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Why we feel regret and guilt about using digital technology in our free time – A European perspective

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ABSTRACT

Despite the widespread use of digital technologies during free time and its potential benefits for wellbeing and recovery from work life, digital engagement is considered a low-quality form of free time that often results in significant regret and guilt. Given its increasing significance as an accessible source of relaxation and enjoyment in today's post-COVID digitised society and the negative health consequences of chronic regret and guilt, the current study sought to explore the drivers of guilt and regret following digital free time across Europe. We conducted semi-structured interviews with 150 participants from Czechia, Germany, Poland, Spain, French-speaking Switzerland and the UK. A thematic analysis of the data showed that digital free time was perceived as inconsistent with the ideal of meaningful and self-determined free time and led to a spiral of guilty pleasure: Unintentional or involuntary uptake of digital activity, digital engagement beyond the desired duration and consumption of unwanted content were followed by a negative evaluation of one's own digital behaviour as a self-regulative failure and digital free time as unproductive, passive, unhealthy and inauthentic. The perceived meaninglessness and lack of control over digital free time engendered feelings of guilt and regret, which were maintained through continued digital engagement during free time. Measures to reduce guilt and regret may require societal-level changes in the way digital technology use during free time is portrayed in media and mainstream discourse in combination with structural changes to digital entertainment apps or services.

1. Introduction

Digital technologies (DTs) are embedded into almost all aspects of life. They have changed the way we work, shop, seek healthcare, and socialise (Azzaakiyyah, 2023; Bridges & Fowler, 2022; Mullan & Wajcman, 2017; Murphy et al., 2021). Critically, they have also

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altered the way in which many of us choose to spend our free time (Černohorská et al., 2025; López-Sintas et al., 2017; Twenge et al., 2019). In the pre-digital era, free time was characterised by a greater focus on hobbies and in-person social meetings, which co-existed with TV time (Vilhelmson et al., 2017). However, free time is now often spent engaging in digital activities (López Sintas et al., 2015), for example, online gaming, viewing social media and browsing the internet (Twenge et al., 2019).

Free time is often filled with DT because of the ease and simplicity with which DT-based entertainment and activities can be accessed (Černohorská et al., 2025). Increasingly time pressured lives (Giurge et al., 2020) and reduced access to disposable income (Office for National Statistics, 2024) has limited individuals' capacity to engage in more traditional non-digital activities which are often time consuming and expensive (Bone et al., 2021; Peng et al., 2023). As a result, people often report positive personal experiences of using DT during free time (Nimrod & Ivan, 2022; Sánchez-Gómez et al., 2024) because it can be an effective way to facilitate recovery from work (Janicke et al., 2017), and increase relaxation, enjoyment, social connection, and a sense of achievement (Chang et al., 2023, 2025; Gellmers & Yan, 2023; López-Sintas et al., 2017; Valtchanov & Parry, 2017). Using DT during free time has therefore been associated with a range of benefits (Ho & Cho, 2024; López-Sintas et al., 2017).

The impact of using DT to fill free time is however complex and at times paradoxical providing positive and negative outcomes. Despite evidence for its benefits, DT is sometimes perceived as a barrier to meaningful free time (Harmon & Duffy, 2022). This stems in part from the perception that digital free time is of low value and therefore a waste of time, and that digital experiences are less authentic than "real-world" ones (Černohorská et al., 2025; Norquist, 2024). The types of digital activities engaged in during free time are often associated with intellectual passivity (Widdicks et al., 2022), diminished attention or presence (Vialle et al., 2024) and reduced social contact (Dodemaide et al., 2022). As a result, using DT during free time is perceived by many as harmful, unhealthy (Agans et al., 2022; Dodemaide et al., 2022; Herder & Staring, 2024) and unproductive (Widen et al., 2015).

Negative appraisals of DT are strongly reflected in the public discourse. Societal narratives often portray DT as "bad" (Lanette et al., 2018; Tiidenberg et al., 2017). Digital activities frequently carried out during free time, for example, are often portrayed as a "guilty pleasure" (O'Connor, 2016; Walsh, 2025) and entertaining online content is commonly referred to as "digital junkfood" (Herder & Staring, 2024) that leads to "brain rot" (Yousef et al., 2025). Concerns about the development of digital addictions, or perceived self-regulation failures resulting from prolonged or excessive DT use (Scott et al., 2017) have prompted some to try to limit their use of DT during free time (Černohorská et al., 2025; Vialle et al., 2024). Such strategies often aim to reduce habitual use (Cho et al., 2021; Guo et al., 2025), engagement without mindful attention (Baughan et al., 2022), exposure to unanticipated and unwanted content (Guo et al., 2025), prolonged digital engagement (Panek, 2013; Terzimehić & Aragon-Hahner, 2022) and failures to cease use (Grandhi et al., 2019; Irimiás et al., 2021; Lukoff et al., 2018; Ochs & Sauer, 2023; Terzimehić et al., 2023). For example, the avoidance of social media use, one of the most common digital free time activities, has been found to be driven by a desire to limit "mindless scrolling", the consumption of trivial or inauthentic social media content or the loss of time that it is perceived to result in (Nguyen, 2023).

A consequence of the combination of negative personal appraisals of DT, negative public discourses regarding DT and perceived self-regulation failures is that using DT during free time can elicit feelings of guilt and regret among many people (Baumgartner & Kühne, 2024; Davis et al., 2025; Halfmann et al., 2021; Černohorská et al., 2025). Regret can be described as the feeling that current circumstances or situations would have been better if a different course of action had been taken (Landman, 1993) and is often closely related or even co-occurs with guilt, a self-conscious emotion that arises when personal behaviour is considered as a moral transgression. Guilt is therefore fed by perceived discrepancies between one's behaviour and standards of behaviour (Tangney et al., 2007; Tilghman-Osborne et al., 2010), the latter of which may reflect personal goals and preferences but also societal norms and attitudes (Reinecke & Meier, 2020).

These drivers of guilt and regret align also with the core principles of the Theory of Planned Behaviour (Ajzen, 1991). Here, behaviour is motivated by behavioural intentions which are predicted by three core factors; attitudes, subjective norms and perceived behavioural control. However, conflicts within these factors, or misalignments between expectations and lived experience can lead to a sense of guilt and regret about past behaviours. For example, whilst attitudes that using DT is good for relaxation, social connection and personal growth may increase digital engagement, experiences of inauthenticity, under stimulating content and a sense of time being wasted create a tension within this driver of behavioural intention. Similar tensions exist with subjective norms whereby the widespread use of technology during free time promotes a norm that everyone else is "doing this" which is in conflict with public and political discourse that DT use is harmful. Finally, the intention and desire to use DT in a controlled and mindful way which is time limited contrasts with the lived experience of unplanned extended use and fears of addiction. As such, dissonance emerges between individual behaviour and individual and societal expectations for what is a meaningful and productive use of time.

The consequences of spending free time in a way which engenders feelings of regret and guilt can be significant. Feelings of regret and guilt are associated with shame (Lickel et al., 2014). Chronically feeling shame, regret and guilt can contribute to feelings of anxiety and depression (Bybee & Quiles, 1998; Dickerson et al., 2004; Jokisaari, 2004; Rutledge et al., 2024). Understanding the factors which lead to feelings of regret and guilt when filling free time with DT is therefore critical to enabling people to develop healthier and more psychologically satisfying relationships with technology and make the best use of their free time.

The current study therefore sought to explore the core factors that are perceived to drive experiences of regret and guilt following the use of DT during free time. Considering the lack of research that has qualitatively explored this topic among people from multiple cultures following the COVID-19 pandemic, our study relies on in-depth qualitative interviews with people from six European countries. Given the likely interrelatedness of guilt- or regret-inducing factors in the experience of digital free time, an in-depth qualitative approach was thought to be helpful to capture more complex relationships between different factors.

2. Method

2.1. Sampling

The methodology for this study is grounded in the TIMED (Time Experience in Europe's Digital age) project, which investigated free time in the digital age. A total of 150 qualitative interviews were conducted across six European countries, with a target sample size of 25 participants per country to allow for demographic diversity.

As in Černohorská et al. (2025), recruitment followed a stratified purposeful sampling approach, i.e. we aimed for a gender-balanced sample of participants based in Czechia, Germany, Poland, Spain, French-speaking Switzerland and the UK of a broad range of ages, with and without caring responsibilities and with differing employment situations. We recruited individuals who were and were not in paid employment, retired individuals as well as students. This strategy was based on a review of literature showing that free time as well as DT use during free time vary as a function of gender, age (García Román & Gracia, 2022; Ferranna et al., 2022; Lee, 2023) and time availability (Conway et al., 2021; Hilbrecht & Lero, 2014; Ren et al., 2013), which is shaped by caring responsibilities and employment situation.

Participants were eligible to take part in the study if they were aged 18 or over, resided in Czechia, Germany, Poland, Spain, French-speaking Switzerland or the UK, and spoke Czech, German, Polish, Spanish, French or English fluently. Participants were recruited through a combination of social media outreach, email invitations, and leaflets distributed to the general public or displayed in public spaces. Additionally, a snowball sampling method was employed to expand the participant pool, allowing current participants to refer others within relevant networks.

2.2. Participants

150 individuals (84 women, 65 men and 1 person whose gender was not recorded) aged between 19 and 80 years (M = 39.11, SD = 16.10) who resided in the UK (n = 25), Germany (25), Poland (25), Czechia (25), French-speaking Switzerland (25) and Spain (25) at the time of data collection were interviewed for the study. Table 1 shows participant demographic information.

2.3. Data collection

Fig. 1 shows a schematic of the process of data collection and analysis. A semi-structured interview schedule was co-produced following discussions between all research teams involved in the project and review of existing literature. It aimed to explore participants' understanding of the concept of free time, ideal free time and how their reality of free time, including current activities differed from reported ideals. The schedule also prompted participants to describe the role of DT in their free time, including what its upsides and downsides were, and how it impacted free time activities and time availability in free time. Other questions related to perceived barriers to free time and imagined free time without DT. This schedule was translated into all six languages of the project.

While the interview schedule encouraged participants to recall and reflect on concrete episodes of free time and how these made them feel, it neither contained specific questions about regret or guilt experienced in digital free time nor prompts to speak about the reasons or nature of such feelings. This ensured that any references to such feelings would be spontaneous and unprompted, and participants would be likely to mention or describe regret or guilt only if these were genuinely relevant to their lived experience of digital free time. Researchers therefore allowed participants to lead the conversation as far as possible in accordance with a semi-structured method. This was in line with the open explorative nature of the study.

In addition to interview data, participants provided demographic details, which included information about age, gender, employment status, highest level of education and caring responsibilities (presence or absence). Participants were either asked to provide demographic data verbally at the beginning of the interview or filled in a demographic questionnaire.

Data collection began in February 2024 and was completed in October 2024. All participants gave recorded informed verbal or written consent prior to data collection. Depending on participant preferences, interviews were conducted face-to-face, online or by telephone and lasted an average of 47.77 min. All interviews were audio recorded. Data collection was terminated once a sample of 25 participants per country had been interviewed.

2.4. Data processing

Verbatim transcriptions of recorded interviews were created manually, with the help of software such as Teams, Otter or Sonix and/or by professional transcription services. All transcripts produced were written in the language in which the interviews had been conducted and deletion or omission of identifying information, such as names of participants was completed upon transcription, once transcripts had been automatically produced by software or once transcripts had been received from external transcription companies.

2.5. Data analysis

Data analysis began during data collection and consisted of a theoretical (deductive) and interpretative thematic analysis of all interviews, inspired by Bingham's (2023) Five-Phase Process of Qualitative Data

Table 1
Demographic information for the sample.

Participants	Total	UK	Germany	Poland	Czechia	Switzerland	Spain
N	150	25	25	25	25	25	25
Age, mean (SD)	39.11 (16.10)	39.24 (14.36)	34.00 (13.60)	43.44 (17.44)	34.16 (13.71)	45.72 (18.01)	38.04 (16.84)
Gender, n (%)							
Women	84 (56)	14 (56)	15 (60)	12 (48)	14 (56)	13 (52)	16 (64)
Men	65 (43.33)	11 (44)	10 (40)	13 (52)	11 (44)	12 (48)	8 (32)
Missing	1 (0.67)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)
Employment status, n (%)							
Employed in the public or private sector	84 (56)	19 (76)	9 (36)	9 (36)	17 (68)	16 (64)	14 (56)
Self-employed	14 (9.33)	1 (4)	0 (0)	5 (20)	3 (12)	2 (8)	3 (12)
Student	36 (24)	2 (8)	16 (64)	4 (16)	8 (32)	4 (16)	2 (8)
Retired	17 (11.33)	2 (8)	0 (0)	6 (24)	1 (4)	6 (24)	2 (8)
Not currently working	6 (4)	1 (4)	0 (0)	1 (4)	1 (4)	0 (0)	3 (12)
Other	2 (1.33)	0 (0)	0 (0)	0 (0)	2 (8)	0 (0)	0 (0)
Missing	2 (1.33)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (8)
Highest level of education, n (%)							
≥ Bachelor	104 (69.33)	18 (72)	20 (80)	18 (72)	12 (48)	18 (72)	18 (72)
Vocational, trade or technical education	13 (8.67)	2 (8)	5 (20)	0 (0)	2 (8)	4 (16)	0 (0)
Secondary education	31 (20.67)	4 (16)	0 (0)	7 (28)	11 (44)	3 (12)	6 (24)
Other	1 (0.67)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Missing	1 (0.67)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)
Caring responsibilities, n (%)							
Yes	53 (35.33)	17 (68)	6 (24)	8 (32)	9 (36)	10 (40)	3 (12)
No	92 (61.33)	8 (32)	19 (76)	17 (68)	16 (64)	15 (60)	17 (68)
Missing	5 (3.33)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (20)

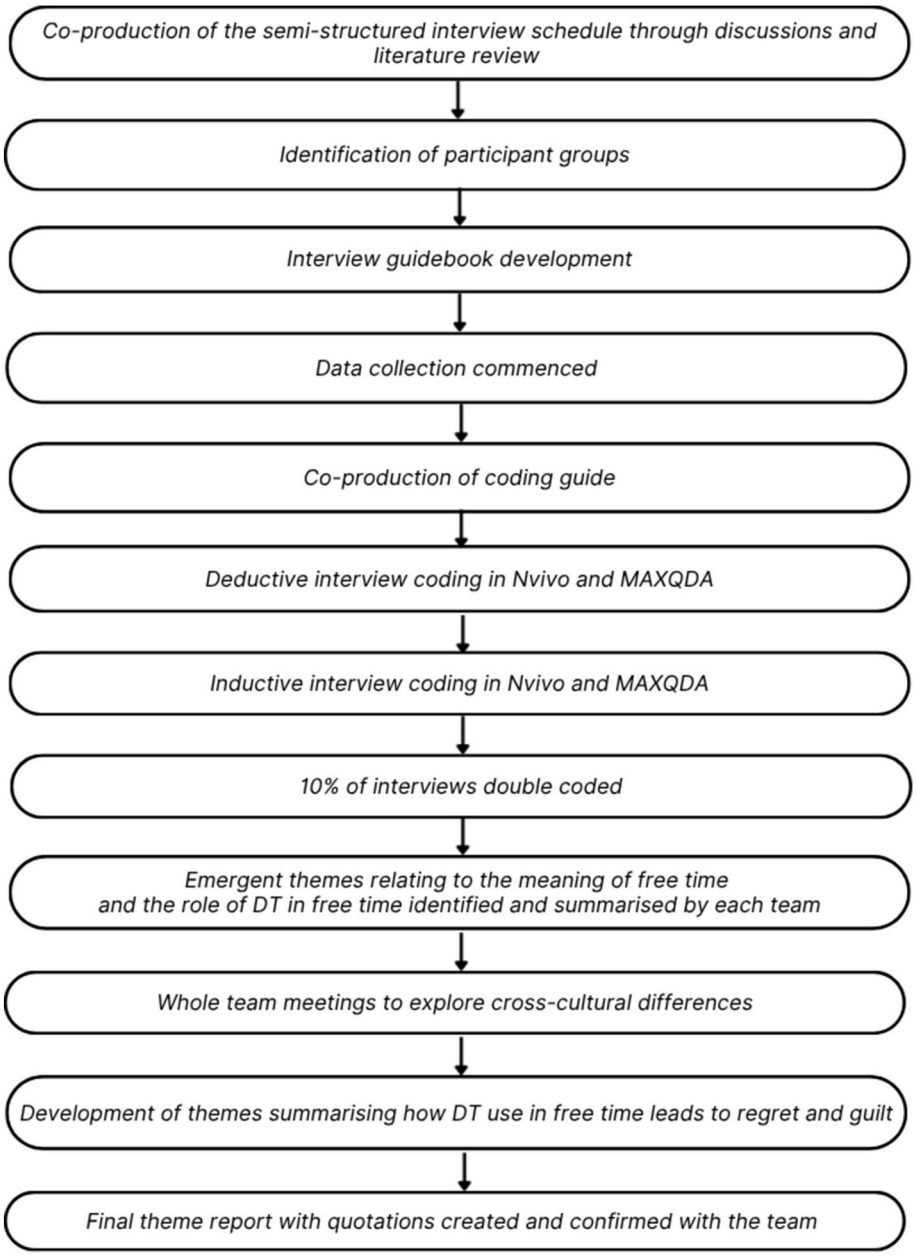

Fig. 1. Schematic of the data collection and analysis process.

Analysis. The analytical process involved (1) the organisation of data according to a priori topic codes detailed in a jointly developed coding guide, (2) the generation of open (inductive) codes, (3) the preparation, collaborative review and discussion of overviews summarising initial patterns of meaning connected to each topic code, (4) the generation of themes and subthemes capturing the factors driving guilt and regret of digital free time.

(1) For the first step of the analytical process, an initial coding guide including a priori topic codes was developed collaboratively by all research teams in order to facilitate consistency in the early coding of research data across teams and extract findings from the data that would be directly relevant to the subject areas investigated by the TIMED research project, i.e. the meaning of free time in the digital age and the role of DT in free time. These initial broad thematic codes were designed to guide analysis to focus on the emotional and behavioural elements of participants responses, rather than solely on the specific apps and platforms that were used during technology use. Previous research, and applications of the Theory of Planned Behaviour suggest that conflicts between expectations and experiences can act as drivers of guilt and regret (Ajzen, 1991; Černohorská et al., 2025; Harmon & Duffy, 2022). Initial a priori codes were therefore developed to identify participants': 1) Expectations, for example, participants conceptual understanding of free time i.e. the circumstances in which it occurred and the psychological emotional and temporal properties which defined it, and their conceptualizations of ideal free time. 2) Experiences, for example, technology-based barriers to achieving free time, emotional appraisal of digital free time, and instances of dysregulation or other negative outcomes. 3) Social evaluations for example, references to societal pressures and reflections on the behaviours of others. Whilst these a priori codes were used to guide initial analysis, they did not preclude the development of new codes which emerged from the data. Each code was listed together with a definition to allow for consistent application of codes across

research teams. After thorough reading and re-reading of interview transcripts, each research team coded their collected data in Nvivo or MAXQDA by applying the initial pre-defined topic codes to their data. This allowed for the organisation of data and the exclusion of text from the analysis which did not relate to the subject areas of interest.

(2) The next step involved the re-examination of data contained within the topic codes and inductive or open coding of this data through the identification of new patterns of meaning that related to each topic code and the creation of codes subordinate to topic codes. Each research team produced their own open codes, which allowed them to choose the most suitable ways to capture the content of their specific data so that differences in the meanings and patterns of meaning identified in interviews across participant samples could be preserved in the coding process, while still keeping the coding relevant to the subject areas explored in the TIMED project through the use of topic codes. The technique of constant comparison was upheld during the creation of open codes, i.e. analysis of new data involved comparing it to previously coded data and then deciding whether existing codes already captured the data, these needed to be modified, eliminated or new codes created. Code generation ceased when it was agreed that no important new patterns of meaning were being identified. Throughout, the authors upheld reflexivity by engaging in introspection and mutual discussions about their individual coding processes and decisions. This collaborative effort aimed to enhance the credibility of the analysis and its interpretations (Yardley, 2000). To ensure consistency, 10 % of all interviews were independently double-coded by at least two researchers. Double-coded interviews were randomly chosen. Analysts compared and discussed their analysis before agreed coding.

(3) Following coding completion, topic codes were summarised by each team into an overview which included names of emerging themes, explanations and relevant quotes from the interviews from each country. Team meetings were held to explore potential cross-cultural differences in the themes identified across countries. While these discussions revealed broad similarities in participants' experiences across the six countries, it is important to note that cultural differences related to DT use and free time may exist, but our data does not allow for conclusive identification of such variations. As a result, the dataset is treated as a whole, and cross-cultural differences are not further explored in this paper.

(4) Following team discussions, the produced thematic overviews were then used to develop themes and subthemes that captured factors that led to regret and guilt about digital free time. In addition, a process diagram was created that visualised the relationships between factors driving regret and guilt. A final report containing definitions and descriptions of themes and subthemes, associated quotes and the diagram was created and confirmed with all research teams.

2.6. Measures to ensure reliability and validity

To ensure a transparent and rigorous data collection process, we developed a detailed guidebook outlining the research questions of the TIMED project, sampling strategy and interview schedule. Consistent data analysis and coding were ensured through the adherence to a coding guide coproduced by all research teams. This guide detailed the analytical process characterised by initial deductive coding followed by open inductive coding, the creation of themes and their summary into an overview. The guide also listed a priori topic codes and their definitions to enhance consistency of the deductive coding process across research teams. A further measure taken to increase reliability involved double-coding 10 % of the interviews, with coders meeting to discuss discrepancies before re-engaging with the data.

Internal validity: To ensure internal validity, peer debriefing was used to ensure continuous discussion of findings and methodological approaches. We also engaged in ongoing critical reflection, acknowledging potential biases in sampling and interpretation. Transparency and consistency were maintained though accurate record-keeping and recording of decision making. In accordance with Hall et al. (2005), statistical measures of inter-rater reliability were deemed inappropriate for this study. Instead, iterative consensus building to achieve coder agreement was employed in line with best practices in qualitative research (Horsburgh, 2003; Noble & Smith, 2015).

External validity: Purposive sampling whereby participants were carefully chosen based on their relevance to the research question was combined with an analytic approach in which a combination of previously defined deductive coding was jointly used with continuous generation of inductive codes. Initial deductive codes were generated as described above and additional inductive codes were incorporated into the analysis when they became relevant, which ensured external validity.

2.7. Reflexivity

The interdisciplinary team who conducted the data collection and analysis comprised of sociologists, psychologists and cognitive neuroscientists whose research interests centre on the role of DTs in everyday life. This team holds a generally balanced but critical stance toward DT: while recognising its benefits, we are also attentive to its potential downsides and its emotional consequences, which may have shaped both the research process and our interpretation of participants' accounts of guilt and regret following technology use. Furthermore, we acknowledge that our disciplinary background may have directed attention toward norms-based and self-evaluative explanations.

To address this, we engaged in reflexive practices throughout the research process. We held regular discussions to identify and challenge our assumptions, particularly our expectations regarding when and why guilt or regret might emerge. Analytic memos were used to document these reflections and to make visible how our perspectives evolved during coding and theme development. During analysis, we made a deliberate effort to remain grounded in participants' accounts rather than privileging pre-existing narratives about digital harm. We actively sought out diverse experiences, including instances where participants did not report guilt or regret, or framed technology use as unproblematic or beneficial, to ensure that our themes were not disproportionately shaped by a bias toward negative interpretations. Overall, our reflexive approach aimed to critically engage with our own assumptions while remaining open to the complexity of participants' experiences. By acknowledging both our attentiveness to potential harms and our efforts to avoid overemphasising them, we sought to produce an analysis that captures the varied and context-dependent drivers of guilt and regret following technology use.

3. Results

Following the coding and thematic analysis process, participant responses revealed that guilt and regret of DT use during free time resulted from the way in which digital free time was appraised and experienced. These evaluations and experiences were organised into five overarching themes. The first theme describes the disconnection between the desires and realities of free time. The following three themes describe facets of digital behaviour which participants associate with feelings of regret: 1) *Engaging in meaningless digital free time, 2) Failure to control digital free time* and *2) The outcomes of digital free time.* The final fifth theme explores participants' *attempts to take the guilt out of "guilty pleasure".*

3.1. Theme 1: disconnection between the desires and realities of free time

This theme explores participants' descriptions of a conflict or

disconnection between their ideal use of free time and their realities of free time. Across all countries, participants consistently described how DT contributed significantly to this disconnect, resulting in a spiral of guilty pleasure. Participants' views are expressed in two sub themes: *Conceptions of ideal free time* and *The ego-dystonic spiral of guilty pleasure*.

3.1.1. Conceptions of ideal free time

Almost all retrospective feelings of regret or guilt about digital free time appeared to result from perceived discrepancies between participants' ideals of free time and their evaluation or experience of digital free time. Broadly speaking, participants aspired towards self-determined and meaningful free time.

> *For me, free time means being able to organise my time however I want. And yes, being free to decide what I want to do now, who I want to do what with or whether I just want to have time for myself today and without appointments that I don't feel like going to.* (Participant from German sample, female, age 25)

Self-determination here refers to (a) perceived freedom to choose free time activities and how much time is dedicated to them in accordance with one's goals and values as well as (b) self-regulation, i.e. the ability to redirect or adjust both leisure activities but also their duration if they deviate from one's original intention, goals or values. *Meaningfulness* in free time here refers to the feeling that free time activities provide tangible emotional, mental, intellectual, physical or social benefits. This includes activities that facilitate self-development, meaningful social relationships or simply positive emotional outcomes such as relaxation or enjoyment.

> *Ideally, I would also have time for myself and for my hobbies or some interests, because I miss having that certain place where I can realize myself, do something just for myself, […] like, go to ceramics or I would like to sew bed linen. I'm so tempted to produce something physically, to see the real thing that I have created. So maybe that would be totally ideal for me, that I believe I would clear my head.* (Participant from Czech sample, female, age 29)

3.1.2. The ego-dystonic spiral of guilty pleasure

Digital free time activities, especially consumptive activities such as doomscrolling, watching short videos and consuming social media content were considered to endanger and even completely prevent self-determined and meaningful free time as they were judged as difficult to control and fundamentally meaningless. This transformed them into "ego-dystonic" behaviour, i.e. activities inconsistent with the ideal of a regulated and conscious self that strives for self-enhancement.

> *I can catch myself especially on this Instagram thing that I like something there and I start to like and follow and so on and then it shows me more and more and more and I think it's a waste of time later on because I catch myself thinking I just wanted to hang out and browse and here I am an hour later.* (Participant from Polish sample, female, age 19)

This inconsistency seemed to be at the root of regret and guilt that followed digital free time. Different experiences and evaluations of digital free time that related to (1) the engagement in digital activities in the first place, (2) failure to control them and (3) their outcomes all contributed to retrospective regret.

> *When I feel that something has sucked me in for too long and it is total nonsense, scrolling, let's say, Instagram, then I already have this feeling of hopelessness, that God, I have overdone it a bit. But it happens rarely, but it just happens.* (Participant from Polish sample, female, age 31)

Overall regretful digital activity was described as a "spiral" by some participants to highlight that DT seemed to "draw them in" sometimes without them noticing, and quickly lead to a loss of control over behaviour (what content was consumed) and time (how long participants spent on DT) causing unintentional prolonged digital engagement that participants retrospectively judged as a meaningless waste of time with negative consequences for wellbeing and individuals' sense of authenticity or integrity.

> Tik Tok really has this thing where the content is infinite and you don't even realise that you're spending time on it, and then you get caught up in this spiral a bit, so I'd say that it's still something that I spend a lot of time on in my free time. (Participant from Swiss sample, female, age 26)

3.2. Theme 2: engaging in meaningless digital free time

The first pattern of behaviour that participants tended to regret retrospectively was the initiation or engagement in specific forms of consumptive digital free time in the first place. Regret appeared to stem from the belief that such activities replaced alternative more ego-syntonic free time pursuits that could have been chosen. The lack of meaningfulness in digital free time is further described under four subthemes: *Lack of productivity, Intellectual and physical passivity, Assumed adverse effects on health* and *Lack of connection with the "real" world*.

3.2.1. Lack of productivity

One of the most common experiences expressed by participants who regretted digital free time was their perception that time that was dedicated to digital activity could have been invested in more productive or valuable pursuits. Such a perception applied slightly more to consumptive digital activities with quickly and unpredictably changing content with no natural end (e.g. doomscrolling, short-form video content) than to consumptive activities with more predictable content that changes more slowly and forms a coherent whole with a clearly defined end (watching films, a TV programme, video gaming, listening to a podcast/music).

> *And maybe I can see that I could use it [my time] more efficiently, maybe I think why don't I start to deal more with the German language for the sake of my job … And so I'm thinking, the time I spent there [on Instagram], if I was on Duolingo, you know, I would have at least B1* (Participant from Czech sample, female, age 29)

What made a free time activity productive seemed to be its ability to satisfy personal interests, enable enjoyment, recovery from non-free time through relaxation, or self-development, whether physical, mental or intellectual (see subtheme *Intellectual and physical passivity*). When referring to their regrets about more unpredictable forms of digital free time, many individuals pointed out that these were not as interesting, enjoyable, relaxing or meaningful in terms of aiding self-enhancement as other forms of free time, (whether non-digital or more predictable digital forms) that is, unpredictable types were not thought to fulfil the criteria of productive free time to the same degree. In addition, understanding the unproductive nature of DT use, and consequently its time-wasting effect, was also associated with self-awareness and insight, whereas appraising technology positively as a means to enrich time could be considered as a failure to recognise its true inferior nature. Such views contributed to the rejection of digital free time.

> *I'll potentially be in the kitchen on Sunday nights going on Facebook video or Twitter or something like that. […] If I find myself doing that for an hour I'm like really hard on myself and going, "well, why don't you use that hour to go and do something productive? Get the endorphins up and actually feel better?" So […] having a screen like that, […] it's not something that makes me happy. […] So it's not really sort of, yeah, provided me with any benefits, health benefits or mental health, mental wellbeing benefits or actual like any sort of relaxation benefits really. I would differentiate that to say watching a football match or watching the cycling on Eurosport or something like that, just something that I actually*

enjoy doing, watching cricket, rugby, whatever it would be. (Participant from UK sample, male, age 41)

Often participants referred to their difficulties stopping engagement in digital free time, its addictive nature, ability to draw participants in and keep them occupied for long periods of time. In this context, the pleasant experiences that drove DT use were seen as part of an unhealthy cycle of addictive or problematic DT use. This devalued the enjoyment, interest or relaxation that sustained participants' tendency to engage in prolonged digital activity. Retrospective regret therefore appears to stem from the combined interpretation of DT use as problematic or uncontrolled behaviour coupled with reduced focus on or devaluation of its emotional benefits.

For example, I don't get so much with the cinema because for me it's not that addictive, right? But with social networks, it does happen that. Yes, I do have a problem with social networks, which well, I think they are created for that, a little. To be addicted to it. I always want a little bit more. So I do feel that for me it is an inconvenience and sometimes they take part of my free time without wanting to, but it does have that inconvenience. (Participant from Spanish sample, female, age 28)

3.2.2. Intellectual and physical passivity

Participants appraised the short quickly changing online content they consumed during free time (e.g. short-form video content) as intellectually inferior often labelling it as "stupid", unable to "teach anything" or "low-brow". Participants also criticized the lack of focus, attention and cognitive effort that the consumption of such content required. The fact that the content could be watched and listened to in a mindless manner meant that it could not afford a sense of intellectual achievement or presence.

I come home from work, I sit on the sofa, I put myself on the phone ….10, 15, 20 minutes, […] then I realise I've just wasted 1 hour being on Tik Tok and it's done me no good, it's taught me nothing. Whereas … whereas I could have done things um … that were more beneficial for my well-being (Yes.) (Participant from Swiss sample, female, age 26)

Participants seemed to arrive at such observations by comparing digital engagement during free time with other free time activities ranging from learning skills to creative hobbies, that were considered to allow for intellectual and cognitive engagement, the prime example of which was "reading a book". Books seemed to symbolise a superior form of free time activity as reading and finishing them required focus, persistence and more active cognitive processing so that this activity could produce a sense of achievement.

It [using DT before going to bed] probably isn't like the highest brow thing I could be doing in my free time, like it would be lovely to be like, maybe like educate myself with a book or you know, something like that. So it's probably not like the most educational thing I could be doing. (Participant from UK sample, female, age 33)

The specific ability to consume "easy" digital content without mental and physical effort was however appreciated by participants as it allowed them to switch off and relax. This was particularly true when participants lacked energy or were in need of recovery from personal responsibilities or commitments, such as work. Therefore, although pursuing low-effort digital activities became desirable, they still produced regret as they symbolised passivity and thus a lack of productivity. As one participant phrased it, digital free time was considered *"the easy way out"*, which also hinted at its status of an undisciplined form of behaviour, discussed more in detail in Theme 3.

Participants also described how the ease of continuing DT use seemed to lead them to accept the cost of retrospective regret because it was easier to accept regret than the temporary effort involved in switching to more valued free time activities.

The problem is that the phone provides such an easy way to spend time, comfortable, not requiring changing, warming up, washing up later, related to physical activity. It doesn't require taking out this guitar, running a cloth over it, taking an amplifier, connecting cables. That's all. (…) Well, from this it follows that by taking the easy way out a bit, you don't spend it completely as you would like. (Participant from Polish sample, male, age 37)

3.2.3. Assumed adverse effects on health

Negative consequences for mental and physical health were mentioned by many participants as reasons for the rejection of digital free time. These consequences included poor sleep, posture or eyesight, negative self-perception or undefined adverse effects on mental well-being. Some of these negative outcomes were simply referred to but not reported to have been experienced personally or were only assumed to have been encountered before, as in the case of a hypothesised reduction in sleep quality due to DT use before bedtime.

I do worry about like the impact it [DT] has on my sleep. So just I'm not a great sleeper and I haven't been even like as a child. So I don't think it's because of that, but I obviously don't think it helps there. And so I, I think I'm more aware of like the impact that sleep has on like your wellbeing like broadly and and stuff like that. (Participant from UK sample, female, age 33)

However, there was tentative evidence that these perceived, rather than experienced, adverse outcomes still added to participants' regret of digital free time. For example, one participant highlighted her enjoyment of TikTok use in the evening but then referred to its negative mental wellbeing effects which she had heard of and pointed out that sleeping instead of engaging in scrolling on TikTok was what she was "supposed" to do.

I do [enjoy scrolling on TikTok] but then there is, I really do. But then there is the talk about it being bad for one's mental health, and especially since I keep doing it when I'm supposed to be trying to sleep. […] The fact that it's, it eats into the time I'm supposed to spend resting. That's discipline on my own end. (Participant from UK sample, female, age 32)

3.2.4. Lack of connection with the "real" world

Using DT during free time was judged as blocking or reducing participation in and experience of the non-digital world by "pulling" participants into the online environment and directing their attention and behaviour away from non-digital happenings. Participants appeared to regret missing out on non-digital experiences, such as uninterrupted face-to-face interactions with other people, real-time entertainment e.g. a football match or even elements of the natural environment such as the weather. In this way, DT interfered with a sense of presence through digital distractions or a sense of absorption in digital activity that lessened attention to the non-digital.

Okay. Let's say I was at a match in Spain in October, Real Madrid played against Osasuna. I bought myself a ticket, flew out and instead of watching the match in real time, I took my phone and recorded what was happening and watched through the screen instead of watching. […] And I should have focused more on what was happening there. And had more memories than capturing them on my phone. Like I noticed that the desire to kind of record my memories meant that I didn't experience them live. (Participant from Polish sample, male, age 31)

It is noteworthy that the "digital" world was sometimes mentioned as contrasting with the "real" world or even "life", which suggested that digital free time was perceived as lacking in authenticity or realness and stood alongside "life", i.e. was disconnected from it in some way. Participants did not clearly explain why digital free time was less "real" for them. However, considering that it was perceived to result in distorted time perception, specifically an involuntary loss of time awareness

through full absorption in digital activities as explained further below it is likely that such an altered relationship with time also produced a sense of disconnection with the non-digital world.

> *Well, but I don't hide the fact that it also takes a lot of time, such browsing. It wastes a lot of time. You really have to have it in the back of your mind as well. Because life is running away so much that you don't even pay attention that it's spring, that the weather is nice, you don't stop for a moment because you're just sitting in this …* (Participant from Polish sample, female, age 54)

3.3. Theme 3: failure to control digital free time

Participants reported that initiating digital activity during free time could generate powerful feelings of regret when it was unintentional or involuntary, therefore violating the principle of self-determination associated with ideal free time. Participants described how they often began using digital devices without full conscious awareness. They referred to digital activity as being the result of a "reflex" or a "default" course of action, suggesting use being triggered by habit.

> *It happened to me sometimes, rather some time ago, because I haven't done such things lately, to* log *off, for example, from Facebook. Just to have that extra one, that I had to* log *in and I was horrified that after logging out consciously like that, a few seconds later I ended up on the login screen, puzzled as to how I had ended up here.* (Participant from Polish sample, male, age 26)

The absence of conscious intention was characterised as being "caught" or "found" on a device, implying that the awareness of digital engagement did not precede uptake of a device, it followed it. Other accounts conveyed that digital activity was triggered by an irresistible urge to use a device sometimes characterised as a sign of "addiction". It appeared that such an urge could be produced by a variety of experiences, including discomfort with empty time, boredom or the need to distract oneself from unpleasant thoughts or events.

> *And then I have the impression that, for example, the phone has become a reflex, I'll pick up my phone, open Tik Tok, scroll like that. (Yeah.) Even if I don't have anything in particular to watch. Erm … so I'd say it's become a way of …. well taking my mind off things, but it's also become a way of just occupying space and emptiness.* (Participant from Swiss sample, female, age 26)

A significant source of regret seemed to be the feeling that time dedicated to digital free time had been wasted or lost as it had not been spent on other more ideal pursuits, i.e. lost time was regretted. While engagement in digital free time in the first place could lead to such regrets, it was also the tendency to continue digital device use longer than intended or the failure to stop the behaviour in accordance with participants' preferences once it had been initiated.

> *I have a problem with the typical doomscrolling that when I'm putting my son to sleep, I suddenly find out I've been on Instagram for two hours. And it goes by so quickly, I absolutely hate it and I know I tend to do it. (Participant from Czech sample, female, age 29)*

This occurred most commonly when participants became so absorbed in digital activity that they lost awareness of time and only regained it after a longer period of digital device use than intended. This means that participants described a temporary loss of self-regulation, i.e. the ability to redirect behaviour in accordance with one's preferences and wants, so that digital free time was not in line with another significant hallmark of ideal free time (self-regulation).

> *It often happens that you just get lost in surfing. You're on YouTube and you click and then a new clip comes up and it could be interesting. And then suddenly two hours have gone by and you actually wanted to do something else, but then your time is up because you've just got lost on some channel. (Participant from German sample, male, age 62)*

Participants expressed concerns that their frequent or prolonged DT use during free time was indicative of addiction or pathological behaviour. Some participants drew parallels between DT use and substance dependency. While most participants did not unambiguously state that concerns about addiction caused regret, consistent associations between DT use and addictive concerns suggests that this may be a factor in the experience of regret.

> *The only problem with technology is that it is more addictive than all these things, more accessible. Because even this alcohol requires going to the store, some storage. Diet, if someone gets into it, because if someone gets too into all this keto, and so on, it's also a problem, but it requires work, thinking, and so on. Nothing is required here. (Participant from Polish sample, male, age 37)*

Perceptions of what constituted and caused digital addiction varied and didn't typically align with clinical definitions of addiction. For example, participants referred to prolonged Facebook use as a sign of addiction and suggested causal mechanisms such as "blue light", "being passive", "damage to dopamine receptors" or "a reduction in our responsiveness to slow digital content." This suggests that narratives of regret of "addictive" digital engagement may have been based on uninformed or incomplete views of the concept of addiction.

> *Even if I think there's a harmful side, there's still this addictive side, which is caused by a lot of things. Blue light, quite simply, […] what you see, well, being passive. (Participant from Swiss sample, female, age 24)*

Apart from reduced control over how long participants spent on DT, they also reported exposure to undesired, i.e. ego-dystonic, content. Such content was not only considered as intellectually inferior, but also of low quality ("nonsense", "rubbish", "average") and fleeting or unmemorable. The latter applied to the quickly changing content on algorithmically controlled platforms, such as TikTok. The way videos were presented on these platforms was viewed as causing tiredness or reduced concentration. Content could not be contained or held onto mentally and participants expressed that they were therefore not properly engaged in "anything".

> *For example, situations like that, where I could catch myself, here something is flying by, I'm supposedly watching it, but I'm not focused at all, it's just flying by, this one, and yet I pick up my phone and start browsing something else at the same time. And it's just very much such a flurry of everything, a million stimuli and so on. And suddenly I'm like: 'what are you doing at all'. It's like neither one thing nor the other are you focused at all, it doesn't do anything for you, what are you doing. So that's how these situations can be.* (Participant from Polish sample, female, age 19)

While several individuals also acknowledged that digital content did meet their interests (it was "cool" or "good"), they devaluated this content in the same breath by pointing out its time-wasting effect, the comparably large amount of low-quality information or the feeling that they spent too much time online without further explaining why. As in the case of the devaluated enjoyment in "addictive" forms of DT use, it appeared that the role of experienced pleasure in digital free time here was described as minimal again, which possibly exacerbated regret.

> *And what's so negative about using the Internet is that I scroll somewhere, even though it's some valuable information, because I follow some valuable, cool accounts, I still have this feeling that I'm in front of this screen for too long.* (Participant from Polish sample, female, age 31)

3.4. Theme 4: outcomes of digital free time

Following what was evaluated as regretful digital free time,

participants tended to experience a variety of negative emotional outcomes apart from regret, specifically self-conscious evaluative emotions, such as shame, self-directed anger, guilt and even self-loathing. For example, participants reported feeling ashamed of or mad at themselves for failing to maintain self-control and giving in to engagement in meaningless digital activity. Especially shame and negative self-perception such as feeling "useless" or "disgusting" suggested that the evaluation of digital activity as meaningless and unregulated free time did not just result in participants' criticising their own behaviour but also had adverse consequences for their self-concept. The experience of regret thus encompassed 1) unfavourable appraisal of digital free time, i.e. one's own behaviour and 2) negative self-perceptions, which was accompanied by negative self-conscious evaluative emotions. These in turn strengthened the perception that digital behaviour should be reduced or replaced by other activities, adding to the experience of regret.

> *When I have a day where I spend the whole day on my mobile phone or watching Netflix, I feel really disgusting afterwards. I feel really useless. Just like that! That's why I try to fill every day with something, including doing something at the weekend, because I don't like it at all when you just spend the whole day doing pointless things. And when I do do it, I feel really bad afterwards. (Participant from German sample, female, age 25)*

Attempting to limit digital free time, or replace it with other activities, was a very common response to regretful digital engagement. However, participants found this difficult because 1) DT requires minimal effort to access when compared to other leisure pursuits, 2) participants are dependent on digital device use for purposes other than leisure making the non-use of devices problematic, 3) participants felt unable to "resist" DT, in part due to a fear of missing out on online content or news. Significantly reducing DT use therefore became an unrealistic or unfeasible solution for some participants resulting in a persistence of retrospective regret.

> *I had an app that banned it [Instagram], that after maybe 30 minutes it shut down and I couldn't go there anymore. So, of course I uninstalled it, haha, it didn't work at all. I would need a more sophisticated app, I don't know, that maybe gives me some exercises, calculations, otherwise it doesn't get me out of there. Or if you'd have to read ten pages, I'd read something [at least]. (Participant from Czech sample, female, age 32)*

3.5. Theme 5: taking the guilt out of "guilty pleasure"

Interviews revealed specific circumstances under which feelings of guilt and regret of digital free time were reduced. There was greater acceptance of the perceived unproductiveness of digital free time when it followed periods of work or fulfilment of commitments, such as caring responsibilities. In this situation, a period of relaxation had been "earned" and if DT then aided relaxation, its perceived unproductive character could be tolerated considering that a balance between productivity (work/commitments) and the lack of it was present.

> *Sometimes I think that when I'm on the phone, I spend half an hour on it while my baby is sleeping. Then, when he wakes up, I think to myself, not that I've wasted half an hour, but I could have used that time better—like reading or learning something. It's that little feeling of regret that I could have done something more productive with my time. But at the same time, I know I really need to relax. (…) Sometimes I feel guilty about it, but then I remind myself that I'm glad for the break, so it's kind of half and half. (Participant from Czech sample, female, age 32)*

Attaching less importance to productiveness in free time also seemed to facilitate tolerance of seemingly unproductive digital behaviours, decreasing or eliminating regret. A few participants highlighted having learnt to embrace unproductive leisure with age and allow themselves to slow down. A few others suggested that time loss to digital free time did not cause any distress or regret as sufficient time was still available to them, even if some of it had been spent on digital free time. However, even during time abundance, regret could also be heightened by the sense that having time provided an even greater opportunity to pursue non-digital activities.

> *No, no, I have no inkling to be productive in my free time. I have absolutely no intention to be productive. I intend to be productive in the time I dedicate to my research activity to house administration. But in my free time, I do not expect to be productive at all. I just expect to do something completely, that I want to do, be completely immersed in it, and forget about the world. But I have to say, do you know, by the time my alarm goes off, I'm ready to be productive again.* (Participant from UK sample, female, age 51)

An intentional and conscious decision to engage in digital free time, for relaxation or entertainment, also helped to reduce retrospective regret when compared to unintentional DT use since control over behaviour, i.e. self-determination could be maintained and accidental time loss avoided. However, intentional digital free time did not eliminate other sources of regret such as perceived meaninglessness of digital activity.

> *Well, like, it makes a difference if I open Instagram with "I'm going to go stare dumbly at my phone now," or if I accidentally end up staring dumbly at my phone, which are just two different things, even though you're doing the same thing. When you consciously say, I want to spend twenty minutes staring at my phone right now, I don't mind spending that time that way, but when it's like, all of a sudden I find out, oh my gosh, oh my gosh, I've been here for half an hour looking at Instagram again or just Facebook or whatever, I'm like: Wow yeah, I could have been doing anything else. (Participant from Czech sample, female, age 27)*

4. Discussion

This study aimed to investigate the factors that give rise to regret and guilt about the use of DT during free time across Europe. The analysis of qualitative interviews with people from six European countries (UK, Germany, Poland, Czechia, Switzerland and Spain) revealed that such factors could be captured by four overarching themes: *1. Disconnection between the desires and realities of free time*, *2. Engaging in meaningless digital free time*, *3. Failure to control digital free time* and *4. Outcomes of digital free time*. The fifth theme *5. Taking the guilt out of "guilty pleasure"* summarised individual experiences and attitudes that had an ameliorating effect on regret and guilt.

The overall findings suggest that guilt and regret emotions seemed to result from a combination of digital behaviours, their negative evaluation and continued digital engagement despite negative emotional outcomes, which created a cycle that maintained regret and guilt. Guilt therefore results from the dynamic and continued interaction of the themes identified above. Fig. 2 depicts a framework of the digital regret cycle in which digital device use was experienced as leading to a spiral of guilt and regret in the following way: Participants initiated DT use unintentionally, e.g. habitually or in response to an urge to use a device, engaged digitally for longer periods of time than intended and retrospectively evaluated these behaviours negatively. These evaluations consisted in a negative appraisal of digital free time as meaningless and a negative perception of digital engagement as a personal failure to maintain control over free time or oneself. The sense of meaninglessness was rooted in the perception of digital free time as inherently unproductive, intellectually and physically passive, unhealthy and inauthentic. The perceived lack of meaning and self-determination in digital free time was inconsistent with ideals of free time, i.e. meaningful and controlled free time. This inconsistency further exacerbated regret and guilt. The unfavourable evaluation of digital behaviours was accompanied by self-conscious emotions such as shame or self-directed anger, which however did not result in the prevention or avoidance of digital free time but reinforced regret and guilt as digital free time was

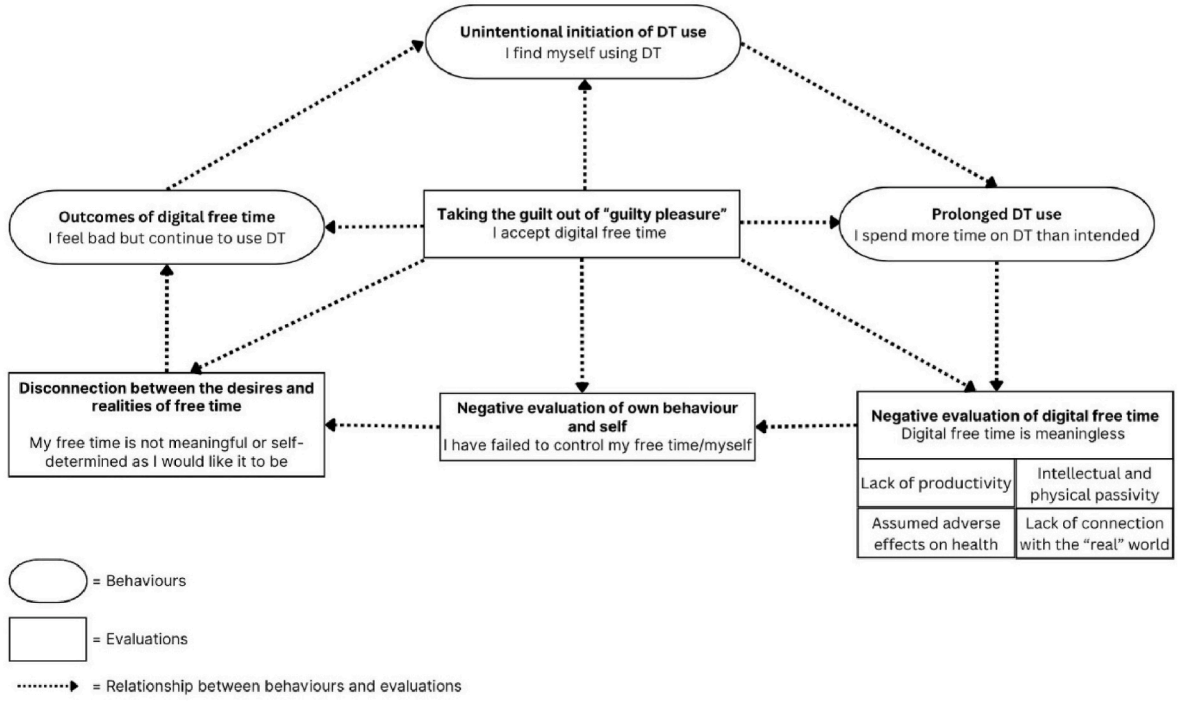

Fig. 2. Framework depicting how digital behaviours and evaluations lead to and maintain guilt and regret of digital free time.

continued. Regret and guilt either did not occur or decreased when the perceived lack of productivity of digital free time could be accepted or its initiation was intentional.

Our findings suggest that the evaluation of digital free time plays a key role in regret and guilt as it appears to influence the way digital activity is experienced. While digital engagement was associated with a lack of control over free time as it led to unwanted initiation of digital behaviours, their continuation beyond what was considered an appropriate duration and consumption of undesired content, it was the negative appraisal of the perceived reduced control that made digital free time regretful rather than merely its experience. For example, frustrations about spending too much time on digital devices often emerged from the belief that time could have been spent "better". In addition, the very features of digital consumption, i.e. its ease and passivity that facilitated the unwanted reduced level of consciousness during digital engagement were often also perceived as pleasurable or relaxing and therefore desirable; yet were rejected as they were inconsistent with values of productivity or health. This suggests that negative appraisal of digital free time may shape lived experience of it and thereby contribute to guilt and regret.

Unlike this study, previous research has associated regret of DT use with more overtly adverse outcomes ranging from exposure to negative online content or availability pressure (Terzimehić & Aragon-Hahner, 2022) to cyberbullying (Huang et al., 2025), invasion of privacy (Wang et al., 2021) or unpleasant personal or social consequences of content published online (Wang et al., 2011). While our study does suggest that digital free time can be experienced as unhealthy and harmful in line with previous findings (Agans et al., 2022; Dodemaide et al., 2022; Herder & Staring, 2024), lived experience of significant adversity did not seem to underlie such judgements most of the time.

Instead regret and guilt occurred in response to digital experiences that could be pleasant. However, seeking such pleasure through DT was considered to imply the pursuit of low-quality addictive rewards instead of higher order/valued outcomes such as autonomy, productivity, health, and authenticity. In other words, the belief that digital free time meant neglecting "superior" values seemed to be a significant source of regret and guilt. The contrast between people's experiences of digital free time and their expectations perhaps portrays a nostalgic view of past analogue eras where non-digital pursuits are assumed to have been more productive and authentic than their modern digital counterparts. Such perspectives appear to be exacerbated by public, media and political discourse which predominantly focus on the potential harms of DT. This suggests that possible avenues for reducing guilt and regret of digital free time could involve a reconsideration of values held so that they align with digital experiences and/or facilitating digital experiences that are more consistent with dominant ideals of free time.

Our findings demonstrate only holding individuals themselves responsible for implementing such changes could even lead to an exacerbation of guilt and regret and is unlikely to be effective. Self-directed anger and shame that were associated with guilt and regret in our study show that individuals currently attribute regretful digital behaviour to deficiencies in their own self-regulative capacities rather than primarily placing the responsibility for unsatisfactory digital free time onto digital services, societal norms or social structures. Such self-blame in turn seemed to worsen regret and guilt when digital behaviours were continued.

The discourse in mainstream media (Caddy, 2022), self-help literature (Price, 2018; Summers, 2024) and among psychologists (Sutton, 2024) also currently conveys that individuals should manage DT use and avoid overuse, e.g. by implementing various strategies for adjusting individual digital behaviours. These strategies range from tracking screen time to replacing digital by non-digital free time activities or implementing digital detoxes (Summers, 2024; Wrighton, 2022). Such a discourse appears to imply that individuals themselves should also alleviate their own regret and guilt about digital free time by taking control of and often limiting their digital behaviours.

This approach however fails to consider that (a) individual choice about free time may be restricted by external factors, such as time poverty, socioeconomic background (Borodulin et al., 2016; Kuykendall et al., 2018, 2020) or social norms (Harris et al., 2025; Nguyen, 2023; Standridge, 2022) potentially making the replacement of digital free time by high-quality non-digital activities too time-consuming, unaffordable or socially challenging; (b) changing or limiting digital behaviours may reduce experiences of regret and guilt (Vanden Abeele

et al., 2024) but does not directly address negative evaluations of digital free time that seem to be at the core of guilt and regret and could persist even in the face of limited digital engagement, which is increasingly difficult to sustain in a digitised society (Nguyen, 2023); (c) values and beliefs about DT that underlie the regret-inducting disconnect between ideal and actual digital free time remain unaddressed through a focus on individual behaviour and the neglect of the role of society in shaping such values and beliefs; (d) the design and functions of digital apps themselves, such as algorithmic content selection, infinite provision of content or the absence of standardised built-in mechanisms to see or monitor time spent on them can encourage users to stay on apps longer than intended and consume unwanted material (Chen et al., 2024; Schaffner et al., 2023), which contributes to regret and guilt.

Nor do such measures clearly acknowledge that these external factors are often interrelated and compounding in their effects. For example, concerns about self-regulation failures and digital addiction, which are often internalised by users as individual or personal failings, often fail to acknowledge the impact of technology design on individual behaviour and choices. Minimising the role of the digital environment, and specifically algorithmic and persuasive technology design which can prioritise continued use over user experience and wellbeing, exacerbates individuals' beliefs that they are both the problem and the reason that solutions fail.

Resolving these issues, and reducing regret and guilt effectively, may require changes at the societal level, which could include rethinking the way digital free time is portrayed in media and academic discourse. For example, clear evidence-based information about DT that directly rectifies common misconceptions or removes uncertainties about its effect, including its often-assumed addictive characteristics or adverse health consequences may contribute to more positive attitudes towards DT (Kessler & Bachmann, 2022) and thereby decrease regret and guilt. In addition, resolving the perceived regret-inducing inconsistency of digital free time with values of productivity and authenticity might require reframing the emotional benefits, such as joy or pleasure obtained through digital free time as tangible, meaningful and productive in their own right rather than inferior to other outcomes such as intellectual or physical self-development.

However, changes in the way DTs are evaluated at a societal level might also need to be accompanied by modifications made to their design or functions in order to effectively reduce regret and guilt about digital free time. This is because one regret-inducing aspect of regretful digital engagement was found to be the desire and perceived inability to engage in other free time activities after being drawn in by the infinite and quickly changing content presented to users on entertainment apps. As this desire might persist even if digital engagement was appraised positively, alleviating regret and guilt successfully might mean assisting individuals in increasing self-determination in time management when engaging with DTs but doing so through structural changes to digital services.

Since unwanted prolonged digital device use was facilitated by a loss of awareness of time, ensuring that individuals retain or regain a sense of temporal awareness while engagement is ongoing might be an effective way to prevent perceived overuse and thereby regret and guilt (Roffarello & Russis, 2019; Whittaker et al., 2016). Previous research (Purohit et al., 2020; Purohit & Holzer, 2021) has shown that displaying digital nudges which remind the user that a self-defined amount of time, such as 10 min has elapsed or that a certain number of screens have been viewed during app use can increase mindful engagement.

While functions intended to support self-determined time management online, such as screen time tracking, setting limits to app accessibility or warnings to disconnect already form part of many devices and apps, such features often have to be manually activated by the user and presuppose user agency, such as commitment to the use of the functions and some degree of self-control (Jorge et al., 2022; Parry et al., 2023). This means that many existing digital tools for online time management do not cater to individuals who face ambivalence about the idea of DT use reduction and may struggle to regulate their digital activities (Jorge et al., 2022; Vanden Abeele et al., 2025), which, as demonstrated in our study, correspond to the self-reported experiences of individuals affected by regret and guilt.

The ineffectiveness of optional digital time management tools built into devices or apps for limiting device use (Dekker et al., 2024; Zimmermann, 2021) is likely to be due to the fact that duration of DT use is often a key indicator of success for digital companies (Barbaro et al., 2020; Carrino et al., 2017; Olsson, 2023) so that app functions may primarily aim to maximise user attention and engagement rather than supporting digital wellbeing (Vanden Abeele et al., 2025). Successful implementation of ethical app design that decreases regret and guilt about digital free time might therefore require policy intervention that introduces digital nudge functions or online time tracking mechanisms as a standardised mandatory element of entertainment apps whilst still offering the user the option to disregard or disable such functions. Such a strategy would reduce the exclusive responsibilisation of the individual for alleviating regret and guilt but also uphold principles of self-determination and choice over the use of DT.

In line with our finding that regret and guilt can be driven by the perceived meaninglessness of DT use, recent recommendations for ethical app design have also included calls for the provision of more meaningful content (Černohorská et al., 2025; Widdicks et al., 2022; Zhang et al., 2022). To identify what makes content satisfying to individual users, the measurement of the quality of user experience by digital services is likely to be necessary. Improving quality of digital engagement rather than primarily reducing its quantity or duration would be consistent with desires documented by users (Zhang et al., 2022), could reduce regret and guilt about digital free time when digital time is difficult to limit due to internal or external barriers and might be more aligned with the interests of app developers or digital services who seek to increase engagement with DT.

Overall, the findings reported in our paper suggest that the effective alleviation of regret and guilt about digital free time is likely to require societal-level changes that remove the burden of responsibility to achieve regret- and guilt-free digital engagement from the individual user and directly address the core drivers of such emotions, specifically the negative appraisal of digital free time and one's own behaviour and self when engaged digitally. Ideally such changes should involve the careful adjustment of the mainstream negative discourse about DT use through a rectification of incomplete or false regret-inducing information about its risks, which could be complemented by a focus on benefits (such as pleasure or enjoyment) that digital free time may afford. In addition, structural changes to digital services or apps that are regulated by policy might be needed to assist individuals in increasing their sense of control over digital experiences. These could include the implementation of mandatory functions in apps that increase user awareness of time during digital activities and the provision of content that is meaningful to users.

These findings highlight the complex and interconnected nature of the impact of time use and DT on wellbeing. Addressing such issues, and developing effective policy and implementation strategies which enhance user experience by reducing feelings of guilt and regret, may require a complexity science approach to complement qualitative work. Complexity science approaches to understanding drivers of largescale group behaviour have previously been effective in understanding how information systems can enhance wellbeing and survival in risk environments (see Helbing et al., 2015 for examples). The interdisciplinary nature of complexity science, which pays particular attention to non-linear effects (small changes which make large differences), cascading effects, adaptations and how individuals and networks interact could therefore enable critical examination of how groups engage with digital free time and how this influences individual and collective behaviours and perceptions.

5. Limitations

The current study aimed to elicit unprompted accounts of regret and guilt about using DT during free time and therefore did not make use of any explicit interview questions addressing or naming these feelings. This approach was adopted to ensure that the experiences reported were not the result of demand characteristics. However, the approach also implied that we did not directly ask participants to state the reasons why they experienced regret or guilt following digital free time. Therefore, it is possible that certain drivers of such feelings are not reflected in our findings, which suggests the need for future studies to explicitly investigate these emotional experiences across Europe.

Due to the qualitative nature of this study, we were unable to explore cross-national differences in the experiences of regret and guilt, although these may exist (Breugelmans et al., 2014; Wong & Tsai, 2007). Other demographic variations, such as age- or gender-related differences were not investigated in this study despite evidence of their relevance. For example, older and younger individuals tend to diverge in their attitudes, experience and use of DT (Liu et al., 2020; Loos & Ivan, 2022; Rosen et al., 2013) and are therefore likely to experience guilt and regret in different ways. In addition, as suggested by our findings guilt and regret of digital free time may increase or decrease with different levels of time availability, which tends to be particularly low among women (Artazcoz et al., 2024; Rodgers, 2023) due to their tendency to shoulder more caring responsibilities and domestic tasks than men (Hyde et al., 2020). Further large scale quantitative research, which seeks to understand how cultural and demographic factors impact experiences of guilt and regret of digital free time could facilitate the identification of groups who might be at heightened risk of regret or guilt and might need to be given special consideration when it comes to taking measures to promote digital wellbeing in the general population.

While our study provides in-depth insights about digital behaviours and evaluations of digital free time that appear to lead to regret and guilt and suggests that societal norms about DT use may influence these experiences and appraisals, it does not provide clear evidence of such an impact or how such an impact might come about. Investigating the influence of societal norms upon regret and guilt about digital free time, e.g. through experimental research or a more targeted qualitative study could help to identify the mechanisms through which society shapes experiences of digital free time. This could help disentangle when negative evaluations of digital free time might be due to personal experience and when they are a result of an internalisation of societal views and aid our understanding of how to reduce regret or guilt.

6. Conclusion

The use of DT during free time has been shown to facilitate relaxation, recovery from work life and enjoyment. However, mainstream discourse and media have portrayed DT use as a low-quality form of free time, with individuals reporting significant guilt and regret following digital free time. Our findings show that these emotions result from digital free time being perceived as a threat to meaningful and self-determined free time (hallmarks of ideal time use) across six different European countries. Digital free time is experienced as unproductive, passive, unhealthy and inauthentic so that especially unintentional and prolonged digital engagement are considered as failures to maintain control over time use, with the burden of responsibility for these digital behaviours currently falling onto the individual. Reducing guilt and regret might require societal changes including a more realistic and evidence-based adjustment of the portrayal of digital free time in media and mainstream discourse and structural changes to digital services such as apps so that these facilitate controlled and meaningful digital engagement in line with user preferences.

CRediT authorship contribution statement

Christine Schoetensack: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ruth Ogden:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Katarzyna Goncikowska:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Joanna Witowska:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation. **Georgina Giner-Domínguez:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sébastien Chappuis:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Tereza Klegr:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Rafael Valenzuela:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Julie Papastamatelou:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation. **Marc Wittmann:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Núria Codina:** Writing – review & editing, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **José Vicente Pestana:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Mónica Fernández Boente:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation. **Quentin Meteier:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Chantal Martin-Soelch:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Vanda Černohorská:** Writing – review & editing, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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Declaration of competing interest

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

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Data availability

The authors do not have permission to share data.

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