What is Digital Wellbeing? A Leverage Points Framework to Guide Research and Action

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Abstract

While research on digital wellbeing has often focused on mitigating the harms of technology (over)use—especially around screen time—the concept itself remains inconsistently defined. In this paper, we first propose a layered taxonomy that characterizes digital wellbeing across three dimensions: technology scope and users, mediators, and strategies. The taxonomy is grounded in a review of ten years of CHI publications and refined through its application to 68 student projects on digital wellbeing. Building on this foundation, we then advance the Leverage Points for Digital Wellbeing, a framework inspired by system thinking that situates interventions along self-oriented, collective, and systemic orientations of change. Our conceptual model provides an actionable account of digital wellbeing—one that captures users' evolving entanglements with technology, including generative AI, as well as the broader social and political conditions in which these entanglements unfold. We conclude by outlining implications for research, design, and policy.

CCS Concepts

• **Human-centered computing** → *Collaborative and social computing theory, concepts and paradigms*; **HCI theory, concepts and models**; *HCI design and evaluation methods*; • **Applied computing** → *Psychology*; • **Social and professional topics** → Computing / technology policy.

Keywords

digital wellbeing, digital wellbeing definition, design frameworks, self-regulation, systemic accountability

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1 Introduction

Over the last decade, smartphones and social media have been recognized for capturing our attention [7, 56, 69] and making us addicted to technology [75, 83, 101]. These concerns have been articulated through the concept of *digital wellbeing*, which has become a recurring theme in Human-Computer Interaction (HCI). Researchers, policymakers, and industry actors have often invoked digital wellbeing as a design goal, particularly in response to the harms of technology (over)use—ranging from excessive screen time [63] to compulsive social media engagement [102]. At the same time, both researchers [78, 92] and technology companies [4, 36] have taken a more pragmatic route, emphasizing support for users' self-regulation of technology use in everyday life—for instance, through the design of digital self-control tools [59, 67].

Despite this growing interest, work on digital wellbeing in HCI remains conceptually fragmented and often narrow in scope. This fragmentation contrasts with the extensive body of psychological studies that has developed wellbeing as a multidimensional and dynamic construct. Indeed, wellbeing has consistently been understood as more than transient satisfaction or the absence of distress. Decades of research have demonstrated that it involves the integration of affective, cognitive, and relational dimensions, as well as processes of growth, meaning, and self-realization [22, 27, 87]. Yet these richer perspectives have not been consistently translated into digital wellbeing research, leaving the field oscillating between narrow individualistic metrics (e.g., screen time [28]) and broad aspirations ("a good digital life [12]") that fail to capture the evolving entanglements of users with technology. Emerging challenges such as Generative AI (GenAI), with its potential to both scaffold learning and undermine agency, further underscore the urgency of conceptual clarity.

This raises two central questions: how is digital wellbeing understood in the CHI community, and how can it be operationalized in design and research?

To address these questions, we first propose a **layered taxonomy** that captures how digital wellbeing is defined and enacted across research and practice. The taxonomy is based on a combination of theoretical development—derived from a scoping review of ten years of CHI publications on digital wellbeing—and critical refection on four years (2022-2025) of a university course on digital wellbeing. It specifies three interrelated dimensions: *(i) technology scope and users*, which clarifies the technological domain under consideration and the populations targeted; *(ii) mediators of wellbeing*, which identify the psychological, social, and structural processes through which technology use affects wellbeing; and *(iii) interventions and strategies*, which encompass the design choices and methods through which digital wellbeing is pursued. Together, these layers provide a structured lens for comparing otherwise

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disparate approaches, revealing where the field has converged and where important gaps remain.

We then synthesize these insights into the **Leverage Points for Digital Wellbeing** framework, inspired by systems thinking [61]. This framework situates interventions along three orientations of change: *(i) self-oriented*, focusing on individual regulation and awareness; *(ii) collective*, emphasizing shared practices and social contexts; and *(iii) systemic*, targeting platforms, infrastructures, and governance. By aligning the layered taxonomy with these orientations, our work delineates a conceptual model which highlights not only what components of digital wellbeing are at stake, but also where and how interventions can achieve different magnitudes of impact—from personal habit change to structural transformation.

Our contribution is threefold.

(1) First, we bring conceptual clarity to digital wellbeing, a construct that has often remained vague or reduced to simplistic metrics such as screen time in HCI research and practice. This clarity enables researchers to better define, measure, and compare digital wellbeing across contexts.
(2) Second, we show how different framings of digital wellbeing translate into distinct forms of intervention—whether aimed at individuals, communities, or systems—thus providing a thinking tool for reflecting on what kinds of change are prioritized.
(3) Third, we create a common ground that bridges diverse HCI perspectives and opens up opportunities for dialogue and cross-pollination across research communities.

2 Methodology

Following established approaches to taxonomy and conceptual model building [58, 73], we based our work on a conceptual–to–empirical strategy (Figure 1). This entails defining the scope of concern (meta-characteristics), specifying stopping conditions, and iteratively refining an initial conceptual framing through a fixed set of empirical examples.

Our meta-characteristics were defined across three layers: technology scope and users, mediators, and strategies. Thus, each layer in our model corresponds to a way in which digital wellbeing is understood, mediated, or intervened upon. These dimensions emerged from prior conceptualizations of wellbeing as a layered construct (e.g., affective, cognitive, and behavioral levels [27, 87]) and from HCI work that distinguishes between technological domains, processes of interaction, and intervention approaches [54, 81]. We adapted these distinctions to digital wellbeing to ensure that our coding captured not only *what* technologies and populations are addressed, but also *how* wellbeing is theorized as mediated, and *which* strategies are mobilized to intervene. Mirroring the approach of Lupetti et al. [58], we adopted the following steps:

- **Grounding.** We first conducted a scoping review on an empirical grounding consisted of a corpus of 62 CHI publications to derive an initial set of components for our meta-characteristics. We focused on CHI as it is the premier venue for HCI research, where digital wellbeing has been repeatedly debated, theorized, and operationalized over the past decade. This deductive step built on prior theoretical framings of digital wellbeing and enabled us to identify candidate components that formed the initial conceptual scaffold of the taxonomy.
- **Applying and revising.** We then empirically articulated and refined this scaffold by analyzing an example set of 68 student projects developed across four editions of a university course on digital wellbeing. Projects were coded against the initial classification, while additional components were added inductively when new framings emerged. Following Lupetti et al. [58], we defined our stopping condition as follows: (i) objectively, all student projects are associated with at least one component in each of the three layers; (ii) subjectively, all relevant components of interest that appear in the projects are accounted for. Since the participating students were necessarily subject to potential biases stemming from exposure to the course's theoretical framing, this step should not be considered an objective empirical validation of our taxonomy. Rather, following design research traditions of annotative knowledge production [34], the projects served both as descriptive material (capturing how students have interpreted digital wellbeing in practice) and as generative inspiration (expanding and reshaping the conceptual space).
- **Iteration, agreement, and articulation.** Finally, through iterative discussion among the authors, we reviewed and verified the classifications across both datasets, resolved ambiguities, and articulated the final version of the layered taxonomy. Furthermore, we synthesized our findings into the Leverage Points for Digital Wellbeing framework, providing an actionable lens for guiding future research and design.

In the following sections, we detail the analyses underpinning this process.

2.1 Scoping Review: 10 Years of CHI Publications on Digital Wellbeing

To build our literature corpus, we searched the ACM Digital Library[1] for research articles published at the ACM CHI Conference on Human Factors in Computing Systems between 2015 and 2025 that contained the term "digital wellbeing" (or "digital well-being").

We limited our search to these exact terms to capture the explicit uses and meanings of the construct within HCI discourse. While this choice may overlook adjacent terms, our focus was on understanding how digital wellbeing is explicitly defined and operationalized, rather than mapping all wellbeing-related constructs in digital contexts. Also, we focused our review on CHI publications as CHI is the flagship venue in HCI and a widely used reference point for identifying research trends [53, 76]. Its breadth of domains and methodologies (e.g., 16 subcommittees in 2025) ensures diversity in the corpus, while maintaining consistency. Our scope is therefore generative rather than exhaustive, and future work may extend this analysis to other SIGCHI conferences that focus on more specific domains.

Given the single-venue focus, our work should be considered a scoping review. To ensure transparency and rigor, we adhered to the key elements of the PRISMA Extension for Scoping Reviews guidelines [104]. The search was conducted on July 1, 2025, and

[1] https://dl.acm.org/, last visited on August 21, 2025

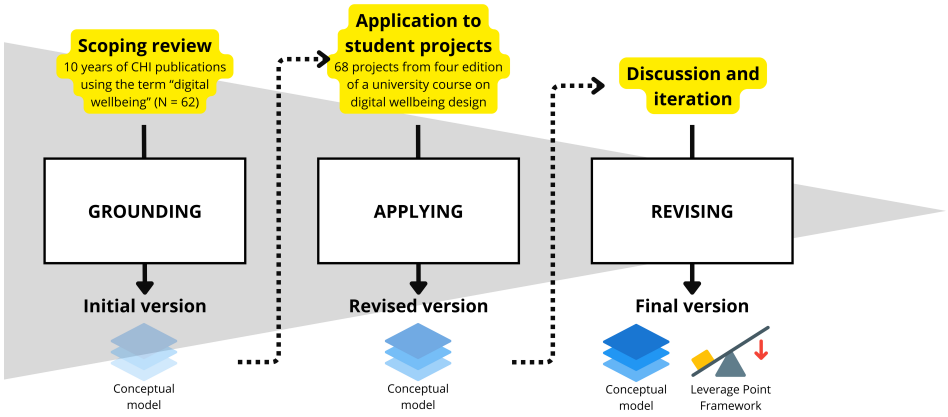

Figure 1: The conceptual–to–empirical strategy adopted in this work: *grounding* a layered taxonomy of digital wellbeing in a scoping literature review, *applying* and refining it through student projects, and finalizing it into the Leverage Points for Digital Wellbeing framework through discussion and iteration (*revising*).

initially returned 100 items. After applying inclusion and exclusion criteria, we excluded 38 items, resulting in a final corpus of 62 articles.

2.1.1 Inclusion and Exclusion Criteria. Articles were eligible if they explicitly framed their contribution around digital wellbeing, regardless of the particular definition adopted by the authors. We excluded:

- Papers that mention "digital wellbeing" only as an example of an application domain or as a direction for future work (e.g., [10, 44, 51]);
- Papers that list "digital wellbeing" solely as a keyword, without further discussion in the text (e.g., [111]);
- Workshop summaries (e.g., [3, 14]).

The resulting corpus comprised 46 full papers and 16 Late-Breaking Works. These included articles are marked with a check mark (✓) in the References list.

2.1.2 Data Extraction and Coding. We developed a structured data extraction sheet to systematically capture relevant information from each paper and to code components for our three main layers defined at the beginning (technology scope and users, mediators, and strategies). For each of the 62 included papers, we recorded bibliographic details (authors, title, abstract, publication type, and year), the main focus of the contribution, the target audience, the technologies involved, and the operationalization of digital wellbeing (mediator(s)). We also noted whether the authors provided or cited a definition of digital wellbeing.

An open coding process was then conducted on the extraction sheet. One researcher generated an initial set of codes for the three layers by reviewing the first 10 papers in the corpus. The same researcher and a second researcher subsequently applied and refined these codes across all 62 papers. Disagreements were resolved through discussion, leading to the refinement of the evolving codes. The final set of codes captured the recurring ways in which digital wellbeing is framed in CHI and resulted in the initial version of our taxonomy. The data extraction sheet and the related coding is available at https://osf.io/78ecs/?view_only=5e6cb23c567e4279bade6b3fce07019a.

2.2 Analysis of Students Projects

After the scoping review, we applied the initial version of our taxonomy to a collection of 68 student projects developed across four editions (2021–2024) of a university course on digital wellbeing.

2.2.1 Course Overview and Student Projects. The student projects analyzed in this work were developed within a multidisciplinary course offered at an Italian university that bridges psychological theory and engineering practice. The course is grounded in the idea that digital wellbeing has two complementary natures: one technical, related to the design and use of digital technologies, and one psychological, related to people's wellbeing and mental health. To capture both dimensions, the course combines theoretical lectures co-delivered by a psychologist and a computer science teacher with hands-on project work, fostering collaboration across students with diverse backgrounds.

The theoretical lectures are organized into three modules (Table 1), each bridging conceptual foundations of psychological wellbeing with HCI perspectives on digital wellbeing. The *Introduction* module introduces core concepts of wellbeing, its relevance in study and work contexts, and models of stress and support, alongside definitions, metrics, and validated measures of digital wellbeing. The *Threats* module examines psychological risks of technology use—such as over-engagement, technostress, and challenges of remote work—together with the design logics of the attention economy and attention-capture patterns. Finally, the *Strategies* module addresses individual differences and coping mechanisms, recovery practices and the right to disconnect, as well as frameworks for intervention, including digital self-control tools and policy responses.

Besides the theoretical lectures, project-based learning challenges student teams to design technological solutions that respect and promote digital wellbeing. The development of these projects is organized into four incremental exercises—journey mapping,

Table 1: Theoretical modules of the course analyzed in this work, combining foundations on psychological wellbeing and HCI perspectives on digital wellbeing.

Module	Foundations on psychological wellbeing	Digital wellbeing in HCI
Introduction	Concepts of wellbeing; Wellbeing in study and work contexts; Models of stress and support	Definitions of digital wellbeing; Metrics and measurement approaches; Validated assessment scales
Threats	Psychological risks of technology use (e.g., over-engagement, technostress, remote work challenges)	Attention economy logics; Design patterns that capture attention
Strategies	Individual differences and coping mechanisms; Recovery practices and the right to disconnect	Frameworks for intervention; Design of digital self-control tools; Systemic responses through policy and regulation

needfinding, low-fidelity prototyping, and high-fidelity prototyping. Before each exercise, students are introduced to the relevant methodologies and tools drawn from psychology, design, and HCI. Teachers' supervision during the project activities consists of feedback on research methods (e.g., interviewing, journey mapping, prototyping) and on the clarity of design requirements, but does not prescribe the types of wellbeing problems to address, the mediators to consider, or the intervention strategies to employ.

Across four editions (2021–2024), the course involved more than 500 students from engineering and design programs, who worked in multidisciplinary teams of 6–8 members and provided a heterogeneous perspective that complemented the literature findings. In total, 68 interactive prototypes were produced using Figma, providing the basis for the dataset analyzed in this study.

2.2.2 Data Collection and Coding. The student projects analyzed in this work are course outputs produced as part of the required assessments of a university course. No personal or identifying student data was collected or used, and all analyses were conducted on anonymized project materials. Specifically, all project materials (reports, slides, and prototypes) were first anonymized and then used as the basis for analysis. As part of their design process, students carried out needfinding activities such as surveys, interviews, and focus groups. Altogether, these activities involved an estimated total of over 5,000 participants, highlighting both the scale of engagement and the diversity of perspectives brought into the projects.

Each project was treated as a design case, providing both descriptive evidence of how students interpret digital wellbeing and generative material for expanding the conceptual space. We applied the same three-layer coding framework used in the literature review (technology scope and users, mediators, strategies) to the 68 student projects, analyzing the groups' written reports and corresponding Figma prototypes. One researcher initially coded all projects using the first version of the taxonomy; new components were added inductively where projects introduced framings absent in the literature corpus. A second researcher independently reviewed the coding, and disagreements were resolved through discussion. The analysis surfaced patterns in how students conceptualized digital wellbeing and revealed orientations less prominent in the CHI corpus, such as concerns related to the usage of GenAI, resulting in a revised version of our taxonomy. The coding of the student projects is available at https://osf.io/78ecs/?view_only=5e6cb23c567e4279bade6b3fce07019a.

2.3 Discussion and Iteration

The final phase of our methodology involved iterative discussion among the authors to consolidate insights from both the literature corpus and the student projects. Through cycles of comparison, refinement, and resolution of ambiguities, we articulated the final layered taxonomy and derived the Leverage Points for Digital Wellbeing framework.

In the following sections, we first show how the literature review revealed conceptual gaps in how digital wellbeing is articulated within HCI, and then present the final versions of the conceptual model derived from our conceptual–to–empirical strategy, which encompasses the layered taxonomy and the Leverage Points framework.

3 What Do We Mean by Digital Wellbeing?

Although digital wellbeing has become a prominent topic in HCI—with 14 contributions at CHI 2025 alone—our literature review reveals that the field engages with the construct in diverse yet often narrow ways. Out of 62 publications surveyed, only eight (12.9%) explicitly define the term, either by citing existing literature or by adopting external formulations.

Most of these works (6, i.e., [28, 47, 64, 66, 69, 91]) rely on two broad theoretical definitions. The first, proposed by Burr et al. [12] in their 2020 article "The Ethics of Digital Well-Being," frames digital wellbeing as:

> "The impact of digital technologies on what it means to live a life that is good for a human being."
> ***Burr et al. [12] definition of digital wellbeing***

The second, developed by Vanden Abeele in her 2021 theoretical contribution "Digital Wellbeing as a Dynamic Construct," defines it as:

> "A subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity."
> ***Vanden Abeele [2] definition of digital wellbeing***

Yet, these expansive formulations are often only loosely connected to the empirical or design work in which they appear. For example, even when citing Burr's definition, contributions tend to focus narrowly on digital self-control [64], paying little attention to the structural or societal determinants of wellbeing.

More critical perspectives do exist. Docherty et al. [28] call for (re)politicizing digital wellbeing, situating it within sociotechnical

systems rather than individual usage patterns. Similarly, Krysztoforska et al. [47] emphasize the need for interdisciplinary approaches to accommodate the multiple epistemologies shaping the construct.

Other contributions adopt corporate-style formulations. For instance, one paper [63] cites one of the first Google's definition of digital wellbeing:

> "We're committed to giving everyone the tools they need to develop their own sense of digital wellbeing. So that life, not the technology in it, stays front and center."
> ***Google's first definition of digital wellbeing [36]***

Such framings mirror industry rhetoric, emphasizing individual responsibility and tool-based self-regulation, but rarely question whether the very platforms providing such tools may simultaneously undermine wellbeing.

Overall, the literature reveals a field marked by conceptual inconsistency and uneven engagement with psychological or social theory. These divergences risk neglecting emerging concerns such as cognitive autonomy, emotional self-determination, and the manipulative dynamics of AI-mediated environments. Furthermore, digital wellbeing is often articulated in broad, aspirational terms, yet operationalized in narrow and reductionist ways. The result is a concept that functions more as a rhetorical umbrella than as a coherent construct.

A central manifestation of this translation gap is the lack of anchoring in theories of psychological wellbeing, which has long been conceptualized as a multidimensional construct, with frameworks that situate it within broader psychological and social processes. One influential framework is Ryff's model of psychological wellbeing [87, 88], which identifies six interrelated components of wellbeing: *autonomy* (the capacity for self-determination and independence of thought), *environmental mastery* (the ability to manage life situations and exert control over one's context), *personal growth* (continued development and openness to new experiences), *positive relations with others* (the presence of warm, trusting, and satisfying interpersonal connections), *purpose in life* (a sense of direction and meaningful goals), and *self-acceptance* (a positive evaluation of oneself and one's past). These dimensions emphasize that wellbeing entails not only the absence of illness, but involves the cultivation of meaning, growth, and effective functioning across different domains of life. Another central framework is the Self-Determination Theory (SDT) [22], which posits that wellbeing derives from the satisfaction of three basic psychological needs: *autonomy* (the experience of volition and psychological freedom in one's actions), *competence* (a sense of mastery and effectiveness in interacting with the environment), and *relatedness* (the experience of connection and a sense of belonging with others). SDT highlights that when these needs are fulfilled, individuals are more likely to experience intrinsic motivation, vitality, and psychological wellbeing, whereas their frustration is associated with illness, passivity, and diminished functioning. Crucially, both Ryff's model and SDT shift the focus from surface-level outcomes (e.g., absence of stress, behavioral control) to deeper psychological processes that sustain human flourishing over time.

In the absence of such perspectives, digital wellbeing research risks offering only a partial view. This underscores the need for shared conceptualizations and frameworks that enable comparison across studies, evaluation of interventions, and accumulation of knowledge beyond isolated cases. Rather than pursuing a singular definition, our work argues for a more structred and actionable account—one that reflects both the evolving entanglements of users with digital systems and the broader social, cultural, and political conditions in which these entanglements unfold, while making these diverse interpretations of digital wellbeing actionable for research and design.

4 Layers of Digital Wellbeing

Our literature review reveals that behind the term "digital wellbeing" lies a wide range of interpretations, priorities, and implicit assumptions. What counts as "wellbeing" in the digital context—and how it should be supported—varies markedly across studies, often depending on the researcher's disciplinary lens, the technologies in focus, or the intended users. As a result, the field has accumulated a fragmented vocabulary and a mix of overlapping but unaligned approaches.

Building on our meta-characteristics, the literature review and analysis of student projects allowed us to surface three recurrent layers that are consistently reflected—often explicitly, sometimes implicitly—across both corpora:

- **technology scope and users:** what technology is being targeted and for whom;
- **mediators of digital wellbeing:** what influences wellbeing in the digital context;
- **interventions and strategies:** how change is enacted in practice.

These interrelated layers contributes to shape how digital wellbeing is framed and pursued, making it possible to compare approaches that might otherwise appear unrelated and to spot opportunities for closing gaps and synthesizing evidence across research traditions. In the sections that follow, we describe each layer in detail, show how it is represented in the existing literature and analyzed student projects, and illustrate how they interact to form the basis of our taxonomy.

4.1 Technology Scope and Users

This layer of the model (Figure 2) specifies which part of the sociotechnical system users are living in is being targeted, and who is intended to benefit from the digital wellbeing perspective. We group technologies and users within the same layer as digital wellbeing opportunities and challenges emerges at the intersection of these two dimensions: different populations experience distinct risks, affordances, and wellbeing trajectories depending on the technological domain they interact with. Mapping *these two scopes* highlights where attention has been concentrated, as well as which areas and communities remain underserved. While the literature and the student projects share notable overlaps, they also reveal distinctive emphases. For example, the literature tends to cluster around established technologies and young adult populations, whereas student projects broaden the focus toward emergent technologies and younger audiences.

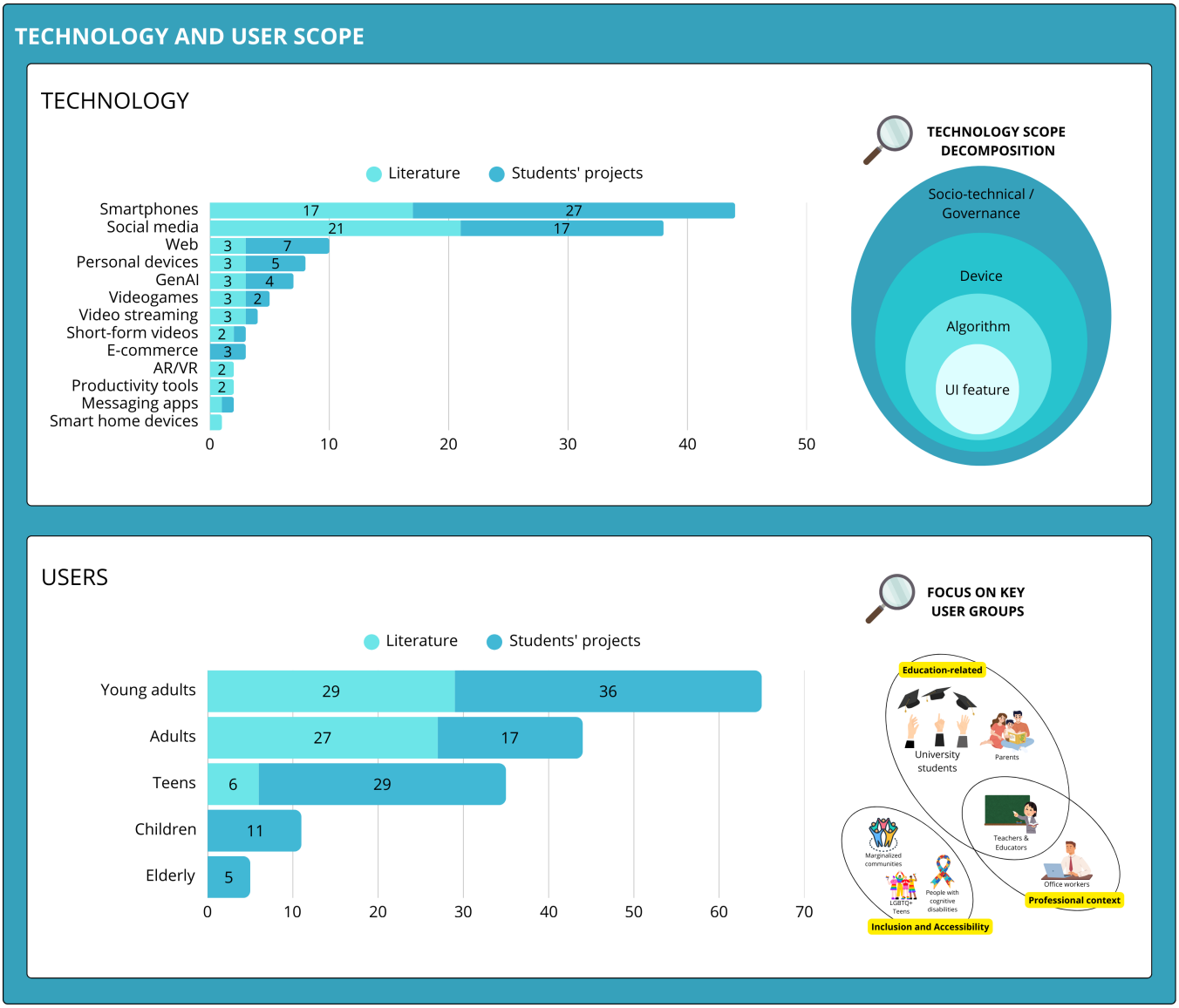

Figure 2: Technology and user scope: distribution of contributions across technological domains and user populations, highlighting dominant areas (e.g., smartphones, social media, young adults) as well as underexplored groups and emerging contexts.

4.1.1 Technology. The technology scope in our corpus encompasses both device-level and application- or platform-level technologies, though this distinction is frequently blurred in the reviewed works. Both research and student projects reveal a strong association between digital wellbeing and **smartphones** and **social media**, which together dominate the technology scope (44 and 38 contributions, respectively). These platforms are often problematized as central vectors of distraction and overuse, while also serving as prime sites of intervention for promoting healthier engagement, e.g., through tools for digital self-control like usage dashboards and timers. As noted by Monge Roffarello et al. [67], this creates a contradiction that differentiates the digital wellbeing context from other behavior change domains: digital devices and social media are simultaneously the source of the problem and the very platforms through which interventions are delivered to users.

Beyond these dominant categories, however, the distribution becomes more fragmented. The literature corpus includes exploratory attention to the **web** [42, 91, 92], often framed as a gateway to distractive environments such as social media; **personal devices** [60, 64, 99], which extend concerns around smartphones into the broader multi-device ecosystems in which users operate; and **video streaming** [55, 56, 89] and video-related social media, with particular attention to how **short-form videos** [18, 79] reshape patterns of content consumption and undermine users' prospective memory. A smaller set of contributions focuses on **videogames** [5, 8], **productivity**

tools [1, 113], and **messaging apps** [69], predominantly in relation to balancing work and life demands. Importantly, a small but emerging strand of work investigates **GenAI** systems [26, 40, 109], positioning them as source of novel risks such as overreliance or persuasive deception. Finally, a few works explore how **AR/VR** solutions might support emotional wellbeing and a stronger sense of presence in the real world [103, 107].

Student projects, while also heavily concentrated on smartphones and social media, further highlight the need to move beyond these technologies by extending digital wellbeing concerns to **e-commerce** (3 projects), as well as speculative explorations of **GenAI** (4 projects). This reflects students' sensitivity to everyday practices within their own peer groups, but also their willingness to experiment with underexplored contexts such as online shopping or AI-mediated interactions.

Technology Scope Decomposition. Across both corpora, the technology scope can be organized into four nested layers of intervention (see Figure 2, technology scope decomposition). At its foundation lies the **UI/feature layer**, often problematized as a vector of distraction, overuse, and persuasive design, but also serving as a key site for interventions such as self-control tools, notification redesigns, or alternative feeds.

The **device layer**, strongly represented in both research works and student projects, mainly focuses on the smartphone as a problematic yet central device. Here, system-level controls such as screen time dashboards, focus modes, and cross-application restrictions are leveraged to regulate and balance use.

Above this sits the **algorithmic layer**, where recommenders, ranking systems, and more recently GenAI models structure users' digital environments. In the literature, for example, studies have examined how algorithms on platforms like YouTube or TikTok shape attention, agency, and exposure to problematic content [56, 69, 79]. Student projects extended this perspective by engaging with GenAI tools such as ChatGPT, experimenting with redesigns that encourage critical engagement and reduce overreliance.

Finally, only a minority of contributions engage with the **socio-technical and governance layer**, e.g., [28, 69, 91], which encompasses policies, standards, and audits of digital platforms. Literature examples include analyses of dark patterns, deceptive design practices, and inequitable outcomes, often accompanied by calls for regulatory oversight and institutional intervention.

Overall, most contributions concentrate on the first two layers, reflecting a micro-level focus where wellbeing is seen as shaped by the affordances and choices embedded in everyday interactions. Yet the higher layers underscore that digital wellbeing increasingly depends on the hidden mechanisms of personalization, filtering, and generative output, highlighting the importance of embedding wellbeing not only in individual interactions but also in the structural and cultural conditions of digital life.

4.1.2 Users. In terms of user populations, **young adults** emerge as the most frequently studied and designed-for group. This population is targeted by 29 research works[2] and 36 student projects. This reflects their centrality as both heavy technology users and a population assumed to be particularly vulnerable to issues of distraction, stress, and overuse. **Adults** in general also feature prominently, though with a stronger emphasis in the literature (27 works[3]) than in student projects (17).

By contrast, **teens** are significantly more visible in student projects (29) than in research papers (6, [16, 23, 40, 86, 102, 112]). Students often foregrounded peer-related challenges such as social media pressure, compulsive engagement, and relational wellbeing, suggesting a lived-experience perspective absent from much of the scholarly literature. **Children** and the **elderly** remain underexplored in the literature but receive more attention in the student projects, with eleven targeting children and five focusing on elderly users. This suggests an urgent need for digital wellbeing research to move beyond (young) adults and address the distinct vulnerabilities and needs of all groups living in today's information society.

Zooming in on specific communities (Figure 2 on the right), three clusters stand out:

- **Education-related groups**, including university students, parents, and teachers/educators, are frequently addressed, reflecting the centrality of digital wellbeing concerns in learning contexts and intergenerational mediation.
- **Inclusion and accessibility**, with attention to groups such as marginalized communities [28], LGBTQ+ teens [100] and people with cognitive disabilities [91], appears more sporadically but signals an important frontier for research and design.
- **Professional contexts**, including office workers, are also represented, albeit to a lesser extent, highlighting productivity- and stress-related dimensions of digital wellbeing.

Overall, the user scope reveals a strong bias toward younger and educational populations, with fewer interventions targeting marginalized or professional groups. This imbalance suggests that while digital wellbeing research and design often resonate with the lived experiences of students themselves, broader societal dimensions—such as workplace wellbeing, aging populations, and inclusion—remain relatively underdeveloped.

4.2 Mediators of Digital Wellbeing

This layer of the model (Figure 3) takes a dual perspective: it specifies the dimensions through which technology use affects digital wellbeing, while also representing the pathways through which interventions and strategies—the third layer of our model (Section 4.3)—can foster or hinder digital wellbeing. Indeed, as discussed in Section 4.3, digital wellbeing is most often framed as the need to overcome problems stemming from technology use (*harm mitigation*). Our analysis shows that most contributions concentrate on individual-level mediators of the self, while a smaller but growing body of work engages with environmental conditions that surround and shape digital experiences.

4.2.1 Mediators of the Self. The majority of contributions in both the literature and the student projects focus on mediators of the self, framing digital wellbeing primarily as a matter of personal

[2] [1, 18, 29, 33, 35, 38, 42, 46, 52, 56, 60, 63, 64, 66, 75, 78, 79, 82, 83, 89, 92, 93, 95, 101, 102, 107, 109, 110, 113]

[3] [5–9, 17, 20, 26, 29, 32, 37, 41, 43, 45, 55, 62, 71, 84–86, 91, 93, 96, 98, 99, 103, 112]

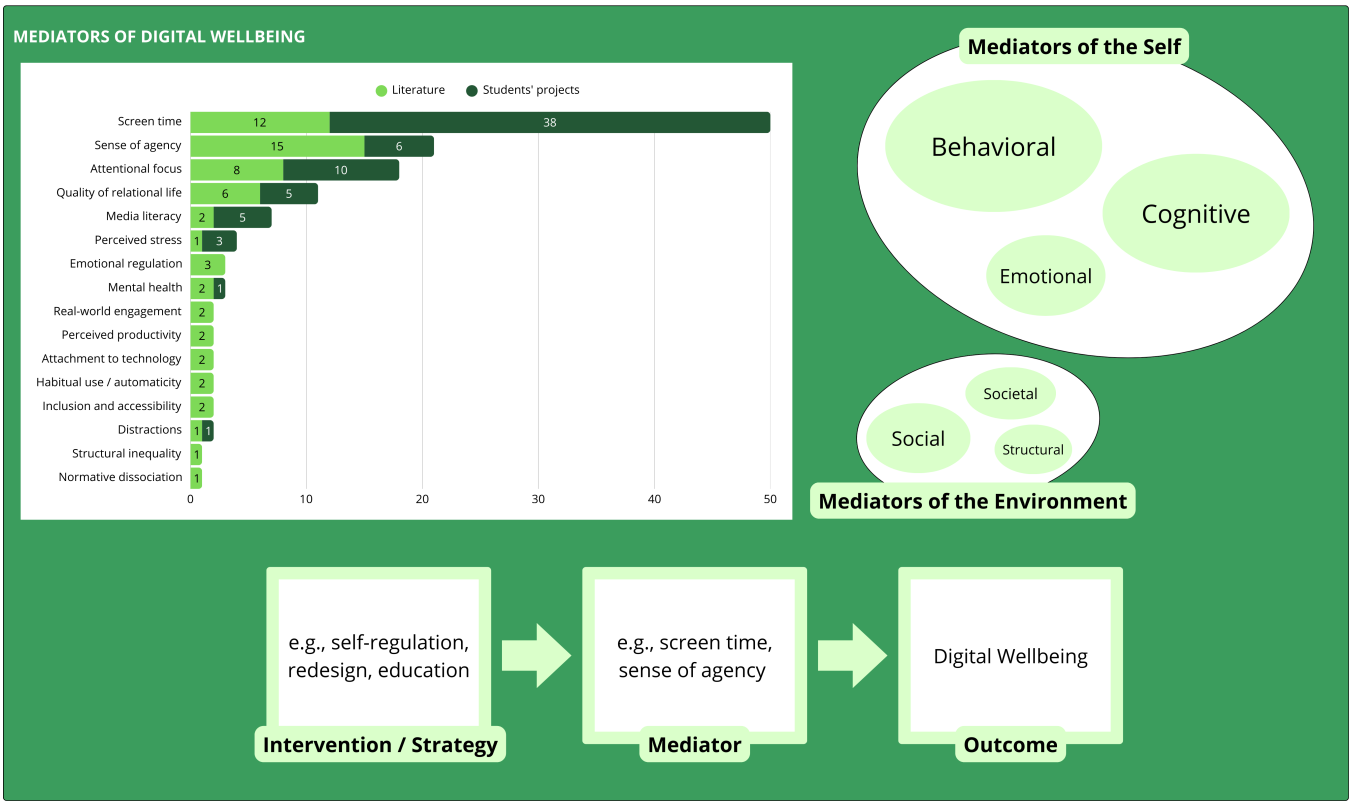

Figure 3: Mediators of digital wellbeing: dimensions through which technology use impacts wellbeing, organized into self-related (behavioral, cognitive, emotional) and environment-related (social and societal) pathways.

capacities and internal states. These can be grouped into three clusters: behavioral, cognitive, and emotional.

Behavioral mediators. Behavioral mediators dominate the corpus, with **screen time** (49 contributions overall) standing out as the single most frequently discussed construct. This framing positions digital wellbeing primarily as a matter of overcoming technology "addiction [63, 83]" and "overuse [38, 75]," reinforcing a problem-focused narrative in which the quantity of use is taken as the central determinant of wellbeing, often at the expense of more nuanced considerations of context, quality, and purpose. This focus is particularly strong in student projects (38), where managing time spent on devices is often taken as the starting point for intervention, based on the simplistic assumption that reducing screen time automatically translates into improved digital wellbeing. Literature contributions (12 research works[4]), while also attentive to screen time, often adopt a more critical stance, acknowledging that duration of use is a poor proxy that obscures qualitative differences in how and why technologies are used. The "smartphone addiction narrative," for example, while compelling, has been widely debated both within HCI [48, 49] and in the medical literature [77]. Furthermore, users' intentions to reduce technology use are often context- and feature-specific—for example, avoiding a social media newsfeed, or limiting use when with family but not while commuting on the bus [54, 57, 65]. Nonetheless, screen time remains emblematic of the "first generation" of digital wellbeing thinking, serving both as a problem to be addressed and as a practical entry point for interventions.

Beyond screen time, two research works [82, 102] address **habitual use and automaticity**, highlighting how repeated and routinized behaviors gradually erode intentionality. For example, Tran et al. [102] explore the cyclical nature of compulsive smartphone use, identifying triggers that initiate such sessions—ranging from boredom to moments of social awkwardness, that is, situations that deviate from social norms or leave the user feeling uncomfortable. Other behavioral mediators include **productivity** [5, 42] and **distractions** [98]. While they are often treated as outcomes of behavior, they also capture the way technology use directly shapes users' ability to enact intentional practices—whether sustaining focused work or avoiding interruptions.

Cognitive mediators. A second major cluster revolves around cognition. The **sense of agency** (21 contributions overall) is the most prominent construct in this category, foregrounded in both literature (15 works, i.e., [1, 9, 20, 23, 26, 32, 35, 45, 47, 55, 56, 95, 97, 110, 113]) and student projects (6). Sense of agency is defined as the feeling of control over one's actions and their outcomes [11].

[4] [29, 38, 43, 46, 52, 63, 64, 75, 78, 84, 92, 112]

Lukoff [54] explicitly advances it as a more appropriate lens for understanding and addressing digital wellbeing than the traditional reliance on screen time.

In the analyzed research works, the central question is whether users feel they can meaningfully steer their digital practices or whether they are subordinated to algorithmic systems. The literature often frames agency in relation to design choices, e.g., how YouTube's autoplay and recommendation systems undermine user control [56]. Empirical studies further demonstrate that specific interface features can have systematic and predictable effects on users' sense of agency [54]. Student projects, in turn, frequently propose tools and redesigns that restore or scaffold agency—for instance, by offering more transparent feedback on usage or by enabling intentional decision-making.

Similarly, Baughan et al. [7] frame their work around the phenomenon of **normative dissociation**, describing how technology use can become so deeply embedded in everyday routines that it produces states of total cognitive absorption, characterized by diminished self-awareness and a reduced sense of agency.

Closely related is **attentional focus** (8 research works[5], 10 student projects), which reflects concerns about the cognitive costs of navigating attention-demanding environments. In the literature, attentional focus is often examined through the lens of *attention-capture damaging patterns* [69]—such as infinite scroll, autoplay, or algorithmically optimized feeds—that deliberately compete for users' attention. These studies connect individual digital-wellbeing struggles to the broader dynamics of the Attention Economy [21], in which platforms monetize engagement by systematically exploiting vulnerabilities in human attention. Together, agency and attention highlight the critical tension of sustaining the user's control in environments designed to fragment it.

Finally, another cognitive mediator is **media literacy**, which shifts attention from immediate experiences to the meta-level skills and knowledge needed to navigate digital environments. These contributions stress that wellbeing is not only a matter of willpower but also of understanding—being able to identify manipulative patterns, critically assess content, and reflect on personal digital habits. In the literature, media literacy is typically framed in educational contexts, with an emphasis on teaching students strategies for self-regulating their technology use [93] or for preventing risks such as child sexual abuse through digital platforms [86]. By contrast, the student projects recognize the urgency of extending media literacy to older generations, whose wellbeing may be threatened not by overuse but by exclusion and vulnerability in navigating digital infrastructures. Here, the focus is on combating misinformation (e.g., fake news) and supporting the use of digital technologies for essential services.

Emotional mediators. Though less numerous, emotional mediators add an essential layer to our model. Our literature corpus highlights **emotional regulation** as the users' ability to manage their emotional states in relation to technology use [79, 99]—for instance, moderating the anxiety produced by distressing short-form videos [79]. The same mediator also captures how technology can serve as a channel for expressing emotions [107], which in turn increases digital well-being.

[5] [18, 37, 60, 62, 66, 69, 83, 89]

Perceived stress (4 contributions overall) appears in both corpora (one research work [8] and 3 student projects) as an indicator of how technology use affects users' digital wellbeing, particularly when it overlaps with work and study obligations. Bell et al. [8], in particular, is one of the few works that frame technology overuse–related stress not in terms of social media or other distractive platforms, but as the prolonged use of computers for work tasks. They present a computer keyboard designed to unobtrusively encourage workers to take regular breaks.

Finally, another emotional mediator emerging from the literature is **attachment to technology** [33, 41], which points to affective bonds with devices and platforms that complicate disengagement. In this sense, attachment can be seen as the emotional counterpart to habitual use: while habits emphasize behavioral repetition, attachment highlights the affective ties that make detachment difficult.

While smaller in absolute numbers, emotional mediators reveal that digital wellbeing is not solely about behaviors or cognition but also about the affective consequences of digital life, and the resources available to cope with them.

4.2.2 Mediators of the Environment. A smaller but important group of contributions—mainly research works—shows that wellbeing is shaped not only by the self, but also by the environments in which technologies are embedded. These mediators include social and societal dimensions.

Social mediators. Social mediators refer to how digital technologies shape users' immediate relationships and everyday interactions, such as friendships, family dynamics, or face-to-face engagement. The most prominent mediator in this category is the **quality of relational life**, which appears in 6 research works [16, 17, 71, 85, 96, 109] and 5 student projects. This construct captures how digital technologies affect interpersonal connections—sometimes enriching relationships by enabling communication and support, and sometimes straining them through pressures of comparison [16], phenomena such as phubbing [85], or conflicts within families [17]. Student projects often foreground the quality of relational life in the context of peer interactions on social media, suggesting that young people experience these challenges acutely. The literature, instead, similarly documents tensions between digital connection and social strain, particularly around family dynamics and parental mediation.

Closely related is the mediator of **real-world engagement** (2 research works, i.e., [101, 103]), which emphasizes how technologies that foster presence and active involvement in offline contexts can enhance users' digital wellbeing. Terzimehić et al. [101] introduce the idea of "winds," small challenges carried out in the physical world after periods of intense smartphone use, designed to help users step out of the digital tunnel and take refreshing breaks from the online world. In its autoethnographic study of presence and engagement, instead, Tran [103] describes situations where technology can facilitate connection with the physical world, e.g., using ChatGPT's speech mode to explore the surroundings during a walk.

Together, social mediators underscore that digital wellbeing is not only about how people relate online, but also about how digital practices intersect with and reshape their social lives in the physical world.

Societal mediators. Societal mediators capture broader issues of equity, inclusion, and collective wellbeing, highlighting how technologies impact marginalized groups and distribute opportunities or risks across society.

Some research works, in particular, address mediators related to **inclusion and accessibility** [6, 91] and **structural inequalities** [28], with attention to groups like autistic adults [91] or people with cognitive disabilities [91]. Schwartz et al. [91], for example, draw an interesting parallel between the fields of accessibility and digital wellbeing, analyzing how adherence to the W3C Web Content Accessibility Guidelines (WCAG) can promote—though in some cases also hinder—digital wellbeing.

Though sparse, these works underscore that digital wellbeing cannot be disentangled from questions of who technologies serve, exclude, or disadvantage, highlighting the need to move beyond a one-size-fits-all framing of the field.

4.3 Interventions and Strategies

This layer of the model (Figure 4) captures the concrete actions, methods, and design choices employed to influence the mediators of digital wellbeing. Interventions and strategies represent the practical levers available to researchers, designers, policymakers, and users themselves. In our analysis, these approaches cluster around two main orientations: *harm mitigation*, which seeks to address or prevent negative impacts of thechnolgy use, and *wellbeing cultivation*, which aims to create conditions for positive experiences and personal growth.

4.3.1 Harm Mitigation. In both the literature and the analyzed student projects, digital wellbeing is predominantly framed as a matter of *mitigating* the *harms* associated with (over)exposure to technology. This perspective accounts for 77% of the contributions in our combined corpus. Here, achieving digital wellbeing is understood as reducing the negative effects of technology use—most often in relation to psychological wellbeing. Examples include preventing overuse, counteracting manipulative design, or addressing risks to cognitive, emotional, or social health.

Harm mitigation can be pursued in several ways. The most common strategy, **self-regulation**, focuses on empowering individuals to monitor, manage, and adapt their technology use in line with personal goals and values. This approach is prominent in both our datasets, appearing in 31 research works[6] and 33 student projects. Self-regulation typically involves the use or development of digital self-control tools [59, 67], which offer features such as usage dashboards and timers, as well as personalization mechanisms to increase awareness, encourage intentionality, and support sustained behavioral change. GoldenTime, for example, provides users with micro-financial incentives to support self-regulation of smartphone use. SwitchTube by Lyngs et al. [55], instead, explores the use of a commitment interface that allows users to navigate platforms such as YouTube with varying degrees of control. The majority of the analyzed student projects (33) follow similar directions, proposing tools for digital self-control to support diverse categories of users and targeting technologies ranging from entire smartphones to specific applications such as social media or e-commerce platforms. Overall, the emphasis of self-regulation is on strengthening users' capacity to make autonomous, value-aligned decisions about their digital engagement.

Self-regulation can also be practiced collectively through **co-regulation**, which distributes responsibility for digital wellbeing across individuals and their social contexts. This approach involves collaborative strategies—such as shared agreements, parental mediation, and peer support networks—that create enabling environments for healthier technology use. Interestingly, students in the digital wellbeing course more frequently associated parental control with digital wellbeing (7 projects), whereas only one paper in our literature review corpus did so [17]. This discrepancy suggests an opportunity to further explore how interdependent forms of regulation—particularly those involving parents, educators, and peers—can be integrated into digital wellbeing interventions and research.

An alternative route is **redesigning** digital systems, interfaces, or features to promote healthier, more balanced, and ethically responsible user experiences, mitigating harms at their source (5 research works [6, 32, 56, 79, 110] and 12 student projects). This may involve rethinking engagement mechanisms in social media (e.g., feeds, notifications, gamification) to reduce persuasive or manipulative effects and to foster intentional, value-driven use. Lukoff et al.[56] examine how YouTube's design influences users' sense of agency, co-designing alternative platform interfaces with users to enhance their control. Similarly, Park et al.[79] explore alternative design strategies for reducing discomfort when users are exposed to distressing short-form videos. Notably, two student projects extend this approach to generative AI systems such as ChatGPT, proposing interface redesigns that promote active, critical learning and reduce the risk of overreliance.

Finally, 12 works[7] in our literature corpus focus not on direct intervention, but on *understanding harms*. This line of research involves identifying, analyzing, and communicating the risks and negative consequences of technology use for individuals and society. It surfaces issues such as addiction and habitual behaviors[85, 102], attentional [66, 69] and memory [18] impacts. Such studies often reveal underlying mechanisms and structural causes, including the use of deceptive design practices—commonly referred to as dark patterns [1, 66, 69, 97]. By making these harms and their mechanisms visible, this approach provides the foundation for evidence-based interventions, informed policymaking, and public discourse on digital wellbeing.

4.3.2 Wellbeing Cultivation. While harm mitigation dominates current strategies, digital wellbeing can also be approached through the *cultivation* of positive experiences—without necessarily starting from a problem of technology use. In our corpus, 23% of contributions adopt this lens, focusing on proactively fostering personal growth, meaningful engagement, and societal benefit. Here, digital wellbeing is framed not just as the absence of harm, but as the presence of human flourishing.

One prominent approach is **positive design**, which seeks to intentionally create technologies that foster positive experiences, personal growth, and human flourishing. In line with the broader field of positive design in product and interaction design [25], these

[6] [5, 7–9, 29, 33, 35, 38, 41–43, 45, 46, 52, 55, 60, 62–64, 75, 78, 82–84, 89, 92, 95, 99, 101, 112, 113]

[7] [1, 18, 26, 37, 66, 69, 85, 97, 98, 100, 102]

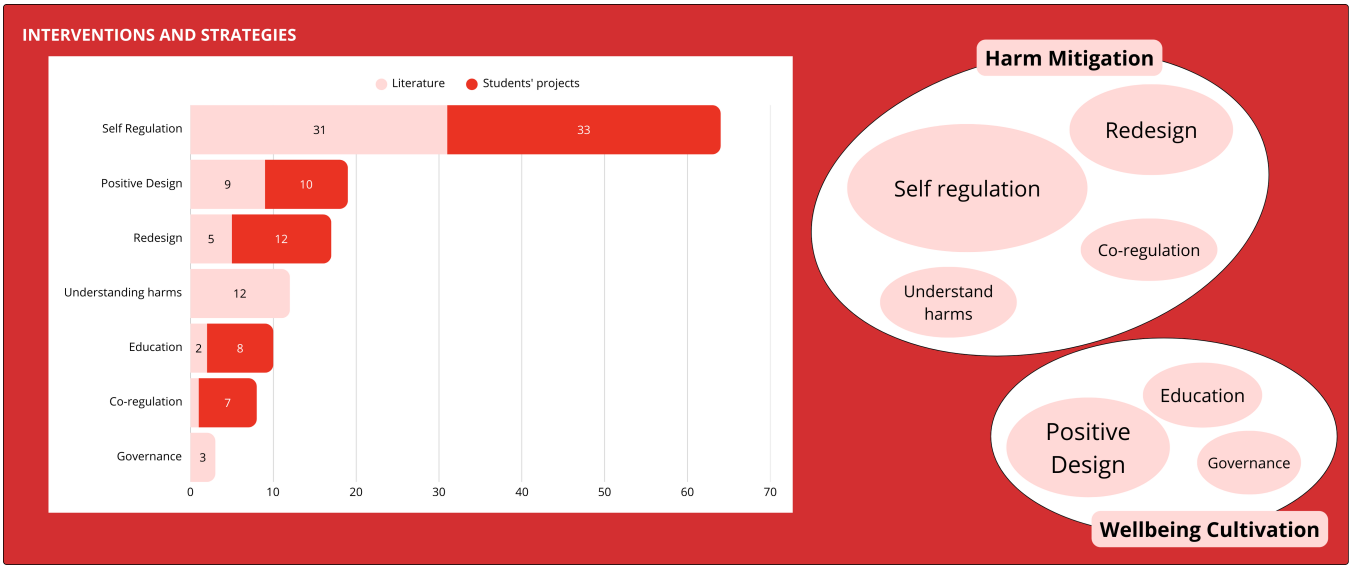

Figure 4: Interventions and strategies: classification of approaches into harm mitigation and wellbeing cultivation, showing how different design choices, educational initiatives, and research orientations shape the pursuit of digital wellbeing.

interventions draw from positive psychology and HCI to embed opportunities for growth, meaning, and quality of life directly into the design—going beyond the mere reduction of problematic use. Such an approach appears in 9 research works[8] and 10 student projects, often focusing on groups whose needs are underserved or overlooked in mainstream technology design. For example, Grevet Delcourt et al.[23] explore novel online social spaces with a group of 17 ethnically diverse, geographically dispersed middle school girls. Morrissey et al.[71] present a series of design concepts to support women's self–other care in relationships with their mothers. Student projects adopt similar perspectives, ranging from technologies that promote social interaction among university commuters to reduce travel-related boredom and isolation, to tools that help pre-teens navigate social media pressures and mitigate digitally induced insecurity.

A smaller but noteworthy category centers on **education**, aiming to build the knowledge, skills, and critical thinking necessary for individuals to navigate digital environments in ways that protect and enhance wellbeing (2 research works [86, 93] and 8 student projects). For example, Scibetta et al. [93] propose the development of an educational app to be used collaboratively by high school students and teachers to increase awareness of topics such as persuasive design patterns, digital habits, and strategies for digital self-control. Roumelioti et al.[86], in turn, leverage gamification to raise awareness and promote prevention of child sexual abuse. Our analysis of student projects suggests that educational interventions can extend beyond younger audiences to address the needs of elderly users, as well as focus on broader societal challenges such as combating fake news, promoting media literacy, and fostering critical engagement with online content.

[8] [16, 20, 23, 40, 71, 96, 103, 107, 109]

Lastly, a few studies [28, 47, 91] adopt a **governance** perspective, recognizing that digital wellbeing is a complex, multifaceted construct that cannot be addressed by individual users alone but requires broader institutional and policy-level engagement. Docherty et al. [28], for example, critique the empirical, ideological, and political limitations of framing digital wellbeing solely through an individualistic lens focused on user engagement. Schwartz et al. [91], in turn, bridge the fields of accessibility and digital wellbeing by analyzing how adherence to the W3C Web Content Accessibility Guidelines (WCAG) can both promote and, in some cases, hinder digital wellbeing. Overall, these contributions integrate theories, methods, and practices from diverse fields to address challenges holistically, acknowledging that technology use is deeply embedded in broader cultural, economic, and policy contexts.

5 Leverage Points for the Digital Wellbeing

The three layers of our digital wellbeing taxonomy—technology scope and users, mediators, and strategies—specify the main building blocks through which digital wellbeing can be understood and acted upon. Yet, taken alone, these layers do not address the crucial question of where to intervene in order to promote users' digital wellbeing through meaningful change. Inspired by the "Leverage Points to Intervene in a System" by Donella Meadows [61] and the "Leverage Points for Intervening in the Extractive Tech Ecosystem" proposed by the Center for Humane Technology [15], we introduce the notion of **Leverage Points for the Digital Wellbeing**, a framework that situates interventions along a continuum of orientations for change (Figure 5).

Meadows emphasized that not all points of intervention carry the same weight: while some changes are easier to implement but only produce marginal effects, others are harder to enact but hold the potential to transform the entire system. In our framework, the components of the three layers of digital wellbeing—technology

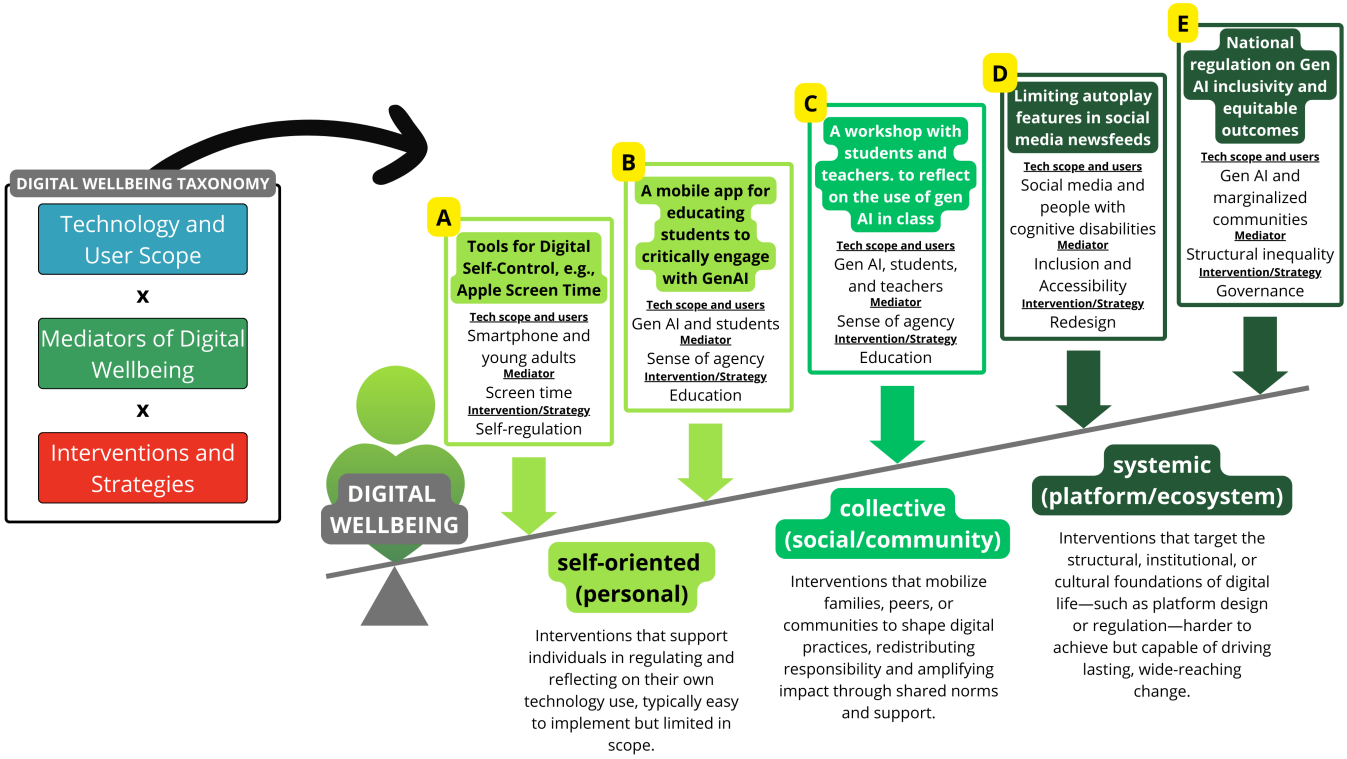

Figure 5: Leverage points in digital wellbeing arise from combining the three layers of our taxonomy (Section 4); as we move from self-oriented to systemic orientations, potential impact grows, but so does the difficulty of change. Interventions A–E illustrate how digital wellbeing initiatives can be decomposed through our taxonomy and translated into Leverage Points.

scope and users, mediators, and strategies—can be combined to define a leverage point. Moving from self-oriented to systemic orientations, the potential leverage increases, but so too does the difficulty of implementation.

5.1 Orientations of Change

We identify three primary orientations that defines three different leverage points in the digital wellbeing space: self-oriented, collective, and systemic. These represent different different magnitudes of impact, and can be conceptualized as positions along a lever arm.

5.1.1 Self-oriented (personal). The self-oriented leverage point occupies the proximal end of the continuum. The focus is on the individual user, drawing primarily on strategies of self-regulation and personal awareness. Examples include the use of digital self-control tools, personal dashboards, reflective prompts, or education initiatives aimed at building media literacy in individuals. Such a leverage point is relatively easy to activate—since it requires no structural change and can often be deployed quickly—but its effects are typically limited in scope, often confined to the motivations and persistence of individual users.

5.1.2 Collective (social/community). The collective leverage point extends the focus beyond the individual to social contexts and shared practices. This leverage point recognizes that digital wellbeing is co-constructed through relationships with family, peers, educators, and colleagues. Interventions in this space include parental mediation, peer-to-peer accountability, school-based programs, and community norms that scaffold healthier digital practices. Collective levers are more challenging to coordinate than self-oriented ones, yet they can create multiplier effects: once new norms are established, they reshape not just individual habits but the broader environments in which technologies are used.

5.1.3 Systemic (platform/ecosystem). The systemic leverage point represents the distal and most powerful end of the continuum. It addresses the structures, rules, and infrastructures that underpin digital life, targeting platforms, algorithms, governance regimes, and societal standards. Examples include platform redesign to minimize dark patterns, policy interventions to enforce transparency or accessibility, and collective efforts to reshape cultural expectations of constant connectivity. These levers are difficult to move, since they require alignment of institutions, industries, and political forces, but they hold the greatest potential for durable and equitable change.

5.2 Application of the Framework

While the three layers of our taxonomy (Section 4) provide the components of digital wellbeing, the lever framework specifies how

these components can be aligned toward change of varying magnitude. Any combination of layers can in principle be situated along the lever continuum, which is structured by three main orientations of change: self-oriented, collective, and systemic. Each orientation can be understood through three guiding questions, which help determine how an intervention may move along the continuum: *(i) Who bears responsibility for change?* (from individuals, to groups, to institutions and infrastructures), *(ii) What scale of conditions is being modified?* (from personal habits to shared norms to structural features of platforms and governance), and *(iii) How durable is the expected impact?* (from short-term behavioural adjustments to socially reinforced practices to system-level transformations).

For example, digital self-control tools such as Apple Screen Time, Google Digital Wellbeing, or research prototypes like Time2Stop [75] and StayFocused [52], which are typically designed to help (young) adults reduce smartphone screen time through self-regulation, can be situated as self-oriented leverage points at the beginning of the lever (Figure 5, A): responsibility is placed primarily on individuals; the scale of modification concerns personal habits; and the durability of impact depends largely on sustained personal motivation.

Yet within each orientation, different degrees of impact can be achieved: similar components may produce interventions at varying levels of leverage, depending on how they are operationalized with respect to the three guiding questions. An illustrative example comes from the student project DEDOOM! (Figure 6), a mobile app designed for adolescents to counter compulsive social media use through gamified challenges and collective engagement. The app combines individual tracking with weekly goals, but its distinctive feature lies in the shared journey: users advance along visual paths together, complete disconnection challenges with friends, and celebrate collective achievements through badges and rankings. Although self-oriented in nature, the cooperative experiences embedded in the app shift responsibility toward the peer group, extend the scale of change to shared norms, and enhance the potential durability of the intervention, thus placing it closer to the *collective* orientation.

To further illustrate how interventions can shift along this continuum, consider the following combination (Figure 5, B):

- *Technology scope and user:* generative AI systems targeting high-school students;
- *Mediator:* sense of agency;
- *Intervention/strategy:* education — a mobile app designed to help students critically engage with AI-generated content.

This example draws from the student project Gaia (Figure 7), a mobile application that supports university students in maintaining agency when using generative AI for study. The app combines a chatbot with educational scaffolds such as pre-defined prompts, reward mechanisms (tokens or "ghiande," as named in the app), and time-of-use monitoring. By gamifying reflective interactions—for instance, rewarding students who upload their own reasoning rather than asking for direct answers—Gaia encourages more deliberate and critical learning practices. In this case, the leverage point is primarily self-oriented, although education can extend its impact beyond purely individual self-regulation approaches such as digital self-control tools. While impactful for motivated students, the changes remain localized to the individual and do not alter the collective or structural conditions shaping AI use.

Now consider a closely related alternative (Figure 5, C):

- *Technology scope and user:* generative AI systems involving high-school students and teachers;
- *Mediator:* sense of agency;
- *Intervention/strategy:* education — a workshop that engages students and teachers in reflecting on the use of generative AI in the classroom.

This configuration, by contrast, operates as a collective lever. Responsibility for digital wellbeing is distributed across students and educators, the scale of change involves classroom norms and shared practices, and durability increases as these practices become embedded in pedagogical routines. By reshaping the social context in which AI is adopted, the intervention has the potential to produce more durable and widely shared effects.

A further example of a collective leverage point is the student project AUT (Figure 8), a mobile application designed to counter FOMO and compulsive social media use among university students by encouraging them to meet around real-world events aligned with their interests. Unlike traditional event-discovery platforms, AUT deliberately limits the number of weekly suggestions to five, reducing information overload and curbing the anxiety of constant comparison. By targeting the quality of relational life through collective engagement, AUT shifts responsibility to the group, alters local social conditions, and creates opportunities for more enduring relational practices.

Finally, Figure 5 shows two examples of leverage points at the systemic level. Limiting autoplay features in social media newsfeeds (Figure 5, D) illustrates how digital wellbeing can be mediated by inclusion and accessibility through redesign, as Schwartz et al. note that such measures may align with WCAG standards and thereby improve accessibility [91]. This configuration moves beyond the individual or collective and addresses systemic features that shape technology use, shifting responsibility at the platform level: the scale of intervention concerns structural interface behaviours, and durability increases as these are implemented as defaults.

At the far end of the continuum, instead, lie governance-level interventions. While recent EU regulations such as the Digital Services Act (DSA) [31] and the AI Act [30] have already begun to introduce transparency, accountability, and risk-mitigation requirements for digital platforms and AI systems, one may also envision future regulations on generative AI that explicitly aim to ensure inclusivity and equitable outcomes for marginalized communities (Figure 5, E). These interventions demand institutional responsibility, operate at the level of rules and infrastructures, and hold the strongest potential for durable transformations, though they are also the hardest to realize.

6 Discussion

Our contributions are not only a conceptual model but also a lens for inquiry and action. In what follows, we first examine the theoretical underpinnings of our taxonomy and framework, then discuss how they can inform HCI, practice, and policy, while also recognizing the limitations of our approach.

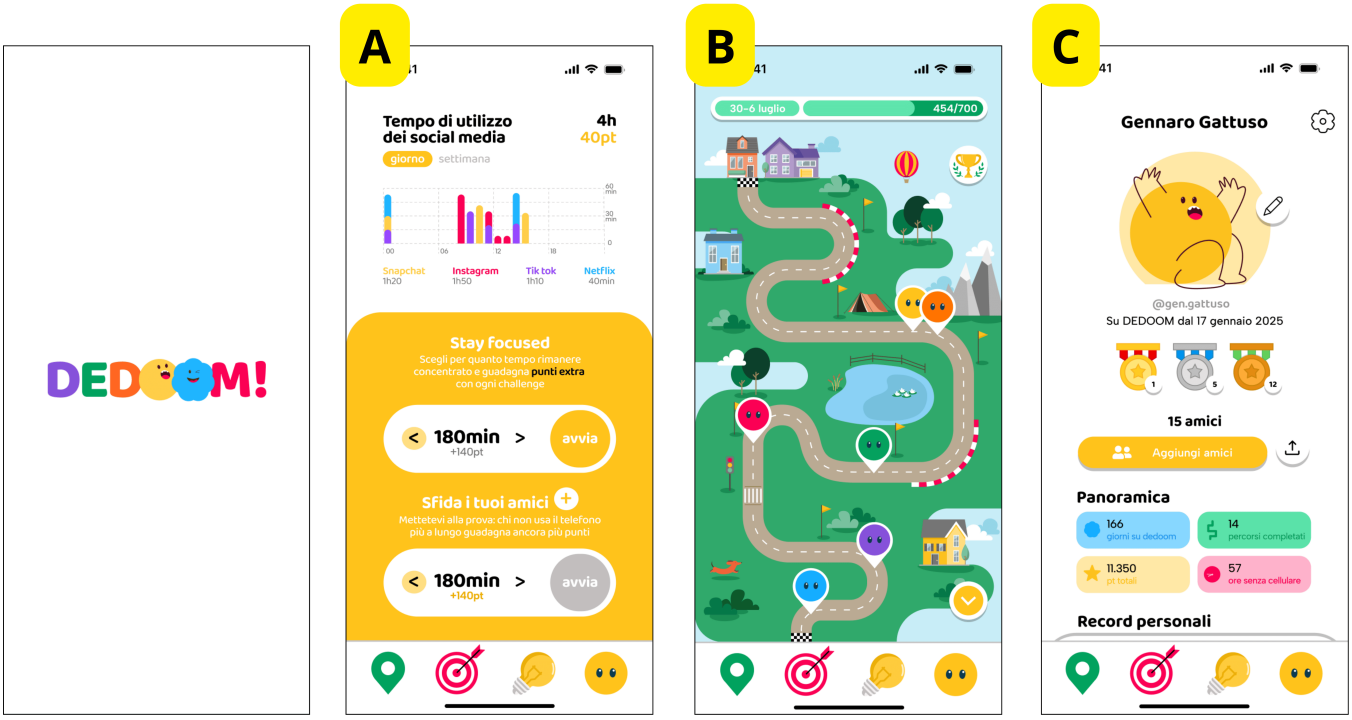

Figure 6: DEDOOM is a mobile app prototyped by students in the Digital Wellbeing course to counter compulsive social media use. While it includes self-regulation features such as individual tracking (A), its focus on shared journeys, group challenges, and collective achievements (B–C) positions it toward the collective orientation of the lever framework.

6.1 Theoretical Implications

Each layer of our taxonomy provides opportunities to examine how technologies intersect with fundamental human needs and processes, and to identify pathways through which digital environments may interact with wellbeing.

The first layer, technology scope and users, underscores the importance of specifying both the technological domain under consideration and the population targeted, providing more than descriptive clarity. Different technologies vary in their potential to support the three basic psychological needs described by the SDT—autonomy, competence, and relatedness [22, 70]. For example, tools that enable users to tailor their interaction or progress at their own pace can enhance autonomy and competence, while platforms that facilitate meaningful exchange and mutual support may strengthen relatedness. Latikka et al. [50] revealed through interviews with older adults that basic psychological needs guide technology adoption decisions and that ICT use can both enable and hinder need satisfaction. User characteristics also play a decisive role. For example, age, gender, socioeconomic status, and cultural background influence both access to and appropriation of digital technologies [39, 106]. While such characteristics can facilitate empowerment, learning, and identity construction, they may simultaneously expose individuals to risks of exclusion and reinforce existing digital inequalities [39, 72]. Socioeconomic background, education, and occupation are closely linked to disparities in digital access and skills, with age-related gaps being particularly pronounced [106]. Addressing these divides requires multifaceted approaches that consider the complex interplay of individual and contextual factors.

The second layer, mediators of digital wellbeing, highlights the behavioral, cognitive, emotional, and social mechanisms through which technology use affects people's wellbeing, helping to identify and explain the processes involved. Behavioral routines such as multitasking, cognitive processes like attentional focus, emotional dynamics including regulation, and social mechanisms such as reciprocity and inclusion all interact to shape digital wellbeing [105, 108]. Understanding these mediators is central to moving beyond reductionist metrics—such as frequency of use—and toward capturing what happens to individuals when they engage with digital tools. Only by examining these interdependent processes researchers and practitioners can identify pathways through which digital practices contribute to growth, meaning, and resilience, or conversely, to stress and disengagement.

The third layer, interventions and strategies, illustrates how theoretical insights can be necessary for developing effective and context-sensitive responses. By linking this layer to the mediators described above, it becomes clear that interventions must be grounded in a specific understanding of behavioral, cognitive, emotional, and social mechanisms. The contribution of psychology thus lies in enabling the design of interventions that are both evidence-based and differentiated, paying attention to generalized solutions

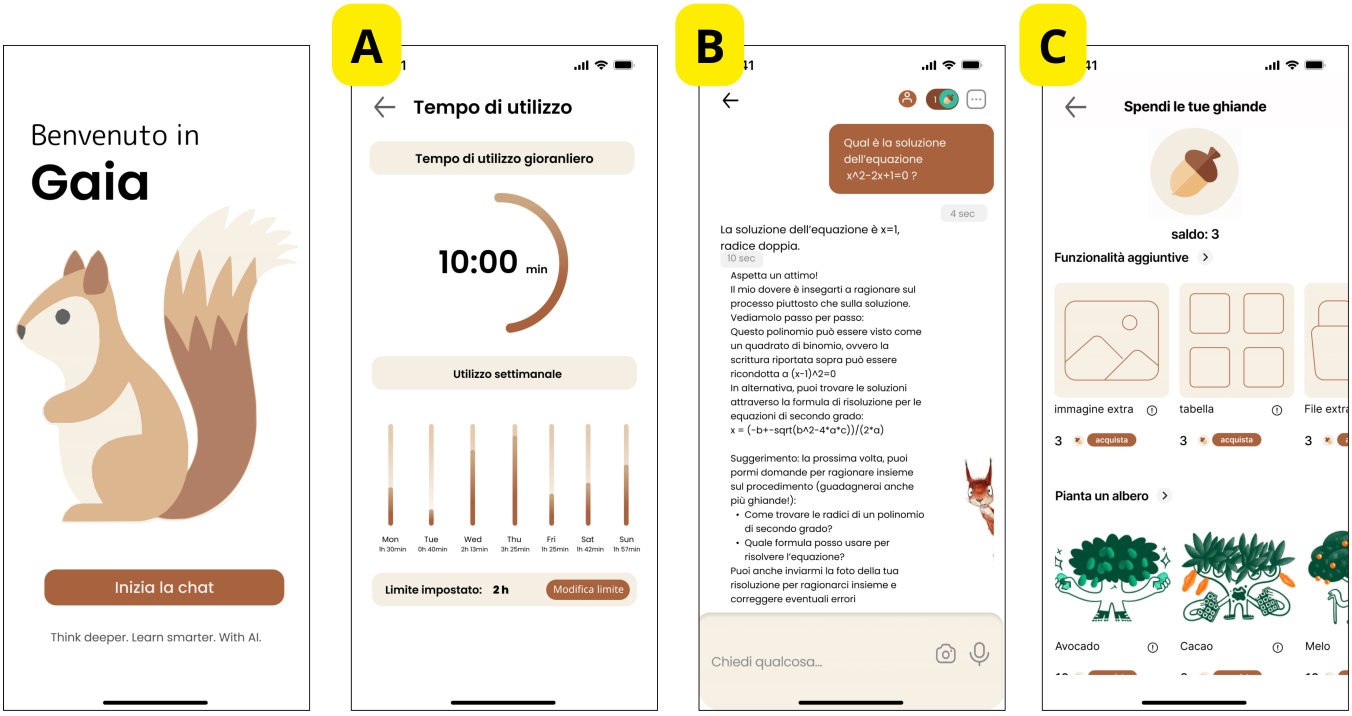

Figure 7: GAIA is a generative AI study app prototyped by students in the Digital Wellbeing course. In addition to offering self-regulation strategies (A), it fosters agency by encouraging reasoning over direct answers (B) and rewarding students who use the tool to learn rather than simply obtain solutions (C).

that may have unintended effects, such as undermining autonomy or exacerbating exclusion.

Taken together, these perspectives highlight the value of grounding the framework in established theories of human needs and processes. At the same time, the model is not fixed: it is meant to evolve as new perspectives and mediators emerge.

Recent work has also proposed design frameworks for digital wellbeing, such as Scibetta et al.'s systematic review of intelligent support systems for self-regulation [94]. The proposed framework focuses on AI-mediated interaction patterns for supporting individual digital self-control, whereas our contribution provides a higher-level conceptual model and a leverage-oriented perspective that spans self-oriented, collective, and systemic forms of change. Together, these complementary perspectives further highlight the need for multi-layered approaches to digital wellbeing. In what follows, we extend the discussion to consider how the framework, together with the underlying taxonomy, can also serve as a practical instrument for researchers, designers and educators, policymakers, and industry actors.

6.2 From HCI Research to Action

Our framework is a practical instrument that different stakeholders can appropriate in distinct ways. Here, we unpack the specific implications for HCI researchers, designers and educators, and policymakers.

6.2.1 Building Bridges and Setting Agendas. For HCI researchers, the framework and its layers serve as boundary objects across fragmented traditions. Over the last decade, digital wellbeing research has proliferated across subdomains—digital self-control tools, persuasive design critiques, education—but often without shared language and definitions. Our analysis shows that interventions vary not only in their technological scope but also in their underlying mediators, from screen time to sense of agency and mental health, and leverage orientation (self, collective, systemic). By making these dimensions explicit, our work allows researchers to position their contributions within a broader landscape and to recognize complementarities and tensions.

This bridging role is particularly important for connecting fragmented research communities. For instance, critical perspectives on dark patterns [1, 69, 97] intersect with both design practice and regulatory debates. Yet, viable alternatives that align users' best interests with commercial incentives remain scarce, and existing regulations struggle to address more seductive patterns such as infinite scroll or algorithmically curated news feeds [69]. A similar challenge has been noted in the design of digital self-control tools, where Monge Roffarello et al. [67] have highlighted a theoretical gap: despite the availability of well-established behavioral theories, both HCI research and commercial apps often fail to ground interventions in them, resulting in short-lived or fragmented outcomes. Our framework offers a way to chart these diverse efforts, supporting comparative synthesis and fostering cross-pollination

Figure 8: AUT is a prototype mobile app developed by students in the Digital Wellbeing course to encourage shared real-world experiences. Users can browse a limited selection of suggested events (A), choose to participate (B), and see who else is attending, with the option to initiate conversations (C).

across communities, while remaining open to further extensions as new perspectives and mediators emerge. For example, Schwartz et al. [92] recently argued for integrating accessibility and digital wellbeing, demonstrating how inclusive design can advance both agendas—an argument that directly informed the inclusion of "inclusion and accessibility" as a dedicated mediator in our model.

In addition, the model has agenda-setting potential. By highlighting how most interventions cluster around self-oriented levers, e.g., reducing screen-time through self-regulation, it directs attention to underexplored areas—particularly systemic levers where governance, infrastructural design, and accountability play decisive roles. This mirrors Lupetti et al.'s taxonomy of AI enchantment, which revealed a disciplinary bias toward "enchanting" principles in the design of AI systems over critical, disenchanting ones.In both cases, surfacing these imbalances opens opportunities for HCI researchers to broaden the scope of their work and engage with underexplored directions.

6.2.2 From Exploration to Reflexivity. For designers and practitioners, the Leverage Points Framework offers a generative tool for exploration, inspiring design reframings through "what if" reflective practices [58, 90]. It enables stakeholders to interrogate which values they reinforce, whose responsibility they foreground, and which orientations of change they neglect. For instance, when (re)designing a digital wellbeing intervention, questions such as "what if this solution moves from the self to the collective?" or "what if it embeds systemic constraints rather than nudges?" can broaden the design space, preventing fixation on individualistic approaches and opening up structural alternatives.

In educational contexts, the framework can serve as a scaffold for teaching digital wellbeing. It could help students articulate why a digital self-control app differs fundamentally from a platform built around collective challenges or from a systemic transparency tool that exposes attention-capture mechanisms in user interfaces, while also encouraging reflection on the orientations of change their projects prioritize.

Beyond ideation, the framework can also support evaluation and critique. When assessing wellbeing features in commercial products, for example, designers and educators can use it to examine whether these features merely offload responsibility onto users (self-oriented), foster shared practices (collective), or confront structural issues (systemic). In this sense, the framework can function as a pedagogical device for cultivating critical design literacy, while complementing recent efforts to propose digital wellbeing design guidelines and heuristics [68, 81].

6.2.3 Diagnosing Gaps and Aligning Interventions with Policies. For policymakers, the framework may act as a diagnostic lens to evaluate how digital wellbeing is currently operationalized in regulation and practice. Policy discourses and emerging regulations increasingly recognize the importance of supporting users' agency by mitigating systemic platform design decisions. For instance, recent EU regulations such as the Digital Services Act (DSA) [31] and the AI Act [30] introduce transparency obligations for very large online

platforms and AI developers to ensure accountability and ethical practices in the deployment of AI technologies. Similar efforts are visible globally, with regulations targeting deceptive and manipulative design practices such as the UK's Digital Markets, Competition and Consumers Act [80], the California Consumer Privacy Act [13] and the Colorado Privacy Act [19] in the US, and India's Consumer Protection Act [24].

Despite these regulatory developments, the interventions that platforms actually deploy often remain limited to superficial controls such as screen time counters or break reminders, with occasional suspensions of controversial features in response to regulatory scrutiny (e.g., TikTok Lite under the EU DSA [74]). Such interventions sit firmly at the self-oriented level, shifting responsibility onto individuals rather than addressing systemic design patterns. While they may carry public-relations value, they risk being perceived as cosmetic gestures that deflect accountability. By situating interventions across orientations, the framework could make these mismatches visible and could highlight where regulatory energy should be directed. For example, policymakers could use it not only to map the current landscape of interventions but also to envision more balanced ecosystems in which responsibility is shared across individuals, communities, and institutions. Overall, while our framework outlines orientations that may inform policy discourse, we acknowledge that its direct applicability for policymaking is exploratory and requires further empirical validation.

6.3 Limitations

As with any conceptual contribution, our work comes with limitations.

First, the evidence grounding our framework is necessarily selective. Our review was limited to a single venue (CHI), reflecting our aim to delineate how digital wellbeing has been conceptualized within this community, rather than to offering a comprehensive interdisciplinary synthesis of wellbeing research across domains. While the analyzed corpus provided a rich perspective on how digital wellbeing is theorized and operationalized, it does not capture the full diversity of research in other HCI venues and adjacent disciplines, including psychology. Furthermore, we also acknowledge that our keyword strategy, while deliberately narrow, may have excluded studies addressing similar phenomena under different labels. Future research could extend this analysis through a broader semantic mapping of wellbeing-related constructs in HCI to examine conceptual overlaps and divergences.

A second limitation of our work concerns the use of a corpus of student projects developed within a specific university course in Italy. Student projects are generative for identifying emerging imaginaries [58], but they cannot be assumed to represent the design strategies or constraints faced in professional practice. Furthermore, we acknowledge that student projects are not neutral data points, as participants were exposed to the course's theoretical framing of digital wellbeing and potentially biased by the course topics. However, our goal was not to collect unbiased behavioral evidence, but to use the projects as annotative and generative material that reveals how conceptual understandings of digital wellbeing are interpreted and reimagined in practice. Future work could validate our conceptual model by applying it to professional design cases and cross-institutional educational contexts.

Finally, while the framework helps situate interventions across layers and leverage points, it does not yet prescribe how to move interventions from one orientation to another (e.g., from self-oriented features to systemic levers). Operationalizing such transitions remains an open challenge for future research and design.

Overall, the framework should be considered a living structure rather than a fixed model. As new technologies and mediators emerge, the set of layers and leverage orientations will likely require adaptation. Our model is thus open-ended, inviting refinement and extension by other researchers and practitioners.

Taken together, these limitations underscore that our contribution should be seen as a starting point—an evolving framework that can guide research and action, but that requires continuous refinement through broader empirical engagement and interdisciplinary dialogue.

7 Conclusions

What is digital wellbeing, then? We argue that in HCI, digital wellbeing must move beyond narrow proxies such as screen time and beyond vague aspirations of "a good digital life." Instead, it can be understood as a layered construct—spanning technology scope and users, mediators, and strategies—and situated within broader orientations of change. Building on ten years of CHI research and student design projects, we introduced the Leverage Points for Digital Wellbeing framework to highlight how interventions can range from self-oriented tools to collective practices and systemic reforms. By making these orientations explicit, the framework supports researchers, designers, and policymakers in positioning their contributions, comparing approaches, and recognizing overlooked opportunities—particularly those at the systemic level. While provisional, this work takes a step toward a more cumulative and actionable agenda for digital wellbeing in HCI, one that better accounts for users' evolving entanglements with technology and the sociotechnical conditions in which they unfold.

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