Centrum für Europäische Politik
FREIBURG | BERLIN

cepInput

No. 11 | 2024 27 August 2024

Post, Like, Scroll – Does Social Media Need a Shorter Digital Leash?

Matthias Kullas

Around four billion people worldwide use social media. On average, they spend two hours and twenty-three minutes a day on social media platforms. What are the consequences of such intensive use of social media for users? It is feared that there may be negative consequences for the mental health of users and for school, academic and professional performance. Calls for stricter regulation, aimed at counteracting intensive use and its potentially negative consequences, are therefore becoming louder. This cepInput answers the question of whether the use of social media actually has negative consequences for users and how this should be dealt with in regulatory terms. The main findings are as follows:

- There are numerous studies investigating the effects of social media on the mental health of users, the results of which are inconsistent. The majority of studies conclude that only in a small number of cases does the use of social media have a negative impact on users' mental health.
- Intensive use of social media often leads to poorer school, academic and professional performance.
- Around a third of social media users would like to spend less time on social media but find it difficult to achieve this. One reason for this is that social media platforms are designed to ensure that users return to a platform as often as possible and then stay on it for as long as possible.
- To solve these problems, this Input proposes, on the one hand, strengthening the media literacy of users which could take the form of warnings that appear when installing, opening or intensively using social media. On the other hand, certain design elements should be restricted. Thus, push notifications, endless scrolling & streaming and read receipts should be deactivated by default and automatic requests to activate these design elements should be prohibited. A ban on addictive algorithms should also be considered.

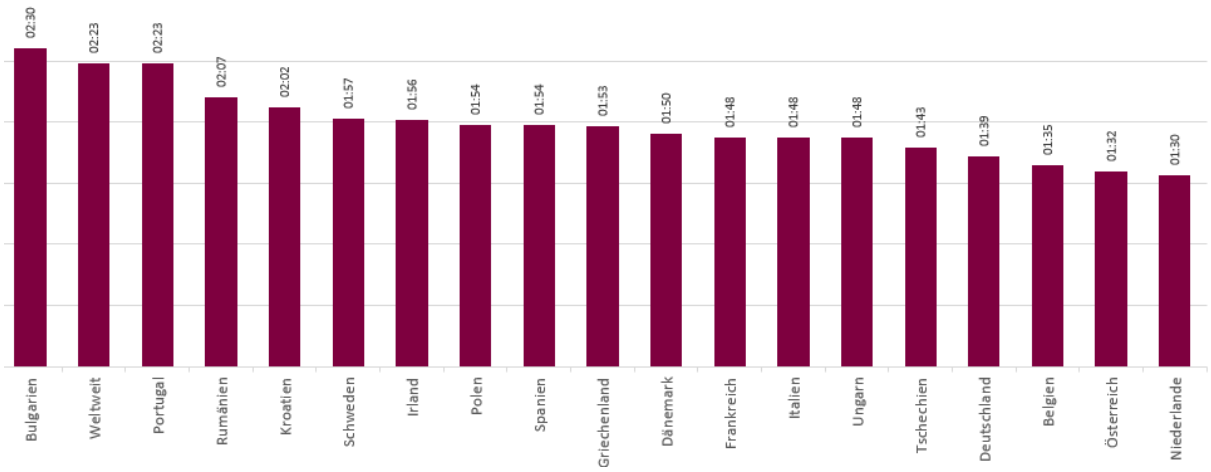
Table of Contents

Table of Figures

Introduction and definition

The use of social media has increased rapidly over the past 20 years. Around four billion people worldwide use social media.[1] On average, they spend two hours and twenty-three minutes a day on the relevant platforms (see Fig. 1).[2] The term social media includes social networks (e.g. Facebook), streaming services (e.g. YouTube) and messenger services (e.g. WhatsApp).

Fig. 1: Time spent on social media platforms per day by internet users (aged 16 to 64) (hrs:min)



Source: We are social (2024): Digital 2024 Global Overview Report, online at https://wearesocial.com/de/blog/2024/01/digital-2024/.

The intensive use of social media is also apparent from the fact that four social media platforms are among the five most visited websites worldwide.[3]

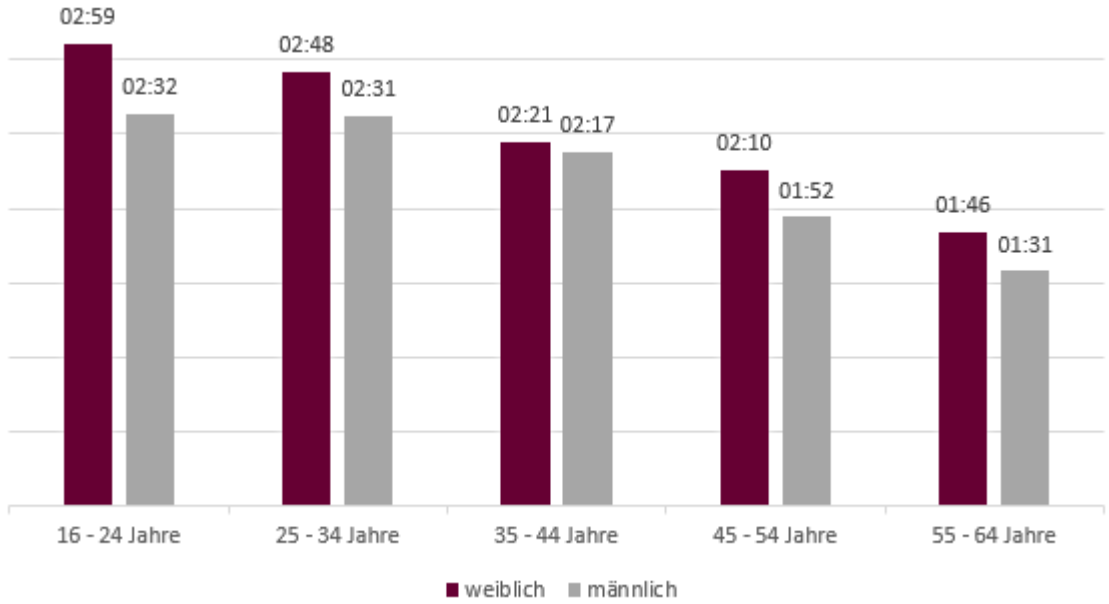
Not everyone uses social media to the same extent. On average, women use social media more than men and younger people more than older people (see Fig. 2).

1 Allcott, A. et al. (2022), Digital Addiction, NBER Working Paper 28936, online at: http://www.nber.org/papers/w28936.

2 These and the following figures are from We are social (2024): Digital 2024 Global Overview Report, online at: https://wearesocial.com/de/blog/2024/01/digital-2024/.

3 The study covers the period between December 2022 and November 2023. The five most visited websites are Google.com, Youtube.com, Facebook.com, Instagram.com and Twitter.com.

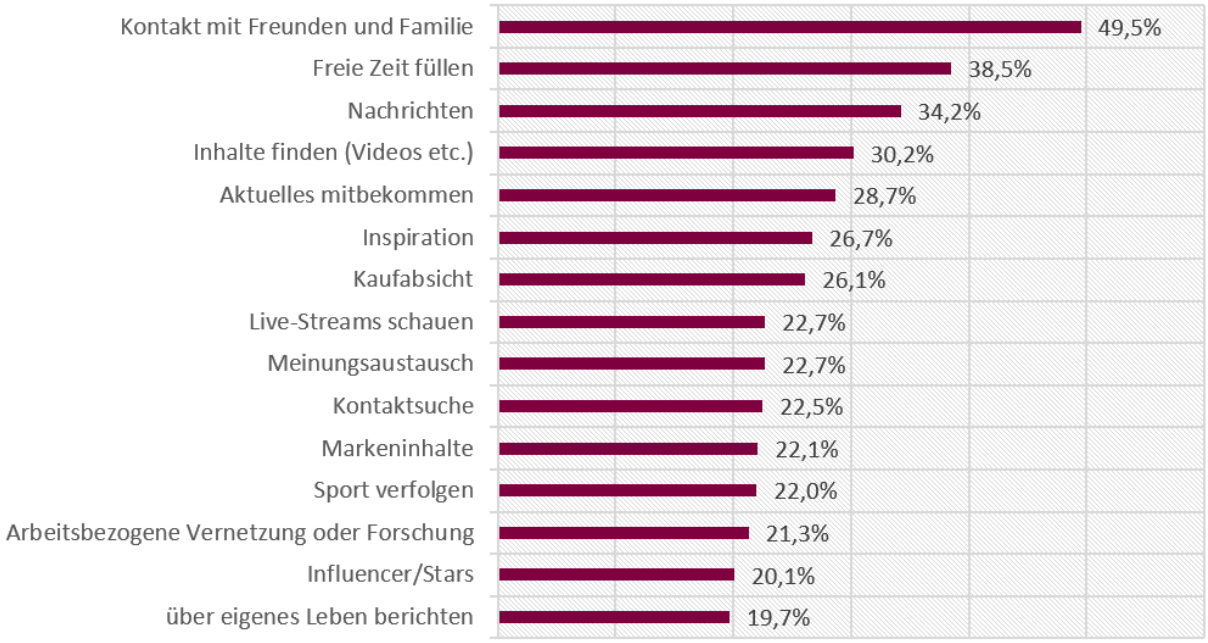
Fig. 2: Time spent on social media platforms per day (hrs:min) by age and gender



Source: We are social (2024): Digital 2024 Global Overview Report, online at https://wearesocial.com/de/blog/2024/01/digital-2024/.

There are many reasons why people use social media. Most users want to stay in touch with friends and family, fill free time and/or follow the news (see Fig. 3).

Fig. 3: Reasons for the use of social media platforms by 16 to 64 year-olds



Source: We are social (2024): Digital 2024 Global Overview Report, online at https://wearesocial.com/de/blog/2024/01/digital-2024/.

The intensive use of social media raises numerous questions, with two subject areas dominating the current debate: The first subject area concerns the question of whether and, if so, what negative consequences the use of social media has for users. This question focusses in particular on the impact

on mental health and on the academic and professional performance of social media users. The second subject area examines whether and, if so, how social media influences the political opinions of users and thus public safety and democratic decisions. In particular, it examines whether social media is leading to a radicalisation of users and thus of society, thereby endangering democracy.

This cepInput deals exclusively with the first subject area because it has recently become the focus of EU policy. The European Commission has launched investigations into two providers of large social media platforms - TikTok and Meta (Facebook and Instagram). The investigations relating to TikTok are aimed, among other things, at ensuring compliance with youth protection measures. The investigations also focus in particular on risk management in relation to addictive design. According to the Digital Services Act, such risk management is necessary "to counter potential risks for the exercise of the fundamental right to the person's physical and mental well-being and for the rights of the child"[4]. The investigations have led to TikTok permanently withdrawing the "TikTok Lite Rewards" programme from the EU.[5] The investigation against Meta also focuses on the protection of minors as the Commission also fears in this case that Facebook and Instagram can trigger addictive behaviour in children, although the Digital Services Act obliges Meta to assess and, if necessary, minimise the risk of addiction.[6]

The European Parliament has also addressed the issue of addictive design. In a resolution, it emphasised the need for new EU rules to reduce the problem of the addictive design of digital services. The resolution does not relate exclusively to social media platforms but also to other digital services such as online games, streaming services for films, series or music, online marketplaces and online shops. In the resolution, the European Parliament draws attention to the risk that digital services may be designed to keep users on the platform for as long as possible so that as much data as possible can be collected and users spend as much time and money as possible there[7]. The European Parliament also points out that one in four children and young people exhibit "problematic" or "dysfunctional" smartphone use, i.e. behaviour patterns that resemble addiction. It also fears that the increase in mental health problems among young people is linked to the overuse of social media and cites research suggesting that social media pressure is one of the top five causes of mental health problems in children.

This cepInput examines the question of whether social media platforms should be regulated beyond the existing level in order to prevent harm to users. It is clear from the above that this issue is of great social relevance because, with billions of users, social media platforms have an enormous influence on users' lives. One of the reasons cited for stricter regulation is the negative impact of the use of social media on mental health. There are also fears that the use of social media will lead to lower academic and professional performance.

---

4 European Commission (2024a), Commission opens formal proceedings against TikTok under the Digital Services Act, Press Release of 19 February 2024, online at: https://ec.europa.eu/commission/presscorner/detail/en/IP_24_926.

5 European Commission (2024b), Digital Services Act: "TikTok Lite Rewards" is permanently withdrawn from the EU, Press Release of 5 August 2024, online at: https://germany.representation.ec.europa.eu/news/gesetz-uber-digitale-dienste-tiktok-lite-rewards-wird-dauerhaft-aus-der-eu-zuruckgezogen-2024-08-05_de.

6 European Commission (2024c), Commission opens formal proceedings against Meta under the Digital Services Act related to the protection of minors on Facebook and Instagram, Press Release of 16 May 2024, online at: https://ec.europa.eu/commission/presscorner/detail/en/ip_24_2664.

7 European Parliament (2023) European Parliament resolution of 12 December 2023 on addictive design of online services and consumer protection in the EU single market, online at: https://www.europarl.europa.eu/doceo/document/TA-9-2023-0459_EN.html.

Section 2 examines whether these concerns are justified and can be used as an argument in favour of the stricter regulation of social media platforms. To this end, we compare and analyse the results of numerous empirical studies. Section 3 highlights which design elements of social media platforms can lead to users frequently returning to a platform and then spending a lot of time there. Finally, Section 4 develops policy recommendations for action to minimise the problems of using social media identified in Section 2.

The term social media is defined in this Input as

> *"internet-based channels and platforms that allow users to interact on demand, selectively present themselves and create user-generated content. This can be done either in real time or asynchronously with both large groups and small groups or individuals."*[8]

This definition includes social networks such as Instagram, Facebook and LinkedIn, but also messenger services such as WhatsApp, Signal and Discord.

Possible arguments in favour of the stricter regulation of social media

In the public debate, there are many calls for stricter regulation of social media. There are many reasons for this. The three most common ones are:

1. The use of social media has a negative impact on the mental health of users.
2. The use of social media has a negative impact on the school, academic and professional performance of users.
3. Social media is thought to create a "kind of" addiction.

The following section examines the empirical evidence for these three justifications and looks in this regard at whether these concerns are justified and can be used as an argument in favour of the stricter regulation of social media platforms.

2.1 Effects on mental health

2.1.1 Empirical Evidence

As many people, especially teenagers and young adults, spend a lot of time on social media platforms, there is currently an intense debate about the possible negative effects of intensive social media use on mental health. This section presents the most important research findings in this area. Some of the research results presented below actually analysed the effects of smartphone use rather than those of social media use. They are nevertheless listed here since the possible negative effects of smartphone use are largely identical to those of social media use. This is unsurprising, as a large proportion of smartphone use can be attributed to social media.[9]

---

[8] Sindermann, C. et al. (2024), Vulnerabilitätsraum: Soziale Medien, online at: https://www.researchgate.net/publication/349570284_Kapitel_5_Vulnerabilitatsraum_Soziale_Medien.

[9] Marino C. et al. (2021), The overlap between problematic smartphone use and problematic social media use: a systematic review, in: Current Addict Report 8(4); Montag, C. et. al. (2021a), Investigating links between fear of COVID-19, neuroticism, social networks use disorder, and smartphone use disorder tendencies, in: Frontiers in Psychology 2(12); Montag, C. et al. (2021b), How to overcome taxonomical problems in the study of Internet use disorders and what to do with "smartphone addiction"?, in: Journal of Behavioural Addictions 9(4); Sha, P. et al. (2019), Linking internet communication and smartphone use disorder by taking a closer look at the facebook and whatsapp applications, in: Addictive Behaviors Reports 1(9) and Rozgonjuk, D. et al. (2020a), Associations between symptoms of problematic

2.1.1.1 Depression

Braghieri et al. (2022) use the staggered introduction of Facebook at US colleges in the mid-2000s and survey data on the mental health of college students collected in the years surrounding the expansion of Facebook.[10] This makes it possible to investigate a causal relationship between the use of social media and the development of the mental health of users. The authors conclude that the introduction of Facebook at a college has a negative impact on students' mental health. The deterioration in mental health corresponds to around 22 per cent of the effect that job loss has on mental health. They also found that after the introduction of Facebook, students were more likely to report that their poor mental health had a negative impact on their academic performance. The authors also show that the negative effects of Facebook on mental health increase with the length of time the platform is used.[11] They suspect that the reason for this is that Facebook encourages unfavourable social comparisons. Finally, the authors show that the introduction of Facebook has increased the proportion of students suffering from depression from 25 per cent to 27 per cent.

Lambert et al. (2022)[12] also show that social media use can lead to an increase in depression. The authors asked test subjects to abstain from social media for a week. As a result, the subjects' depression and anxiety decreased. De Hesselle and Montag (2024) come to the conclusion that smartphone use is definitively (but not significantly) related to the severity of depression.[13] Twenge et al. (2020) show that excessive use of digital media correlates with an increase in mental health problems such as depression. They also point out that intensive use of social media can predict the likelihood of depressive symptoms in adolescents, but not as well as gender can.[14]

In a meta-analysis, Hancock et al. (2022) conclude that there is a small positive correlation between depression and the use of social media.[15] In a study covering a period of nine years, Schemer et al. (2021) came to the conclusion that there is no link between social media use and depression.[16]

2.1.1.2 Effects on sleep

Sleep disorders and depression are closely linked, as sleep is a protective factor against depression.[17] It is therefore hardly surprising that there are numerous studies investigating the link between social media use and sleep disorders. Ratdke et al. (2020)[18] show that a significant reduction in smartphone

smartphone, Facebook, WhatsApp, and Instagram use: an item-level exploratory graph analysis perspective, in: Journal of Behavioral Addictions 9(3).

[10] Braghieri, L. et al. (2022), Social Media and Mental Health, in: American Economic Review 112(11), https://doi.org/10.1257/aer.20211218.

[11] Due to the availability of data, this statement could only be analysed over the short and medium term.

[12] Lambert, J. et al. (2022), Taking a one-week break from social media improves well-being, depression, and anxiety: a randomised controlled trial, in: Cyberpsychology, Behavior, and Social Networking 25(5).

[13] De Hesselle, L. und C. Montag (2024), Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study, in: BMC Psychology.

[14] Twenge, J.M. et al. (2020), Considering All of the Data on Digital-Media Use and Depressive Symptoms: Response to Ophir, Lipshits-Braziler, and Rosenberg; in: Clinical Psychological Science 8(2).

[15] Hancock, J. et al. (2022), Psychological Well-Being and Social Media Use: A Meta-Analysis of Associations between Social Media Use and Depression, Anxiety, Loneliness, Eudaimonic, Hedonic and Social Well-Being, online at: https://ssrn.com/abstract=4053961.

[16] Schemer, C. et al. (2021), The Impact of Internet and Social Media Use on Well-Being: A Longitudinal Analysis of Adolescents Across Nine Years, in: Journal of Computer-Mediated Communication 26 (2021).

[17] Twenge, J.M. et al. (2020), Considering All of the Data on Digital-Media Use and Depressive Symptoms: Response to Ophir, Lipshits-Braziler, and Rosenberg; in: Clinical Psychological Science 8(2).

[18] Radtke, T. et al. (2022), Digital detox: An effective solution in the smartphone era? A systematic literature review. Mobile Media and Communication 10(2).

use improves sleep quality and thus establish a causal link between smartphone use and sleep disorders. At this point, we would like to remind you that there is a large overlap between smartphone use and social media use, so that the results mentioned above also apply to the latter. In a meta-study on smartphone use among children and adolescents, Sohn et al. (2024) came to the conclusion that one in four children and adolescents have problematic smartphone use. They also show that problematic smartphone use is associated with an increased likelihood of poorer sleep quality, an increased likelihood of depression, increased anxiety and a higher level of stress.[19] Rod et al. (2018) analysed the smartphone use of young people over a period of four weeks. They came to the conclusion that 41 per cent of young people have their sleep interrupted by their smartphone on at least one working day. Young people with frequent interruptions sleep on average 48 minutes less than those without. They also have a higher body mass index.[20] In a meta-study, Hussain and Starcevic (2020) also show a connection between problematic social media use and lower sleep quality.[21]

2.1.1.3 Effects on a person's own body image

In a study involving 14-day smartphone abstinence, De Hesselle and Montag (2024) came to the conclusion that smartphone use has a negative (but not significant) effect on body image.[22] Thus, body image disorder is reduced when social media is avoided. However, the authors point out that the measured effects are small. They attribute this to the fact that social comparisons not only take place via social media but also via television and real-life interactions. Rozgonjuk et al. (2023) investigate the relationship between the use of smartphones and Instagram and body dissatisfaction. They show that more intensive smartphone use is associated with greater dissatisfaction with one's own body. Instagram usage, however, correlates only slightly (and not significantly) with personal body satisfaction. As in the study by De Hesselle and Montag (2024), the authors come to the conclusion that the use of Instagram is not the main reason for problems with one's own body.[23]

2.1.1.4 Effects on life satisfaction, general well-being and the perception of stress

Fernandez et al. (2020) analysed the effects of social media abstinence in a meta-study. They found that the following symptoms occur:[24]

- after two days, a feeling of withdrawal,
- after seven days, boredom,
- after 14 days, cravings and time distortion (when they had to estimate the time they needed to complete the survey),
- after 99 days, social pressure to use social media.

[19] Sohn, S.Y. et al. (2019), Prevalence of problematic smartphone usage and associated mental health outcomes among children and young people: a systematic review, meta-analysis and GRADE of the evidence, in: BMC Psychiatry 19(1).

[20] Rod, N.H. et al. (2018) Overnight smartphone use: Eine neue Herausforderung für die öffentliche Gesundheit? Ein neues Studiendesign basierend auf hochauflösenden Smartphone-Daten, in: PLOS One 13(10).

[21] Hussain, Z. and V. Starcevic (2020), Problematic social networking site use: a brief review of recent research methods and the way forward, in: Current Opinion in Psychology, 36.

[22] De Hesselle, L. und C. Montag (2024), Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study, in: BMC Psychology, 12.

[23] Rozgonjuk, D. et al. (2023), Smartphone and Instagram use, body dissatisfaction, and eating disorders: investigating the associations using self-report and tracked data, in: Journal of Eating Disorders 11(1).

[24] Fernandez, D.P. et al. (2020), Short-term abstinence effects across potential behavioral addictions: A systematic review, in: Clinical Psychology Review.

The authors also show that social media abstinence increases life satisfaction and general well-being and reduces perceived stress. In contrast, Radtke et al. (2022) conclude in a meta-study that the effects of a digital detox on life satisfaction are unclear. [25] Thus, two studies found no effect from a social media abstinence, while two studies observed a decrease in life satisfaction. In contrast, four studies found an increase in life satisfaction after abstinence from social media. Study results on subjective well-being are only slightly clearer. Two studies have come to the conclusion that smartphone abstinence increases well-being. However, one study found no correlation between smartphone abstinence and well-being. In terms of the effects of a digital detox on stress, two studies found no effect, while three studies showed a significant reduction in perceived stress, cortisol levels and skin conductance rate.

Orben (2019), Schemer et al. (2021) and Hancock et al. (2022) came to the conclusion in a meta-study that there is no connection between general well-being and the use of social media.[26]

2.1.1.5 Product market traps

Bursztyn et al. (2023) use an experiment to show that a large proportion of TikTok and Instagram users would prefer these social media platforms not to exist.[27] The authors consider that the fact that these platforms are nevertheless used is explained by the adverse external effects that platform users exert on non-users. Specifically, they state that the non-use of social media leads to the social marginalisation of non-users. The larger a platform is, the greater the adverse effect on non-users of the platform. This can lead to non-users deciding to use a platform only because they want to avoid the adverse effects of non-use (such as social exclusion). Overall, however, the existence and use of the platform has a negative impact on them. The authors refer in this regard to product market traps, as some consumers - in this case social media users - would prefer the product not to exist. Although these consumers derive a negative return from consuming the product, their return would be even more negative if they did not consume the product at all. In one experiment, the authors found that TikTok and Instagram users would have to be paid an average of $59 and $47, respectively, to deactivate their TikTok and Instagram profiles for four weeks. The situation was different when the students were offered an option whereby not only they themselves but also two thirds of their fellow students would deactivate TikTok and Instagram for four weeks. In this case, the students were willing to pay $28 and $10, respectively. Overall, 64 per cent of TikTok users and 48 per cent of Instagram users were willing to pay money for large-scale deactivation. The authors conclude that 64 per cent of TikTok users and 48 per cent of Instagram users derive a negative return from using the respective social media platform. Students who don't use TikTok or Instagram even display a willingness to pay of $67 and $39, respectively, to have other students deactivate their profiles. In addition, most TikTok and Instagram users surveyed stated that they would prefer to live in a world without these social media platforms. Most students cited the fear of missing out as the reason why they still use these

[25] Radtke, T. et al. (2022), Digital detox: An effective solution in the smartphone era? A systematic literature review, in: Mobile Media & Communication 10(2).

[26] Orben, A. (2020), Teenagers, screens and social media: a narrative review of reviews and key studies, in: Social Psychiatry and Psychiatric Epidemiology 55; Schemer, C. et al. (2021), The Impact of Internet and Social Media Use on Well-Being: A Longitudinal Analysis of Adolescents Across Nine Years, in: Journal of Computer-Mediated Communication 26 and Hancock, J. et al.(2022), Psychological Well-Being and Social Media Use: A Meta-Analysis of Associations between Social Media Use and Depression, Anxiety, Loneliness, Eudaimonic, Hedonic and Social Well-Being, online at: https://ssrn.com/abstract=4053961.

[27] Bursztyn, L. et al. (2023), When Product Markets become collective Traps: The Case of Social Media, NBER Working Paper 31771, online at: http://www.nber.org/papers/w31771.

platforms[28]. The authors come to the conclusion that the majority of social media users find themselves in a "social media trap", i.e. they would rather do without social media but are unable to coordinate this eschewal. Thus, the authors also provide an explanation for why people use social media despite the adverse effects it has on them.

2.1.2 Impact on mental health - an argument in favour of stricter regulation?

The product market trap argument, i.e. that most users would prefer to live in a world without social media, cannot be used to justify stricter regulation of social media for two reasons. Firstly, there has only been one study on this topic to date. In view of the numerous differences between the studies on mental health, no decision in favour of stricter regulation should be made on the basis of one study. Secondly, the existence of a product market trap would not in principle be a reason for regulation. If this argument were to be accepted as a reason for regulation, numerous other markets would have to be analysed to determine whether they represent a product market trap. For example, Bursztyn et al. (2023) show that other markets could also represent "product market traps", particularly those for luxury goods. Specifically, they show that 44 per cent of respondents who buy luxury brands (e.g. Gucci, Versace, Rolex) would prefer to live in a world in which none of these brands existed. Among respondents who do not own such brands, 69 per cent would prefer to live in a world without them. The authors also show that 91 per cent of iPhone owners would prefer it if Apple only released a new iPhone every other year. Among respondents who do not own an iPhone, this proportion was even higher at 94 per cent. These two examples alone show that acceptance of the "product market traps" argument could lead to a very far-reaching encroachment on entrepreneurial freedom and consumer sovereignty. In fact, hardly any market would be safe from regulation because the negative psychological external effects on non-users of consuming a product, which the authors cite as a reason for product market traps, are virtually omnipresent. Ultimately, this argument could even be used to ban healthy food in a canteen if the consumption of a salad by a canteen visitor leads to other canteen visitors having a guilty conscience because they themselves eat fast food.

The other effects on the mental health of users, i.e. those described in subsections 2.1.1.1 to 2.1.1.4, require more detailed consideration. There is evidence that social media use can affect mental health, in particular it can lead to an increase in depression and poorer sleep quality. However, the extent of these negative effects is smaller than often assumed. In addition, the study results are not without ambiguity. On the one hand, there are numerous studies that have found - mostly minor - negative effects of social media use on mental health. On the other hand, there are numerous studies that find no negative effects of social media use. Another problem is that many studies analyse correlations that do not allow any conclusions to be drawn about the cause. In studies that prove a causal relationship, such as abstinence studies, the periods analysed are often short. Only a few studies examine a longer period of time, such as the study by Braghieri et al. (2022)[29] or Schemer et al. (2021)[30]. In addition, the study results vary depending on the population group analysed and the study methodology.[31]

---

[28] See on this Section 3.1.

[29] Braghieri, L. et al. (2022), Social Media and Mental Health, in: American Economic Review 112(11).

[30] Sindermann, C. et al. (2021): The Impact of Internet and Social Media Use on Well-Being: A Longitudinal Analysis of Adolescents Across Nine Years, in: Journal of Computer-Mediated Communication 26.

[31] Hancock, J. et al. (2022), Psychological Well-Being and Social Media Use: A Meta-Analysis of Associations between Social Media Use and Depression, Anxiety, Loneliness, Eudaimonic, Hedonic and Social Well-Being, online at: https://ssrn.com/abstract=4053961.

All in all, the research findings presented in sections 2.1.1.1 to 2.1.1.4 do not justify stricter regulation of social media. However, the existing regulations - in particular for the protection of minors and other vulnerable groups - should be consistently enforced. This is currently not happening to a sufficient degree. Against this background, it is to be welcomed that the EU Commission increasingly appears to be utilising the opportunities offered by EU law - above all the Digital Services Act. The EU Commission and national authorities should do more to ensure that the minimum age for using social media is consistently enforced. It should also conduct continuous monitoring of the results of research in this area because, in view of the contradictory results of the studies described above, it cannot be ruled out that new findings may require additional or different measures. Finally, it should be ensured that users whose mental health is affected by social media receive individualised support.

2.2 Effects on work and study performance

2.2.1 Empirical evidence

Rozgonjuk et al. (2020) show that social media usage disorder is associated with lower labour productivity.[32] The authors suspect that the reason for this is that people with problematic social media use interrupt their work more frequently to use social media. This is fuelled in particular by push notifications. Kuss and Griffiths (2011)[33] show that Facebook users have lower average grades and spend less time studying than students who do not use a social network. Ponnusamy et al. (2020)[34] show that Instagram addiction leads to poorer academic performance and less participation in real life. Zivnuska et al. (2019)[35] show that social media addiction leads to an unfavourable balance between work and family, which is ultimately reflected in lower work performance. Montag et al. (2023) come to the conclusion that problematic social media use is associated with more cognitive deficits.[36] These are errors in the performance of a task that a person would normally perform successfully in everyday life. The authors suspect the cause to be distraction and reduced attention during everyday tasks. Neophytou et al. (2019) concluded in a meta-study that most of the studies analysed found a number of harmful effects of excessive screen time on neurodevelopment, learning, memory and a potentially increased risk of early neurodegeneration.[37] Du et al. (2020) cite two reasons for the poorer work and study performance due to social media. Firstly, the easy accessibility of social media creates a social pressure to always be available online and an excessive concern about what happens on social media platforms. Social media therefore makes it difficult for people to maintain sufficient awareness of ongoing activities or goals. Secondly, everyday use of social media is often characterised by habitual behaviour that promotes the automatic, i.e. unconscious, use of social media. Both lead to users having

[32] Rozgonjuk, D. et al. (2020b), Fear of missing out (FoMO) and social media's impact on daily-life and productivity at work: do WhatsApp, Facebook, Instagram and Snapchat use disorders mediate that association?, in: Addictive Behaviors Addictive Behaviors.

[33] Kuss, D.J. and M.D. Griffiths (2011), Online social networking and addiction—a review of the psychological literature, in: International Journal of Environmental Research and Public Health 8(9).

[34] Ponnusamy, S. et al. (2020), Drivers and outcomes of Instagram addiction: psychological well-being as moderator, in: Computers in Human Behavior 1(107).

[35] Zivnuska, S. et al. (2019), Social media addiction and social media reactions: the implications for job performance, in: The Journal of Social Psychology 159(6).

[36] Montag, C. und S. Markett (2023), Social media use and everyday cognitive failure: investigating the fear of missing out and social networks use disorder relationship, in: BMC Psychiatry 23(1).

[37] Neophytou, E. et al. (2019), Effects of excessive screen time on neurodevelopment, learning, memory, mental health, and neurodegeneration: a scoping review, in: International Journal of Mental Health and Addiction 19(7).

difficulties focussing their attention and awareness on current tasks or goals.[38] The authors also point out that the frequent failures to exercise self-control over the use of social media means that attention to and awareness of ongoing tasks or goals is constantly impaired.[39]

But here, too, there are studies that come to a different conclusion. Skiera et al. (2015) find that social media activities during lectures adversely affect academic performance. However, male students benefit from a general use of Facebook, especially if they are strongly networked.[40]

2.2.2 Impact on work and study performance - an argument in favour of stricter regulation?

The results show that intensive social media use is very likely to lead to poorer school, academic and professional performance. However, poorer school, academic and professional performance alone does not justify stricter regulation of social media. For one thing, users are free to decide whether they prefer to spend their time on social media or whether they prefer to study or work. Stricter regulation runs the risk of restricting this freedom. On the other hand, there are numerous other - unregulated - things that also impair performance. Sugary drinks, for example, are suspected of reducing the performance of school children.[41]

However, there are also two reasons that could justify stricter regulation of social media platforms. Firstly, children are unable to fully grasp the implications of their decision in favour of social media and against learning. This could justify stricter protective rules, but there are already protective provisions for children and young people in Germany, including the Interstate Treaty on the Protection of Minors in the Media, the General Data Protection Regulation and the Digital Services Act. These laws mean, among other things, that most social media platforms have set a minimum age of at least 13 years in their terms and conditions. The problem is that social media platforms often fail to check compliance with the minimum age limits. This, however, is not down to stricter regulation but of enforcement of the existing regulation. The EU Commission and national authorities should consistently enforce existing youth protection legislation. Consideration should also be given to raising the minimum age. At the same time, rules should be found for dealing with social media in schools.

Secondly, stricter regulation could be justified if social media users are not acting voluntarily when they exchange school, academic and professional achievements for time on social media platforms. In this case, the use of social media is like an addiction that leads to users to spend more time on social media platforms than they actually want to. The results of Du et al. (2020) suggest that this could be the case. According to the authors, a failure of self-control means that attention to and awareness of ongoing tasks are constantly impaired by social media. The following sub-section therefore examines the extent to which self-control problems play a role in the use of social media.

---

[38] Du, J. et al. (2021), The reciprocal relationships between social media self-control failure, mindfulness and wellbeing: A longitudinal study, in: PLOS ONE, online at: https://doi.org/10.1371/journal.pone.0255648.

[39] Du, J. et al. (2021), The reciprocal relationships between social media self-control failure, mindfulness and wellbeing: A longitudinal study, in: PLOS ONE, online at: https://doi.org/10.1371/journal.pone.0255648.

[40] Skiera, B. (2015), Social Media and Academic Performance: Social Media and Academic Performance: Does Facebook Activity Relate to Good Grades?, in: Schmalenbach Business Review 67(1).

[41] Schiltz, F. and K. De Witte (2022), Sugar rush or sugar crash? Experimental evidence on the impact of sugary drinks in the classroom, in: Health Economics 31.

2.3 Self-control problems

2.3.1 Empirical evidence

The foregoing section showed that self-control problems could be a cause of excessive social media use. This conclusion is also suggested by a survey of young people in the US. In the survey, 36 per cent of young people stated that they spend too much time on social media.[42] However, this is more pronounced among girls than boys (41 vs. 31 per cent). This phenomenon is also confirmed in a study by Allcott et al. (2022). The authors asked US-Americans what they would like to do more of or less of in their lives. Alongside the expected responses, "do more sport", "eat more healthily" and "take more care of your pension", the top five places included "less social media use" and "less smartphone use".[43] The authors conclude that habit formation and self-control problems are a major cause of social media use. As habit formation and self-control problems are central to classic addictive substances such as cigarettes, drugs and alcohol, the authors speak of "digital addiction". They show that self-control problems, which are reinforced by habit formation, could be responsible for 31 per cent of social media use. Du et al. (2020) come to a similar conclusion. They show that a failure of self-control could be responsible for 35 per cent of the time people spend on social media.[44] According to the authors, a failure of self-control over social media consumption occurs "when the desire to use social media conflicts with other important goals and the use of social media becomes a temptation."[45] However, they also show that a failure of self-control does not necessarily lead to lower life satisfaction. Nevertheless, they conclude that the frequent failure of self-control over social media use is a problematic form of social media use. Hofmann et al. (2012) show that among the many desires people experience on a typical day, the desire to use media not only conflicts with a relatively large number of other goals but also causes the highest rate of self-control failure: 42 per cent of all attempts not to give in to a desire to consume media failed.[46] Hofmann et al. (2017) also see the inability to control oneself as a cause of excessive social media use. They note that the ubiquity of media content poses a challenge to users' ability to control themselves "by increasing the frequency of situations that require the resolution of conflicting goals due to media temptations."[47]

As shown in Sections 2.1 and 2.2, the use of social media can jeopardise the achievement of everyday personal goals, such as getting enough sleep or having enough time for work or study. Even if users are aware of the conflicting goals and the possible negative consequences of social media consumption, they are often unable to reduce their social media use.[48] It is also interesting to note that the failure of self-control when using social media is not only associated with procrastinatory

---

[42] Vogels E. A. und R. Gelles-Watnick (2024), Teens and social media: Key findings from Pew Research Center surveys, online at: https://www.pewresearch.org/short-reads/2023/04/24/teens-and-social-media-key-findings-from-pew-research-center-surveys/.

[43] Allcott, H. et al. (2022), Digital Addiction, NBER Working Paper 28936, online at: http://www.nber.org/papers/w28936.

[44] Du, J. et al. (2018), A brief measure of social media self-control failure, in: Computers in Human Behavior 84.

[45] Du, J, et al. (2018), A brief measure of social media self-control failure, in: Computers in Human Behavior 84.

[46] In this study, media consumption encompasses more than just social media. Hofmann, W. et al. (2012), What People Desire, Feel Conflicted About, and Try to Resist in Everyday Life, in: Psychological Science 23(6).

[47] Hofmann, W. et al. (2017), Of sweet temptations and bitter aftertaste: Self-control as a moderator of the effects of media use on well-being, in: Reinecke, L. and M.B. Oliver (Ed.), The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects, New York.

[48] Du, J. et al. (2021), The reciprocal relationships between social media self-control failure, mindfulness and wellbeing: A longitudinal study, in: PLOS ONE, online at: https://doi.org/10.1371/journal.pone.0255648.

behaviour, but also occurs in situations that are not considered typical procrastination situations, such as using social media while driving.[49]

Finally, Montag et al. (2017) show in a neurological study that excessive use of the Facebook app could be classified as addictive behaviour. This is because users who open Facebook frequently have a lower volume of the nucleus accumbens[50], which is also the case for alcoholics.[51] It is fitting that the "pathological" use of social media is often referred to in the literature as "social media use disorder".[52] This term is based on the definition of gambling disorder in the International Classification of Diseases. The reference suggests that social media use disorder is a type of addiction. In non-scientific texts, this is also referred to as social media addiction. In its resolution, the European Parliament writes that internet addiction "can have similar side effects to substance-related addictions, including signs of tolerance and relapse."[53] Less severe cases of social media use, i.e. cases where the user does not require treatment, are often referred to in the literature as "problematic social media use".[54] When discussing the negative effects of social media, it is important to bear in mind that intensive, i.e. very frequent and/or long-term social media use does not automatically mean problematic social media use or even social media addiction.[55] Whether social media use is problematic or even a social media addiction can be recognised by, among other things, the motives for social media use. Problematic social media use can manifest itself, for example, in the use of social media to regulate one's own mood.[56] In contrast, seeking information and socialising are less likely to lead to problematic social media use. Social media addiction can also manifest itself in unsuccessful attempts to reduce usage.[57]

2.3.2 Self-control problems - an argument in favour of stricter regulation?

The study results indicate that the inability to regulate one's own social media use is a widespread problem. This fits with the fact that social media platforms are generally designed to ensure that users return to a platform frequently, stay on the platform for as long as possible and are active on the platform as much as possible. This allows platform providers to maximise their advertising revenue.[58] Just how big this business model has become can be seen from the advertising revenues of social media providers. By the end of 2024, the advertising revenue of social media providers will amount to USD

---

[49] Du, J. et al. (2021), The reciprocal relationships between social media self-control failure, mindfulness and wellbeing: A longitudinal study, in: PLOS ONE, online at: https://doi.org/10.1371/journal.pone.0255648.

[50] This region of the brain plays a central role in the brain's reward system and in the development of addiction.

[51] Montag, C. et al. (2017), Facebook usage on smartphones and gray matter volume of the nucleus accumbens, in: Behavioural Brain Research 329.

[52] Paschke, K. et al. (2021), ICD-11-Based Assessment of Social Media Use Disorder in Adolescents: Development and Validation of the Social Media Use Disorder Scale for Adolescents, online at: https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2021.661483/full.
European Parliament (2023) European Parliament resolution of 12 December 2023 on addictive design of online services and consumer protection in the EU single market, online at: https://www.europarl.europa.eu/doceo/document/TA-9-2023-0459_EN.html.

[54] De Hesselle, L. und C. Montag (2024), Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study, in: BMC Psychology 12.

[55] De Hesselle, L. and C. Montag (2024): Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study, in: BMC Psychology 12.

[56] Mostyn Sullivan, B. and A.M. George (2023), The association of motives with problematic smartphone use: A systematic review. Cyberpsychology: Journal of Psychosocial Research on Cyberspace 17(1) and Zhang, K.Z.K. (2014), Understanding the role of motives in smartphone addiction, Pacific Asia Conference on Information Systems (PACIS 2014) Proceedings 131.

[57] De Hesselle, L. und C. Montag (2024), Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study, in: BMC Psychology, 12:141.

[58] Rozgonjuk, D. et al. (2020b), Fear of missing out (FoMO) and social media's impact on daily-life and productivity at work: do WhatsApp, Facebook, Instagram and Snapchat use disorders mediate that association?, in: Addictive Behaviors.

247.3 billion. The global advertising revenue of television programme providers will amount to USD 196.0 billion. Holder of the largest share of the advertising revenue of social media providers is Meta with 63 per cent. By 2025, Meta's advertising revenue alone is expected to exceed that of all television providers. All in all, the self-control problems of many users justify stricter regulatory intervention. Section 4 shows what form this could take. Before that, Section 3 explains why users have self-control problems when using social media.

Interim conclusion

Section 2 examined several arguments that are often used to support stricter regulation of social media. It is clear that there is little reliable evidence to date about the possible negative effects of social media use on mental health. This is due to the fact that the numerous studies on this topic have produced contradictory results. It is certain that social media has a negative impact on the mental health of some users, but fewer than is often assumed. These users should receive personalised help.

The argument that social media platforms represent product market traps, which are merely due to a failure in coordination on the part of users, cannot be used as an argument in favour of stricter regulation either. The consumption of a product often triggers negative psychological effects in non-users, even in the case of products that are not suspected of being a product market trap. If the product market trap argument were to be accepted in favour of regulation it would severely restrict entrepreneurial freedom and consumer sovereignty. The damage would be greater than the benefit.

The argument that intensive social media use reduces school, academic and professional performance can be used in two cases as an argument in favour of stricter regulation of social media. Firstly, when it concerns children and young people who do not yet realise the implications of the decision to use social media instead of learning. However, there is already a youth protection law that also applies to social media providers, which is not consistently enforced. The EU Commission and national authorities should do more to ensure consistent enforcement of the minimum age for using social media. The investigations carried out by the EU Commission into Meta[59] and TikTok[60]provide hope in this respect. In addition, the EU Commission recently published a consultation on the planned guidelines for the protection of minors on the internet.[61]

The second case, in which poorer school, academic and professional performance can be used as an argument in favour of stricter regulation, arises when the decision to use social media instead of learning and working does not correspond to the wishes of the users. In fact, there are several studies that show that around a third of social media users would like to spend less time on social media, but are unable to do so. Regulation could try to help users reduce their social media consumption to the level they actually want.

---

[59] https://ec.europa.eu/commission/presscorner/detail/de/ip_24_2664European Commission (2024c), Commission opens formal proceedings against Meta under the Digital Services Act related to the protection of minors on Facebook and Instagram, Press Release of 16 May 2024, online at: https://ec.europa.eu/commission/presscorner/detail/en/ip_24_2664.

[60] https://ec.europa.eu/commission/presscorner/detail/de/IP_24_926European Commission (2024a), Commission opens formal proceedings against TikTok under the Digital Services Act, Press Release of 19 February 2024, online at: https://ec.europa.eu/commission/presscorner/detail/en/IP_24_926.

[61] European Commission (2024d), Protection of Minors - Guidelines, online at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14352-Schutz-Minderjahriger-Leitlinien_de.

In order to find an appropriate regulatory approach, the following section examines why social media users often spend more time on social media platforms than they would like to.

Causes of self-control problems

In the literature, two main approaches are used to explain why users spend more time on social media platforms than they would like to. The first approach places users at the centre of the investigation. This shows that the Fear of Missing Out (FOMO) most notably contributes to intensive social media use. This means that social media providers benefit from social media users' fear of missing out. The second approach places platform design at the centre of the investigation. This is based on the assumption that platforms are designed in such a way that users stay on them for as long as possible and are active on the platform as much as possible as this allows platform providers to maximise their advertising revenue.[62] Both approaches are described below.

3.1 Fear of Missing Out

Numerous studies show that the fear of missing out on information that could improve one's life is one of the main reasons why people overuse social media.[63] In the literature, this fear is referred to as *Fear of Missing Out*, or FOMO for short. FOMO results in the need to stay in touch with others and what they are doing.[64] However, the FOMO concept refers not only to missing out on content, but also to the feeling of not being there in real time or missing out on immediate interactions.

FOMO varies in severity depending on the user. Users with a greater FOMO tendency often want to react immediately to posts, messages or comments in order to feel part of the discussion. They don't want to feel that they are missing out on important moments or conversations that are taking place. The feeling of not being up to date with what friends or important personalities are posting can also make users with a greater FOMO tendency feel uncomfortable. It is therefore hardly surprising that such users are more likely to have problematic social media use, with the associated negative effects such as lower work productivity.[65] This could be due to the fact that users with a greater FOMO tendency interrupt their work more often to check social media for news.

Studies show that people with low conscientiousness, high impulsivity and high neuroticism have higher FOMO values.[66] High neuroticism describes people who worry a lot and are anxious. People with these three personality traits - low conscientiousness, high impulsivity and high neuroticism - are therefore at a higher risk of problematic social media use. However, the influence of these three factors alone is too minimal to explain problematic social media use.[67]

---

62 Rozgonjuk, D. et al. (2020b), Fear of missing out (FoMO) and social media's impact on daily-life and productivity at work: do WhatsApp, Facebook, Instagram and Snapchat use disorders mediate that association?, in: Addictive Behaviors.

63 Bursztyn, L. et al. (2023), When Product Markets become collective Traps: The Case of Social Media, NBER Working Paper 31771, online at: http://www.nber.org/papers/w31771.

64 Sindermann, C. et al. (2022), The Design of Social Media Platforms — Initial Evidence on Relations Between Personality, Fear of Missing Out, Design Element-Driven Increased Social Media Use, and Problematic Social Media Use; in: Special Collection: Behavioral Addiction to Technology 3(4).

65 Rozgonjuk, D. et al. (2020b), Fear of missing out (FoMO) and social media's impact on daily-life and productivity at work: do WhatsApp, Facebook, Instagram and Snapchat use disorders mediate that association?, in: Addictive Behaviors.

66 For an overview see Sindermann, C. et al. (2022), The Design of Social Media Platforms — Initial Evidence on Relations Between Personality, Fear of Missing Out, Design Element-Driven Increased Social Media Use, and Problematic Social Media Use; in: Special Collection: Behavioral Addiction to Technology 3(4).

67 Montag, C. und S. Hegelich (2020), Understanding Detrimental Aspects of Social Media Use: Will the Real Culprits Please Stand Up?, in: Frontiers in sociology 5.

Peer pressure and social norms also play an important role in the use of social media. If family, friends and colleagues are constantly providing new content, there may be social pressure to be active on a platform so as not to be excluded. This peer pressure can be particularly strong in adolescents as belonging to a group is of the utmost importance at this age.

3.2 Design elements of social media platforms

Social media providers use design elements on their platforms to increase the time users spend on them. These design elements may be aimed directly at keeping users on the platform or act indirectly, for example by triggering or reinforcing FOMO so that users return to the platform more frequently.

Design elements of online user interfaces that are intended to entice users into behaviour that is not in their interests are often referred to as "dark patterns". The OECD defines dark patterns as

> *"business practices employing elements of digital choice architecture, in particular in online user interfaces, that subvert or impair consumer autonomy, decision-making or choice. They often deceive, coerce or manipulate consumers and are likely to cause direct or indirect consumer detriment in various ways, though it may be difficult or impossible to measure such detriment in many instances."*[68]

The aim of dark patterns is to encourage consumers to, among other things,[69]

- buy, buy more of or continue to buy a product or service that they would not otherwise buy or would buy in smaller quantities,
- spend more money on a purchase or spend more time on a service - in this case the use of social media - than they want to, or
- disclose more personal data than want to.

Dark patterns that lead to users to use social media platforms for longer and more often than they would like are of particular interest for this Input. However, we do not use the term dark pattern in this Input. Instead, the neutral term "design elements" is used, as some of the design elements described below are inherent to the nature of a social media platform. In addition, many design elements may cause a user to spend more time on a platform or return to a platform more frequently without necessarily being detrimental to the user or resulting in problematic social media use. Nevertheless, the design elements described below do contribute to problematic social media use or are at least suspected of contributing to it.

3.2.1 Push notifications

Numerous social media platforms enable push notifications to alert users to new events, such as new messages, likes received, the activities of other users and much more. Push notifications utilise and reinforce FOMO and require users to exercise self-control because they interrupt users' everyday lives and draw their attention back to the social media platform. Push notifications thus lead to interruptions and task-irrelevant thoughts that often clash with users' situational goals and

[68] OECD (2022), Dark commercial patterns, online at: https://one.oecd.org/document/DSTI/CP(2021)12/FINAL/en/pdf.
[69] OECD (2022), Dark commercial patterns, online at: https://one.oecd.org/document/DSTI/CP(2021)12/FINAL/en/pdf.

responsibilities.[70] In combination with the social pressure to react promptly to messages, push notifications are a strain on the self-control capacity of social media users.

Push notifications are also a form of "variable reward". A reward is variable if it is given randomly and unpredictably. Variable rewards release more dopamine than predictable rewards.[71] This method is also used in slot machines. Push notifications are therefore an effective design element for increasing user loyalty. Research shows that users who allow push notifications on many social media platforms use social media more frequently than users who do not allow them.[72]

3.2.2 Endless scrolling & streaming

Social media platforms use the concept of endless scrolling & streaming to keep users on their pages for longer. Endless scrolling & streaming ensures that users are constantly shown new content, so that they never come to a natural end where they might consider leaving the platform.[73] This means that users not only spend more time on a platform than they otherwise would but are also more likely to return because studies show that people remember unfinished activities more than completed ones. The default setting "Auto-Play", which at the end of one video causes the next video to be played automatically, is a type of endless streaming. The aim of endless scrolling & streaming is to create flow for the user because flow goes hand in hand with a feeling of time distortion. [74] Just how susceptible people are to the concept of endless scrolling and streaming is illustrated by the "Bottomless Bowl" experiment.[75] The experiment shows that people eat 73 per cent more soup when the soup bowl is refilled without them realising it and, at the same time, they do not feel any more full.

Endless scrolling & streaming can be enhanced with variable rewards. Thus, when someone is scrolling through articles, posts or videos, an algorithm may show the user not only interesting content but also less interesting content. If the user then unexpectedly sees interesting content, the brain's reward system is stimulated, i.e. dopamine is released. This dopamine release is greater than in the case of an expected reward. This method is also used in slot machines. Endless scrolling & streaming is an effective design element to keep users on a platform for as long as possible.

3.2.3 Likes, views and read receipts

People are social beings, i.e. they enjoy social affirmation. The opportunity to receive social affirmation is therefore a strong driver in the use of social media. [76] Social media platforms enable social

[70] Hofmann, W. et al. (2017), Of sweet temptations and bitter aftertaste: Self-control as a moderator of the effects of media use on well-being, in: Reinecke, L. and M.B. Oliver (Ed.), The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects (p. 211-222), New York: Routledge.

[71] Neyman, C. (2017): A Survey of Addictive Software Design, in: Computer Science and Software Engineering 1(1).

[72] Sindermann, C. et al. (2022), The Design of Social Media Platforms — Initial Evidence on Relations Between Personality, Fear of Missing Out, Design Element-Driven Increased Social Media Use, and Problematic Social Media Use, in: Special Collection: Behavioral Addiction to Technology 3(4).

[73] Montag, C. et al. (2019), Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories, in: International Journal of Environmental Research and Public Health 16.

[74] Montag, C. et al. (2019), Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories, in: International Journal of Environmental Research and Public Health 16.

[75] Neyman, C. (2017): A Survey of Addictive Software Design, in: Computer Science and Software Engineering 1(1).

[76] Ponnusamy, S. et al. (2020), Drivers and outcomes of Instagram Addiction: Psychological well-being as moderator, in: Computers in Human Behavior 107.

endorsements in the form of likes, views and other forms of positive feedback.[77] Neuronal studies confirm this. They show that the brain's reward centre is active when a like is received. This effect is more pronounced in people who use social media intensively. Likes are therefore perceived as a reward and that reinforces social media use.[78] The opportunity to receive social affirmation therefore encourages the use of social media. Users can also use feedback to find out how they are perceived in their social network. This increases the incentive to visit a social media platform again.[79] Young people in particular tend to explore their self-identity by seeking the approval of other people and social media platforms offer a good opportunity for this. However, this also requires a lot of time to be spent on the platform.[80] In addition, people are inclined to reciprocate the social gestures of others which increases a user's tendency to give positive feedback if they have received such feedback themselves. If users repeatedly fulfil social needs via a particular social media platform, this can lead to users developing a sense of belonging to this platform.[81]

Read receipts result in social pressure to respond quickly to a message. Studies show that users who have enabled read receipts use social media more frequently than users who do not allow them.[82] As a rule, read receipts are preset as standard and very few users bother to change the default settings.[83]

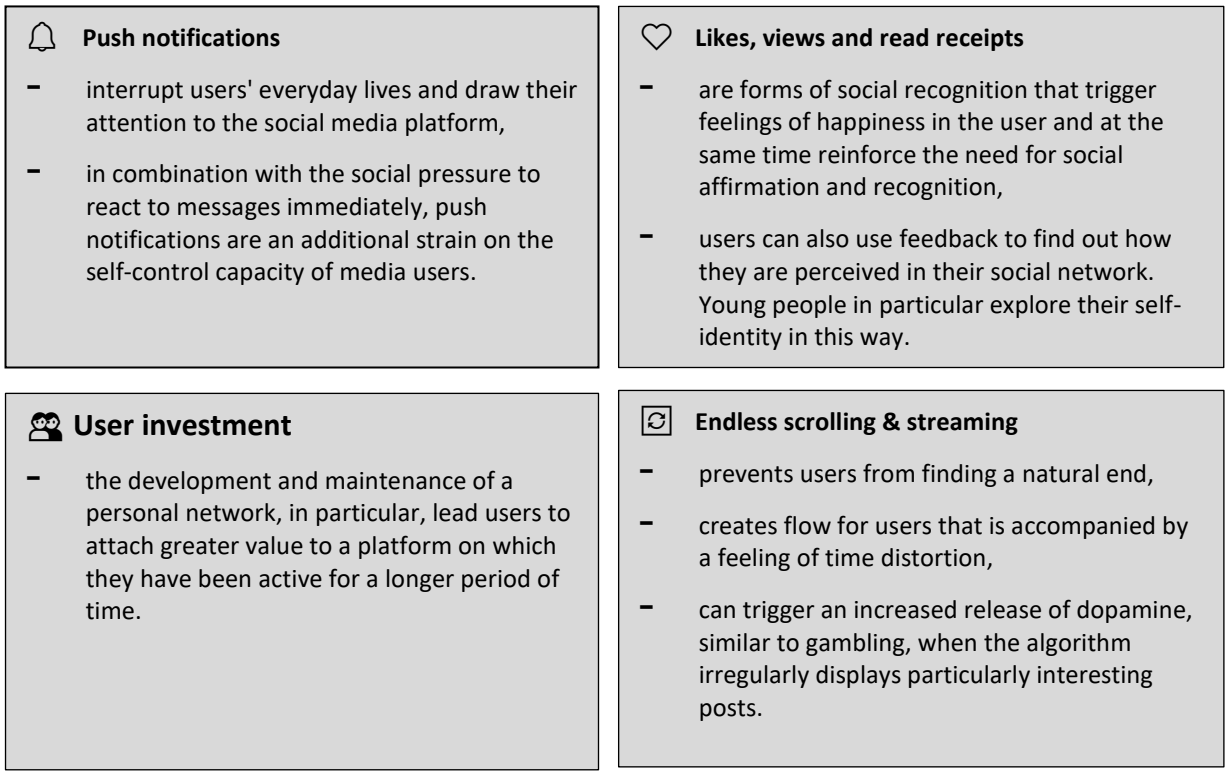
3.2.4 User investment in a platform

Social media platforms involve users in the creation of their user profile in a variety of ways, in particular through the creation and maintenance of a personal network, through the possibility of creating a personalised profile picture or by saving user contributions. All of these are investments by the user. Platforms thus utilise the phenomenon that users attach a higher value to objects which they themselves have helped to create, be it with time or money.[84] The longer a user uses a social media platform, the stronger the effect of this mechanism will be, which makes it more difficult for users to permanently leave a social media platform.

Figure 4 provides an overview of the four design elements considered which may contribute to increased use of social media platforms.

[77] Neyman, C. (2017): A Survey of Addictive Software Design, in: Computer Science and Software Engineering 1(1).
[78] Montag, C. et al. (2017), Facebook usage on smartphones and gray matter volume of the nucleus accumbens, in: Behavioural Brain Research 329.
[79] Montag, C. et al. (2019), Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories, in: International Journal of Environmental Research and Public Health 16.
[80] Ponnusamy, S. et al. (2020), Drivers and outcomes of Instagram Addiction: Psychological well-being as moderator, in: Computers in Human Behavior 107.
[81] Ponnusamy, S. et al. (2020), Drivers and outcomes of Instagram Addiction: Psychological well-being as moderator, in: Computers in Human Behavior 107.
[82] Sindermann, C. et al. (2022), The Design of Social Media Platforms — Initial Evidence on Relations Between Personality, Fear of Missing Out, Design Element-Driven Increased Social Media Use, and Problematic Social Media Use in: Special Collection: Behavioral Addiction to Technology 3(4).
[83] Montag, C. et al. (2019), Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories, in: International Journal of Environmental Research and Public Health 16.
[84] Neyman, C. (2017): A Survey of Addictive Software Design, in: Computer Science and Software Engineering 1(1).

Fig. 4: Design elements of social media platforms which may contribute to increased use of the platform



Source: Own representation.

Policy recommendations

According to the findings in Section 2, there is evidence to show that social media use can affect mental health by leading, in particular, to an increase in depression and poorer sleep quality. The extent of these negative effects, however, is smaller than is often assumed. On a cautionary note, however, it must be said that the study results are somewhat contradictory. It was also shown in Section 2 that intensive use of social media often goes hand in hand with poorer school, academic and professional performance. One reason for this arises from self-control problems on the part of users. Studies come to the conclusion that a failure to exercise self-control could be responsible for about a third of the time people spend on social media. It is therefore hardly surprising that many people would like to spend less time on social media but are unable to do so.[85] Based on these findings, we have two policy recommendations to make.

4.1 Better enforcement of the existing rules - in particular for the protection of minors and other vulnerable groups

The EU Commission and national authorities should consistently enforce the existing rules - in particular for the protection of minors and other vulnerable groups. Against this background, it is to be welcomed that the EU Commission increasingly appears to be utilising the opportunities offered by EU law - above all the Digital Services Act. The EU Commission and national authorities should do more to ensure that the minimum age for using social media is consistently enforced. They should also

[85] See on this Section 3.3.

conduct continuous monitoring of the results of research in this area because, in view of the somewhat contradictory study results, it cannot be ruled out that new findings may require additional or different measures. Finally, it should be ensured that users whose mental health is affected by social media receive individualised support.

4.2 Increasing the digital literacy of the population

The existing regulation, however, is not sufficient to eliminate the self-control problems of many social media users because it focuses primarily on the content provided, the risks as a consumer, the risks to privacy and the risks to well-being.[86] The risk that social media is often used more than is actually intended has not yet been adequately addressed. The results of Section 2.3 indicate that a significant proportion of the population - not just young people - is affected.

The phenomenon of "self-control problems" is not new; it occurs in many areas of life. The activities mentioned in Section 2.3 - "doing more sport", "looking after your pension" and "eating more healthily" - are also affected and, in contrast to social media consumption, have already been comprehensively analysed and regulated from an economic perspective. However, the reasons why people have problems exercising self-control vary depending on the activity. One problem when it comes to "taking care of one's old-age pension" is that the damage caused by inaction arises only in the future. The same applies to "healthy eating". Alcohol, cigarettes and drugs, on the other hand, are psychologically and physically addictive. The regulatory approaches used to reduce self-control problems are therefore as varied as the causes. For example, the sale of drugs is prohibited, pension schemes are subject to compulsory insurance (at least for most employees in Germany) and foodstuffs must show nutritional values in order to inform potential buyers. Even this short list shows that self-control problems can give rise to huge amounts of regulation.

The urge to use social media could be compared to the desire to consume unhealthy foods, such as sugar. There are two major differences, however. Firstly, the health consequences of intensive social media use are generally less serious than the consequences of intensive sugar consumption, although intensive social media use can reduce school, academic and professional performance. Secondly, compared to unhealthy foods, there is less awareness of the risk that common social media platforms entice people to use them intensively. In addition, the population is not sufficiently aware of which design elements trigger excessive social media use.

In principle, the chosen regulatory instrument should always be the mildest means necessary to achieve the objective. In addition, the negative effects of any regulation should also be taken into account when selecting the regulatory instrument. Compulsory insurance, for example, restricts consumer sovereignty. Overriding consumers in this way may be justified but requires very good reasons. Finally, the regulatory instrument should be proportionate to the harm caused by consumption of the product. In the case of social media, all three aspects speak in favour of moderate regulatory intervention, especially as it is not yet clear whether the excessive use of social media causes any harm at all.[87]

[86] For an overview of the risks to children on the internet, see e.g. OECD (2021), Children in the Digital Environment: Revised Typology of Risks, online at: https://one.oecd.org/document/DSTI/CDEP/DGP(2020)3/FINAL/en/pdf.

[87] On this, see Section 2.

In order to choose the right tool, it is important to understand why users spend more time on social media than they actually want to. As shown in Section 3, this is due to a mixture of the individual characteristics of the users, habit formation and the design elements of the social media platforms. For example, many social media users are interrupted by push notifications several times a day during other activities and are brought back to the platform.

Based on these findings, we propose the following two regulatory approaches which can be implemented independently or together. The first approach aims to improve the media literacy of social media users. Thus, users should know that social media can create a kind of addiction that leads to overuse. In this context, the design elements that contribute to excessive social media use, such as push notifications, endless scrolling & streaming, likes, views and read receipts, as well as user investment, should also be explained. On the one hand, the aim of strengthening literacy should be to raise user awareness of the dangers of social media. On the other hand, it should also aim to prevent the habitual checking of social media which could take place by way of warnings that appear when installing, opening or intensively using social media. Users should also be able to see the time they have spent on a social media platform and limit it. This is already possible on some platforms.

The second approach involves restricting the use of certain design elements. Thus, push notifications, endless scrolling & streaming and read receipts could be deactivated as standard and automatic requests to activate these design elements prohibited. Certain design elements could be prohibited for minors. The problem of user investment could be reduced by increasing the interoperability of the various social media platforms, although it cannot be completely avoided. The design elements of likes and shares are also difficult to regulate. Which approach ultimately promises the greatest success will require empirical observation.

Bibliography

Allcott, H., Gentzkow, M., & Song, L. (2022). Digital Addiction. *National Bureau of Economic Research (NBER) Working Paper, 28936*. Retrieved from National Bureau of Economic Research: http://www.nber.org/papers/w28936.

Braghieri, L., Levy, R., & Makarin, A. (2022). Social Media and Mental Health. *American Economic Review, 112*(11), pp. 3660-3693. Retrieved from https://doi.org/10.1257/aer.20211218.

Bursztyn, L., Handel, B. J., Jimenes, R., & Roth, C. (2023). When Product Markets become collective Traps: The Case of Social Media. *National Bureau of Economic Research (NBER), Working Paper 31771*. Retrieved from http://www.nber.org/papers/w31771

De Hesselle, L. C., & Montag, C. (2024). Effects of a 14-day social media abstinence on mental health and well-being: results from an experimental study. *BMC Psychology, 12*, p. 141.

Du, J., Kerkhof, P., & van Konigsbruggen, G. M. (2021). The reciprocal relationships between social media self-control failure, mindfulness and wellbeing: A longitudinal study. *PLOS ONE*. Retrieved from https://doi.org/10.1371/journal.pone.0255648

Du, J., van Konigsbrunnen, G., & Kerkhof, P. (2018). A brief measure of social media self-control failure. *Computers in Human Behavior*, pp. 68-75. Retrieved from https://doi.org/10.1016/j.chb.2018.02.002.

Europäische Komission. (2024, Februar 19). *Kommission leitet förmliches Verfahren gegen TikTok im Rahmen des Gesetzes über digitale Dienste ein*. Retrieved from Europäische Komission: https://ec.europa.eu/commission/presscorner/detail/de/IP_24_926.

Europäische Komission. (2024a, Mai 16). *Kommission leitet im Rahmen des Gesetzes über digitale Dienste förmliches Verfahren gegen Meta im Zusammen-hang mit dem Schutz Minderjähriger auf Facebook und Instagram ein.* Retrieved from Europäische Komission: https://ec.europa.eu/commission/presscorner/detail/de/ip_24_2664

Europäischen Komission. (2024b). Schutz Minderjähriger-Leitlinien. Retrieved from https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14352-Schutz-Minderjahriger-Leitlinien_de.

Europäisches Parlament. (2023, Dezember 12). *Entschließung des Europäischen Parlaments vom 12. Dezember 2023 zur suchterzeugenden Gestaltung von Online-Diensten und zum Verbraucherschutz im EU-Binnenmarkt*. Retrieved from Europäisches Parlament: https://www.europarl.europa.eu/doceo/document/TA-9-2023-0459_DE.html.

Fernandez, D. P., Kuss, D. J., & Griffiths, M. D. (2020). Short-term abstinence effects across potential behavioral addictions: A systematic review. *Clinical Psychology Review*.

Hancok, J., Liu, S. X., Luo, M., & Mieczkowski, H. (2022, April). *Psychological Well-Being and Social Media Use: A Meta-Analysis of Associations between Social Media Use and De-pression,*

Anxiety, Loneliness, Eudaimonic, Hedonic and Social Well-Being. Retrieved from SSRN: https://ssrn.com/abstract=4053961

Hofmann, W., Reinecke, L., & Meier, L. (2017). Of sweet temptations and bitter aftertaste: Self-control as a moderator of the effects of media use on well-being. In *L. Reinecke & M. B. Oliver (Eds.), The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 211-222). New York: Routledge.

Hofmann, W., Vohs, K., & Baumeister, R. F. (2012). What People Desire, Feel Conflicted About, and Try to Resist in Everyday Life. *Psychological Science, 23*(6), pp. 582-588.

Hussain, Z., & Starcevic, V. (2020). Problematic social networking site use: a brief review of recent research methods and the way forward. *Current Opinion in Psychology, 36*, pp. 89-95.

Kuss, D., & Griffiths, M. (2011). Online social ntworking and addiction-a review of the psychological literature. *International journal of environmental research and public health, 8*(9), pp. 3528-3552.

Lambert, J., Barnstable, G., Minter, E., Cooper, J., & McEwan, D. (n.d.). Taking a one-week break from social media improves well-being, depression, and anxiety: a randomized controlled trial. *Cyberpsychology, Behavior, and Social Networking, 25*(5), pp. 287-293.

Marino, C., Canale, N., Melodia, F., & Spada, M. M. (2021). The Overlap Between Problematic Smartphone Use and Problematic Social Media Use: a Systematic Review. *Current Addiction Reports, 8*(4), pp. 469-480.

Montag, C., & Hegelich, S. (2020). Understanding Detrimental Aspects of Social Media Use: Will the Real Culprits Please Stand Up? *Frontiers in Sociology, 5*, p. 599270. doi:10.3389/fsoc.2020.599270.

Montag, C., & Markett, S. (2023). Social media use and everyday cognitive failure; investigating the fear of missing out and social networks use disorder relationship. *BMC Psychiatry, 23*(1), p. 872.

Montag, C., Lachmann, B., Herrlich, M., & Zweig, K. (2019). Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psycholog-ical and Economic Theories. *International Journal of Environmental Research and Public Health, 16*(2612). doi:doi:10.3390/ijerph16142612

Montag, C., Markowetz, A., Blaszkiewicz, K., Andone, I., Lachmann, B., Sariyska, R., . . . Markett, S. (2017). Facebook usage on smartphones and gray matter volume of the nucleus accumbens. *Behavioural Brain Research, 329*, pp. 221-228.

Montag, C., Sindermann, C., Rozgonjuk, D., Yang, S., Elhai, J. D., & Yang, H. (2021). Investigating Links Between Fear of COVID-19, Neuroticism, Social Networks Use Disorder, and Smartphone Use Disorder Tendencies. *Frontiers in Psychology, 2*(12).

Montag, C., Wegmann, E., Sariyska, R., Demetrovics, Z., & Brand, M. (2021). How to overcome taxonomical problems in the study of Internet use disorders and what to do with “smartphone addiction”? *Journal Behav Addiction, 9*(4), pp. 908-914.

Mostyn Sullivan, B., & George, A. M. (2023). The association of motives with problematic smartphone use: A systematic review. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 17*(1). Retrieved from https://cyberpsychology.eu/article/view/20905

Neophytou, E., Manwell, L. A., & Eikelboom, R. (2019). Effects of excessive screen time on neurodevelopment, learning, memory, mental health, and neurodegeneration: a scoping review. *International Journal of mental health addiction, 19*, pp. 724-744.

Neyman, C. (2017, Juni). A Survey of Addictive Software Design. Retrieved from https://digitalcommons.calpoly.edu/cscsp/111/.

OECD. (2021). Children in the Digital Environment: Revised Typology of Risks. Retrieved from https://one.oecd.org/document/DSTI/CDEP/DGP(2020)3/FINAL/en/pdf.

OECD. (2022). Dark commercial patterns. Retrieved from https://one.oecd.org/document/DSTI/CP(2021)12/FINAL/en/pdf.

Orben, A. (2020). Teenagers, screens and social media: a narrative review of reviews and key studies; Social Psychiatry and Psychiatric Ep-idemiology. *Social Psychiatry and Psychiatric Epidemiology, 55*, pp. 407-414. Retrieved from https://doi.org/10.1007/s00127-019-01825-4

Paschke, K., Austermann, M. I., & Thomasius, R. (2021). *ICD-11-Based Assessment of Social Media Use Disorder in Adolescents: Development and Validation of the Social Media Use Disorder Scale for Adolescents*. Retrieved from frontiers: https://www.frontiersin.org/journals/psychiatry/articles/10.3389/fpsyt.2021.661483/full

Ponnumsamy, S., Iranmanesh, M., Foroughi, B., & Hyun, S. S. (2020). Drivers and outcomes of Instagram addiction: psychological well-being as moderator. *Computers in Human Behavior, 1*(107), p. 106294.

Ponnusamy, S., Iranmanesh, M., Foroughi, B., & Sean Hyun, S. (2020). Psychological well-being as moderator. *Computers in Human Behavior, 107*(2020), p. 106294.

Radtke, T., Apel, T., Schenkel, K., Keller, J., & von Lindern, E. (2022). Digital detox: An effective solution in the smartphone era? A systematic literature review. *Mobile Media and Communication, 10*(2), pp. 190-215.

Rod, N. H., Dissing, A. S., Clarke, A., Gerds, T. A., & Lund, R. (2018). . Overnight smartphone use: Eine neue Herausforderung für die öffentliche Gesundheit? Ein neues Studiendesign basie-rend auf hochauflösenden Smartphone-Daten. *PLOS ONe, 13*(10), p. 0204811.

Rozgonjuk, D., Ignell, J., Mech, F., Rothermund, E., Gündel, H., & Montag, C. (2023). Smartphone and Instagram use, body dissatisfaction, and eating disorders: investigating the associations using self-report and tracked data. *Journal of eating disorders, 11*(1).

Rozgonjuk, D., Sindermann, C., & Elhat, J. D. (2020). Fear of missing out (FOMO) and social media's impact on daily-life and productivity at work: do WhatsApp, Facebook, Instagram and Snapchat use disorders mediate that association? *Addictive Behaviors*. doi:https://doi.org/10.1016/j.addbeh.2020.106487

Rozgonjuk, D., Sindermann, C., Elhai, J. D., Christensen, A. P., & Montag, C. (2020, August 13). Associations between symptoms of problematic smartphone, Facebook, WhatsApp, and Instagram use: an itel-level exploratory analysis perspective. *Journal of Behavioral Addictions, 9*(3), pp. 686-697.

Schemer, C., Masur, P. K., Geiß, S. M., & Schäfer, S. (2021). The impact of internet ans social media use on well-being: A longitudinal Analysis of Adolescents Across Nine Years. *Journal of Computer-Mediated Communication, 26*(2021), pp. 1-21.

Schlitz, F., & De Witte, K. (2022). Sugar rush or sugar crash? Experimental evidence on the impact of sugary drinks in the classroom,. *Health Economics, 31*, pp. 215-232.

Sha, P., Sariyska, R. R., Lachmann, B., & Montag, C. (2019, Juni). Linking internet communication and smartphone use disorder by taking a closer look at the facebook and whatsapp ap-plications. *Addictive Behaviors Reports, 1*(9).

Sindermann, C., & Elhai, J. M. (2022). The Design of Social Media Platforms—Initial Evidence on Relations Between Personality, Fear of Missing Out, Design Element-Driven Increased Social Media Use, and Problematic Social Media Use. *Behavioral Addiction to Technology, 3*(4). Retrieved from https://tmb.apaopen.org/pub/m4nkfstp/release/1.

Sindermann, C., Ebner, F., Montag, C., Scholz, R., Ostendorf, S., Freytag, P., & Thull, B. (2024). *Vulnerabilitätsraum: Soziale Medien*. Retrieved from https://www.researchgate.net/publication/349570284_Kapitel_5_Vulnerabilitatsraum_Soziale_Medien.

Skiera, B., Hinz, O., & Spann, M. (2015, Januar). Social Media and Academic Performance: Does the Intensity of Facebook Activity Relate to Good Grades? *Schmalenbach Business Review (SBR), 67*, pp. 54-72.

Sohn, S. Y., Reese, P., Wildridge, B., & Carter, B. (2019). Prevalence of problematic smartphone usage and associated mental health outcomes among children and young peo-ple: a systematic review, meta-analysis and GRADE of the evidence. *BMC Psychiatry, 19*(1), p. 356.

Twenge, J. M., Joiner, T. M., & Marin, G. N. (2020). Considering All of the Data on Digital-Media Use and Depressive Symptoms: Response to Ophir, Lipshits-Braziler, and Rosenberg. *Clinical Psychological Science, 8*(2), pp. 379-383.

Vogels, E. A., & Gelles-Watnick, R. (2024). *Teens and social media: Key findings from Pew Research Center surveys*. Retrieved from Pew Research Center: https://www.pewresearch.org/short-reads/2023/04/24/teens-and-social-media-key-findings-from-pew-research-center-surveys/

We are social. (2024). *Digital 2024 Global Overview Report.* Retrieved from https://wearesocial.com/us/blog/2024/01/digital-2024/

Zhang, K. Z., Chen, C., & Lee, M. K. (2014). *Understanding the role of motives in smartphones addiction.* Retrieved from Proceeding of the 19th Pacific Asia Conference on Information Systems (2014) Pacific Asia Conference on Information Systems: https:// aisel. aisnet. org/ pacis 2014/ 131

Zivnuska, S., Carlson, J. R., & Carlson, D. S. (2019). Social media addiction and social media reactions: the implications for job performance. *The Journal of social Psychology, 159*(6), pp. 746-760.

Author:

Dr. Matthias Kullas
Head of Department for Internal Market and Competition
kullas@cep.eu

Centrum für Europäische Politik FREIBURG | BERLIN
Kaiser-Joseph-Straße 266 | D-79098 Freiburg
Schiffbauerdamm 40 Räume 4205/06 | D-10117 Berlin
Tel. + 49 761 38693-0

The **Centrum für Europäische Politik** FREIBURG | BERLIN, the **Centre de Politique Européenne** PARIS and the **Centro Politiche Europee** ROMA form the **Centres for European Policy Network** FREIBURG | BERLIN | PARIS | ROMA.

The Centres for European Policy Network analyses and assesses the policy of the European Union independently of individual or political interests, in alignment with the policy of integration and according to the principles of a free, market-based system.