Unveiling the Expanding Landscape of Attention-Capture Damaging Patterns

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Abstract: This paper aims to investigate, define, and classify a comprehensive set of Attention-Capture Damaging Patterns (ACDPs) in the context of social media apps and platforms. A new taxonomy is proposed to categorize ACDPs based on their mechanisms and psychological impacts on users. Building on the concept of "dark patterns" and examining how they contribute to social polarization, this study explores the intersection between digital interface design, digital well-being, and polarization. The paper analyzes several examples of ACDPs present in popular platforms such as Instagram, TikTok, WhatsApp, and Facebook, proposing a new categorization based on three main categories. In addition, it discusses alternative design strategies that promote healthier interactions on digital platforms, aiming to mitigate the negative effects of these patterns and promote a more balanced digital environment.

1 INTRODUCTION

The design of digital interfaces has evolved significantly in recent decades, especially with the rise of social media as the predominant platform for communication and social interaction. However, this advancement has raised concerns about the negative impacts of certain design patterns that seek to capture user attention in a predatory manner. In 2010, Harry Brignull introduced the concept of "dark patterns" to describe deceptive design practices that manipulate users into performing unwanted or unintended actions on digital platforms (Brignull, 2020). Since then, the terminology has evolved to "deceptive design", "damaging patterns", and finally ACDPs, reflecting a growing concern about the detrimental effects of these strategies on users' mental health and social well-being.

Within this context, social polarization has emerged as a significant side effect of the massive adoption of ACDPs on digital platforms. Studies such as that of Song and Boomgaarden (2017) indicate that the combination of selective exposure to content and interactions within interpersonal networks can create reinforcing spirals, intensifying the polarization of attitudes. These reinforcing spirals occur when users are repeatedly exposed to information that confirms their preexisting beliefs, isolating them in echo chambers and exacerbating social divisions. This paper aims to explore this intersection between attention-capturing design patterns, digital well-being, and social polarization, proposing a new taxonomy to categorize and better understand the impacts of these patterns.

The rest of the paper is structured as follows. Section 2 provides background on the evolution of ACDPs from "dark patterns" to harmful mechanisms on digital platforms, highlighting frameworks like Büchi's proto-theory of digital well-being (2022) and Song and Boomgaarden's (2017) reinforcing spirals. Section 3 outlines the methodology, including a literature review, criteria for identifying ACDPs, and strategies for mapping alternative patterns. Section 4 presents a preview of the taxonomy under construction, classifying ACDPs into Cognitive Manipulation, Compulsive Engagement, and Healthy Use Disruption Patterns, with examples from Instagram, TikTok, WhatsApp, Facebook, and YouTube.

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Section 5 analyzes the psychological and social impacts of ACDPs, including anxiety and polarization, and explores ethical alternatives to promote digital well-being. Section 6 addresses study limitations, such as data collection constraints and platform-specific focus. Section 7 suggests future research on testing alternative patterns across user groups and their impact on societal issues. Section 8 concludes by summarizing findings and advocating for ethical digital design.

2 BACKGROUND

This literature review has three main goals: first, to expand the list of ACDPs identified in previous studies, incorporating new examples observed on popular digital platforms such as Instagram, TikTok, WhatsApp and Facebook; second, to propose a new taxonomy that classifies these patterns according to their mechanisms, psychological effects and impacts on user behavior; and third, to map alternative patterns that can be adopted to mitigate the negative effects of ACDPs, promoting a healthier and more balanced experience for users.

The ACDPs discussed in this study are directly related to the aforementioned social networks, with practical examples of how these patterns affect users' experience on these platforms. Furthermore, the new proposed taxonomy categorizes ACDPs based on their manipulation tactics, such as cognitive manipulation patterns, compulsive engagement patterns, and healthy use interruption patterns. By mapping alternative patterns, this work identifies design approaches that respect users' autonomy, promoting more ethical and healthy interactions.

3 METHODOLOGY

The methodology of this study is based on a comprehensive analysis of the existing literature on ACDPs in the main digital communication platforms. Extensive searches were carried out in academic databases such as PubMed, Scopus, Web of Science and Google Scholar, aiming to identify relevant studies that addressed detrimental design patterns, their impacts on user engagement and behavior, as well as the psychological and behavioral effects associated with ACDPs.

Fundamental references, such as Brignull's (2020) research on "deceptive design" and Song and Boomgaarden's (2017) agent-based model, served as foundations for mapping polarization dynamics and attention capture mechanisms. Based on the detailed information collected from each study, specific examples of ACDPs, their operating mechanisms, and the observed or theorized effects on users' behavior and digital well-being were analyzed.

The critical synthesis of the data allowed us to identify common patterns, gaps in the current literature, and insights into how different ACDPs affect users differently. Based on this analysis, a new taxonomy was proposed to categorize these patterns, reflecting their different intentions and impacts, and contributing to a deeper understanding of the topic. Additionally, this study expanded the list of ACDPs by systematically reviewing recent design trends and user behaviors observed in contemporary social media platforms. Through a comparative approach, new patterns were identified. This analysis was based on their mechanisms, practical implications, or psychological effects, further enriching the taxonomy under construction.

Since Brignull (2020) introduced "dark patterns", several studies have documented their evolution and impacts on user behavior. Büchi (2022) proposed in "A Proto-Theory of Digital Well-Being" that digital well-being should be understood from a perspective that transcends the absence of negative impacts, integrating practices that promote human flourishing. Büchi argues that the design of digital platforms should incorporate principles that promote autonomy, balance, and conscious engagement of users, contrasting with the harmful effects of ACDPs.

These patterns, such as auto-play videos, persistent notifications, and infinite scrolling, create cycles of continuous engagement, making it difficult to stop consumption and increasing exposure to potentially polarizing content. Song and Boomgaarden (2017) demonstrate how these design mechanisms can amplify attitudinal polarization by reinforcing selective exposure and creating reinforcing spirals that solidify preexisting beliefs and limit openness to divergent perspectives. Attitudinal polarization is the process by which individuals become more extreme in their beliefs and opinions, often in opposition to groups with different views, and this can be exacerbated by external factors such as mainstream media and online social networks.

The literature review conducted in this study revealed new instances of ACDPs on popular digital platforms. The use of "Automatic Story Transitions" on Instagram, for example, encourages continuous viewing of content without allowing for natural breaks, fostering an endless cycle of consumption that

captures the user's attention. According to Monge Roffarello and De Russis (2019), practices such as these negatively impact digital well-being by eliminating stopping points and reducing the user's ability to reflect or disconnect.

Another relevant example is the use of "FOMO Alerts" (Fear of Missing Out) — alerts that generate anxiety by suggesting that the user is missing out on something important, such as events or updates from friends (Song & Boomgaarden, 2017). These alerts exploit the fear of social exclusion and encourage users to stay connected and attentive, often to the detriment of their emotional well-being. Büchi (2022) proposes that design alternatives, such as less intrusive and more personalized notifications, can reduce these negative effects and promote a more balanced use of digital platforms.

3.1 Impact of ACDPs on Digital Well-Being and Social Polarization

The impact of ACDPs on digital well-being is an emerging field of study that benefits from an intersectional approach, as Büchi (2022) suggested. Harmful patterns that sustain user retention, such as Streak Rewards and Engagement-Based Notifications, can lead to digital dependency by rewarding repetitive behaviors and promoting continuous use (Monge Roffarello & De Russis, 2019). This dynamic also contributes to social polarization, as prolonged exposure to targeted content can intensify ideological divisions and reduce tolerance for divergent perspectives (Alatawi et al., 2021).

Social Media Induced Polarization (SMIP) (Qureshi et al., 2020) involves interconnected elements such as fake news, disinformation, hate speech, echo chambers, and filter bubbles, all of which amplify social and political conflict (Pimentel et al., 2023). While Roffarello and De Russis (2023) focus primarily on the impact of interface design and gamification on digital well-being, discussing how practices like infinite scrolling and compulsive rewards increase anxiety and stress, they do not directly address issues like hate speech or fake news. However, these elements, studied extensively elsewhere, are recognized for their role in promoting toxic behaviors and heightening stress (Roffarello & De Russis, 2023).

Continuous exposure to polarizing content can profoundly affect mental health, fostering a sense of constant conflict and alienation. Song and Boomgaarden (2017) showed that selective exposure to information reinforcing pre-existing beliefs can lead to social isolation and polarization. This phenomenon is compounded by echo chambers, where interactions occur predominantly among individuals with similar beliefs, amplifying ideas without exposure to dissenting viewpoints (Zollo & Quattrociocchi, 2018). While echo chambers intentionally discredit opposing voices, filter bubbles operate more passively through algorithmic content personalization, further isolating users (Alatawi et al., 2021).

By addressing these harmful patterns through an ethical lens, the proposed taxonomy highlights the urgency of balancing user engagement with digital well-being.

3.1.1 Brain Rot and Cognitive Manipulation Patterns

Patterns that exploit emotional triggers, such as "FOMO Alerts" and "Emotionally Manipulative Headlines", amplify the effects of brain rot by exposing users to constant stimuli that provoke impulsive reactions and heighten anxiety. These mechanisms create a heightened state of vigilance and stress, which inhibits reflection and deep thinking. Song and Boomgaarden (2017) demonstrate that selective exposure to polarizing content fosters a sense of conflict and alienation, further intensifying cognitive and emotional saturation. Similarly, Ross et al. (2019) explore how manipulative actors, including bots, can exacerbate these dynamics by creating a distorted opinion climate that pressures individuals into conforming to a perceived majority opinion. Rage-baiting, the deliberate provocation of anger to drive engagement, is another extension of these patterns, leveraging anger as a tool for retention and further contributing to the mental strain experienced by users, thus reinforcing the cyclical nature of brain rot.

3.1.2 Implications for Mental Health and Autonomy

The concept of brain rot encapsulates the cumulative impact of ACDPs on cognitive capacity and mental health, compromising user autonomy and intentional platform usage. Büchi (2022) advocates for digital design practices that foster balance and critical reflection, contrasting sharply with the mechanisms that exacerbate brain rot. Alternative solutions, such as COMO (Comfortable Missing Out) prompts and content summaries, could restore user control, promote reflective pauses, and interrupt the cycle of passive engagement. These alternatives emphasize a

more mindful interaction with digital platforms, addressing the core issues driving compulsive use.

The phenomenon of brain rot illustrates the direct consequences of predatory engagement mechanisms employed by ACDPs. Coupled with practices like rage-baiting, which exploit anger as an engagement tool, these patterns illustrate how excessive, unintentional platform use undermines focus, mental health, and user autonomy. Platforms perpetuate these dynamics through features designed to exploit emotional intensity, ensuring continued engagement while sacrificing user well-being.

Mitigating these effects requires a shift toward ethical design practices, such as prioritizing neutral headlines, customizable notifications, and reflective prompts. By incorporating alternatives like COMO Prompts and balancing engagement metrics with mental health considerations, platforms can promote a healthier, more intentional digital experience. This reframing underscores the urgency of redefining the role of digital platforms in an increasingly polarized and attention-driven society.

Wiese, Pohlmeyer, and Hekkert's (2024) research further suggests that designing digital interfaces that prioritize user well-being—as discussed in the Digital Wellbeing Lens framework (Monge Roffarello & De Russis, 2024)—can mitigate these adverse effects. When a more balanced digital experience is fostered, such design strategies can reduce the psychological toll of prolonged exposure to polarizing content and promote healthier engagement patterns.

4 RESULTS

The taxonomy being developed in this study highlights the varied and complex nature of ACDPs, which exploit user psychology in distinct ways to manipulate digital experiences.

To account for these differences, the taxonomy is divided into three main categories: Cognitive Manipulation and Interface Ambiguity Patterns, Compulsive Engagement Patterns, and Disruption of Healthy Use Patterns. This work builds on previous work by Monge Roffarello, De Russis, and Pellegrino (2024), which, to the best of our knowledge, identified a set of ACDPs together with associated alternative patterns for the first time.

Table 1: A preview of the proposed taxonomy of Attention-Capture Damaging Patterns on Social Media.

Attention-Capture Damaging Pattern (ACDP)	**Alternative Pattern**	**Category in the New ACDP Taxonomy**	**Social Networks Where the ACDP Occurs**
FOMO (Fear of Missing Out) Alerts Alerts that induce anxiety by suggesting users are missing something important.	COMO (Comfortable Missing Out) Prompts Messages that promote the importance of disconnecting and enjoying the present moment.	Cognitive Manipulation and Interface Ambiguity Patterns	Facebook, Instagram
Emotionally Manipulative Headlines Platforms reward sensationalist headlines that provoke emotional reactions and clicks.	Neutral Headlines Platforms reward informative headlines that describe the content clearly and objectively.	Cognitive Manipulation and Interface Ambiguity Patterns	Facebook, YouTube
Autoplay of Shared Reels Shared reels automatically start the next video after the previous one ends.	Press-to-Play The system displays a thumbnail with a "tap to play" option.	Compulsive Engagement Patterns	Instagram
Infinite Comments Scroll Continuously loaded comments encourage endless reading.	Comment Limit Display a limited number of comments with an option to load more.	Compulsive Engagement Patterns	YouTube, Facebook, Instagram
Endless Notifications and Engagement-Based Notifications Apps send constant notifications and interaction alerts to keep users engaged.	Batch Notifications Non-urgent notifications are grouped and sent at specific times.	Disruption of Healthy Use Patterns	Facebook, Instagram, TikTok, YouTube, WhatsApp
Time-Wasting Challenges Challenges designed to keep users engaged for long periods without a clear purpose.	Purposeful Challenges Challenges that promote activities with tangible and measurable benefits for the user.	Disruption of Healthy Use Patterns	TikTok, Instagram

Cognitive Manipulation and Interface Ambiguity Patterns involve mechanisms that leverage cognitive or emotional biases, such as FOMO, to keep users engaged. These patterns often use ambiguous or misleading interfaces, which obscure decision-making and exploit psychological vulnerabilities, as exemplified by disguised notifications described by Brignull (2020).

Compulsive Engagement Patterns, the second category, include design elements that sustain prolonged use and limit natural breaks in content consumption, such as autoplay and infinite scrolling, found prominently on platforms like TikTok and Instagram. These mechanisms foster compulsive habits, making it difficult for users to disengage. Monge Roffarello and De Russis (2019) note that such designs, which lack intentional stopping cues, contribute to addictive behaviors that undermine user well-being by creating a cycle of excessive engagement.

The third category, Disruption of Healthy Use Patterns, encompasses features that disrupt users' ability to maintain a balanced relationship with digital platforms. Frequent notifications, automatic video countdowns, and time-wasting challenges on platforms like YouTube interfere with users' autonomy and time management, blurring the lines between productive and unproductive interactions. These practices often result in prolonged and unintentional engagement, contributing to cognitive fatigue and diminished well-being.

The study focused on major platforms—Facebook, Instagram, TikTok, YouTube, and WhatsApp — chosen for their global reach, cultural significance, and diversified engagement mechanisms. Platforms with extensive user bases and widespread influence were prioritized, as their design practices have far-reaching effects. Song and Boomgaarden (2017) emphasize that algorithms and recommendation systems on such platforms exacerbate these dynamics, amplifying user engagement while contributing to polarization.

The socio-cultural impact of each platform was also considered. Platforms like Facebook and Instagram have a central influence on identity formation and opinion shaping, while TikTok and YouTube, which attract younger demographics, significantly contribute to contemporary digital culture. WhatsApp, though primarily a messaging platform, was included due to its pivotal role in information dissemination and its ability to influence social behaviors. These aspects underscore the importance of analyzing ACDPs on platforms with diverse user-profiles and cultural significance, ensuring a comprehensive and relevant investigation.

The third criterion accounted for the diversity of engagement mechanisms across platforms. For instance, TikTok and Instagram heavily utilize features such as infinite scrolling, autoplay, and content personalization to sustain user engagement. As one of the oldest platforms, Facebook leverages constant notifications and automatic recommendations that encourage continuous use. YouTube promotes engagement through popularity-based interaction notifications and countdowns that autoplay subsequent videos, removing natural pauses and creating a seamless consumption experience. In the case of WhatsApp, message notifications incentivize immediate responses, fostering continuous interaction cycles and contributing to digital dependency.

Applying this structure and the outlined criteria enabled a practical and comparative analysis of the new taxonomy. Consequently, it was possible to build a structure (Table 1) that systematically organizes the identified ACDPs by social media platform, categorizing them into the three proposed types. This structured approach facilitates understanding how ACDPs operate across platforms and their effects on user behaviors, whether contributing to digital well-being or exacerbating dependency.

The creation of a taxonomy for ACDPs emerged from the need to categorize and analyze these patterns with precision, enabling a nuanced understanding of their impacts on user behavior. This approach aimed to differentiate ACDPs based on their psychological effects and the mechanisms they employ to influence and shape digital behaviors. Such a structured framework provides a foundation for future interventions and alternative design solutions prioritizing digital well-being, as Büchi (2022) emphasized, underscoring the need for design practices that promote user autonomy and balance on digital platforms.

This systematization of the taxonomy not only standardizes the analysis of ACDPs but also supports the development of alternative designs that prioritize mental health and digital well-being. Categorizing these patterns based on consistent criteria allows researchers and developers to identify the most problematic design practices across platforms and propose targeted interventions. For instance, addressing Compulsive Engagement Patterns through customizable time limits and configurable notifications aligns with Büchi's (2022) principles of promoting user balance and autonomy.

The development of the taxonomy also seeks to raise awareness among both users and corporations about the adverse effects of ACDPs on major social media platforms. By systematically and transparently mapping these patterns, the study hopes to encourage big tech companies to adopt design practices that foster healthier and more balanced digital environments, promoting intentional and mindful interactions. As part of both academic and technological development, the proposed structure not only organizes and characterizes ACDPs but also serves as a starting point for creating design practices that respect user autonomy and prioritize collective mental health and well-being.

The expected outcome of this study is to provide a refined and comprehensive taxonomy for categorizing ACDPs, offering a robust framework to analyze their mechanisms and psychological impacts on users. By dividing these patterns into three primary categories—Cognitive Manipulation and Interface Ambiguity Patterns, Compulsive Engagement Patterns, and Healthy Use Disruption Patterns—the taxonomy provides a structured approach to understanding how ACDPs influence digital behavior. This categorization serves not only as an analytical tool but also as a foundation for rethinking design strategies that align with principles of digital well-being.

Brignull (2020) and Song and Boomgaarden (2017) have demonstrated how "Cognitive Manipulation and Interface Ambiguity" Patterns leverage psychological vulnerabilities to maximize engagement, often without explicit user consent. The proliferation of rage-baiting further intensifies these effects by trapping users in cycles of emotional manipulation and superficial content consumption.

"Compulsive Engagement" Patterns are characterized by design mechanisms that foster prolonged and habitual usage, creating seamless cycles of consumption that users find difficult to interrupt. These patterns exploit users' desire for novelty and achievement, reinforcing behaviors that resemble addiction. Monge Roffarello and De Russis (2019) highlighted the impact of such designs on digital well-being, noting that they encourage passive consumption and reduce users' ability to engage meaningfully with digital platforms. Büchi (2022) further emphasizes that compulsive engagement erodes autonomy, as users are drawn into repetitive loops of low-value interactions. The phenomenon of brain rot is particularly relevant here, as compulsive engagement exacerbates cognitive depletion and leaves users feeling mentally drained and disengaged. Platforms like TikTok and Instagram epitomize this trend with their reliance on infinite content loops and gamified user incentives.

"Disruption of Healthy Use" Patterns interfere with users' ability to maintain intentional engagement with digital platforms, disrupting boundaries between online and offline life and leading to stress, exhaustion, and diminished well-being. Monge Roffarello and De Russis (2019) observed that such patterns hinder healthy offline habits like rest and focus, which are essential for cognitive recovery. Büchi's (2022) proto-theory of digital well-being advocates for reflective and intentional use of technology, contrasting sharply with the behaviors encouraged by these patterns.

The taxonomy under construction and depicted in this study categorizes ACDPs into three groups, elucidating their varied impacts on digital well-being. Cognitive Manipulation Patterns undermine decision-making and clarity, Compulsive Engagement Patterns foster addiction and fatigue, and Healthy Use Disruption Patterns exacerbate stress and mental health challenges. These insights highlight the widespread presence of ACDPs across platforms like Facebook, Instagram, TikTok, YouTube, and WhatsApp, where features such as infinite scrolling, autoplay, and deceptive notifications contribute to cognitive overload and compulsive behavior.

Alternative strategies, such as COMO prompts and batch notifications, offer ways to counteract these negative effects by encouraging reflection, autonomy, and balanced engagement. These interventions align with Büchi's vision of digital well-being and suggest a pathway for mitigating the harms of ACDPs. The study emphasizes the need for a paradigm shift in digital design, prioritizing user well-being and ethical engagement over short-term metrics.

5 ANALYSIS AND DISCUSSION

The taxonomy proposed in this study aims to provide a multidimensional analysis of ACDPs by classifying them into three overarching categories: Cognitive Manipulation and Interface Ambiguity Patterns, Compulsive Engagement Patterns, and Disruption of Healthy Use Patterns. Each category highlights specific psychological impacts these patterns have on users, such as anxiety, compulsive behavior, and decision fatigue, alongside ethical concerns regarding user rights. For instance, Cognitive Manipulation Patterns exploit emotional triggers like FOMO (Song & Boomgaarden, 2017), undermining user autonomy by inducing impulsive behaviors. Addressing these

manipulations, the table introduces alternative designs, such as COMO, a concept developed by the first author of this paper, which encourages a healthy detachment and reduces the anxiety driven by constant digital connectivity.

Table 2 offers practical insights for designers, policymakers, and researchers aiming to reduce the harm caused by ACDPs. By showing the psychological impacts, it underscores the need for user-focused alternatives. Büchi (2022) argues that digital platforms should center their designs around autonomy, reflection, and balance. The table builds on this idea, providing a clear framework to identify harmful practices and promote ethical, transparent, and sustainable design.

Table 2: Categorization of ACDPs: Categories and Psychological Impacts.

Category	**Psychological Impact**
Cognitive Manipulation and Interface Ambiguity Patterns	- Anxiety (FOMO) - Impulsive decisions - Difficulty disconnecting
Compulsive Engagement Patterns	- Compulsion and addiction - Mental exhaustion - Reduced focus and productivity
Disruption of Healthy Use Patterns	- Stress and fatigue - Irritability - Disruption of healthy habits (sleep, rest)

6 LIMITATIONS OF THE STUDY

This study presents limitations that must be acknowledged to contextualize its findings and provide a basis for future research. First, as this is a work in progress, the version presented in this article is just a snippet of the expected final version, which should be presented and discussed in follow-up papers.

Second, the study focuses primarily on a theoretical taxonomy of ACDPs and does not include empirical validation through user-based experiments or longitudinal studies. While established theories and prior research inform the taxonomy, its practical applicability and effectiveness in mitigating negative outcomes require empirical testing. This limitation restricts the study's ability to make definitive claims about the real-world impacts of proposed design alternatives, such as COMO prompts or batch notifications.

Another limitation lies in the platform-specific analysis, which concentrates on major social media platforms such as Facebook, Instagram, TikTok, YouTube, and WhatsApp. These platforms represent a significant share of global user engagement; however, the findings may not be generalized to less prominent platforms or niche digital environments. Smaller platforms with distinct user demographics and engagement mechanisms could exhibit unique ACDPs that were not captured in this study.

Finally, while theoretically robust, the proposed design alternatives were not evaluated for their feasibility from a technical or business perspective. Big tech companies operate within profit-driven frameworks, and the implementation of ethical design alternatives may face resistance due to concerns about reduced user engagement and, therefore, reduced revenue. This study does not address the economic implications of these interventions, which could influence their adoption in practice.

7 FUTURE RESEARCH DIRECTIONS

This study provides a fundamental framework for understanding ACDPs, but the work is ongoing, and there is a need to deepen the understanding of ACDPs and address their impacts. Future studies should empirically validate the taxonomy under construction, exploring the psychological and behavioral effects of ACDPs through experimental and longitudinal methodologies. These investigations could also evaluate the effectiveness of alternative design strategies, such as COMO prompts and reflective interfaces, in fostering digital well-being across diverse user groups.

Exploring cultural and contextual variations in the impact of ACDPs presents another important avenue. Social media platforms operate globally, but cultural differences influence user behavior and the reception of design patterns. Research on these variations could guide the development of culturally sensitive and inclusive digital design practices. Understanding how emerging tools like AI and augmented reality shape attention-capture dynamics is critical as technology advances.

Moreover, as regulatory frameworks develop to address the harms of ACDPs, studies should assess their efficacy and identify best practices across regions. Lastly, it must be mentioned that interdisciplinary collaboration between psychology, design, and policy is essential for creating ethical design standards that balance user well-being with platform objectives. By addressing these areas, future

research can drive the development of a healthier digital ecosystem that prioritizes autonomy, mental health, and social cohesion.

8 CONCLUSIONS

By systematically mapping ACDPs and analyzing their psychological impacts, this study contributes to understanding how design mechanisms in digital platforms influence user behavior, cognitive autonomy, and mental health.

The findings reveal the pervasive influence of ACDPs in fostering harmful user behaviors, such as compulsive engagement, emotional exhaustion, and diminished cognitive capacity. These patterns may not only compromise individual well-being but also contribute to broader societal issues, such as polarization and the erosion of social cohesion.

The proposed taxonomy serves as both an analytical tool and a practical guide for addressing the adverse effects of ACDPs. The exercise of categorizing these patterns based on their mechanisms and impacts creates a framework that enables researchers, developers, and policymakers to identify problematic design practices. More than that, it allows these interest groups to propose targeted interventions. Solutions such as COMO prompts, transparent interface designs, and customizable user controls represent promising avenues for mitigating the negative effects of ACDPs and fostering a more balanced digital experience. These interventions align with Büchi's (2022) proto-theory of digital well-being, which advocates for design practices that promote autonomy, intentionality, and human flourishing.

The implications of this study extend beyond theoretical contributions, offering actionable insights for the development of ethical design practices. The study does that by demonstrating that alternative design patterns can support long-term user engagement without sacrificing well-being. This research challenges the prevailing narrative that prioritizes short-term metrics over sustainable interaction.

Ultimately, this study underscores the urgency of a paradigm shift in digital design—one that places user well-being at its core. As digital platforms continue to shape societal interactions on an unprecedented scale, adopting ethical and user-centered design practices is not only a moral imperative but also a strategic necessity for ensuring the sustainability and inclusivity of these technologies. This shift has the potential to redefine the role of digital platforms in an increasingly interconnected and polarized world by fostering environments that respect user autonomy and promote collective mental health.

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