

Design Approaches to Digital Wellbeing Interventions for Mindful Social Media Use

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Abstract—This paper discusses growing concerns about excessive use of digital media, particularly social media, and provides a comprehensive overview of innovative design approaches for digital interventions. These interventions aim to address the challenges posed by compulsive phone use, which can be aggravated by dark patterns in user experience design. Four main intervention approaches—external, redesigns, implicit and nudging—are examined, along with their effectiveness and limitations. The results indicate the need to go beyond external interventions and standard practices. For long-term improvement, it is necessary to focus on approaches that promote mindfulness and awareness in order to achieve more sustainable and balanced habits. In light of these insights into the ongoing discourse on digital wellbeing, the paper encourages collaboration between researchers and user experience designers to develop better intervention strategies.

Keywords—digital wellbeing, user experience design, dark patterns, social media

1. INTRODUCTION

Overuse of digital media, and social media applications in particular, has been a topic of some concern for the past several years [1], [2]. More recently, efforts to reduce screen time have become more sought after [3]. These digital wellbeing measures, as they are often called, have even started to become integrated in mobile operating systems [4], [5]. However, the extent to which these applications can actually give users more control over their social media consumption is still under discussion [3]. With that in mind, this paper aims to give an overview of innovative design approaches for digital intervention targeting excessive social media use.

1.1 Between Habit and Compulsion

Compulsive phone use has been studied extensively [3], [6]. The phenomenon is typically associated with feelings of frustration and lack of control on the users' side [6], [7]. Tran et al. [7] call this the “30-minute ick factor”, which describes the sensation of becoming abruptly aware of the extended amount of time one has been spending on their phone without meaning to, which is typically accompanied by a feelings of disgust, regret [7] and disorientation [6]. This kind of unintentional and prolonged use has been compared to disassociation [6]. While research has also shown that occasional meaningless phone use can have positive effects on one's mood by providing a space to “escape” to [8], this exact effect, once it becomes habitual and unintentional, can lead to struggles with self-control, procrastination, and overall feelings of guilt [6]. In their study of the correlation between social media app design and users entering a state of normative disassociation, Baughan et al. [6] have found a direct link that suggests design can both facilitate or interrupt disassociation during social media use.

2. THE FIGHT FOR USER ATTENTION

Today, social media companies try to keep users on their apps for as long as possible by employing different methods to capture and retain user attention. Unfortunately, some of these methods can be categorized as what is known in user experience design as “dark patterns” [9]. Dark patterns are functionalities and design patterns that trick the user into doing something that they would not do willfully or if they were fully informed [10]. Importantly, there is a difference between dark patterns in the traditionally understood sense and dark patterns that aim to exploit user attention [9]. These so-called attention-capture dark patterns do not directly influence user interaction—in fact, many claim to improve usability by decreasing the cognitive and/or physical effort that it takes to remain on an app for longer periods of time.

The difference, therefore, lies in the intention. If the primary goal behind implementing such an improvement is to keep users on the platform for as long as possible—and in doing so the user’s control over their experience is undermined [8]—the feature may qualify as an attention-capture dark pattern [9]. Roffarello & De Russis [9] identify five such design patterns which can capture the user’s attention in malicious ways:

- 1) *Recommendations*. Recommendation systems can undoubtedly have their benefits, as they can provide the user with content that is more relevant to them. Utilized as a dark pattern, however, they can also create a content loop that essentially traps the user in a current session, seemingly with no end [8].
- 2) *Autoplay*. Video content that is played automatically without the need for user interaction can easily keep the user on a service for much longer than they intend to. While it can have its uses, for example for continued playback of music, Lukanoff et al. [8] have found that this type of functionality frequently undermines the user’s agency.
- 3) *Pull-to-refresh*. Researchers have frequently compared the functionality to refresh content at any time with just a micro-interaction to slot machines, i.e. gambling mechanisms, as it depends on the exact same psychological susceptibility [11], [12].
- 4) *Infinite scrolling*. As with the pull-to-refresh mechanism, the infinite scrolling functionality also promises unlimited unpredictable and variable rewards [9] while promoting passive and mindless use [13].
- 5) *Social investment*. Social metrics such as likes, followers, reactions, comments, and views are the building blocks of social media. Nevertheless, they are sometimes implemented in ways that reward users for increased usage of the app and/or give the impression that users may “lose” the social momentum they have gained if they do not continue interacting with the platform [12]. The latter effect is also observable in YouTube creators, for instance, who may feel compelled to continuously post content and to increase their views and subscriber count [9].

3. DIGITAL WELLBEING STRATEGIES

Digital wellbeing refers to measures that encourage a more mindful, balanced use of digital technologies with the objective of bettering one’s quality of life [14].

As cited in Burr et al., Floridi has also defined the term as “the impact of digital technologies on what it means to live a life that is good for a human being in an information society” [15, p. 1]. Tech companies such as Google [4], [16] and Apple [5] have also embraced digital wellbeing and have started to integrate usage monitoring features into their operating systems and applications.

3.1 External Interventions

As digital wellbeing has risen in popularity both in research and industry circles, app stores have become populated with hundreds of applications that promise a more balanced phone use by providing usage metrics for self-monitoring purposes, imposing timers, reminders, and lock-out restrictions on apps or on the phone as a whole [14]. However, this approach of using external mechanisms relies on the user’s ability to practice the necessary self-control and discipline to make any kind of change. Moreover, these types of applications show a decrease in effectiveness in the long term [9]. In their review of common features in digital wellbeing apps and their effectiveness, Roffarello & De Russis [14] have examined which features are employed and how well they work. They conclude that the majority of features is aimed at breaking existing habits through self-monitoring behavior on the user’s part by providing the user with metrics of their phone or app usage. Unfortunately, any progress in usage reduction can revert to previous levels once the monitoring by the digital wellbeing app is paused. Interventions such as timers, reminders, and app locks also promise improvement but often do not deliver. They can be snoozed, paused, or deleted all too easily, which counteracts any positive effects they may have [14]. These types of interventions have also been found to decrease and undermine users’ sense of agency [17]. Interestingly, Roffarello & De Russis [14] have also found that users themselves do wish for solutions to help them limit their excessive phone use, and that they think these types of external monitoring mechanisms are not effective enough to do so.

3.2 Redesigns

In light of the ineffectiveness of external mechanisms, researchers have turned to alternative approaches. One such approach is to utilize internal mechanisms. Roffarello & De Russis [9] suggest redesigning offending apps in such a way that features which use dark patterns (such as YouTube Autoplay) are removed while still retaining the benefits of these features for the user. In this regard, they refer to the work of Lukoff et al. [8], who identify a spectrum of possibilities to

redesign attention-capture dark patterns on YouTube in such a way that they no longer undermine the user’s agency. Autoplay, for example, could be redesigned to simply showing the next queued video and requiring the user’s active consent before playing it [8]. In their study, Roffarello & De Russis [9] found that reducing and removing social metrics (such as the number of likes and comments) from Facebook via a browser extension led to a “more active and less intense” [9, p. 4] usage of the platform. Additionally, the redesign lowered the participants’ overall daily amount of time on Facebook. In another study by Roffarello & De Russis [1], the authors redesigned Facebook and YouTube in such a way that recommendation feeds are moved from the homepage to a separate, isolated page while placing the primary tasks (such as searching for videos) front and center on the home screen. Their results illustrate a significantly lowered number of scrolls per minute as well as time spent on both platforms, and also suggested a more mindful usage [1].

3.3 *Implicit Interventions*

A third approach among researchers is what Terzimehić et al. [3] call implicit interventions. These are centered around minimalist design, like setting the phone’s display to grayscale, which decreased the daily screen time by almost 40 minutes on average in one study [18]. Another promising method is to prompt users on the context of what they are currently doing when they check their phone, which promotes a higher awareness of the outside world and reduces absent-minded phone usage [19].

3.4 *Nudging*

Okeke et al. [2] approach the problem from the angle of the nudge theory, which “refers to an intervention that steers people in a particular direction without eliminating their freedom of making the final choice” [2, p. 1]. With this theory in mind, they designed and tested a digital intervention that would make the phone vibrate periodically after the user has exceeded the daily usage limit for Facebook as an example app. Their results show a significant reduction in usage time for participants who would receive these vibration nudges. However, the vast majority participants also perceived the vibrations as irritating, and Facebook usage rose again after the intervention was removed, suggesting that the intervention failed in building a long-term habit. Another nudging approach was introduced in the aforementioned study by Roffarello & De Russis [1], comparing redesign and nudging strategies with Facebook and YouTube. Their nudging

strategy was to progressively darken the background on the pages that implemented the infinite scroll pattern. This approach was proven to decrease usage time as well as scrolls per minute especially on Facebook [1].

4. CONCLUSION

In recent years, the growing concern about the overuse of digital media, particularly social media, has led to a boom of digital wellbeing measures. This paper provides a comprehensive overview of innovative design approaches for digital interventions that go beyond the strategies most commonly represented on app stores.

The core of the problem that these digital wellbeing tools try to solve lies in the strategies that social media companies use to capture user attention, including the use of dark patterns such as recommendations, autoplay, pull-to-refresh, infinite scroll, and social investment. The standardization of these design patterns begets the need to tackle the issues they cause and to promote a more reflective and balanced use of social media.

Four main approaches are explored: external interventions, redesigns, implicit interventions, and nudging. The limitations of external mechanisms such as timers and reminders are highlighted, which have also led researchers to explore internal redesigns that eliminate dark patterns while retaining user benefits. Implicit interventions, including grayscale displays and usage context prompts, offer minimalist solutions. Furthermore, nudging strategies show promise in reducing screen time, although challenges persist in matters of user experience and building long-term habits.

In navigating the complex landscape of digital wellbeing, this paper highlights the importance of phone use interventions. The findings contribute insights to the ongoing discourse on promoting healthier and more mindful interactions with social media platforms. Most importantly, external interventions, which are currently most common, do not address the root problem: the malicious twist on standardized design patterns employed by many platforms. Therefore, it may be better to focus on approaches that increase mindfulness and awareness, which can have better long-term effects on habit formation [1]. In that regard, researchers and user experience designers can work together to improve these intervention approaches in order to ensure a healthier phone-life balance for users.

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