, there are not many platform-specific studies on its effects on adolescent well-being. One of the most consistent gaps is the lack of research on how different aspects involved in TikTok use impact adolescents' digital well-being on the app. In light of this, the study aimed to explore the relationship between time spent on TikTok, content consumption, and self-perception of digital well-being. Given the scientific consensus on social media's greater impact on girls, this study also sought to examine gender differences. For that purpose, a quantitative cross-sectional study was conducted with 737 Spanish adolescents aged 12 to 18, who completed an online questionnaire with validated scales and items on daily usage time, type of content consumption, and digital well-being. Results showed significant gender differences in TikTok usage and content consumption: girls spent more time on TikTok and notably engaged more with beauty and fashion content, while boys with video games and sports content, suggesting that traditional gender roles are still present in their choices of content consumption. Beyond that, a rather positive self-perception of digital well-being on TikTok by teenagers was observed. Despite this, an increased TikTok usage was associated with a reduced ability to set boundaries and limit their time on the app. These findings highlight the need for measures to limit the time adolescents spend on TikTok, such as mandatory parental controls on electronic devices and educational programs aimed at promoting healthy digital habits.

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Introduction

Mental health conditions are one of the leading causes of illness and disability among adolescents (World Health Organization, 2023). Several studies reveal that the pandemic and the COVID-19 lockdown have had a clear impact on the recent increase in mental health disorders among minors. While anxiety and depressive disorders are the most common conditions diagnosed among adolescents (Fonseca-Pedrero et al., 2023), a rise has been observed for other psychological problems such as suicidal ideation, low self-esteem, eating disorders, self-harm, aggression, and grief (Bera et al., 2022; Matsumoto et al., 2023; Sholihah et al., 2022). In terms of gender, research shows that twice as many adolescent girls are diagnosed with mental health disorders than boys (Choukas-Bradley et al., 2022; Stentiford et al., 2023).

While the figures highlighting the increase in mental health disorders among minors are positive in terms of progress in diagnosing them, the World Health Organization (2022) points out that stigma and discrimination against people with psychological disorders act as a disincentive, especially among adolescents, to seek help. This means that the number of existing cases is much higher than the number of diagnosed people. In this respect, there is a range of research that focuses on the analysis of the stigmatising effect of media discourse on mental health disorders (Robinson et al., 2019; Ross et al., 2019).

Recent research also adds a second factor of impact on the mental health of teenagers after the onset of the COVID-19 pandemic: the growth in the consumption of content on social media and the effects that this content has on children and adolescents (Marciano et al., 2022). According to the International Society for Social Pediatrics and Child Health (Jörgensen et al., 2022), greater consumption of social media, along with adolescence, female sex, presence of depressive symptoms, and greater exposure to COVID-19 cases are risk factors for the increase in mental health disorders among minors. Based on these data, several studies highlight that the use of social media for more than two hours a day has also been associated with poor self-perception of mental health, poor body image, increased levels of psychological distress, and suicidal ideation (Valkenburg et al., 2021; Yang et al., 2021).

However, mental health definitions usually allude not only to the absence of mental illness but also to the presence of mental well-being (Keyes, 2009). In this regard, the World Health Organization (2022) defines mental health as "a state of mental well-being that enables people to cope with the stresses of life, to realise their abilities, to learn well and work well, and to contribute to their communities", and the U.S. Centers for Disease Control and Prevention (2024) add that mental health includes three different components: emotional, psychological, and social well-being.

On that basis, another concept has recently arisen due to the current high levels of connectivity: digital well-being. Considered a vague concept by some researchers, as differences in research scope have led to various definitions (Vanden Abeele & Nguyen, 2022), digital well-being can be described as the (lack of) balance that we may experience concerning digital connectivity (Vanden Abeele, 2021). While some previous studies have conceptualised digital well-being as the sum of effects that digital technologies have on our well-being (Burr & Floridi, 2020), Vanden Abeele (2021) has developed a theoretical model to extend this definition and overcome some of its theoretical and methodological limitations, putting greater emphasis on the omnipresence of digital media in our daily lives. To this end, Vanden Abeele defines digital well-being as "a subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity", which comprises "affective and cognitive appraisals of the integration of digital connectivity into ordinary life", and which can be achieved "when experiencing maximal controlled pleasure and functional support, together with minimal loss of control and functional impairment".

The theoretical development of the concept has been useful in guiding empirical inquiry. Prakash (2023) recently carried out a study that allowed us to broaden the existing definitions and identify the dimensions that constitute digital well-being as a valid construct for empirical research. Accordingly, Prakash defines digital well-being as a state of optimal balance in digital consumption that is achieved through a cognitive and affective assessment of four dimensions: (I) management of online emotions, (II) sense of agency over technology, (III) online social connections, and (IV) communion with the digital world.

Some researchers have also uncovered the connection between digital well-being and other mental health-related concepts. For instance, Burr et al. (2020) conducted a thematic review on digital well-being in which they reflect on the possibility that digital technologies, and especially social media, could have a negative impact on the increase in mental health disorders, such as depression or anxiety, among adolescents. Similarly, other researchers have pointed out the existing relationship between digital well-being and subjective well-being. The latter refers to people's evaluations of their own lives, including both cognitive judgements, such as life satisfaction, and emotional responses to ongoing life in terms of positive and negative emotions (Diener et al., 2018). In this respect, Dienlin and Johannes (2020) review the current literature about digital technology use and adolescent well-being and conclude that digital technology use has stronger effects on short-term measures of subjective well-being (e.g. negative affect) than on long-term ones (e.g. life satisfaction). The same study also observes that low and excessive use of technology is associated with decreased well-being, whereas moderate use is related to increased well-being (Dienlin & Johannes, 2020). Likewise, Suárez Álvarez and Vicente (2023), who analyse the impact of internet use on well-being, point out that individuals who make more intensive use of the internet seem to have lower levels of life satisfaction and happiness than those who report using it to a lesser extent. Even while defining the term digital well-being, some authors directly allude to subjective well-being. For example, Prakash (2023) affirms that digital well-being is an extended version of subjective well-being, meaning that digital well-being contributes to achieving subjective well-being. Büchi (2024), in turn, states that digital well-being concerns "individuals' subjective well-being in a social environment where digital media are omnipresent".

While digital well-being usually speaks of digital connectivity in general, social media are central to public debates over digital well-being, as social media overuse is usually identified as a primary problem and concern in discussions. Within this frame, another concept is often presented as a solution: digital disconnection, or applied to social media context, social media abstinence, or detox (Vanden Abeele et al., 2022; Vanden Abeele & Nguyen, 2022). Adolescents spend an average of three hours on social media daily: depending on the country, YouTube, TikTok, or Instagram are the social media they spend the most time on (You et al., 2023). However, the question of whether the use of social networks is harmful to users' well-being, and particularly adolescents', has obtained non-conclusive responses. From a psychological perspective, digital well-being research generally focuses on the relationship between adolescents' screen time and signs of anxiety or depression (Dienlin & Johannes, 2020), but little evidence indicates cause and effect (Büchi, 2024). Likewise, mixed results have been reported in the studies analysing the effects of digital disconnection on well-being, suggesting that we

lack an understanding of why, how, and when disconnection works as a solution (Vanden Abeele et al., 2022).

These inconsistencies, according to Vanden Abeele and Nguyen (2022), could be explained by the consideration of digital well-being as a psychological condition and not as a sociocultural phenomenon, which would imply that the negative consequences of digital media "exist in the perceptions and experiences of individuals" despite the current lack of "meaningful and generalisable causal effect on established indicators of well-being". Another argument that is worth considering is that the use of varying measures to assess social media use has led to inconclusive results (Fumagalli et al., 2024; Svensson et al., 2022). In this regard, Büchi (2024) analyses the findings of previous studies and suggests that specific uses, motivations, and feelings could be relevant when it comes to social media use, thus concluding that "indiscriminate measures, such as screen time, cannot induce uniform effects on well-being". In the same line, Svensson et al. (2022) state the importance of going beyond the study of the time spent on social media in their research, in which it was proved that distinct kinds of social media activities have different outcomes on adolescents' well-being, with significant differences between teen girls and boys. Fumagalli et al. (2024) also add that social media are composed of many subtypes, such as social networking sites, which vary greatly in terms of primary features or norms of use. Therefore, the authors declare that while utilising measures of total social media use might be useful for some reasons, it also risks concealing platform-specific effects on adolescent well-being or overlooking differences in user demographics across platforms.

According to Unicef (2020), Spain is the European country with the highest prevalence of mental health problems among children and adolescents. Along the same line, Boer et al. (2020), who carried out an international study with a sample of 29 countries, assert that Spain is the country where adolescents' social media use is more problematic. Problematic social media use is defined as a loss of control over their use and the presence of other addiction-like symptoms that affect users' daily functioning (Van den Eijnden et al., (2016)). Based on statistical evidence, TikTok is more popular among young users worldwide than other social media networks (Hendrikse & Limniou, 2024). In Spain, it is the current favourite platform of minors and the most used by them: recent data report an average consumption of one and a half hours a day approximately. These facts situate Spain as the country with the highest percentage of teen TikTok users (IAB Spain, 2023; Qustodio, 2024). For this reason, the Spanish government plans to approve a law in the coming months to protect minors in digital environments. The legal measures aim, among other things, to have mandatory parental controls on electronic devices such as mobile phones or tablets and a paediatric test to determine whether they are being used inappropriately (RTVE, 2024).

The popularity of the app and the high amount of time users spend on it match the hypothesis from some authors that have underscored that the endless scrolling inherent to the TikTok format itself can blur the user's time judgement and cause addiction to the platform (Lin, 2023). This matter could affect even more teen girls than boys, as Anderson et al. (2023) reported in a US study that girls are more likely to constantly use TikTok than boys. In addition, unlike other social media platforms, such as Facebook, Instagram, or X, whose primary feature is to represent, underline, and intensify real world social interactions and transform them into digital analogues, TikTok encourages users to interact with (I) a personalised algorithm that shows videos catered to their own interests and (II) their own content and self-representations (Bhandari & Bimo, 2020). On top of this intrapersonal—rather than interpersonal—model, the study of Bucknell Bossen and Kottasz (2020) observes that the main driver behind TikTok consumption among adolescents is the gratification of entertainment/affect. This perspective follows the uses and gratifications theory, which proposes that the use of specific media can lead to the gratification of a person's needs (Katz et al., 1973). The authors also highlight that passive use behaviours are prevalent on TikTok among teenagers. These behaviours correspond to individuals who consume content on the app without engaging in any other activities and differ from the ones associated with participating use, which refers to user-to-user interaction and user-to-content interaction, or with contributing use, which implies the creation, production, and publication of one's contents (Bucknell Bossen & Kottasz, 2020).

In this regard, Verduyn et al. (2022) state that in previous research, it has been noted that passive consumption of social media content on other platforms, such as Facebook or Instagram, negatively affects subjective well-being, while more active behaviours have a positive effect. Due to TikTok's focus on entertainment rather than social interaction, and the predominance of passive content consumption within the app, some scholars have begun to study this relationship. For instance, Pan et al. (2023) recently uncovered that passive TikTok uses are negatively associated with female users' body image. Nevertheless, more comprehensive studies are lacking concerning how active and passive use can have an impact on users' well-being, as Montag et al. (2021) reflect in their review of TikTok use.

The few existing studies focusing on active TikTok use have inquired, particularly, into the content creation within the app. Shutsko (2020), for example, analysed which content is popular and common among TikTok content creators, concluding that comedy videos and musical performances are the most popular and frequent content categories among both male and female creators, and that comedy videos are especially frequent among male performers, while beauty and do-it-yourself (DIY) videos are more common for females. Suárez-Álvarez and García-Jiménez (2021) also studied the type of content teen influencers create and disseminate on the app, stating that video selfies, choreographies, and videos with a fun purpose are the most prevailing. Similarly, the authors note gender differences in the sense that teenage boys seem to be abandoning video games to give more protagonism to their self-representation on TikTok. Given the foremost passive use of the app, we should expect most studies to focus on content consumption as their main theme. That is not the case, with only Schneuing (2023) carrying out an analysis of the type of content users consumed on TikTok and the effect this had on mood and self-compassion, in which the author suggested that there are links between certain TikTok contents and differences in mood and self-compassion.

At the moment, Spain-specific studies on digital well-being or TikTok use are scarce. The former comprises research mainly centred on digital well-being in the context of education (Meyerhofer-Parra & González-Martínez, 2024; Ventura Campos, 2023) and family (Aliagas-Marin et al., 2021; Villén Sánchez, 2023), especially conducted during and after the COVID-19 pandemic. The latter includes research on the time minors spend on this network and their addictive-related behaviours (Ubieto, 2023), on their creation and interaction with advertisements on the platform (Feijoo et al., 2024; Suárez-Álvarez & Pastor-Rodríguez, 2023), and on the content created by teen TikTok users and influencers within the app (Suárez-Álvarez & García-Jiménez, 2021), paying special attention to their self-presentation practices (Hernández-Serrano et al., 2022; Suárez-Álvarez et al., 2023).

Therefore, this study aims to address the existing gap in research regarding adolescent digital well-being in the social media context and its relationship with TikTok use, and more

specifically, TikTok passive use, in Spain. In this sense, this research analyses TikTok use (time of use and type of content consumption) and self-perception of digital well-being concerning the consumption of this specific social network of Spanish teenagers aged 12–18. Moreover, the study examines (a) gender differences in the aforementioned variables, as it has been seen in the literature review that gender seems to have a relevant role, and (b) the impact of TikTok use on the digital well-being of the participants. On account of these goals, the research aims to tackle the following research questions:

(RQ1) How do Spanish teenagers use TikTok, in terms of daily usage time and type of content consumption?

(RQ2) What is their self-perception of digital well-being concerning TikTok?

(RQ3) Are there any significant gender differences in adolescents' TikTok use and self-perception of digital well-being?

(RQ4) Is teenagers' TikTok use significantly correlated to their self-perception of digital well-being?

For this purpose, a survey was conducted among a representative sample of 1043 adolescents from all over Spain, to be capable of generalising the findings of the study. The results correspond to the 737 adolescents who were TikTok users.

Methods

Participants. This research employed a quantitative cross-sectional design utilising an online survey aimed at assessing the self-perceived TikTok use and digital well-being of young individuals aged 12 to 18 residing in Spain. Adolescence, which refers to the period that spans from childhood to adulthood, is typically studied from 12 to 18 years of age. However, recent work has enlarged this age interval from 10 to 25 years of age (Jaworska & MacQueen, 2015; World Health Organization, 2023). Despite this, there are obvious differences between the behaviours and demands of a 10-year-old and a 25-year-old, and additionally, the transition from childhood to adolescence and from adolescence to adulthood depends on several factors and cannot happen at the same time for everyone (Jaworska & MacQueen, 2015; Wright et al., 2023). Taken together, these facts guided the decision to focus the current study on adolescents aged 12 to 18, as the former is around the age they usually start high school and the latter is considered the legal age of majority in many countries, and this age range could facilitate practical applications of the obtained results in educational contexts.

Using a stratified random sampling strategy, data were collected from 1043 teenagers. However, only 737 samples were retrieved after excluding the data from the respondents not using TikTok (29.34% of the initial sample, which corresponded to 173 male respondents and 133 female respondents). Out of the 737 remaining participants, 343 were male (46.54%) and 394 were female (53.46%), and the average age was 14.21 (SD = 1.40).

Procedure. The survey was designed, on the basis of the research questions, following a three-section structure: (a) socio-demographic data, (b) TikTok use, and (c) digital well-being. In spite of this, a filter question was included at the beginning of the questionnaire to only consider TikTok users as participants.

Data collection was conducted by a third party, ODEC, a data recording company from Spain, which used a stratified random sampling strategy to obtain data from all over Spain. The sample size was determined with a confidence level of 95% ($Z = \pm 1.96$), a desired level of precision $d = 3\%$, and maximum indeterminacy ($p = q = 50\%$), following the guidance of Martínez-Mesa et al. (2014) for health-related research. The reference data used for this was the total population of Spain aged 12 to 18 in 2023 provided by the Spanish Statistics Office (Instituto Nacional de Estadística, 2024). The sample was then segmented by autonomous communities, the first level of political subdivision of Spain, to the actual distribution of the population. After that, municipalities (primary sampling units) were randomly selected in proportion to the size of each province in each autonomous community. The selection of participants (final sampling units) followed a transversal classification by gender, age, and size of municipality.

The survey was distributed online. ODEC sent a link with the questionnaire to the participants of the study, which was self-administered, meaning that respondents completed it independently, without an interviewer, between 24 April and 6 May 2024, following the acquisition of informed consent. Data and participant security and confidentiality were respected following the UNE EN ISO/IEC27001 standards and the favourable report issued by the Universitat Oberta de Catalunya Ethics Committee under file CE24-PR05.

Measures

TikTok use. To assess the TikTok use of the participants, the time of use and the type of content they consumed were measured. Participants first stated the daily average time in minutes they spent on TikTok, choosing among six options that ranged from "Less than 10 min" to "More than 2 hours (121 minutes or more)". Then they responded on a 5-point Likert scale, in which 1 indicates "Never", and 5 indicates "Always", how often they consumed different types of content on TikTok. The categories of content were adapted from an initial categorisation of TikTok content developed by Schneuing (2023) to use more specific terms to define each category. The resulting categories for this study were: (I) comedy; (II) dance and lip-sync trends; (III) influencers and streamers news—e.g. gossip, interviews, podcasts, live videos, etc.; (IV) music—e.g. concerts, professional music videos, etc.; (V) books, films, TV series, and reality shows; (VI) video games; (VII) travel; (VIII) leisure content—e.g. festivals, theatre plays, restaurants, etc.; (IX) professional sports -e.g. matches, competitions, etc.; (X) beauty -e.g. make up, skincare, etc.; (XI) fashion—e.g. clothing trends, hauls, etc.; (XII) food—e.g. cooking recipes, nutrition, etc.; (XIII) fitness—e.g. tips and recommendations for doing sport, workout routines, etc.; (XIV) medicine—e.g. information about illness, medical advice, etc.; (XV) psychology—e.g. mental health information, psychological advice, etc.; (XVI) other well-being-related contents—e.g. meditation, mindfulness, order and study tips, etc.; (XVII) tutorials—e.g. DIY videos, how-to-do videos, etc.; (XVIII) current news—e.g. economy, society, politics, etc.; (XIX) various knowledge—e.g. languages, general knowledge, etc.; and (XX) any other content that they considered relevant (open-ended question in which they needed to specify).

Digital well-being on TikTok scale. To date, there are only a few validated scales to measure digital well-being (Arslankara et al., 2022; Mathew et al., 2023; Prakash, 2023; Rosič et al., 2024). While all of them take noteworthy approaches to measure this concept, one of the main purposes of this study is to assess the impact of TikTok use, specifically, on the self-perception of digital well-being on the app. For this reason, the scale developed by Prakash (2023) was selected, as the scale originally refers to digital consumption, which matches the scope of the study of focusing on the passive usage of TikTok. The items of the scale have been adapted to make explicit references to TikTok use instead of digital technology use in general.

The original scale includes four dimensions: emotional resilience, agency, social connection, and communion, containing a total of 13 items. The scale was translated into Spanish and its

language was adapted to include direct references to TikTok use. Participants responded on a 5-point Likert scale, in which 1 indicates "strongly disagree", and 5 indicates "strongly agree". The higher the score is, the higher the level of the participants' digital well-being concerning TikTok. Since the original scale was adapted for the study, an exploratory factor analysis (EFA) was conducted. First, Bartlett's test of sphericity results ($\chi^2(78) = 3363.65$, $p < 0.001$) proved that the correlation matrix was not random, and the Kaiser–Meyer–Olkin measure of sampling adequacy assumed an acceptable value to perform EFA (0.83). The Varimax rotation and the Principal Axis extraction method were employed. The results determined that the data were distributed in three factors, which could explain 60.46% of the variance, instead of the four factors proposed in the theoretical model by Prakash (2023). However, the first factor included all the items of the emotional resilience dimension of the original scale, the second factor included all the items of the agency dimension, and the third factor included all the items of the social connection and communion dimensions. For this reason, the two last dimensions were unified into one single dimension, renamed "social connection and communion" for the study. The Cronbach's α reliability coefficients were acceptable for these three dimensions: 0.79 for the emotional resilience subscale, 0.82 for the agency subscale, and 0.83 for the social connection and communion subscale.

Data analysis. IBM® SPSS Statistics 25.0 was used for data processing. First, reliability and exploratory factor analyses were performed for the adapted version of the digital well-being on TikTok scale. Then, descriptive statistical analyses were conducted for all the measured variables, and mean and standard deviations were calculated for the Likert scale responses. After that, Pearson's chi-square and independent samples t-tests were used to analyse the differences by gender in TikTok use and digital well-being. Finally, one-way analysis of variance tests and bivariate correlations were utilised to examine the effect of TikTok use (in terms of the time of use and type of content consumption respectively) in digital well-being. All the described tests were performed with the significance level set at 5%, given that the number of samples was also selected to give this accuracy level in the responses.

Results

TikTok time of use and differences by gender. Descriptive statistics about TikTok usage in minutes across different categories and for both males and females are shown in Table 1. Overall, the most common self-reported daily time of use is from 31 to 60 minutes (21.30% of the sample), closely followed by 121 min or more (20.22%), in which it is noticeable that the female participants almost double the male ones that reported spending more than two hours on the app. To analyse the specific gender differences, Pearson's chi-square test was performed: $X^2(5, N = 737) = 15.30$, $p = 0.01$ ($p < 0.05$), which strongly suggests that gender and TikTok time of use are significantly related. When analysing the adjusted residuals of the time of use scores concerning gender in the contingency tables, only statistically significant differences were found in two categories: (I) "121 min or more", in which 53 males and 96 females were included, with an adjusted residual value of $Z = \pm 3.0$, $p = 0.00$ ($p < 0.05$), suggesting that teenage girls are more likely to engage in very long usage durations compared to boys; and (II) "Up to 10 min", in which 33 males and 19 females were included, with an adjusted residual value of $Z = \pm 2.5$, $p = 0.01$ ($p < 0.05$), indicating that boys are more likely to engage in very short usage durations compared to girls.

Table 1 Descriptive statistics for TikTok daily consumption in minutes.

Daily consumption in minutes	Total	Total (%)	Male	Female
121 min. or more	149	20.22%	53	96
From 91 to 120 min.	111	15.06%	49	62
From 61 to 90 min.	132	17.91%	69	63
From 31 to 60 min.	157	21.30%	74	83
From 11 to 30 min.	136	18.46%	65	71
Up to 10 min.	52	7.05%	33	19
Total	737	100%	343	394

Type of content consumption on TikTok and differences by gender. The study also provides insights into the preferences and behavioural patterns of adolescent boys and girls in terms of TikTok content consumption (see Table A1 in the annexes for descriptive statistics). In general, the most consumed type of content on TikTok is comedy content (3.30 ± 1.10), closely followed by music content (3.18 ± 1.06), influencers and streamers news (2.89 ± 1.10), and dance or lip-sync trends (2.72 ± 1.15). The descriptive analysis also unveils that, overall, the most consumed content by teenage boys is (a) comedy (3.50 ± 1.03), (b) video games (3.19 ± 1.25), (c) music (3.06 ± 1.06), and (d) professional sports (3.01 ± 1.30); while the most consumed content by adolescent girls is (I) comedy (3.24 ± 1.09), (II) music (3.22 ± 1.04), (III) fashion (3.02 ± 1.13), and (IV) beauty (3.00 ± 1.18).

To deepen into the gender-based differences in content consumption, independent samples t-tests were also carried out for each category of content, as the frequency of consumption was the dependent variable scored on a 5-point scale from 1 = "Never" to 5 = "Always". The analysis revealed statistically significant differences in several categories (results from all the tests are shown in Table 2).

Substantially, this statistical analysis demonstrates that there are notable gender differences in the consumption of content on TikTok, with teenage boys and girls showing significantly different engagement patterns. In particular, the results suggest that teenage boys are more likely to consume comedy, video games, and professional sports content than girls; whereas adolescent girls are more likely to engage with dance and lip-sync trends, music, travel, leisure, beauty, fashion, food, psychology, and other well-being-related contents than boys. The remaining categories did not exhibit significant gender-based differences in consumption patterns.

Digital well-being on TikTok and differences by gender. Descriptive analyses were performed to assess the level of digital well-being on TikTok in each of the three dimensions of the scale (see Table A2 in the annexes for descriptive statistics of every item): (a) emotional resilience, (b) agency, and (c) social connection and communion. The mean values were 3.31 ± 0.60 for the emotional resilience dimension, 3.22 ± 0.91 for the agency dimension, and 3.64 ± 0.57 for the social connection and communion dimension. Independent samples t-tests were also conducted in order to analyse the differences between teenage boys and girls' dimensions of digital well-being. However, no statistically significant differences were found: t (1, 735) = 0.15, *ns*, for the emotional resilience subscale; t (1, 735) = −1.05, *ns*, for the agency subscale; and t (1, 735) = −1.79, *ns*, for the social connection and communion subscale.

Effect of time of use on digital well-being on TikTok. One-way analysis of variance (ANOVA) tests were carried out to compare

Table 2 Differences between female and male participants on the frequency of consumption by type of content.

	Female		Male			
Variables	***M***	**SD**	***M***	**SD**	***t* (735)**	***p***
1. Comedy content	3.24	1.09	3.50	1.03	3.30	**0.00**
2. Dance and lip-sync trends	2.88	1.18	2.58	1.11	−3.49	**0.00**
3. Influencers and streamers news	2.82	1.08	2.92	1.06	1.26	0.21
4. Music content	3.22	1.04	3.06	1.06	−2.10	**0.04**
5. Books, films, TV series and reality shows content	2.70	1.05	2.55	1.04	−1.94	0.05
6. Video games content	2.14	1.08	3.19	1.25	12.02	**0.00**
7. Travel content	2.42	1.09	2.20	1.07	−2.78	**0.01**
8. Leisure content	2.49	1.04	2.27	1.10	−2.89	**0.01**
9. Professional sports content	2.24	1.07	3.01	1.30	8.65	**0.00**
10. Beauty content	3.00	1.18	1.75	1.05	−15.10	**0.00**
11. Fashion content	3.02	1.13	1.91	1.00	−13.95	**0.00**
12. Food content	2.58	1.06	2.24	1.19	−4.00	**0.00**
13. Fitness content	2.29	1.04	2.36	1.16	0.86	0.39
14. Medicine content	2.03	0.98	1.94	1.02	−1.22	0.22
15. Psychology content	2.02	1.00	1.84	0.96	−2.42	**0.02**
16. Other well-being-related content	2.05	0.97	1.81	0.94	−3.45	**0.00**
17. Tutorials	2.71	1.03	2.59	1.03	−1.58	0.12
18. Current news	2.13	1.08	2.22	1.06	1.14	0.26
19. Various knowledge content	2.41	1.00	2.34	1.02	−0.94	0.35

Bold values mean that $p < 0.05$.

Table 3 Means, standard deviations, and correlations for the variables type of content and digital well-being.

Variables	***M***	**SD**	**1**	**2**	**3**
1. DW: Emotional resilience	3.31	0.60	-	-	-
2. DW: Agency	3.22	0.91	-	-	-
3. DW: Social connection and communion	3.64	0.57	-	-	-
4. Comedy content	3.36	1.07	0.09*	0.05	**0.13****
5. Dance and lip-sync trends	2.74	1.16	0.06	0.03	**0.12****
6. Influencers and streamers news	2.87	1.07	0.06	−0.07	0.10**
7. Music content	3.15	1.05	**0.16****	0.08*	0.11**
8. Books, films, TV series and reality shows content	2.63	1.05	**0.16****	**0.13****	0.04
9. Video games content	2.63	1.27	0.05	−0.01	−0.01
10. Travel content	2.31	1.08	**0.16****	**0.12****	0.05
11. Leisure content	2.39	1.08	0.13**	**0.11****	0.03
12. Professional sports content	2.60	1.24	0.07	0.09*	0.00
13. Beauty content	2.42	1.28	0.10**	0.01	**0.12****
14. Fashion content	2.50	1.21	0.11**	−0.02	**0.14****
15. Food content	2.42	1.13	0.12**	0.07	0.07
16. Fitness content	2.32	1.10	0.10**	0.01	0.09*
17. Medicine content	1.99	1.00	0.08*	0.04	0.01
18. Psychology content	1.94	0.98	0.06	0.02	0.05
19. Other well-being-related content	1.94	0.97	0.12**	0.08*	0.05
20. Tutorials	2.65	1.03	0.10**	0.07	0.10**
21. Current news	2.18	1.08	0.12**	0.09*	0.02
22. Various knowledge content	2.38	1.01	**0.16****	**0.14****	0.03

*$p < 0.05$; **$p < 0.01$.
Bold values indicate the highest significant correlations in each dimension of digital well-being.

the effect of TikTok time of use in the three digital well-being dimensions. There was a significant effect of the time of use at the $p < 0.05$ level only for the agency dimension [$F(5, 731) = 7.48$, $p = 0.00$]. Post hoc comparisons using the Scheffe test indicated that the mean score for the "121 minutes and more" users (2.93 ± 0.98) was significantly different than the score for "Up to 10 min" users (3.53 ± 0.82), for "From 11 to 30 min" users (3.47 ± 0.85), and for "From 31 to 60 min" users (3.33 ± 0.82). Taken together, these results suggest that when teenagers spend more than two hours on TikTok daily, they have less agency to set boundaries and limit the time they spend on the app.

Relationship of type of content consumption and digital well-being on TikTok. Finally, correlation analyses were performed to see if the digital well-being dimensions and the type of content consumed on TikTok were related (see Table 3). The results showed that the emotional resilience dimension was significantly and positively correlated with more than one category. The most intense correlations were: music content ($r = 0.16$, $p < 0.01$); books, films, TV series and reality shows content ($r = 0.16$, $p < 0.01$); travel content ($r = 0.16$, $p < 0.01$); and various knowledge content ($r = 0.16$, $p < 0.01$). In the same way, the agency dimension was positively correlated to several types of content, the most notable categories: various knowledge content ($r = 0.14$, $p < 0.01$); books, films, TV series and reality shows content ($r = 0.13$, $p < 0.01$); travel content ($r = 0.12$, $p < 0.01$); and leisure content ($r = 0.11$, $p < 0.01$). Lastly, the social connection and communion dimension was positively correlated to miscellaneous categories, from which the most outstanding correlations were: fashion content ($r = 0.14$, $p < 0.01$); comedy content ($r = 0.13$, $p < 0.01$); beauty content ($r = 0.12$, $p < 0.01$); and dance and lip-sync trends ($r = 0.12$, $p < 0.01$).

Discussion

This study examined the patterns of TikTok use (time of use and type of content consumption) and the level of digital well-being on TikTok among Spanish adolescents aged 12–18. In addition, the research analysed the gender differences in the aforementioned variables and the effect of TikTok use on the three dimensions of digital well-being. The main results obtained are presented and discussed hereafter.

Self-reported TikTok use. This article covered the patterns of TikTok usage by Spanish teenagers. In terms of time of use, it is worth mentioning that approximately 20% of adolescents spend an average daily time on the app greater than two hours, while around 35% of them spend more than one and a half hours. The only available data to date in this regard is provided in the report by Qustodio (2024), where it was stated that Spanish adolescents spend an average of one hour and a half a day on TikTok. The lower percentage of this study, compared to these data, might be because of the self-reported character of the measure, as it has been proven before that users tend to underestimate their screen time and that there are discrepancies between self-reported measures and objective measures of smartphone usage time (Júdice et al., 2023).

In terms of content consumption, the most consumed content are comedy videos, music videos, influencers and streamers news, and dance and lip-sync trends. Although there are no previous studies analysing the type of content consumed on TikTok by Spanish teenagers, these results match the analysis of Schneuing (2023), in which the author concluded that content with an entertainment factor —which includes the categories of comedy,

celebrities/influencers, and music/concerts inter alia—is the most popular among young users from the Netherlands. Furthermore, these results could be linked to the study of Bucknell Bossen and Kottasz (2020) that followed the uses and gratifications approach and affirmed that the main driver behind TikTok use by teenagers is the gratification of entertainment/affect.

Self-perception of digital well-being on TikTok. This research also measured the self-perceived digital well-being of Spanish teenagers on the app. The most noteworthy results indicate that they perceive their management of emotions, agency, and social connection and communion on TikTok as rather positive. The items of the digital well-being scale used for the study (Prakash, 2023) referred to different passive ways of TikTok consumption, as the only ones that implied a more participative use made reference to the other users connecting or interacting with them, and not the other way around. It has been previously said that passive social media use on other platforms, such as Facebook or Instagram, has a negative impact on subjective well-being, especially when compared to more active use (Verduyn et al., 2022); and that digital technology use has stronger effects on short-term measures of subjective well-being (e.g. negative affect) than on long-term ones (e.g. life satisfaction) (Dienlin & Johannes, 2020). In addition, digital well-being has been conceptualised as an extended version of subjective well-being by some researchers (Prakash, 2023). However, our findings suggest that digital well-being—and not subjective well-being—regarding TikTok passive consumption, in particular, is mainly perceived as positive by Spanish teenagers, which matches the statements in Fumagalli et al. (2024) affirming that there could be platform-specific effects on adolescent well-being. Among the three dimensions, the lowest mean value obtained corresponds to the agency dimension, which refers to the capacity to set limits to TikTok consumption. This fact could also be related to the hypothesis of Ubieto (2023), who stated that adolescents use TikTok to explore diverse forms of satisfaction and that they tend to show binge behaviour—meaning it is difficult to set boundaries towards it—because of their compulsive search for a kind of satisfaction that they have already experienced on the app -and that, of course, they intend to always be the same.

Gender differences in TikTok time of use. In the results of the study, it was also observed that there were significant gender differences between the TikTok time of use of teenage boys and girls. Specifically, the results suggest girls are more prone than boys to engage in long-time usage durations and vice versa, boys being more prone than girls to engage in short-time usage durations. Even though no Spain-specific researches were found on this matter, this matches the data presented by Anderson et al. (2023) in their US report, who state that teen girls are more likely to make constant use of the app than boys. Previous studies have also shown that girls are more frequent social media users in general than boys (Lu et al., 2016), which could mean that when it comes to gender-based differences in time of use, TikTok seems to be used in a similar way to other social media platforms. These gender differences could be even more pronounced in the case of TikTok because of the greater presence of female users than males on the app (Montag et al., 2021) and a reported higher level of TikTok addiction among young female users than males (Fahruni et al., 2022), but this should be studied more in-depth in future research.

Gender differences in the type of content consumption on TikTok. The study has also unveiled that there are significant gender differences among the types of content teenagers consume on TikTok. The most notable differences were found in the following categories: the results suggest that boys tend to interact more with video games and professional sports content than girls, while girls tend to watch more beauty and fashion content than boys. Although these results might seem expectable, they differ from the findings reported by Suárez-Álvarez and García-Jiménez (2021) when analysing the content creation by popular Spanish TikTok influencers, as the authors propose that there is an attenuation of the traditional gender roles in the audiovisual content created on the app —meaning that teenage boys are leaving video games behind to give more protagonism to their self-representation—which could reflect a possible evolution of the teenagers' gender behaviour on TikTok. In this sense, the data of this study could suggest that when it comes to patterns of content consumption—and not creation—or passive TikTok use rather than active TikTok use, traditional gender roles are still present in the choices of adolescent boys and girls.

Moreover, comedy and music videos were among the most popular content for both male and female adolescents, but the results indicate that teen boys are a little bit more prone to consume comedy content, while teen girls are a little bit more prone to consume music content. Again, there were no previous data from Spain in this regard, but these results match other authors' findings concerning the type of content created on TikTok (Shutsko, 2020), suggesting that comedy videos and musical performances are the most popular content categories among both male and female creators, but comedy videos are especially frequent for males and beauty and DIY videos are more frequent for females. This coincidence between categories of content created by males and females and categories of content consumed by males and females could be supported by the social identity theory, as the choices of content consumption might be related to the gender of the content creator, especially women perceive themselves to be more similar to female influencers than male influencers, which can lead to stronger feelings of parasocial interaction (Hudders & De Jans, 2022).

Absence of gender differences in digital well-being on TikTok. The study has further revealed that no significant differences have been found between male and female adolescents' levels of digital well-being (emotional resilience, agency, and social connection and communion dimensions were analysed). Despite the absence of previous specific data about Spanish teenagers' digital well-being on TikTok, these findings were partly unanticipated, as previous research identified that young female TikTok users show higher levels of addiction to the platform than boys (Fahruni et al., 2022), that TikTok addictive users show significantly worse mental health conditions (Chao et al., 2023), and that twice as many adolescent girls are diagnosed with mental health disorders than boys (Choukas-Bradley et al., 2022; Stentiford et al., 2023). These results also differ from the research of Svensson et al. (2022), which analyses social media use in general—no particular platform is specified—and concludes that social media use—and more specifically, self-presentation practices—is associated with a worse level of well-being only for adolescent girls. Again, these inconsistencies might be due to the unique context of TikTok, in which digital well-being—and not other related terms, such as social media addiction—seems to be rather positive for both teen girls and boys.

Time of use and digital well-being on TikTok. In addition to gender differences, this research points out the effect of TikTok's time of use on teenagers' digital well-being. Specifically, significant differences have been noted in the agency dimension of the digital well-being scale: the results suggest that the more time

adolescents spend on TikTok, the less agency they have to set boundaries and limit their use of the app. This matches the hypothesis presented by Lin (2023), who highlights that TikTok content and the design of the app itself can blur the user's time judgement and cause addiction to the platform. It also resonates with the prevalence of problematic social media use in general among teens in Spain (Boer et al., 2020), which implies that adolescents experience a loss of control over their use of social media and this affects their daily lives. That can be related as well to the concept of self-control failure regarding social media use, which assesses the degree to which individuals use social media platforms even if it stands in conflict with other goals or tasks that they have to do (Irmer & Schmiedek, 2023). Taking the results of this article, it seems that TikTok might imply a problematic use, similar to what other social media platforms imply, among Spanish adolescents, but again, this hypothesis should be further tested in future studies.

Type of content consumption and digital well-being on TikTok. Lastly, the study uncovers that there are significant and positive correlations between the dimensions of digital well-being and the consumption of specific types of content on TikTok. These correlations, while statistically significant, are rather weak. This could be partly explained because multiple factors have been identified as relevant in the relationship between social media use and digital well-being, such as the motivations or feelings of the users (Büchi, 2024).

In particular, the emotional resilience and agency dimensions showed the most intense positive correlations to culture-related content, such as music; books, films, TV series, and reality shows; travel; leisure; and various knowledge. These results suggest that a higher consumption of culture-related content by teenagers could be connected to a better capacity to manage emotions online and limit their time on the app. Although there have been some studies investigating the impact of TikTok on the film and television industry (Jiang, 2023), or the process of learning through the app (Fiallos et al., 2021), no previous research has examined the relationship between TikTok content consumption and digital well-being. However, one possible explanation for this could be that these types of content directly allude to activities that are performed outside of social media, such as listening to music or reading a book, so this could be a supportive of these kinds of behaviour, as it happens with products or activities promoted by social media influencers (Al-Ansi et al., 2023). Nevertheless, this relationship should be studied more in-depth in future work.

On the other hand, the social connection and communion dimension showed the highest correlations to fashion content, comedy content, beauty content, and dance and lip-sync trends. These results propose that higher consumption of these types of content might be related to higher levels of social connection and communion on TikTok. Similarly, no previous researches has specifically addressed this relationship, but the nature of this connection could be explained by the fact that (a) beauty and fashion content; (b) comedy content such as parodies, memes, etc.; and (c) dance and lip-sync trends, all include shared codes and references, and specific expressions, languages, or hashtags that create a sense of community to which the users feel they belong, leading to what is known as the participatory online culture (Gannon & Prothero, 2018; Klug, 2020; Vickery, 2014).

Conclusions

After conducting the data analysis, the following conclusions are retrieved from this investigation. (RQ1) First, the research indicates that 35% of Spanish adolescents spend more than one hour and a half daily on TikTok, and that the most consumed contents by teens are related to comedy, music, influencers and streamers, and dance and lip-sync trends, which all imply an entertainment factor. (RQ2) It has also been observed that all of the three dimensions of digital well-being on TikTok, which are emotional resilience, agency, and social connection and communion, are perceived as rather positive by Spanish teenagers, which could be a unique TikTok result when compared to other platforms' previous results. (RQ3) Significant gender differences have been found in the time of use and content consumption on TikTok, with girls being more frequent users than boys and boys and girls exhibiting different choices when it comes to content consumption, which can be related to some widespread traditional gender roles. However, no differences have been found between male and female adolescents' levels of digital well-being, which could be linked again to the particular context of TikTok and the differences it implies from other social networks. (RQ4) Finally, increased TikTok usage by teens can be associated with a reduced ability to set boundaries and limit their use of the app, which matches previous findings regarding the infinite scroll design of the platform and the addictive component of this activity. In addition, different types of content consumption might be related to an increase in digital well-being on TikTok, suggesting that a higher consumption of culture-related content could be connected to better emotion management and agency to limit time on the app; while content regarding fashion, comedy, beauty, and dance and lip-sync trends, topics that might create a sense of community around them, could be linked to better levels of social connection and communion.

Theoretical and practical implications of the research. The research results have relevant theoretical implications. The study provides significant data regarding the consumption patterns of adolescents on TikTok and their self-perception of digital well-being. It also offers critical insights into gender-specific differences in TikTok time of use and content consumption and into the relationship between these variables and different dimensions of digital well-being, connecting the findings of the research to relevant social theories and hypotheses about social media use in general, and TikTok use in particular. In this sense, it should be noted that to date, no research has been carried out in Spain that correlates these variables and allows to determine conclusive elements concerning gender, consumption patterns, and digital well-being of minors on TikTok.

From an overall perspective, the scope of the study on passive TikTok use addresses an existing gap in research concerning this type of use of the app and how it interrelates to well-being in general and, more specifically, to digital well-being (Montag et al., 2021). Furthermore, the platform-specific focus on TikTok aims to overcome the limitations of previous studies that utilised measures of total social media use, which could conceal platform-specific effects on adolescent well-being (Fumagalli et al., 2024), especially knowing that TikTok's primary features differ notably from other social media platforms (Bhandari & Bimo, 2020). Lastly, the study also includes measures of TikTok use that go beyond the time spent on the app, as it is the type of content consumed, to get over the statements indicating that indiscriminate measures, such as screen time, are not sufficient and cannot induce uniform effects on well-being (Büchi, 2024; Svensson et al., 2022).

On the other hand, the findings of this study have important implications for policy and practice. The obtained results bring to light the need for measures to limit the time minors spend on TikTok. On that account, TikTok has recently announced the setting of a daily screen time limit of 60 minutes on accounts of

underage users (Ubieto, 2023). However, it has to be pointed out that limiting the time they spend on the app does not imply that promoting social media disconnection or abstinence might work as a solution (Vanden Abeele et al., 2022), as it has been proven in previous studies regarding digital technology use in general that a low or excessive use is associated with decreased well-being, whereas a moderate use is related to increased well-being (Dienlin & Johannes, 2020). In light of these results, it would be important for policymakers to first determine which time range is equivalent to moderate use in every sociocultural context—in this case, Spain—and then set up educational programs and policies aimed at promoting digital well-being and balanced use of social media platforms such as TikTok, especially for minors with high levels of digital addiction, as stated by Prakash (2023). On top of that, other potential regulatory measures to go beyond limiting the time of use might include mandating regular algorithmic audits to curtail potentially addictive features of apps like TikTok.

Moreover, parental engagement emerges as another critical component in this proposed framework. While possible interventions could include mandatory parental controls on the electronic devices of minors, public health strategies should also strive to enlighten caregivers about the main indicators of problematic social media consumption and furnish them with other strategies to foster healthy social media habits within the family unit. In addition, these approaches should be sufficiently flexible to accommodate gender-specific variations, as our research accentuates the imperative of gender-sensitive perspectives in public policies and interventions to address the nuanced differences across genders in terms of distinct patterns of social media use in general, and TikTok use in particular.

Limitations and future research. Besides its valuable contributions, there are some limitations to the study. One of the limitations is its exclusive focus on the Spanish context. While this scope responds to the high popularity of TikTok among Spanish teenagers and the prevalence of mental health disorders and problematic social media use among minors from the country, it may also restrict the generalisability of the findings to other countries. Additionally, the consideration of digital well-being as a sociocultural phenomenon rather than a psychological condition, as proposed by Vanden Abeele and Nguyen (2022), might add more restrictions to the generalisability of the results. However, given the cultural and social similarities across European countries, the results could potentially be extrapolated to other European contexts. These resemblances include similar educational systems, comparable levels of digital technology usage among minors, and parallel societal values regarding child development. Therefore, while the study's findings are specifically derived from a Spanish cohort, they could provide valuable insights applicable to broader European populations.

Another limitation of the study is the self-reported measurement of TikTok's time of use due to the lack of access to more objective measures. The self-reported character of this measure might affect the validity of the obtained results, as it has been said before that users tend to underestimate their screen time regarding smartphone usage (Júdice et al., 2023). To overcome this limitation, future studies should use objective measures of TikTok's daily time of use when possible. Similarly, the article inquires into the relationship between TikTok use and digital well-being, adding to the time of use measure, which has been stated to give inconclusive results, the analysis of the type of content consumed on the app. Nonetheless, while this might address some specific uses of TikTok, it potentially overlooks as well the complexity of other contributing factors in this relationship, such as the motivations or feelings of the users (Büchi, 2024). Future work should also take into account these variables when measuring TikTok use by teenagers.

Thus, while the results of the study are valuable, they should be interpreted within the appropriate context and considering these limitations. Suggestions for future research include continuing the study of the effects of platform-specific use—and in particular TikTok—rather than general social media use, on digital well-being. This will contribute to addressing an existing gap in research, and understanding which are the specificities of TikTok and how its outcomes on well-being are similar or different from other older social media platforms that have been more studied in literature. Another recommendation for upcoming research is to study more in-depth the link of digital well-being with other related concepts, such as problematic social media use, social media addiction, subjective well-being, or mental health disorders symptoms. On the one hand, this would help to enhance the definition of digital well-being, which has been criticised by some researchers for being an unclear concept. On the other hand, specifically when studying the relationship with health-related concepts such as subjective well-being or mental health disorders, this would assist in understanding which is the role of social media use as a contributor among other multifaceted environmental and genetic factors that also play crucial roles in driving mental health issues (Odgers, 2024), and offer deeper insights into how digital behaviour may influence adolescents' well-being. Lastly, further research could also investigate the relationship between platform-specific patterns of use—preferably TikTok—and subjective well-being or specific mental health conditions. This approach would provide a more comprehensive understanding of the nuances of mental health issues among children and adolescents and would help to better recognise the sociodemographic—for instance, in terms of gender—and psychological profiles of those adolescents who are most at risk of negative outcomes from excessive social media engagement in each specific platform.

Data availability

All data generated or analysed during this study are included in this published article [and its supplementary information files].

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Author contributions

All authors contributed to the conceptualisation of the study and the interpretation of the results, and read and approved the final version of the manuscript. Clara Virós-Martín screened articles, analysed data, wrote the first draft of the paper, and edited the final version. Mireia Montaña-Blasco analysed data, wrote the first draft of the paper, edited the final version, and was responsible for the funding acquisition. Mònika Jiménez-Morales conducted the literature searches, wrote the first draft of the paper, edited the final version, and was responsible for the funding acquisition.

Competing interests

The authors declare no competing interests.

Ethical approval

Ethical approval for this study was obtained from the Universitat Oberta de Catalunya Ethics Committee under file CE24-PR05 on 22 February 2024. This approval included the following points: the researchers, the facilities, and the means are apt to carry out the study; the experimental protocol of the study guarantees the integrity and dignity of the subjects; and the researchers must adhere to the obligations derived from the Spanish Organic Law on Protection of Personal Data and Guarantee of Digital Rights (Law 3/2018) that comes from the European (EU) 2016/679 General Regulation of Data Protection. Data and participant security and confidentiality were also respected following the UNE EN ISO/IEC27001 standards. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed consent

Informed consent was obtained from all participants aged 14 to 18 and/or their legal guardians in case they were under 14 years old. According to Art. 7.1 of the Spanish Organic Law on the Protection of Personal Data and Guarantee of Digital Rights (Law 3/2018), only minors between 14 and 17 years old can give their own consent for the use of their personal data. The data recording company ODEC was responsible for obtaining written informed consent from all the participants between 24 April and 6 May 2024 before accessing the survey of the study. The consent included information about the object and purpose of the research, a guarantee of the anonymity of personal data, and an explanation about possible derived risks from participation. ODEC was also responsible for the processing of the collected data and the anonymization process.

Additional information

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