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The Harmful Nature of the Attention Economy: In Search of a Link between Social Media Features and Psychological Harm

Abstract: The discourse on the harmful effects of social media (SM) platforms on mental well-being, while dynamic and extensive, is at the same time inconclusive. Researchers still have not settled fundamental issues, such as whether the use of SM can be attributed to a harmful causal effect, and, if so, whether this effect has practical significance. The reason for this inconclusiveness may lie in the complex nature of SM, which makes it difficult to distinguish the real risks within a pool of diverse effects, both positive and negative. The paper addresses this challenge by identifying and presenting theoretically grounded causal links between (1) the business model of platforms, (2) specific platform design, and (3) the psychological harm identified among SM users. The first part of the paper describes an SM business model based on the attention economy as a source of specific technical solutions. The second part elaborates on specific social media features that support the platform's business goals (e.g., infinite newsfeed, autoplay video) and discusses the mechanisms of their harmful potential. The third part presents a classification of harms that can be linked with SM design, including: behavioural harms – mainly related to excessive SM use; psychopathological harms – related to SM potential to contribute to the development of mental disorders; and cognitive harms – associated with lower cognitive abilities resulting from SM use. Finally, practical and regulatory implications are proposed. The paper provides the argument for the harmful potential of SM arising from the attention economy business model.

Keywords: *social media, attention economy, mental health, mental harm, digital well-being*

INTRODUCTION

Social media has achieved such great popularity in the modern world that daily functioning without it is difficult to imagine (Dixon, 2025). While this proliferation has opened up significant opportunities for users and revolutionised social interactions around the world, the potential harm to mental health resulting from social media use is increasingly being pointed out (e.g., Haidt, 2024; Huang, 2022; Keles et al., 2020; Nguyen et al., 2025). The discourse on the harmful effects of social media on mental well-being, while dynamic and extensive, is at the same time inconclusive (e.g., Haidt, 2024; Odgers, 2024; Twenge, 2023; Valkenburg et al., 2022). The aim of this paper is to address this inconclusiveness by identifying and proposing the possible causal links between (1) the business model of platforms, resulting in design aimed at capturing and keeping users' attention; (2) the psychological processes engaged in contact with such design; and (3) the psychological harm identified among social media users.

My argument will proceed as follows; first, a business model based on the attention economy will be described, as a source of technical solutions with harmful potential. Second, the paper will discuss the examples of specific technical solutions, i.e., design features of social media platforms that support the business goals of platform providers but at the same time engage psychological processes that can lead to mental harm. Then, a classifica-

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tion of the mental harms that may be incurred as a result of exposure to the previously described technologies will be presented. Finally, some practical implications resulting from the study will be presented. As the work is limited to harms arising from the specific design of the platforms, social media harms resulting from the inappropriate behaviour of other users, such as, for example, cyberbullying (Hamm et al., 2015; Li et al., 2024), or demoralising influences resulting from the sale of pathological content (Kułaga, 2023; Porębski, 2024a), will not be considered as part of the ongoing deliberations.

SOCIAL MEDIA AND MENTAL WELL-BEING – THE INCONCLUSIVENESS OF THE RESEARCH AND ITS REASONS

The discourse on the harmful effects of social media on mental well-being is inconclusive. Researchers still have not settled fundamental issues in this discussion, such as whether the use of social media can be attributed to a harmful causal effect, and if so, whether this effect has practical significance (Appel et al., 2020; Kreski et al., 2021; Orben & Przybylski, 2020; Twenge et al., 2020). Despite the vast amount of research and analysis indicating a relationship between social media use and various psychological damages, determining the causal nature of these relationships remains a challenge. On the one hand, this issue may stem from shortcomings in the studies conducted, which are often correlational, cross-sectional, and rarely based on experimental methods (Conte et al., 2025; Marino et al., 2018; Orben, 2020; Shannon et al., 2022). Furthermore, the studies differ in terms of the characteristics of the groups examined (general population, minors, girls, etc.), the definition and measurement of social media usage (behaviourally measured screen time, subjective declarations of use, taking into account different social media platforms, etc.), the definition and measurement of well-being outcomes (depression symptoms, distress, self-esteem, etc.) and the control of confounding variables. On the other hand, the reason may lie in the very nature of social media; Kross and colleagues (2021) suggest that social media is neither inherently good nor bad technology, but rather much depends on how it is used. Social media platforms offer a range of functionalities and uses that are largely independent of each other (Kross et al., 2021; Smock et al., 2011). Platforms offer, among other things, chatting with friends, actively sharing content, passively browsing content, playing games, and organizing events. Each of these activities engages different aspects of the users' psyche and can contribute in different ways to the positive or negative effects of social media use (Balamurali, 2025; Khalaf et al., 2023; Perlmutter et al., 2024; Verduyn et al., 2017)[1].

Therefore, it can be argued that investigating social media's harmfulness is comparable to investigating the harmfulness of using a lake where one can swim, sail, fish, or sunbathe on the shore. For these types of phenomena, it is difficult to obtain clear-cut results with a simple interpretation and to distinguish the real risks within a pool of diverse effects, both positive (e.g. better swimming skills) and negative (e.g. health issues related to pathogenic bacteria in the lake). It is thus uncertain whether the findings, sometimes obtained, that indicate a modest association of social media use with psychological well-being (e.g., Hancock et al., 2022; Ferguson et al., 2022; Meier & Reinecke, 2020; Przybylski et al., 2020), adequately reflect the full picture of the phenomenon. This concern is all the more significant given that most studies do not take into account the complexity of social media, treating platforms as monoliths. Some researchers (e.g., Khalaf et al., 2023; Kross et al., 2021) argue that an aggregate analysis of social media platforms that does not distinguish between the activities undertaken within them is one of the primary reasons for the inconclusiveness of findings regarding the relationship between platform use and mental well-being.

This article argues that some of the links discovered in research on relationships between social media use and various psychological harms can, nonetheless, reasonably be given a causal interpretation. This interpretation is based on understanding of how social media platforms are designed, stemming from the fact that they operate within a business model rooted in the attention economy. In other words, it is possible to identify the inherent dangers of social media in its current form that create a systemic risk of incurring psychological harm. In this paper, I do not begin with empirical data on the psychological problems of social media users. Instead, I start with an analysis of the specific technical features employed by platform providers and the impact of these features on users' psyche, aiming to identify the most significant risks related to them. In doing so, I follow the suggestion of Kross and colleagues (2021) to place greater emphasis on the role of psychological processes engaged as a result of platform use when discussing the harms of social media (a similar approach was applied in Orben et al., 2024).

THE IMPORTANCE OF THE SOCIAL MEDIA BUSINESS MODEL

The proposed approach assumes that many of the potential negative effects of the widespread use of social media stem from the business model of social media providers – certain design choices maximise platforms' profits, but at the same time are a source of risk for their users; this business model is well-explained by the concept

[1] Although in this article I focus on the possible negative mental health outcomes of social media use, one should note that some of the platforms' features may be beneficial for some people in some contexts. Social media has proven helpful during the COVID-19 pandemic as a tool for staying connected with peers (James et al., 2023) and coping with pandemic-related anxiety (Cauberghe et al., 2021). There is also significant body of research that people from marginalised or minority groups (e.g., racial or sexual minorities, people with rare diseases, etc.) use social media for building social capital (Escobar-Viera et al., 2020) and self-acceptance (Chalmers et al., 2020); for the review see Nagata et al. (2025).

of the attention economy (Bhargava & Velasquez, 2021; Franck, 2019; see also: Pałka, 2021). According to this concept, the business model underpinning social media platforms allows users to use them "for free" in a financial sense, but users "pay" with their attention and engagement, which the platforms then resell to other entities, such as advertisers. Under such a business model, the profit of platform owners is contingent on how effectively the platforms capture and maintain users' attention, as this is directly linked to their capacity to effectively display advertising material. Consequently, platform design is geared towards maximising addictive potential (Bhargava & Velasquez, 2021), in line with the principle that extended platform use and more frequent revisiting enable the display of more advertisements, which are a source of platform profit (Li et al., 2020). Recognising and understanding how the attention economy business model operates is key to identifying the inherent risks, even if it proves difficult to isolate these risks within empirical research employing aggregated measures of social media use.

DESIGN BASED ON THE ATTENTION ECONOMY LOGIC

How does social media maximise user attention and engagement? As the present work aims to identify such mental harms for which platform design is responsible for increasing the risk of occurrence, it is worth identifying the key elements involved in the process of profit maximisation according to the logic of the attention economy (Montag et al., 2019; Bhargava & Velasquez, 2020). At this point, it is worth mentioning that the explicit identification of such features is not simple. Online platforms provide a range of functionalities and, for a great many of them, it is difficult to unambiguously identify their role in shaping mental health problems among users. The distinction between design that is good and useful from a "user experience" perspective and design that is addictive or harmful is often quite fluid and blurred. In the following section, the methods for increasing user attention engagement mentioned in the literature (Montag et al., 2019; Bhargava & Velasquez, 2020) will be characterised and commented upon, along with examples of specific technical solutions found on social media platforms that are used for this purpose.

Variable reinforcement schedule

Research shows that variable reinforcement schedules, i.e. rewards delivered unpredictably, at variable intervals, are the most effective in maintaining a behaviour, such as content viewing on social media (Ferster & Skinner, 1957; Stafford, 2006; Wu, 2017). On the one hand, content posted on social media naturally varies in attractiveness (some content is unpredictably more "rewarding" compared to other). On the other hand, this content is managed by personalisation algorithms (discussed below) that aim to maximise users' attention, and one can assume that they adapt to provide varying reinforcement strength. Therefore, exciting content is most likely presented alternately with uninteresting content in an optimal proportion (from the platform's perspective), as this maximises the effectiveness of the algorithm. In addition to this "naturally occurring" as well as "algorithmically managing" variability, social media platforms employ other techniques that implement an additional source of variable schedule of reinforcement (Griffiths & Nuyens, 2017; Mujica et al., 2022). Examples include displaying a loading screen regardless of how good the user's internet connection is, making the user wait an indeterminate amount of time before the desired content is shown. Morgans (2017) raised the suspicion that platforms (Instagram and Twitter (currently "X")) might be employing such tactics; however, for obvious reasons, this claim is difficult to verify.

Infinite scrolling

Infinite scrolling (also known as endless or continuous scrolling) means that a social media platform is designed in a way that minimises stopping cues in content browsing, making it difficult to control the time spent using the media. The content flows in a constant stream, without the constraint of, for example, running out of content and having to move on to the next page, which, combined with the mechanism of a variable schedule of reinforcement (the user never knows which content will turn out to be attractive), has addictive potential (Harrigan & Dixon, 2009; Mujica et al., 2022). The detrimental potential of infinite scrolling is indicated by studies showing that browsing endless content is identified by users themselves as a bad habit (Mildner & Savino, 2021) and other studies in which respondents identified an endless stream of content as a source of their social media overuse, i.e., browsing content they did not plan to browse when they launched the app (Heitmayer & Lahlou, 2021; Rixen et al., 2023), and which they later regret (Cho et al., 2021). Of course, such evidence is not enough to confirm that this particular design feature is responsible for users' addiction. However, this evidence shows that infinite scrolling makes it harder for users to control their use of the app and increases the likelihood of excessive dependence on the platform.

Personalised newsfeed

Social media employ increasingly effective content personalisation algorithms (recommendation systems, personalised newsfeeds) aimed at providing users with content of interest (including advertising), usually with mechanics unfamiliar to the user (Ognibene et al., 2023; Vombatkere et al., 2024). Algorithms developed and applied by platform designers are able to identify many relevant user characteristics and preferences by, among other things, using data on the reactions users give, the sentiment of the content they provide, or the time they look at the content being displayed (Eichstaedt et al., 2018; Kramer et al., 2014; Marengo & Montag, 2020; Montag et al., 2019). This makes it possible to deliver highly targeted content with the greatest potential to keep the user engaged on the platform (Matz et al., 2017).

Functionalities intensifying social comparisons

Social media platforms offer numerous functionalities for giving and receiving social feedback. Extensive facilities for giving, receiving and control feedback, such as likes and views rates, enable social comparisons to be made and a sense of social approval to be experienced, which is a very strong and potentially addictive stimulus, of high relevance to users (Deci & Ryan, 2000; Rosenthal-von der Pütten, 2019; Scissors et al., 2016; Turner et al., 2024; Leary & Baumeister, 2000). Additionally, it should be taken into account that such social media design promotes the creation of a competition for attractiveness and popularity (Rosenberg & Egbert, 2011), which leads a typical user, when browsing content, to experience a sense of being worse, as their offline self does not live up to the idealised online models (Chou & Edge, 2012). Although users post their social media content on their own, without direct platform interference, the design of the platforms, and in particular the way content is displayed and rated, enhanced social comparisons creating risks for the users' self-esteem (Vogel et al., 2014).

Functions that reinforce social pressure

Platform design is geared towards maximising the potential to engage users, including by increasing control of social interactions. An example is the extensive expansion of the repertoire of information a user receives during communicating with friends in social media chats. Depending on the application the techniques vary, but nowadays it is common to mark out the moment a message is sent, delivered, or read by the interlocutor (the "seen" function), and even the interlocutor is writing a reply (Montag et al., 2019). This means that once a message is written, the app offers detailed additional information (other than the interlocutor's feedback message) to wait for or follow up on, making it even more difficult to "disconnect" from the app. Researchers argue that such information can induce feeling of obligation to reply resulting from fear of ostracism (Mai et al., 2015).

Unfinished content

The interfaces of social media platforms often present a lot of content simultaneously, some of which is unfinished. As Montag and colleagues (2019) point out, such a strategy takes advantage of psychological mechanisms described in the literature as the Zeigarnik effect and the Ovsiankina effect, i.e., effects that occur in the context of unfinished or interrupted tasks. The Zeigarnik effect relies on better recall of tasks that were interrupted in the process of completion (Ongchoco et al., 2023; Zeigarnik, 1927) while the Ovsiankina effect refers to the natural need and drive to complete interrupted or unfinished activities (Ovsiankina; 1928). Both effects describe a form of preoccupation with unfinished activities, whether in the form of them being more activated and available in the mind (which is associated with better recall) or in the form of increased motivation to continue them. Examples of techniques used by platforms can be autoplay videos (e.g., on YouTube, TikTok, or Facebook), but also displaying the content in a way that maximises the likelihood of seeing at least a small portion of the next post, photo, or video – a good example of which is the interface of the Pinterest platform. It displays graphics in such a way that it is not possible to see all of them in full form, always some part of them is hidden and require scrolling to be seen[2]. This type of started but not fully viewed content engages the user's cognitive and emotional resources to a greater extent than content that has been fully viewed. This is profitable for the platform, since exposure to unfinished content motivates users to return to the platform in order to complete it.

Obviously, the examples listed above do not exhaust the pool of all social media features that have harmful potential yet are profitable in the attention economy business model. Large business entities, with access to data from millions of users, are certainly taking various steps to maximise profits (Jensen, 2002), while at the same time not officially communicating the rationale behind the implementation of specific changes and features. There are many minor rarely noticed design choices that support platform's business interest while being disadvantageous for users. An example is the process of removing Facebook account – designed in such a way that makes it very difficult for a user to escape from the platform[3].

Finally, one should note that the algorithms used by platform providers are black boxes of a dual nature: institutional on the one hand – they do not share the algorithms they use – and algorithmic on the other – it is very likely that the algorithms they use have a level of complexity that makes it impossible to trace the exact way the algorithms work (Porębski, 2024b; Reviglio & Agosti, 2020). Therefore, researchers study platforms from the difficult position of external observers, trying to "guess" what the goals of specific features are, how these features affect users, and in what ways this impact may be harmful. These challenges make it difficult to create effective public policies to reduce the harmful effects of social media.

MENTAL HARM AS AN EFFECT OF PARTICIPATION IN THE ATTENTION ECONOMY

Below is a proposed classification of psychological harms, the increased risk of which can be causally linked to the use of social media because it is possible to

[2] According to some researchers, the way new content loads on social media platforms ("pull-to-refresh") mimics the mechanism of slot machines (Harris, 2019; Williams, 2018, p. 35).

[3] The location of this function in the platform's settings is counterintuitive, and it takes many steps to complete the process, but even then the account is not deleted, only frozen for 30 days, and the operation can be easily reversed. This process was already described several years ago by Bhargava and Velasquez (2020), and although it has undergone obvious changes, the essence – a complicated character and that attempts to dissuade the user from deleting their account – has remained the same.

identify mechanisms that may stay behind these effects. The indicated categories of harms were chosen based on a review of psychological problems described in the literature as associated with social media use. Among them, those that may result from participation in the attention economy were selected. It should be mentioned that many of the harms associated with social media use are correlated with each other at some level, so the classification should not be considered a disjoint division. For example, the first category of harm proposed focuses on the problem of excessive engagement in the activity of using social media and this can secondarily generate problems on many other levels, such as deterioration of relationships with close ones or depression (Shensa et al., 2017).

One should note that under the proposed approach, it is not crucial to determine that social media is responsible for the increased intensity of official diagnoses of mental disorders but to demonstrate that some of their features show the potential to shape mental problems, in mild or severe form. Consequently, both harms that are relatively minor but experienced by many users – e.g., the experience of distraction as a result of receiving notifications – and those that affect a smaller group of people but severely deteriorate their health and quality of life – e.g., suicidal thoughts – will be presented.

Examples juxtaposing platform design features, psychological processes involved, and the types of mental harms (discussed below) are shown in Table 1.

Table 1. Examples of potentially harmful social media features linked to corresponding psychological mechanisms and mental harm

Platform design feature	Psychological mechanism	Type of mental harm
endless scrolling	variable distribution of reward, lack of stopping cues	behavioural harms
highly personalised newsfeed	the rabbit hole effect	psychopathological harms
autoplay content (mainly videos)	Zeigarnik effect, Ovsiankina effect, attention attraction and occupation	cognitive harms
beautification filters (appearance-altering digital image effects)	social comparison, social pressure	psychopathological harms
reaction functions (e.g., likes and dislikes)	social comparison, social pressure	behavioural harms, psychopathological harms
chat-related visual cues (e.g., "seen" function, typing indicator)	social pressure, attention attraction and occupation	behavioural harms

Behavioural harms

The first category of psychological harm that is proposed within the present paper is of a behavioural nature, that is, related to excessive engagement in the *activity* of using social media. As demonstrated earlier, social media has addictive potential, and moreover, maintenance and improvement of this potential are in the interest of platform providers (Mujica et al., 2022). A logical and direct consequence of this is the real dependency of some users[4], although this dependency will occur to varying degrees. In its mildest form, behavioural harm involves using social media "too much" or "more than one would like", i.e., experiencing a lack of control over one's behaviour, but also dissatisfaction with the loss of time or neglect of what is lost as a result of social media engagement (e.g., Cho et al., 2021). A report by the Pew Research Center (Vogels & Gelles-Watnick, 2023) found that 36% of U.S. teens (13–17 years old) say they spend too much time on social media. Moreover, preliminary findings from the 2019 Millennium Cohort Study data on a sample of teenagers (16–18 years old) from the UK, show that 57% of girls and 37% of boys agree with the statement "I think I am addicted to social media" (Devlin, 2024). Older studies also indicate that a large group of users perceive a problem with habitual excessive social media use. In a 2011 study (Cabral, 2011), 59% of participants (16–30 years old) from U.S. reported feeling addicted, 39% using more than they would like, and 17% making ineffective attempts to reduce their social media use. In a 2012 study (Olowu & Seri, 2012), 25% of participants (16–30 years old) from Nigeria declared a feeling of using social media too much. Obviously, declaring a sense of being addicted does not equate to a clinical diagnosis of addiction. Moreover, whether the phenomenon of excessive social media use described above constitutes a serious social problem merits a separate, in-depth discussion, as this link is not necessary.

[4] It is worth adding that while the addictive potential of social media is raised by many researchers who cite known mechanisms of addiction (Bhargava & Velasquez, 2021; Morris et al., 2023; Mujica et al., 2022), it is difficult to find rigorously-designed experimental studies that clearly prove this causal link. A promising area of research is social media interventions (Vanden Abeele et al., 2025), as they sometimes involve manipulation within the platform application (e.g., hiding view and like rates; Agarwal, 2023). However, most popular social media platforms are run by private companies, which significantly limits the extent to which external researchers can manipulate the platform environment (Skeggs & Orben, 2025, p. 1080).

However, these statistics show that a significant fraction of users use social media more than they would like to or consider to be healthy, which poses the foundation for more serious problems among some users.

For some users, the negative effects of social media use are exacerbated, increasing the psychological costs they incur. Although problematic social media use has not yet been included in the official classification of mental disorders (Shannon et al., 2022), it is now widely accepted as a type of addiction (e.g., Block, 2008; Karim & Chaudhri, 2012; Robbins & Clark, 2015). However, it is worth mentioning that in the literature on the issue, the phenomenon is discussed under various labels: social media addiction (Ryan et al., 2014), social media dependency (Ferris & Hollenbaugh, 2018), excessive social media use (Wang et al., 2016), and social media disorder (Van den Eijnden, 2016). Problematic social media use is most often defined and diagnosed by analogy with other behavioural addictions such as gambling. According to the definition formulated by Andreassen and colleagues (2012; see also: Griffiths, 2005), problematic social media use consists of six elements: (1) mood change/improvement as a result of social media use; (2) preoccupation with social media use (salience); (3) increasing amount of time spent using social media; (4) withdrawal symptoms, i.e., anxiety/irritation as a result of not being able to use social media; (5) interpersonal relationship conflicts due to social media use; (6) return to compulsive use after a period of abstinence[5]. Problematic social media use, like other addictions, significantly impairs an individual's ability to function properly and is associated with experiencing a range of negative symptoms such as depressive symptoms (Shensa et al., 2017), anxiety (Andreassen et al., 2016), or decreased self-esteem and life satisfaction (Huang, 2020).

It is difficult to clearly determine the prevalence of problematic social media use due to the lack of a unified definition and the multiplicity of diagnostic tools (Banyai et al., 2017). Meeting single diagnostic criteria, such as the aforementioned unsuccessful attempts to reduce social media use, applies to a large proportion of users, but statistics on the encompassing set of symptoms of problematic social media use range from a few (Biolcati et al., 2018; Vangeel et al., 2016) to dozens of percent (Shensa et al., 2017; Tang et al., 2017).

The studies indicated above show that a significant group of users experience some form of problems or dissatisfaction due to intensive engagement in the activity of using social media. It is worth mentioning that beyond the most severe forms of addiction, in which a reduction in psychological well-being is obvious, a wide variety of problems can arise in less obvious and indirect ways. This could be the case where engaging in social media use limits involvement in other activities, thereby limiting one's ability to achieve other longer-term and more valuable goals (Ouellette & Wood, 1998; Turel & Sarenko, 2012; Kolle et al., 2025) or complete tasks that are crucial at a given stage of development (Haidt, 2024). Another example is the phenomenon of phubbing, i.e., ignoring people in one's immediate environment when using a smartphone (Roberts & David, 2016; Chotpitayasunondh & Douglas, 2016; Deschamps et al., 2025), which is often a vehicle for social media applications (Coyne et al., 2023). Studies show that this phenomenon is relatively widespread (T'ng et al., 2018) and negatively affects the quality of intimate relationships, such as by systematically reducing the quality of conversations held with a close one (Abeele et al., 2019; Wang et al., 2017). All of this, given that platforms intentionally employ methods directed at maximising the intensity of social media use, suggests the presence of a systemic risk of problems oriented around problematic social media use.

Cognitive harms

The second category of psychological harm proposed in the paper is that of a cognitive nature, i.e., related to some form of cognitive impairment of social media users. Analogous to behavioural damage, relatively widespread minor and short-term cognitive damage can be observed, but research tentatively suggests the existence of deeper cognitive impairments as well.

As mentioned in an earlier section of the paper, social media platforms rely on a specific design, largely directed at gaining users' attention as efficiently as possible. This results in offering users a large amount of short-form, condensed content but also a lot of unfinished content, such as auto-playing videos. As a result, the relatively mild and widespread cognitive harm of social media use includes all cognitive problems related to its enormous potential for distraction (e.g., Koessmeier & Büttner, 2021) as well as the potential for engaging users in performing multiple tasks simultaneously (multitasking). Research shows that active use of social media while learning new material undermines comprehension and lowers academic performance (Froese et al., 2020; for a review on multitasking see: Carrier et al., 2015). On the one hand, such results are not surprising and reflect a natural decline in learning performance due to the need to divide attention. On the other hand, given the particular persuasiveness and personal relevance of many social media-generated notifications, this phenomenon may be particularly potent and systematically reduce the learning capacity of many people. The results of another study extend the reach of the potential impact of social media by showing that simply keeping a smartphone on a desk while working reduces cognitive resources (Ward et al., 2017). The authors of the study argue that the use of social media, or the mere presence of a phone generally being a "carrier" of social media applications, affects the engagement of a certain portion of attentional resources with thoughts

[5] The approach was based on the model of addiction within the biopsychosocial framework (Griffiths, 2005) and draws on existing and long-standing considerations regarding established behavioural addictions, such as gambling, and their diagnosis. Due to the ongoing debate surrounding internet gaming disorder, which has resulted in the inclusion of additional criteria (deception, loss of interest in previously enjoyed activities, continuing an activity despite of problems) (Petry et al., 2014), some researchers also take these additional criteria into account in the context of problematic social media use (Van Den Eijnden et al., 2016).

related to them, and this contributes to the reduction of cognitive resources. This reasoning seems to be in line with suggestions about the addictive potential of social media, manifested, among other things, through the Zeigarnik and Ovsiankina effects (Montag et al., 2019), which consists of the mind's "striving" to close interrupted activities and thus – preoccupation with them (Ovsiankina, 1928; Zeĭgarnik, 1927). Social media provide numerous "unfinished" stimuli, such as automatically playing videos, which may result in an increase in their potential to absorb attention even after use has ceased (but such relationship was not empirically verified yet).

An experimental study conducted by Chiossi et al. (2023) provides interesting insights into the relationship between the specific form of content displayed on social media and cognitive impairment related to memory. The participants studied performed a task involving prospective memory while interrupted by social media (TikTok, Twitter, YouTube). The study showed that only the TikTok condition significantly lowered the subjects' performance, which suggests that short visual forms, quickly shifting between topics, have the potential for impairing prospective memory. It is worth noting that short vertical videos, once associated with TikTok, have already been widely adopted on all major platforms, e.g., on YouTube ("Shorts"), Facebook and Instagram ("Reels").

Researchers are also tentatively identifying permanent or long-term changes in cognitive abilities or brain structure that would result from the use or excessive use of social media (Firth et al., 2019). A study by Sharifian and Zahodne (2020) found that among adult users, as the intensity of social media use increases, the intensity of memory failures increases on the day following the day of increased use. A number of other studies focus on the impact of internet use in general, showing, among other things, that individuals who frequently engage in intensive multi-tasking using online media paradoxically perform worse on tasks that require multitasking, which is explained by their higher susceptibility to distractors (Ophir et al., 2009). Social media is identified by researchers as one of the crucial sources of modern multitasking related to the use of technology, due to its outstanding ability to capture users' attention even when an application is not actively used (Firth et al., 2019). A study by Hadar et al. (2017) showed that compulsive smartphone users exhibit higher levels of inattention and hyperactivity compared to non-users. Hadar et al. (2017) also conducted a longitudinal study in which a group of non-users used a smartphone for three months, and a causal relationship between smartphone use and reduced numerical processing was found.

The above studies suggest that social media poses the risk of harm occurring at the level of users' resources and cognitive abilities. In the case of difficulties of a cognitive nature, it is challenging to estimate the scale of temporal and permanent problems among users, but it can be cautiously assumed that the mildest forms of them, such as a tendency to get distracted, may be very common. It is worth adding at this point that much cognitive damage, e.g., in the form of reduced memory abilities, is difficult to observe, while even if observed, it is difficult to see that the degradation was the result of social media use (if it was). Given that the business model of the platforms seems to lead to the intensive exploitation of users' cognitive resources, future research should be directed at precisely detecting the factors responsible for the damage experienced by users on this front.

Psychopathological harms

The third category of problems is those arising from the psychopathogenic nature of certain aspects of the platforms, i.e., those related to generating or exacerbating mental disorders, as this is the potential that certain functionalities and technologies used by social media providers seem to have.

An investigation carried out by The Guardian suggests that TikTok's algorithms can very quickly "recognise" a users' mood and suggest content best suited to it, as the most effective method in maintaining interest (Taylor, 2024). At the same time, such a content recommendation strategy involves sustaining and even intensifying the states experienced by the user, including negative ones, which is sometimes referred to as a "rabbit hole" (Herriger et al., 2022). A study by Amnesty International (2023) in collaboration with the Algorithmic Transparency Institute found that young people interested in mental health content were relatively quickly steered by the algorithm towards potentially harmful content, such as those romanticising depressive thoughts, self-harm or even committing suicide, while those with a one-time interest in content with sad undertones were quickly bombarded with similar subject matter, especially within the "For You" page. A report by the Center for Countering Digital Hate (2022) showed that TikTok's algorithm, in the face of an artificially generated account of a 13-year-old interested in "body image" and mental health topics, recommended suicide-related content after less than three minutes of use and eating-disorder-related content after approximately eight minutes. As the report states, the results show that the algorithms used on the platform will suggest harmful content as long as it is important from the perspective of maintaining user interest (Center for Countering Digital Hate, 2022; Harriger et al., 2022). This implies huge potential for the platform's participation in shaping mental disorders based on the ability of the algorithms to pick up on current trends in users and exacerbate them, regardless of sentiment. Importantly, the toxic content has particularly great potential to generate user engagement (Beknazar-Yuzbashev et al., 2025). This means that, according to the logic of the attention economy business model, such content may be particularly promoted (more than neutral or positive content) due to its ability to maintain activity on the platform for longer. The fact that personalisation algorithms can concentrate negative and toxic content does not in itself prove that social media cause depressive or suicidal tendencies in population of users. This would require further research. However, the characteristics of the personalisation algorithms highlight the potential risks arising from the fact that platforms are designed to keep users engaged.

The development of mental disorders can also occur in other ways. For example, certain platform features such as appearance-altering digital image effects (filters) are likely to significantly increase the active engagement of users, who will be probably more likely to make their own photos public as a result of using them. Publishing one's own content will likely further affect engagement due to the need to monitor social feedback of the shared content, which works in favour of the platform itself. Instagram users often enhance their photos using filters integrated with the platform, which usually involve extensive beautification of the person in the photo and can significantly contribute to the creation of unrealistic beauty standards, especially when widely used (Fardouly et al., 2018; Harriger et al., 2022; Rowland, 2022). Users, dealing mainly with filtered photos, produce a standard in their mind for which their own appearance seems unattractive (Myers & Crowther, 2009; Fardouly et al., 2017). Recent research suggests that frequent use of social media may even lead to the internalisation of algorithmic beauty norms and a preference for Eurocentric beauty standards among people of other ethnicities (Hussain et al., 2025). This unrealistic standard can have the effect of lowering self-esteem, especially since research shows that the vast majority of comparisons made by social media users are "upward social comparisons", that is, relative to people perceived as better (Jan et al., 2017). Widdows and Sutherland (2024) suggest (but with no direct empirical support) that social media algorithms are especially inclined towards promoting beauty content to different users groups – even those who do not show an active interest in it – as well as significantly intensifying its delivery to those classified as a target for such content. Other researchers point out that concerns about the psychological problems generated by the prevalence of photo alteration on social media platforms are justified, especially for a group of the youngest girls (Kleemans et al., 2018; Mills et al., 2018). Given the mechanisms identified above, studies suggesting a link between social media use and eating disorders such as anorexia and bulimia (Holland & Tiggemann, 2016) appear to diagnose a real causal threat. Interestingly, an internal study conducted for the use of the platforms, accessed by the Wall Street Journal (McEvoy, 2021), proved that Facebook has knowledge of Instagram's harmful effects on young girls, as the results indicated that nearly one-third of female respondents report that Instagram worsens their body self-perception.

Previous studies indicate a link between social media use and the experience of psychiatric disorders such as depression, eating disorders, and anxiety disorders (for review see: Keles et al., 2020; Cataldo et al., 2021), but many do not allow determine the causality of this relationship (Orben, 2020). In this context, an area of social media interventions research is promising (Skeggs & Orben, 2025; Vanden Abeele et al., 2025) – for example, using "hide like count" manipulation on the Instagram platform has been associated with a lower risk of developing eating disorders (Agarwal, 2023). The mechanisms described above justify distinguishing the category of psychopathogenic risks arising from the use of social media and developing measures to mitigate them. At the same time, it should be noted that the above reasoning does not determine that social media is primarily responsible for the emergence of the mental disorders considered so far in the literature. However, it does demonstrate that the use of certain design strategies by platform providers entails the risk of generating such problems, and it is possible to propose the way in which this risk is generated.

PRACTICAL AND REGULATORY IMPLICATIONS

Awareness of the above-described risks arising from the business model of social media platforms can support the development of more effective mitigation measures. The arguments presented lead to the conclusion that regulatory measures should focus on changing the way social media platforms are designed. Mitigation measures should take into account the following recommendations:
(1) The endless scrolling and autoplay features should be optional and, importantly, non-default (opt-in).
(2) Features that strongly promote social comparisons and negative emotions (such as reactions to published content, e.g., likes and dislikes; Agarwal, 2023) should be limited.
(3) "Beautifying" filters should be limited, that is, removed as an integrated and easily accessible element of the platform applications.
(4) The way content personalisation algorithms and recommendation systems work should be changed: when personalising content, algorithms should use only variables connected with the user's deliberate, explicit declarations of interest (e.g., follows, subscriptions, likes, saves, etc.) rather than engagement measured in the background, without conscious user action (e.g., time spent viewing content).
(5) The process of permanently deleting the account should be facilitated.
(6) Content variability should be enhanced in order to mitigate the "rabbit hole" effect risk.

Additionally, given the increasing use of generative artificial intelligence, further interventions aimed at limiting the harmful impact of promoting content generated in this way, e.g., idealised depictions of the human body, should be actively considered (Tufail et al., 2024).

When designing positive interventions, differences in susceptibility and other moderators influencing the relationship between social media use and negative mental health outcomes should also be taken into account. Some studies indicate that social media has a stronger negative effect on girls (Twenge & Farley, 2021), particularly with regard to body image (Yurdagül et al., 2021). At the same time, a recent scoping review provided by Gugushvili and colleagues (2025) suggests that among the many moderators (including age, gender, personality traits, social capital, and fear of missing out), social comparison orientation was the most consistent one. This suggests that, among the various interventions in social media, the ones that focus on features that reinforce social comparisons (e.g., likes rates, beauty filters) should be prioritised.

Given that the above-described interventions will typically affect the economic interests of platform providers, it can be expected that they will not be readily implemented without additional regulatory and legal measures. An example of such regulations is the Digital Services Act (DSA) adopted by European Parliament[6]. Under the DSA, providers of Very Large Online Platforms (VLOPs) (including many of the most popular social media platforms) are required to conduct a risk assessment (Article 34) and implement mitigation measures (Article 35) for identified risk. The DSA requires that they identify and analyse systemic risks stemming from the design, functioning, or use of the service (Article 34.2). While this legal regulation has the potential to have a real impact on platforms by limiting their negative influence on mental health (Pałka & Ilczuk, 2026), it constitutes rather general and vague standards. This means that platform providers may endeavour to avoid changing those aspects of their products that generate significant profit – even if these aspects have the most negative impact on users' mental health at the same time. The best way to effectively address the risks posed by the attention economy business model is to recognise that platform providers will only decide to make positive reforms if legal regulations alter their incentives – that is, if they begin to see it as more profitable to move away from harmful design practices (Langvardt, 2019, p. 170). Combining this knowledge with clear identification of the harmful potential of these practices – as this paper has attempted to do – may help to limit such practices.

Needless to say, changes in platform design and regulations that enforce such changes are not the only ways to deal with the mental health damage that social media use can cause. Other interventions include: widespread education on the business model and design of social media platforms, aimed at increasing user resilience and agency; digital literacy programs that raise awareness of healthy digital behaviours among minors, parents, teachers, clinicians and therapists (e.g., Andersen et al., 2024); the development and promotion of device features or applications supporting control over social media usage time and other usage habits (Roffarello & De Russis, 2023)[7]. A comprehensive review of possible social media interventions on different levels was provided by Skeggs and Orben (2025). Moreover, in the coming years, the effects of Australia's social media ban for people under the age of 16 will become apparent (Fieldhouse & Basu, 2025).

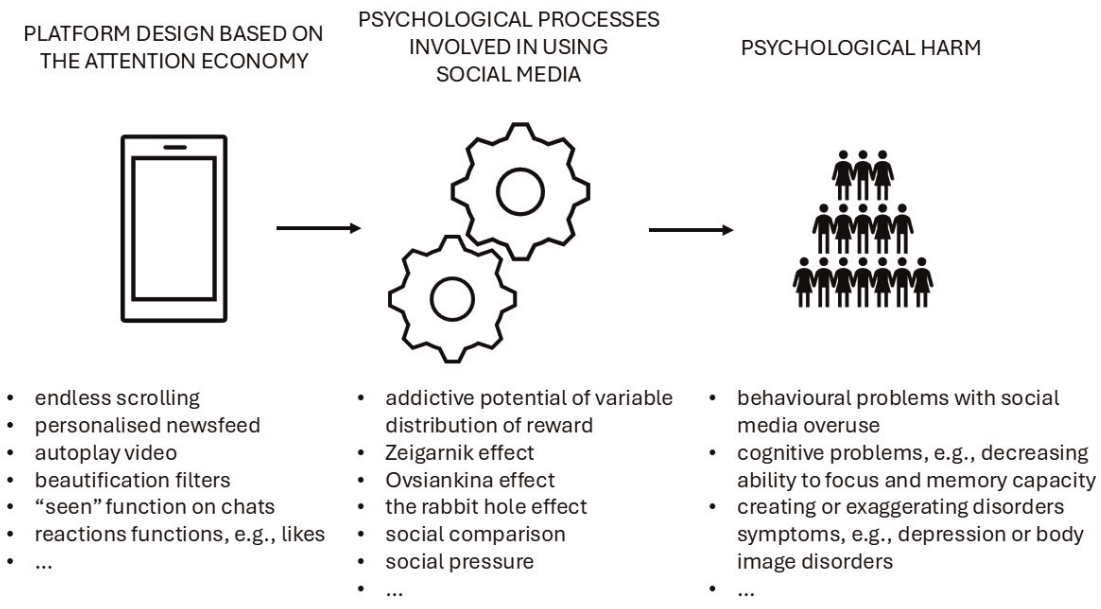
CONCLUSIONS

The mental harm from social media use is one of the key topics of current public and academic debate. The inconclusiveness of research findings poses a significant challenge for effective mitigation efforts. The article aimed to argue that, although there is still no complete picture of the consequences of social media use, the combination of knowledge about the business model of platform providers and the design of social media is sufficient to identify key risks to mental health and move towards minimising them. The approach used in this paper is to synthesise knowledge about the platform design, the psychological mechanisms engaged, and the mental health risks generated as a result (for the summarisation of the approach used, see Figure 1). By correctly identifying the social media features involved

[6] DSA: Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act) [2022] OJ L 277/1.

[7] When considering possible interventions, it is also important to take into account the new, emerging functionalities of social media, especially since some of them are highly controversial and subjectively harmful. An example of such feature is Grok's nudification tool integrated with "X" platform which allows nudification of users' photos without their consent (Gentleman & Horton, 2026). It should be bear in mind that such functionalities seem to directly violate many personal rights, and also appear faster than research proving their harmfulness, which is an argument for more far-reaching interventions targeting the platform, e.g. banning it (Bennett, 2026).

Figure 1. A scheme demonstrating the approach adopted in the paper



in shaping psychological problems, it is possible to consider which of them are necessary for the platforms to be useful and meet the needs of modern humans, and which could be changed to less harmful alternatives without affecting the core platforms' functions and advantages.

The paper aimed to emphasise that a considerable part of the harmful potential of social media is a direct result of the way they are designed, which is entailed by the attention economy business model. Effective risk mitigation is within the reach of platform providers – unfortunately, it conflicts with their business interests.

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