Understanding Online Choices, Preferences, and Welfare

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Contents

Section

1. Overview

1.1 This paper discusses how to understand user choices, preferences and welfare in an online context. Typically, economics seeks to understand individual welfare based on the choices that people make. However, this approach faces challenges in an online context. This is because online intermediaries (platforms that facilitate interactions between users and providers of goods and services online, including social media, retail and gaming) strongly influence users' choices through the use of choice architecture. This influence could lead to situations where users' behaviour online does not reflect what they really want. This paper explores how to identify circumstances in which user behaviour is likely to be influenced by these online intermediaries, and where user empowerment tools can help users make choices that align more closely with their preferences.

1.2 We begin by setting out a conceptual framework that distinguishes between choices, preferences, and welfare, and explains why an individual's online choices may not always provide a strong basis for understanding their underlying preferences or welfare. In outlining this framework, we draw on the economic concepts of stated and revealed preference, and the behavioural economics distinction between 'System 1' (automatic, instinctive, and fast), and 'System 2' (conscious, deliberative, and slow) thinking.

1.3 We then consider specific features of the online environment that mean that individuals' choices do not always reflect their preferences or increase their welfare:

a) Social media platforms and other online intermediaries, while providing highly valuable services, have an incentive to capture and retain the attention of users and have a high degree of control over their users' behaviour through their use of choice architecture, including the ways in which content is ranked, choices are framed, and defaults are set.
b) These online intermediaries are also able to gather large volumes of user data and conduct tests and trials to understand how to keep their users online for longer, and to encourage users to make choices that are in the platform's interests.
c) They may encourage their users to engage in System 1 thinking with features like infinite scrolling, autoplay and prompts for immediate reactions. As a result, some users may exhibit what could be termed 'addictive' behaviours where they feel compelled to check and use social media and other online intermediaries frequently, or compulsively, or for long periods.
d) Finally, network effects may mean that users are 'locked into' using services because their friends use them, creating high barriers to leaving the platform or significantly reducing the usage.

1.4 As a result of these factors, users' online choices may not always reflect what they really want. For example, they may spend more time online than they say they want to, behave and act differently to how they want to, or they may consume unwanted content such as misinformation or violent content. If users are not getting what they really want, and make choices that they later regret, this implies a considerable welfare loss. The nature of the online environment, therefore, poses a fundamental challenge: how can we understand what users really want, when the actions that they take are shaped by the choice architecture of online platforms, and are there ways in which we can support users to take actions to enhance their welfare?

1.5 This paper discusses potential interventions to help individuals make online choices that are better aligned with their preferences, by encouraging them to make more considered decisions, through System 2 thinking. We discuss the evidence on the effectiveness of a range of interventions that aim to empower users to make better choices. These interventions include prompts, self-control tools, and inoculation tools. Collectively, we call these 'user empowerment tools'.

1.6 We note that, if well-designed and deployed at the right time, user empowerment tools can be highly effective in helping users make choices that align with their preferences and interests. Further, by supporting individual choices rather than imposing changes, they mitigate the concerns of paternalism and proportionality that are sometimes associated with other forms of regulatory interventions.

1.7 However, user empowerment tools can also add friction and transactions costs to the user's online experience and, if excessively used, may lead to problems of annoyance, frustration, and choice overload. The question of how and when to intervene with such tools is, therefore, likely to be context-specific. This paper proposes a framework outlining circumstances under which user empowerment tools are more likely to be welfare-enhancing. These circumstances include situations where:

a) Services are offered by commercial intermediaries with an incentive to keep users online, displaying features designed to increase pressure or encourage habitual use;
b) There is evidence that users express regret over time spent using these services, and adopt self-control and other empowerment tools when available, expressing satisfaction with their deployment, either through trials or in the field;
c) The services are orientated particularly towards certain types of vulnerable user groups, such as children, or
d) The content displayed is likely to be harmful to the individual or society more broadly.

1.8 Evidence gathering, including through surveys and the testing and trialling of interventions, is likely to be important for understanding the extent to which these circumstances apply in individual cases, and for designing interventions in a way that maximises their effectiveness. We have recently carried out a series of trials designed to test the effectiveness of one type of user empowerment tool - prompts - across a range of design dimensions, including timeliness and message framing. In the future, we will consider the case for further trials to test the approach set out in this paper.

1.9 Given the limited attention users can devote to prompts and other empowerment tools, and the risk of unintended consequences if such tools are used excessively, coordination and cooperation among regulators in designing and deploying these tools is likely to be important.

2. Introduction

2.1 This paper discusses how we can understand what users really want online when their actions are shaped by the choice architecture of online platforms, such as the ordering of content and the framing of choices. Then, we look at whether there are ways to support users in taking actions to enhance their welfare, through user empowerment tools such as prompts, self-control and media literacy tools.

Relevance to Ofcom's work

2.2 These issues are relevant to Ofcom's work in several ways as following:

a) Digital markets: Ofcom has an active programme of work in digital markets, which focuses on how well digital markets are working for consumers in the communications' sector.[1]

b) Media literacy: Ofcom defines media literacy as 'the ability to use, understand and create media and communications across multiple formats and services.'[2] We have recently consulted on a new three-year strategy and will soon publish our statement. The strategy recognises that user empowerment tools, such as those discussed in this paper, can have an important part to play in ensuring that users have the skills and confidence to flourish online.

c) Online safety: Ofcom is the regulator for online safety in the UK and our role is to ensure that online services meet their duties to protect users. Our research has found that young people maybe engaging with, and encountering content online, that they do not really want to, and that has the potential to cause them harm.[3] We have recently carried out empirical research into different tools that users could use to reduce their exposure to sensitive content.

d) Media plurality and online news: We are currently carrying out a project exploring the impact of accessing news through social media on the ability of citizens to participate in a well-functioning democracy. The impact of choice architecture on citizens' consumption of news is an important component of this work, and among the interventions that may be relevant to our work are tools to empower users to make informed choices.[4]

e) Telecommunications: We have explored the use of prompts in telecommunications sectors as well, including a requirement on communication providers (CPs) to send end-of-contract notifications to their customers when their minimum contract period is coming to an end.[5]

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[1] Ofcom, Digital markets in the communications sector [Accessed July 2024]]

[2] Ofcom, Making Sense of Media [Accessed May 2024].

[3] Page 5-6, Family Kids & Youth, March 2024, Understanding Pathways to Online Violent Content Among Children and page 10-11, Ipsos UK and TONIC Research, March 2024, Online Content: Qualitative Research, experience of children encountering online content relating to eating disorders, self-harm and suicide.

[4] Ofcom, November 2022, Media plurality and online news: discussion document.

[5] Ofcom, 2022 An ex-post evaluation of the impact of the introduction of end-of-contract notifications on re-contracting and pricing for broadband services.

2.3 In the broadest sense, many aspects of our understanding of individual and societal welfare are derived from observing the choices that individuals make, and inferring from these choices, the value that individuals ascribe to particular goods and services. This approach provides the foundation for much of the welfare economics used in the policy appraisal and evaluation carried out by us, other regulators, and government departments. It is, therefore, important that we understand any limitations to this approach in an online context and consider alternatives.

Structure of the paper

2.4 The rest of this paper is structured as follows:

a) Section 3 sets out a conceptual framework for considering the issues discussed in this paper, based on the distinction between choices, preferences and welfare, and the behavioural economics concepts of System 1 and System 2 thinking;
b) Section 4 describes features of the online environment that can lead users making choices that do not correspond to their preferences, and the implications of this on their welfare;
c) Section 5 discusses some practical tools that could help users make better choices online ('user empowerment tools'), considers the benefits and potential costs of these tools, and discusses the circumstances under which these tools are likely to be most effective and
d) Section 6 concludes the discussion paper.

3. Choices, preferences, and welfare

3.1 This section sets out a conceptual framework for interpreting user choices, preferences, and welfare and understanding how each differs. It draws, in particular, on the work of psychologist Daniel Kahneman, and the disciplines of welfare economics and behavioural economics.

The difference between choices, preferences, and welfare

3.2 Understanding what people really want online can be viewed through the lens of the choices they make, the preferences they have, and ultimately, their welfare (the benefit that they derive from the choices that they make) and the welfare of society as a whole.

3.3 Choices, preferences, and welfare differ [6]:

a) Choices are the decisions that people take. In an online context, clicking on a piece of content, scrolling through a news feed, playing a game, or purchasing an item are all examples of choices.
b) Preferences describe what people want. 'I want to spend no more than three hours a day online' would be an example of a preference. Unlike choices, preferences are generally not directly observable, but can be elicited by asking questions to the user, or indirectly inferred from observed behaviour. Preferences can be context-dependent and are sometimes elicited through hypothetical questions e.g., relating to the choices an individual would make in a particular situation.
c) Individual welfare describes the outcomes of people's choices in terms of the benefits they receive from those choices and the costs they incur because of them. Social welfare is the aggregation of these costs and benefits over all the individuals in a society.

3.4 These concepts are related but differ in some important respects. Choices are observable behaviours, while preferences are not, as they are psychological in nature. Welfare is effectively a measure of 'what is good' for the individual and is, therefore, of central importance in considering the case for policy interventions (but it is the most challenging of the three concepts to identify). As a result, an important practical question for policy design is how to infer individual welfare from the observable choices that users make, and the preferences they express. In the rest of this section, we consider this question through the lens of each of the three concepts.

[6] Luke Thorburn, Jonathan Stray and Priyanjana Bengani, 2022, What Does it Mean to Give People What They Want? The Nature of Preferences in Recommender Systems, Medium [Accessed May 2024] has informed this discussion.

Choices

3.5 When an individual is making a choice, it can be helpful to think of it as employing one of two ways of thinking: a) a fast, automatic, unconscious way of thinking, based on experience and intuition, or b) a slower, more effortful, and conscious way of thinking, based on logical and systematic thought and deliberation. These two ways are described by Daniel Kahneman as System 1 and System 2 reasonings, respectively.[7]

3.6 The circumstances under which users make choices will affect the mode of reasoning used by them. Situations where choices must be made under pressure, quickly, or where choices are made regularly, are more likely to be made under System 1 reasoning. In an online environment, a user is typically confronted with so many choices that it can be helpful to rely on their automatic use of System 1 thinking to avoid spending excessive amounts of time in deciding among different options.

3.7 However, in some circumstances, online choices made under System 1 reasoning may not provide as much user welfare as choices made under System 2 reasoning. This is particularly likely to be the case where providers of online goods and services create artificial pressure for users to act rapidly, without thinking through different options. For example, the CMA has set out principles for online travel agents and hotel websites to prevent misleading claims of scarcity of hotel rooms[8] and investigated a mattress supplier in relation to countdown clocks on its website, both of which can put pressure on customers who want to avoid missing out on sale prices.[9] These sorts of practices could lead to consumers making choices using System 1 reasoning (that they may not have made using System 2 reasoning) which are less reflective of their underlying preferences and worse for their welfare. In Section 4, we further discuss features of the online environment that might lead to these outcomes.

3.8 In other contexts, users must make choices, but they may be indifferent among those choices or make a choice as a means to an end, but not care about the choice itself (e.g. clicking randomly on an option on the choice screen in order to get access to a service). In these circumstances, the choices a user makes may not reflect a meaningful preference.

Preferences

3.9 Preferences describe what an individual wants. As noted above, an individual's preferences are not directly observable. Therefore, economists have developed two alternative approaches for identifying preferences:

a) 'Revealed preference' involves inferring an individual's preferences from the choices that they make.

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[7] Kahneman, D. ,2011, *Thinking Fast and Slow*. Kahneman's System 1 and System 2 reasoning are rooted in the dual-process models discussed in the psychology literature. For example, in their framework, Posner and Snyder (1975) discuss that human decision-making involves two distinct types of thinking and describe them as automatic (based on intuition) and controlled (based on deliberative reasoning).

[8] CMA, 2019, Consumer protection law compliance, Principles for businesses offering online accommodation booking services.

[9] CMA, 2023, CMA calls on Emma Sleep to change its online sales practices.

b) ‘Stated preference’ involves understanding individuals’ preferences through what they say they want or would do in a particular situation.

3.10 The discipline of welfare economics has typically placed greater weight on revealed preference in understanding an individual’s preferences and welfare. This is largely because of the challenges involved in implementing the alternative stated preference approach. In particular, there is a concern that there may be little at stake for the individual when stating a preference or answering questions, where the costs of providing an incorrect answer to a hypothetical choice are typically low. For example, respondents to a survey may state they prefer a particular brand or have an intention to vote in a particular way, but it may be more helpful to observe what consumers purchase through sales data or to observe the outcome of an election to understand the preferences of consumers and voters. Economics, focused as it is on the role of incentives, has, therefore, typically placed more weight on revealed preference compared to stated preference.

3.11 However, as noted above and discussed in more detail in Section 4, there are several features of the online environment that mean that a user’s choices may sometimes be less reflective of their underlying preferences and welfare than is the case in other contexts. This suggests that there may be circumstances in which stated preference is a more valuable tool for understanding what individuals really want. This is likely to be particularly the case where aspects of the online environment are able to shape the user’s choices (for example, through the way that choices are ranked, framed, and displayed). Reflecting on this insight, several papers have suggested that algorithms designed to understand what people want (such as recommender systems) should seek to understand the mental state of a user, and not only rely on what people do, given that users can behave in ways that they may not want to (for example, clicking and scrolling endlessly).[10]

3.12 We note that there are some critiques in the literature of the notion of stable, underlying preferences.[11] We agree that preferences are not necessarily stable - they can change over time and be influenced by various factors, including online choice architecture (OCA), context, and experience. [12]

Welfare

3.13 The choices that a user makes affect the welfare of that user. Some choices will result in better welfare outcomes for users as compared to other choices. For example, a decision to spend an extra 20-minute scrolling on a social media feed or spending a little bit more on an online game, may not bring as much ‘utility’ (or pleasure) to a user as another choice that they could have made with their time or money.

3.14 In an online context, using choices to understand the value that consumers place on certain activities and services may, in some circumstances, lead us to misinterpret consumer

[10] See, for example, Kleinburg, Ludwig, Mullainathan and Raghavan, 2023, The Inversion Problem: Why algorithms should infer mental state and not just predict behaviour and Kleinberg, Mullainathan and Raghaven, the Challenge of Understanding What Users Want: Inconsistent Preferences and Engagement Optimization.
[11] See for example Infante et al (2015) Preference purification and the inner rational agent: a critique of the conventional wisdom of behavioural welfare economics.
[12] See, for example, Jacobs, M. (2016). Accounting for changing tastes: approaches to explaining unstable individual preferences. Review of Economics, 67(2), 121-183.

demand and welfare. In welfare economics, the demand curve represents the relationship between the price of a good and the marginal benefit that consumers will experience from consuming an additional unit of the good. Consumers who choose to consume additional 'unit' of online services (for example, by spending more time or more money) are assumed to benefit from this choice, which may not be the case if the choices that they are making do not reflect their true preferences. For example, it is not necessarily the case that users are improving their welfare by spending longer periods of time online (they may be exhibiting problematic behaviour in terms of the time spent online or may be consuming 'bad' content as they spent time online).[13] A key focus of this paper is to consider the circumstances under which the choices that people make may not reflect what they want, and ultimately what is beneficial for them.

3.15 While individual welfare describes the outcomes of people's choices in terms of the benefits they receive from those choices and the costs they incur because of them, social welfare is the aggregation of these costs and benefits over all the individuals in a society. Crucially, measures of social welfare also take account of 'externalities', which are the costs and benefits that an individual's choices impose on others in society. While these externalities are not the main focus of this paper, we note that they provide the principal basis for many policy and regulatory interventions (including mandating, subsidising, taxing or prohibiting certain activities).

Conclusion

3.16 This section has described the differences between choices and preferences, and how they can be used to understand individual and social welfare. We have noted that while in many contexts there is a good reason for using an individual's choices as a guide to understand their preferences and welfare, there are limitations to this approach in an online context. This is due to the ability of online platforms to use choice architecture to influence those choices. This leads us to two important implications:

a) Firstly, stated preferences – asking an individual about what they want, and how they feel about the choices they have made – can be a particularly useful tool to supplement our understanding of an individual's preferences in an online context.
b) Secondly, there is a case for encouraging users to make certain choices using System 2 reasoning – in a more deliberative, conscious way – in order to ensure that their choices are more reflective of their preferences and enhance their welfare.

3.17 Section 4 explores the features of the online environment which may lead to people making choices that may not reflect their preferences, thus harming their welfare, while Section 5 sets out possible interventions to support users in making choices that reflect their underlying preferences.

[13] See, for example, Beknazar-Yuzbashev, Jimenez-Duran, and Stalinski, 2024, A Model of Harmful yet Engaging Content on Social Media.

4. Features of the online environment

4.1 This section describes features of the online environment that can lead users to make choices that do not correspond to their preferences, and the implications of these features on their welfare. The section starts by describing the role of online intermediaries and their commercial incentives.

Online intermediaries

4.2 Websites and online intermediaries such as social media platforms often have an incentive to encourage their users to spend as much time as possible on their website or platform. This is because the time that a user spends on a platform increases the value of that user for that website or platform; this is either in terms of the money that the user spends, the value of the data that user generates, or the value of the user in terms of advertising revenue.[14]

4.3 This incentive may lead to content being served in a way that encourages users to choose to spend longer online than they would prefer. It may also lead to platforms promoting certain types of content that some users would prefer not to see. For example, polarising content has been found to drive engagement and clicks, giving online intermediaries an incentive to promote this type of content.[15] We acknowledge that these incentives are likely to differ between platforms – for example, the incentive to keep users on a platform is likely to be stronger for companies that sell display advertising as opposed to search advertising.

4.4 This business model can lead to services that 'monopolise' users' attention against their interests, leading to users making choices online that are not optimal or reflective of their preferences. O'Reilly et al. (2023) argue that platforms, in the presence of limited user attention (due to the huge quantities of information that users experience online), have the ability to abuse their role as trusted intermediaries to direct user attention to sub-optimal (and often, sponsored) information.[16]

4.5 The next section describes the features of the online environment that mean that users' choices do not always reflect their preferences. These features relate to a wide range of online activities (such as retail, gaming, and social media) but, recognising the particularly important role played by social media platforms in users' online lives, we focus on social media in several of the examples given below.

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[14] See for example: page 4, Aridor, Jimenez-Duran, Levy and Song, The Economics of Social Media and page 445, Rosenquist, Scott Morton and Weinstein, 2021, Addictive Technology and its Implications for Antitrust Enforcement.

[15] Page 15, Ofcom, 2024, Online News Research update. Our research update identifies research by Robertson et al. (2023) which find that headlines with negative and sad words increase clicks and research by Rathje et al. (2021) found that references to 'out-groups' in social media posts were the strongest predictor of engagement, and that negative, moral-emotional words were generally associated with increased shares and reposts.

[16] O'Reilly, Strauss and Mazzucato, 2023, Algorithmic Attention Rents: A theory of digital platform market power.

4.6 While the focus of this paper is on these features, and how to respond to them, we also note that online intermediaries can enhance users' cognitive, social, and psychological well-being. They provide instant access to vast amounts of information, facilitating cognitive offloading, where the internet is used for information storage, freeing cognitive resources for more complex tasks. [17] This accessibility allows for quick retrieval of knowledge, making it easier to learn and stay informed. Additionally, the ability to connect with others, express oneself, and find health information online can contribute to mental health benefits, such as reduced symptoms of major depression and anxiety. [18] Retaining and enhancing these benefits, while addressing legitimate concerns about user welfare and autonomy, should be a key objective of regulatory interventions in this area, as discussed in Section 5.

The online environment

4.7 Several features of the services offered by online intermediaries mean that users' actions online may not always reflect their underlying preferences:

a) **Choice architecture:** online intermediaries have a high degree of control over the user experience through features such as the ordering of content, the framing of choices, and the use of default settings.
b) **Algorithmic curation of content using user data:** online intermediaries gather large amounts of data on their users which allows for personalisation and fast and frequent testing of different approaches, all of which can be used to further shape and influence user choice. [19]
c) **Features that encourage automatic thinking:** the use of features such as infinite scrolling, autoplay and prompts for immediate reactions can lead to users making fast and inattentive choices rather than more considered choices and spending longer online than they would wish.
d) **Network effects**: for users of social media in particular, the perceived need to use a platform can be driven by the use that their friends make of the platform, leading them to feel compelled to be online for longer than they would ideally want, due to the fear of the social repercussions of limiting their use of social media.
e) **Market power**: can enable online intermediaries to impose practices that may not align with users' best interests, further enhancing their control over user behaviour and limiting the ability for users to make choices better aligned with their preferences.

[17] Firth, J., Torous, J., Stubbs, B., Firth, J. A., Steiner, G. Z., Smith, L., L., Alvarez-Jimenez, M., Gleeson, J., Vancampfort, D., Armitage, C.J. and Sarris, J. (2019). The 'online brain': how the Internet may be changing our cognition. World Psychiatry, 18(2), 119-129.
[18] Hampton, K. N. (2019). Social media and change in psychological distress over time: The role of social causation. Journal of Computer-Mediated Communication, 24(5), 205-222.
[19] Google have stated 'In 2022, we ran over 800,000 experiments that resulted in more than 4,000 improvements to Search.' https://www.google.com/search/howsearchworks/how-search-works/rigorous-testing/

Choice architecture

4.8 Choice architecture refers to the way that choices (such as rankings or defaults) are presented to individuals. Choice architecture can have a significant impact on the choices users make.[20]

4.9 An example of how choice architecture can influence what users do is the ordering of content. We conducted an online experiment utilising eye-tracking technology to investigate the effect of content ranking in a social media feed, which found that the positioning of a news article on a page strongly affects its likelihood of being read and remembered. News posts displayed towards the top of the user's social media feed received 14 times as much attention as posts positioned towards the bottom of the feed and were 8 times more likely to be spontaneously recalled by the user.[21] This study demonstrates that choices regarding the placement of content by an online platform have a substantial impact on the level of user engagement with that content. This is consistent with evidence from other studies – for example, studies focusing on shopping search results make similar findings regarding the frequency with which the top results are selected.[22]

4.10 The Competition and Markets Authority (CMA) has described a taxonomy of 21 online choice architecture practices that influence consumers through the way in which choices are presented (such as defaults and ranking), the information that is presented (such as framing and complexity of language), and the pressure applied to consumers' choices (such as reminders and scarcity claims).[23] Each of the practices has the potential to shape or change consumer choices in a way that may result in worse outcomes for the consumer. Practices relating to structure (for example, defaults, ranking, and dark nudges[24]) are likely to be particularly relevant for online choices that consumers might regret later (such as spending too much time online or engaging in activities that they would prefer to avoid, such as the consumption of misinformation).

Algorithmic curation of content using data

4.11 Online intermediaries can gather large amounts of data on their users, allowing for personalisation and fast and frequent testing of different approaches.[25]

4.12 For example, intermediaries can engage in 'A/B testing' which enables them to test different features or screen layouts and compare which features or layouts drive the greatest 'user engagement' (i.e., time spent on the platform). These types of tests can be conducted

[20] Thaler, R., H., Sunstein, C. R., and Balz, J. P. (2010). Choice Architecture.
[21] Lumen Research (for Ofcom), 2023, Media Plurality Online: Attention to News on Social Media.
[22] See a summary of these studies on page 13 of O'Reilly, Strauss and Mazzucato, 2023, Algorithmic Attention Rents: A theory of digital platform market power.
[23] Paragraph 1.5, CMA, 2022, Online Choice Architecture, How digital design can harm competition and consumers.
[24] Dark nudges are where the online platform makes it easy or removes friction so that consumers make inadvertent or ill-considered decisions (page 19, CMA, 2022, Online Choice Architecture, How digital design can harm competition and consumers).
[25] Paragraph 4, CMA, 2022, Online Choice Architecture, How digital design can harm competition and consumers.

frequently and with high precision, meaning that the online environment can be tailored to individuals and used to steer users' choices and keep them online for longer.

4.13 The combination of an intermediary's incentives to maximise user time on its services, and its ability to use the large quantities of user data collected during this time to personalise and adapt the service, can work together to create a feedback loop. As the online intermediary keeps its users online for longer, it can gather more information about them, which is then can be used to further personalise and adapt the service, in turn keeping the user online for longer. The CMA and ICO have also noted that choice architecture can be used by online intermediaries to encourage the extraction of personal data. [26]

4.14 Fletcher et al. (2023) discuss that recommender systems may suffer from biases due to incomplete information about users' preferences, leading to systemic biases in their recommendations. These include popularity bias, incumbency bias, homogeneity bias, and conformity bias. The influence of these recommender system biases may also be amplified by the online choice architectures through which recommendations are presented. These systemic biases, in turn, may cause users' choices to diverge from their preferences. [27]

4.15 Recent advances in the development of generative AI and foundation models provide another important means by which the large-scale use of data by online intermediaries may influence and steer user choices and preferences. For example, one recent study found that 'opinionated' large language models influenced the social attitudes of participants who had been exposed to them.[28] This study and other related evidence on the impact of large language models have been discussed in the CMA report on AI Foundation Models.[29]

Features that encourage automatic thinking

4.16 As discussed in Section 3, it is helpful to differentiate between two broad types of thinking: a fast, automatic, frequent, unconscious mode of thinking based on instinct and intuition (System 1) and a slower, more effortful, and conscious mode of thinking based on logical and systematic thought (System 2).[30]

4.17 Both modes of thinking are used online and offline, but the distinction is particularly relevant in the online environment. The online environment features elements likely to engage System 1 thinking, including large quantities of information and data, frequent updates, alerts, and notifications; and repeated interactions with the same websites (such as checking social media). Given the large number of decisions that must be made on a regular basis, and the huge range of options available, use of System 1 thinking is necessary to allow the user to navigate a platform's services without spending excessive time. However, platforms can also introduce design features that induce automatic thinking, such as prompts to instantly react with a 'like' or comment, endless scrolling of newsfeeds and auto-play defaults on video content. Such features can encourage users to spend more time

[26] See the CMA / ICO joint position paper on 'How Online Choice Architecture practices can undermine consumer choice and control over personal information'.
[27] Fletcher, A., Ormosi, P. L., & Savani, R. (2023). Recommender' systems and supplier competition on platforms. Journal of Competition Law & Economics, 19(3), 397-426.
[28] Jakesch et al. (2022) Interacting with Opinionated Language Models Changes Users' Views
[29] CMA, 2023, AI Foundation Models Initial Report.
[30] Kahnemann, D. (2011), *Thinking Fast and Slow*.

online, hijack their attention, and engage in behaviours such as 'doomscrolling' and 'going down rabbit holes.'[31]

4.18 Habit formation is an important part of System 1 thinking, and platforms can deploy a range of design features that encourage habitual use. For example, features such as newsfeeds or the potential to gain 'rewards' (e.g., 'likes' or in-game currency) keep users checking sites and returning to websites or apps. The need to keep checking can lead to feelings of withdrawal, if not done. It can also lead to regret and disappointment when checking does not yield a 'reward.'[32] Other examples include notification banners or messages from apps on a user's phone. The Gambling Commission identifies direct communications from operators to gamblers as a type of 'trigger' leading to gambling activity.[33]

Network effects

4.19 The services provided by online intermediaries are often characterised by network effects, particularly, in the case of social media platforms. Network effects occur when the value a user derives from a platform is related to the number of other users of that platform, especially among their existing friends and contacts (i.e., the more users of the platform, the more valuable it becomes for each individual user). For example, in social media, more users mean each individual user is more likely to be able to connect with and interact with their friends and contacts.

4.20 Network effects can give rise to coordination problems and 'traps'. These are situations occur when users would prefer not to use certain networks such as social media (either specific networks or networks in general), but feel compelled to do so because others do. There may be a coordination problem if a large number of users want to switch to an alternative network (or abandon networks entirely) but cannot coordinate this change. Bursztyn et al. (2023) find that some users of social media platforms are trapped in an inefficient equilibrium, where they have negative utility from using the platform, but would experience even greater negative utility if they did not use it while their friends continue to do so (due to the social costs of not being on a platform with their contacts). These users would be better off if the service did not exist, but due to coordination failure, they continue using a service that causes them negative utility because they cannot coordinate leaving with other users.[34]

[31] See for example: Cho, Choi, Kim, Kang, Choe and Lee, 2021, Reflect, not Regret: Understanding Regretful Smartphone use with App Feature-Level Analysis and Rosenquist, Scott Morton and Weinstein, 2021, Addictive Technology and its Implications for Antitrust Enforcement.
[32] See for example: Cho, Choi, Kim, Kang, Choe and Lee, 2021, Reflect, not Regret: Understanding Regretful Smartphone use with App Feature-Level Analysis. Rosenquist, Scott Morton and Weinstein, 2021, Addictive Technology and its Implications for Antitrust Enforcement notes that social media platforms use reward schedules that have properties similar to substances such as cigarettes and alcohol (p446).
[33] See: https://www.gamblingcommission.gov.uk/about-us/guide/page/implications-for-higher-risk-gamblers
[34] Bursztyn, Handel, Jimenez-Duran, Roth, 2023, When Product Markets Become Collective Traps: The Case of Social Media.

Market power

4.21 Online intermediaries may also possess market power.[35] This can result in a lack of alternative choices for users, reinforcing the intermediaries' ability to dictate their own rules. Such practices imposed by intermediaries may not align with users' best interests, further enhancing the intermediaries' control over user behaviour. Consequently, users may find themselves navigating a digital environment where alternatives are scarce, autonomy is reduced, and choices are influenced by the platform's rules. Strauss et al. (2023) identify market power over user's attention as allowing online platforms to offer their users a worse experience.[36] Doctorow has described the process by which online platforms, unconstrained by competition, decay over time and offer their users a worse service.[37]

4.22 When online intermediaries hold market power, they have the potential to exacerbate other features identified in this section (which means their influence over user behaviour is likely to become more pronounced). Users may spend even more time on a platform due to network effects, which provides intermediaries with more data with to fine-tune algorithms and encourage longer user engagement.

4.23 Conversely, online intermediaries facing strong competition may have a stronger incentive to offer a wider range of high-quality online services. Rosenquist et al. (2021) suggest that in competitive social media markets, firms could compete by offering innovative user interfaces that promote mental health and safer social media experiences (e.g., offering better time limits and parental controls).[38]

Welfare implications

4.24 These features of the online environment have the potential to harm both the individual user's welfare and the broader welfare of society.

Implications for individual welfare

4.25 Users' welfare may be harmed through the overconsumption of online content and the consumption of content that does not align with their preferences (including, for example, content such as violent content or misinformation that users state they do not want to consume).[39]

4.26 The extent of any welfare loss is likely to vary significantly on a case-by-case basis, however, it is worth noting that this could involve significant harm. People spend a lot of time online, with our research indicating that, on average, people spend 3 hours 41 minutes online per day, and this is even higher for young people (4 hours 36 minutes).[40] In their experiment, Bursztyn et al. (2023) found that 60% of active TikTok users experienced negative welfare

[35] CMA, 2020, Online platforms and digital advertising. CMA, 2022, Mobile Ecosystems.
[36] O'Reilly, Strauss and Mazzucato, 2023, Algorithmic Attention Rents: A theory of digital platform market power.
[37] Financial Times, 'Enshittification' is coming for absolutely everything' [Accessed May 2024].
[38] Rosenquist, Scott Morton and Weinstein, 2021, Addictive Technology and its Implications for Antitrust Enforcement.
[39] Rather than content that is 'wrong' in a normative sense.
[40] Page 12, Ofcom, 28 November 2023, Online Nation.

from the product's existence. Users were willing to pay $24 on average to have others, including themselves, deactivate TikTok.

Digital addiction

4.27 In extreme cases, the online environment can lead to problems of online addiction. Allcott et al. (2022), conceptualise digital addiction as the combination of habit formation (i.e., previous consumption stimulates current demand) and impulsive consumption (where demand is higher 'in the moment' than the individual would have chosen in advance). The authors develop a model of digital addiction and use a randomised control trial to test this model. They simulate the effects of habit formation and self-control problems on smartphone use and find that self-control problems account for 31% of social media use.[41]

4.28 A meta-review by Meng at al. (2022) identified 504 studies covering over 2 million individuals from 64 countries and found that a significant proportion of people were 'addicted' to smartphones, social media or the internet (among other online activities).[42] Several papers focus on problematic smart phone use in particular: Olson et al. (2022) test which smartphone features can be disabled (such as switching to greyscale and turning off notifications) in order to reduce smartphone use;[43] and Shin and Dey (2013) focus on identifying problematic smart phone use and its causes (based on interviews with 'problematic' users).[44]

4.29 There is an ongoing debate regarding the nature and exact boundaries of certain addictions. For example, some online activities, such as gaming, have been classified as disorders by the World Health Organisation.[45] In considering the impact on individual users, this paper focuses on the addictive nature of certain online features in the context of users forming habits and having self-control problems, rather than the clinical definition of specific addictions as diseases. This paper also focuses on the harms that problematic use of online activities inflicts on users. We define addiction and problematic use as engaging in online activities to an extent that it harms the users and / or causes regret, rather than referring to a specific clinical threshold. Defining addiction and problematic use in this way for the purposes of this paper is consistent with the approach used by both the NHS, which recognises addiction as having a broad definition, whereby users who do not have control engage in something to the point where it could be harmful to them,[46] and the Gambling Commission, which has a focus on 'problem gambling' and 'at-risk gambling'.[47]

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[41] Allcott, Gentzhow and Song, 2022, Digital Addiction.
[42] Meng, Cheng, Li, Yang, Zheng, Chang, Shi, Chen, Lu, Sun, Bao and Shi, 2022, Global prevalence of digital addiction in general population: A systematic review and meta-analysis.
[43] Olson, Sandra, Chmoulevitch, Raz and Veissiere, 2022, A Nudge-Based Intervention to Reduce Problematic Smartphone Use: Randomised Control Trial.
[44] Shin and Dey, 2013, Automatically Detecting Problematic Use of Smartphones.
[45] See for example: BBC, 2018, Gaming addiction classified as disorder by WHO [Accessed May 2024], and Guardian, 2024, Everyone is on their phones: but is it really phone addiction we're experiencing? [Accessed May 2024].
[46] NHS, Addiction: What is it? [Accessed May 2024].
[47] Gambling Commission, 2022, Problem and at-risk gambling.

Exposure to harmful content

4.30 Our research into young people's experiences online has identified significant potential harms (such as distress and anxiety) from accessing content related to violence, self-harm etc., which in many cases, young people access either inadvertently or due to perceived pressure.[48] The content provided by these services, even if harmful, can be difficult for users to avoid engaging with. Our research has found that platforms may share and disseminate violent content to young people, who may engage with it even though they would prefer not to.[49] Several US states are suing Instagram and its parent company Meta over allegations that Meta knowingly induced young children and teenagers into addictive and compulsive social media use. [50]

Implications for social welfare

4.31 In addition to impacts on the welfare of individual online users, the features discussed above can also have substantial implications for broader societal welfare. While these societal harms are not the main focus of this paper, actions taken to support individual users in making better choices may also yield wider positive benefits. For example, consuming information quickly in a System 1 mode of reasoning can reinforce group prejudices or underlying biases. Davenport et al. (2023) find that Facebook users are more likely to demonstrate bias and discriminate against 'out-groups' (i.e. people who are different from them) when they engage in activities that rely more heavily on System 1 thinking (such as using the Facebook's 'News Feed', which is a 'high-frequency online behaviour') compared to activities relying more heavily on System 2 thinking (such as using the Facebook's 'People You May Know' feature, where users more deliberatively choose whom to friend).[51]

4.32 Moreover, consuming information quickly in a System 1 mode of reasoning combined with the influence of choice architecture, could lead to overconsumption of misinformation or polarising content, which can result in societal costs (such as diminished trust in institutions and election results).[52] Our research into online news and media plurality has found that: [53]

a) Social media platforms have considerable influence over the news users see and remember;
b) Social media platforms expose users to narrower range of news topics compared to traditional news sources;
c) People who use social media for news are more polarised, less informed about important news, and less trusting of democratic institutions than those who rely on traditional news sources;

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[48] Family Kids & Youth, March 2024, Understanding Pathways to Online Violent Content Among Children and Ipsos UK and TONIC Research, March 2024, Online Content: Qualitative Research, experience of children encountering online content relating to eating disorders, self-harm and suicide.
[49] Family Kids & Youth, March 2024, Understanding Pathways to Online Violent Content Among Children.
[50] New York Times, Meta Sued Over Features That Hook Children to Instagram, Facebook.
[51] Agan, Davenport, Ludwig and Mullainathan (2023). Automating Automaticity: How the context of human choice affects the extent of algorithmic bias.
[52] For example, The Global Risks Report (2023) identifies misinformation and disinformation as risks that could erode social cohesion, destabilise trust in information, and impact political processes. A 2019 report jointly published by CHEQ and the University of Baltimore estimates the economic cost of fake news to be $78 billion.
[53] Ofcom, November 2022, Media Plurality and Online News Discussion Document.

d) There is a variety of potential ways in which news consumption on social media could help lead to these outcomes, including: algorithms promoting polarising content on the basis that it drives engagement; personalisation exposing users to a narrow range of views, increasing the risk of echo chambers; and tools for the sharing of content leading to the spread of mis- and disinformation.

4.33 There may also be harms to the competitive process if, for instance, competition is muted or dampened because consumers are not able to select the best service for them and do not switch due to addictive features or problematic use of online services.[54] This can impact all users – for example, leading to higher prices, less innovation among platforms (like fewer offers of safer or better online experiences), lower quality services, or increased advertising.[55]

Conclusion

4.34 This section has described how various features of the online environment shape user choices and their impact on individual and social welfare. The next section discusses tools and interventions that could help users make better choices online that align better with their preferences and improve their welfare.

[54] Fletcher, A., Ormosi, P. L., & Savani, R. (2023). Recommender systems and supplier competition on platforms. Journal of Competition Law & Economics, 19(3), 397-426.

[55] See for example: Section 4, CMA, 2022, Online Choice Architecture, How digital design can harm competition and consumers and page 465, Rosenquist, Scott Morton and Weinstein, 2021, Addictive Technology and its Implications for Antitrust Enforcement.

5. Tools to empower users

5.1 This section discusses the existing literature on practical tools that could help users make choices online that are more closely aligned with their preferences. It starts from the principle that individuals are likely to make better choices in circumstances when they can make a reasoned, considered choice and then act on their decision, and builds on previous Behavioural Research we have conducted on empowering social media users.[56]

5.2 The section begins with a review of different types of user empowerment tool, including prompts, self-control, and media literacy tools. Then, it discusses both the benefits and challenges of such ways of supporting users, particularly, the frictions and costs created by such tools, and the risks of unsuccessful interventions. To overcome these challenges, we propose a framework for considering when such interventions are more likely to be helpful, and how and when to deploy them to maximise the chances of success.

Types of user empowerment tool

5.3 In this section we consider evidence on the type of interventions that could be effective in helping people make choices more aligned with their preferences, thereby improving their welfare.

5.4 We focus on what we call 'user-empowerment tools' which are interventions that aim to help users make choices using their System 2 reasoning, rather than their System 1 reasoning. Such tools aim to help users make better decisions (for example by assisting them to develop strategies for situations where they might be engaged in System 1 reasoning). These tools are intended to help ensure that user choices are more closely aligned with their preferences and are less influenced by aspects of the online environment.

5.5 User empowerment tools are one way to help users make better choices online. We acknowledge that there is a wide range of alternative or complementary measures that could help support better choices (such as banning certain practices, or promoting greater competition between platforms), which are beyond the scope of this paper. User empowerment tools are attractive options to explore from a policy perspective in part because they support individual choice rather than replacing it. Below, we assess a range of such tools: prompts, self-control tools, media literacy, and changes to platform design.

Prompts

5.6 Utilising prompts for behaviour change involves strategically integrating cues or reminders into daily routines either to help individuals to reflect on their actions and make a proactive choice that they may not have considered (e.g., prompts encouraging the user to take a specific action such as 'Have you considered changing your user settings?') or to ask the user to reflect before taking an action (e.g., prompts that add friction and ask users questions like: 'Are you sure you want to share this content?').

[56] Behavioural insights to empower social media users (ofcom.org.uk)

5.7 In the context of online choices, prompts could be used to help individuals improve their welfare by encouraging them to reflect on their online behaviours before engaging. For example, prompts could remind users to assess the purpose and impact of their online activities, encouraging them to consider whether their time spent online aligns with their personal goals and values. By prompting users to pause and reflect, this approach may promote more mindful and intentional use of digital platforms and encourage users to make choices better aligned with their preferences.

5.8 Research suggests that the timing and framing of prompts are important factors in their effectiveness. Our Behavioural Insight Hub has conducted a range of work considering the effectiveness of different types of prompts, as discussed in Box 1 below.

Box 1: Ofcom's analysis on the effectiveness of prompts

Content controls on social media: content controls, which allow users to choose whether to reduce the amount of sensitive content they see, are a tool offered by social media platforms. However, only 26% of people say they have ever used them. We conducted a range of randomised control trials to test the effectiveness of prompts relating to sensitive content at two different stages of the user journey on a mock-up social media platform:

(a) at sign-up; and,

(b) during browsing (when users were invited to 'check and update' their settings).

In relation to sign-up, the research found that:

- Users who were defaulted to the 'all content type' setting at the sign-up were less likely to change their settings to 'reduced sensitive content' than users who were not defaulted.
- Users who experienced prompts at sign-up were more likely to select 'reduced sensitive content' when descriptions of sensitive content were shown as part of the sign-up process and were unlikely to change their settings after the initial sign-up.

In relation to the 'check and update' trial, the research found that:

(a) Users were more likely to change their settings after receiving a prompt than users who did not receive a prompt.

(b) However, users who had a default content setting at the sign-up were less likely to change their settings after a prompt than users with no default content setting (suggesting initial settings are 'sticky').

(c) Prompts that emphasised the ease of changing settings led to a higher proportion of users changing their setting compared to prompts that offered a sense of control.,

(d) Additionally, prompts after engagement with sensitive content were more likely to lead to changes in settings than prompts made before engagement with sensitive content.

In summary, the research found that defaults, salience, prompts, timing, and motivational messages all shaped user choices. Across both trials, most users stuck with the initial setting, even when provided with low-effort opportunities to revise it.[57]

[57] Ofcom, 2024, Behavioural insights to empower social media users.

Viewing and reporting of potentially harmful content: We carried out several randomised control trials to understand the effect of differences in the user interface to encourage users to report potentially harmful content to the online platform. We explored the extent to which users engaged with:

- video content by using prompts to alert users to potentially harmful content, and
- content-reporting mechanisms by changing the choice architecture to make the reporting mechanism more salient.

The trials found that users were more likely to skip potentially harmful content when they were prompted with a message indicating that others had reported the content to be potentially sensitive. The trials also found that raising the salience of the reporting option and prompting users to report the video if they had commented or disliked it increased the likelihood of the video being reported.[58]

Auto-skip and auto-play default prompts: We conducted research to determine whether the impact of the alert message varied depending on whether the potentially harmful content auto-played after the alert message was shown.

The research found that users who were exposed to an auto-skip default and an alert message were less likely to watch potentially harmful content. However, conversely the research did not find that an alert message combined with an auto-play default reduced the probability of participants skipping potentially harmful content. Although with the auto-play default, more participants started to watch the potentially harmful content and then skipped it compared to just the active choice alert message. Therefore, with auto-play users were more likely to be exposed to potentially harmful content compared to just an alert message.[59]

Promoting user engagement with Terms and Conditions: We carried out an online randomised control trial to assess the effectiveness of prompts and reframing messages on users' access to Community Guidelines[60] during sign-up.

The study found that prompts were the only effective method for increasing engagement with the platform's Community Guidelines. However, despite encouraging users to access these guidelines, prompts did not significantly affect user reporting or reposting of content that violated the platform's rules (referred to as 'violative content'). This implies that additional strategies may be needed to promote compliance with the platform's rules beyond mere engagement with terms and conditions. [61]

Self-control tools

5.9 Self-control tools include tools that help users monitor their online behaviours or commit to certain behaviours. Examples include screentime tools that allow a user to understand how

[58] The trial also found that other measures (not including prompts) such as raising the prominence increased the likelihood that videos were reported. Ofcom, 2022, Behavioural insights for online safety: understanding the impact of video sharing platform (VSP) design on user behaviour.
[59] Ofcom, 2023, Defaults and Alert Messages.
[60] Community Guidelines are a set of rules that define how users should behave on a platform, including what content is allowed and who can access the service.
[61] Ofcom, 2024, Promoting user engagement with Terms and Conditions.

long they are spending online (either on particular apps, or in total), tools that give the user rewards for sticking to certain usage limits (as in Allcott et al. (2022) paper on digital addiction), and tools allow the user to block usage (either completely or after exceeding certain time limits).

5.10 Numerous studies have examined the impact of self-monitoring tools on self-control issues in offline environments. For instance, Davydenko and Kolbuszewska (2021) conducted a meta-analysis focusing on financial decision-making, while Abraham et al. (2009) conducted a meta-analysis on promoting healthier practices related to physical activity and eating habits. These studies showed the effectiveness of self-monitoring tools in relation to controlling spending and increasing physical activity and healthy eating.

5.11 There is now growing interest in understanding the effectiveness of self-monitoring tools in addressing similar issues within the online environment. For instance, Hoong (2021) discovered that participants significantly reduced their usage of smartphones and Facebook after implementing a soft commitment device in the form of a screen time limit (for example, the introduction of an app limit on Facebook reduced Facebook usage by 31%). These findings also highlight the challenges individuals face in exercising self-control; even after the introduction of this limit, their actual time spent on Facebook and their phones during the experiment exceeded their anticipated and preferred time spent.

5.12 Allcott et al. (2022) found that in their experiment, participants who received a digital tool allowing them to set personalised daily time limits for individual apps reduced their social media usage by over 20 minutes per day (16%) over twelve weeks. They also estimated the impact of paying people to reduce their social media use and found that reductions in use persisted even after the payments stopped. They used a structural model to predict the overall long-run effect of these tools on social media use and estimated that they led to a 31% decrease in social media use.

5.13 Additionally, Roffarello and Russis (2023) conducted a systematic review and meta-analysis of the effectiveness of self-control tools in reducing digital use. Their analysis included tools such as setting time limits, blocking access to specific apps or websites, disabling notifications, and providing prompts to inform users about their digital habits or encourage them to take breaks. They concluded that these self-control tools are effective in reducing time spent on digital devices and applications, with a moderate effect observed in the short-term to medium- term, but that the long-term effectiveness of these tools has not been widely studied in the field, yet.

Media literacy, inoculation and 'self-nudging'

5.14 A wide range of interventions to support informed choice can be grouped under the broad category of media literacy interventions, including inoculation and self-nudging approaches. At a high level, these all involve supporting and training individuals so that they are better able to make decisions online that correspond more closely to their underlying preferences.

5.15 Making Sense of Media (MSOM) is our initiative aimed at enhancing the online skills, knowledge, and understanding of both UK adults and children. [62] MSOM accomplishes this by disseminating evidence-based insights and motivating the media literacy community to

[62] Ofcom, n.d. Making Sense of Media.

experiment with activities and initiatives that align with MSOM's objectives. The programme emphasises both people and platforms. MSOM collaborates with online platforms and services to identify effective online practices and areas for improvement. Recently, this has included the creation of Best Practice Principles for Media Literacy by Design, offering guidance to social media, gaming, pornography, sharing, and search services of all sizes on developing on-platform interventions to foster media literacy. [63]

5.16 The inoculation approach comprises methods by which users can prepare themselves for situations in which they anticipate they will have self-control problems or at risk of being unduly influenced by choice architecture by learning to deal with these situations in advance. The inoculation approach typically focuses on controlled exposure to a 'threat'—a deliberate strategy aimed at bolstering resistance against its persuasive impact. For example, 'The Bad News Game' teaches users how to identify misinformation and has been found to help users to think about the news that they read online and boost users' confidence and ability to identify misinformation (Basol et al. (2020)). Strategies such as inoculation, when applied effectively, can empower users to cultivate discernment skills. These skills could enable them to recognise subtle design features and contextual situations where their choices may deviate from their preferences. Consequently, inoculated users can make more informed decisions that improve their welfare.

5.17 Self-nudging is an approach to improving media literacy which encourages individuals to create their own nudges, by reminding users of behaviours that they would like to pursue in situations where they might act otherwise. Examples could include hiding unhealthy food at the back of the fridge, or the 'if-then' framework, in which an individual creates a rule such as 'if I am tempted to snack, then I will eat fruit instead of cake.'[64] Self-nudges in the context of online behaviour could include developing strategies such as having a plan for what to do (for example, go for a short walk outside) if you are tempted to open a particular app. There is currently limited evidence on the effectiveness of such measures.

Changes to platform design

5.18 The interventions discussed so far can potentially be made without the involvement of the online intermediary (for example, by using third party tools or developing one's own strategies). However, platforms can play a significant role in addressing the issues discussed, by introducing empowerment tools and techniques to their own services, either voluntarily or through regulatory intervention.

5.19 Possible changes to platform design to empower user choice could include:

a) Additional frictions (such as prompts, time delays, or adding extra steps) when users exceed certain usage times, notifying users when they spend excessive time on the platform over consecutive days, and prompting users to take breaks.
b) Defaults which could be particularly effective in helping users manage self-control problems. A meta-analysis of default effects found that defaults are more effective when they operate through endorsement (defaults that are seen as conveying what the decision-maker 'should' do) or endowment (defaults that are seen as reflecting the

[63] Ofcom, n.d. Establishing best practice media literacy design principles.
[64] Reijula and Hertwig (2020). Self-nudging and the citizen choice architect.

status quo).[65] Our research found that the choice of either auto-play or auto-skip defaults, combined with alert prompts may affect user's exposure to potentially harmful content (see Box 1).

c) Enhanced transparency, such as i) adopting a traffic light system like food labelling for social media use, ii) offering users a choice over algorithm-driven content, or iii) providing transparency about algorithm functionality.

5.20 In April, Ofcom published 'Best Practice Principles for On-Platform Interventions to Promote Media Literacy'[66]. These set out how platforms might best use on-platform interventions to promote media literacy and present a non-exhaustive list of best-practice principles for how social media, search, video-sharing, and gaming services can promote media literacy by design.

5.21 In their guidance for firms on the Consumer Duty (i.e., the standard of care that financial services firms should offer consumers in retail financial markets), the FCA recommends that firms incorporate positive frictions into their processes. This encourages users to slow down and take more time in their decision-making, supporting better outcomes. For example, adding an additional step by requiring customers to watch an educational video before purchasing a complex or high-risk investment product can slow down transactions. This could help customers make informed and reasoned decisions. [67]

Which features of online environments can user empowerment tools address?

5.22 User empowerment interventions aim to enhance users' control, autonomy, and decision-making within the online environment. These interventions can help address several of the features of online environments discussed in the previous section that might otherwise lead people to make choices that do not align with their preferences, including the use of choice architecture, curation of content using data and features that encourage automatic thinking.

5.23 However, other features of the online environment, notably network effects and market power, present challenges that individual user empowerment measures alone are unlikely to be able to affect. As discussed above, network effects give rise to coordination problems that can only be addressed collectively rather than individual action. Similarly, problems arising from market power and barriers to entry cannot be addressed by user empowerment alone and are likely to require the use of regulatory measures and policies aimed at promoting competition.

5.24 Annex 1 provides a more granular analysis of how the range of potential user empowerment interventions set out in this paper address specific behavioural barriers that might lead users to make choices that do not align with their preferences. It is based on the Capability, Opportunity, and Motivation (COM-B) model of behaviour, which suggests that there are three essential conditions required for informed choice to occur: Capability (e.g., physical

[65] Jachimowicz, Duncan, Weber and Johnson, 2019, When and why defaults influence decisions: a meta-analysis of default effects.
[66] Ofcom, 2024, Media Literacy by Design.
[67] FCA, 2022, Final non-Handbook Guidance for firms on the Consumer Duty.

skill or knowledge), Opportunity (e.g., prompts in the environment, time, and resources) and Motivation (e.g., beliefs about what is good and bad, emotional reactions, impulses).[68]

Potential challenges

5.25 If well-designed and deployed at the right time, user empowerment tools can be effective in helping users make choices that better align with their preferences and interests. However, deploying user empowerment tools effectively raises several challenges.

5.26 Firstly, in the online environment, users have to make a large number of choices, and it is unlikely to be reasonable, nor practical, to expect users to make all choices using System 2 reasoning or to add frictions that consistently require users to slow down their reasoning to better control their behaviour online. System 1 reasoning plays an important role in helping people make certain choices (for example, those made frequently or where there is little at stake), and excessive use of methods to help users make better choices by eliciting System 2 responses may lead to problems of choice overload, annoyance, or frictions that detract from the user experience, potentially reducing user welfare. Therefore, any interventions must be used carefully while considering all these risks.

5.27 Second, the choices people make online, and how they make those choices, are likely to vary between individuals and contexts. Behaviour may be shaped and evolve over time depending on an individual's upbringing, past experiences, and other passive influences.[69] Furthermore, there may be specific characteristics and differences in individuals' capabilities in engaging in online activities, which mean they may need more help and support when making choices online.

5.28 Therefore, the question of when to intervene to help users make better choices online is likely to be context-specific, both in terms of the nature of the online activity and the nature of the individual in question. The next section describes the factors and circumstances that could help us understand when it may be particularly beneficial to introduce user empowerment tools.

When are user empowerment tools most likely to be helpful?

5.29 For a user empowerment intervention to be effective, one or more of the features of the online environment set out in Section 4 should be present, and there should be a clear link between the risk factor motivating the intervention (e.g., a tendency to engage in System 1 thinking, leading to excessive amounts of time online) and the intervention in question (e.g., a self-control tool). Annex 1 provides a more detailed discussion of how different user empowerment tools may address a range of barriers to informed choice.

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[68] Michie, S., van Stralen, M., and West, R., 2021. The behaviour change wheel: A new method for characterising and designing behaviour change interventions.

[69] See, for example, the Gambling Commission's 'Path to Play Framework' which describes the different stages an individual may take when making decisions in relation to gambling: https://www.gamblingcommission.gov.uk/about-us/guide/page/the-path-to-play-framework.

5.30 In addition, we consider that the case for regulatory intervention to introduce user empowerment tools is likely to be stronger where:

a) There is evidence of problematic outcomes, notably users expressing regret at the time they have spent online or the choices they have made or problematic market outcomes arising from market power;
b) Users targeted by a particular feature or practice are likely to be vulnerable such that self-control issues may be particularly problematic (for example, children);
c) The nature of the online content being engaged with is likely to be particularly harmful to the individual or broader society.

5.31 We discuss each of these circumstances in turn.

Evidence of user regret

5.32 There is a stronger case for user empowerment tools where there is evidence that users experience regret after making a choice that is not aligned with their preferences.[70] A study has shown that Facebook users experience an improved mood upon logging in and then an increasingly negative mood as they spend longer on the site.[71] Research has shown that younger people experience regret (and in some cases worse forms of harm) after experiencing certain content online (for example, violent content).[72] Cho et al. (2021) find that users experience regret (either fully or partially) around one-quarter of the times that they use the apps.[73]

5.33 The case for intervention is also stronger where users say they want to use self-control and other empowerment tools, adopt these where they are made available, and express satisfaction with their deployment, either through trials or in the field. Available tools include screentime limits or apps that help manage screen time and focus,[74] to help users manage their online behaviour. Promoting awareness and targeting barriers which prevent people from using these tools could help a wider set of users (i.e., those who do not currently use tools to help with screentime.)

Vulnerable users

5.34 Where a service targets vulnerable users, interventions to help them make better choices are more likely to be warranted. Ofcom has noted that vulnerability can be either temporary or permanent. Vulnerability might include physical or mental health problems, specific

[70] In practice, some users, especially those with limited experience of a particular service, might struggle to fully anticipate the regret they will feel after making a decision. For example, optimism bias, a common behavioural bias, leads individuals to underestimate negative outcomes and overestimate positive ones.
[71] Hussain, Simonovic, Stupple, Austin, 2019, Using Eye Tracking to Explore Facebook Use and Associations with Facebook Addiction, Mental Well-being, and Personality.
[72] Family Kids & Youth, March 2024, Understanding Pathways to Online Violent Content Among Children and Ipsos UK and TONIC Research, March 2024, Online Content: Qualitative Research, experience of children encountering online content relating to eating disorders, self-harm and suicide.
[73] Page 9, Cho, Choi, Kim, Kang, Choe and Lee, 2021, Reflect, not Regret: Understanding Regretful Smartphone use with App Feature-Level Analysis
[74] See for example: https://www.opal.so/ and https://www.forestapp.cc/

characteristics such as age, literacy skills, or changes in personal circumstances due to bereavement, job loss or changes in household income.[75]

5.35 The Online Safety Act seeks to secure a higher standard of protection for children, and it requires services that are likely to be accessed by children to carry out a children's risk assessment and use proportionate safety measures to keep children safe online. Among the measures that we are currently consulting on are user support tools that will enable children to have more control over their interactions on services that pose a risk of certain harms.[76] More generally, Ofcom's draft Services' Risk Assessment Guidance identifies the importance of taking into account impacts on vulnerable users,[77] and a recent 'Call for Evidence' included questions to help us understand how categorised services determine whether users are vulnerable and how they might be affected by different types of content.[78]

5.36 Individuals with mental health problems represent a further category of potentially vulnerable users. For example, the Money and Mental Health Policy Institute notes how the removal of frictions in online financial services can cause harm in some cases, due to the shorter attention spans, increased impulsivity, and the reduced ability to process complex information experienced by some individuals with mental health problems.[79]

Harmful content

5.37 The case for intervening is likely to be stronger in circumstances where the content being viewed or shared by the user is harmful in nature, either to the individual, or to broader society.

5.38 Important examples of content that are harmful to individuals include the types of content that are the focus of the Online Safety Act. These include various categories of illegal content (such as child sexual exploitation, incitement to violence, promotion of suicidal ideation and terrorism) and content that is harmful to children (such as pornography, and content that promotes self-harm or eating disorders).[80]

5.39 Intervention is also more likely to be justified where negative externalities arise from certain categories of content, particularly those that can cause material harm to others or to broader society. Examples include situations where viral misinformation is spread (potentially harming democracy) or where content that could cause harm to others, or lead others to self-harm is shared.

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[75] Page 1, Ofcom, 2022, Treating Vulnerable Consumers Fairly: A Guide for phone, broadband, and pay-TV providers.
[76] Ofcom, 2024 Protecting children from harm online.
[77] See for example Ofcom, 2023, Protecting people from illegal harms online – Annex 5: Service Risk Assessment Guidance.
[78] Call for evidence: Third phase of online safety regulation (ofcom.org.uk)
[79] Page 6, Money and Mental Health Policy Institute, 2017, Fintech for Good: How financial technology can support people experiencing mental health problems.
[80] See: Family Kids & Youth, March 2024, Understanding Pathways to Online Violent Content Among Children and Ipsos UK and TONIC Research, March 2024, Online Content: Qualitative Research, experience of children encountering online content relating to eating disorders, self-harm and suicide.

Design considerations

5.40 This section considers two design considerations relevant to potential interventions to introduce user empowerment tools: a) the specific timing of any intervention and b) the benefits of coordinating interventions among regulators.

Timing of interventions

5.41 The Behavioural Insight Team identifies 'timeliness' as one of the four main behavioural principles that could be used to shape behaviour. [81] We note that interventions such as prompts can be introduced at different points in a user journey and that their effectiveness may differ depending on the point at which they are introduced. For example, a user could be offered the choice to set a prompt reminding them when they have spent a certain amount of time online. The choice of the time limit could be made when setting-up the device, at the start of a browsing session, or another time (for example, after a browsing session in anticipation of the next session). This likely to have an important effect on how receptive the user is to the empowerment tool.

5.42 For example, a user who is prompted when setting-up a device is more likely to be deploying reflective, System 2 modes of thinking, as they have a range of other important choices to make. This is why system set-up has been used in other regulatory contexts as a key time to engage users. For example, in the context of the DMA, Google introduced choice screens for search engines and browsers during the initial device setup of Android devices. These choice screens aim under the DMA to enhance user control by allowing them to select their preferred search provider and default browser [82] Research carried out by Mozilla found that people are significantly less likely to choose the pre-installed browser as their default if the choice screen is shown at the device set-up stage, compared to when the browser is first used.[83]

5.43 Conversely, other prompts may sometimes be more meaningful to the user if they immediately follow a relevant online experience. For example, our research on content controls on social media (referenced in Box 1 above) found that prompts after engagement with sensitive content were more likely to lead to changes in settings than prompts made before engagement with sensitive content.

Regulatory coordination

5.44 In considering when to intervene to help individuals make better choices, we recognise that several regulators and other bodies may be considering potential interventions to support user choice across a range of policy areas (for example, interventions keep users safe online, interventions to help consumers make more informed purchasing decisions through

[81] The Behavioural Insights Team ran a trial with Her Majesty's Courts Service to test whether well-timed text messages might increase fine payment rates. They found that sending a text message to individuals who owe Court Service fines 10 days before bailiffs are scheduled to visit their homes doubles the value of payments made, without requiring additional intervention. BIT, 2014. EAST Four simple ways to apply behavioural insights [accessed June 12, 2024].

[82] See Article 6(3) of the Digital Market Act, 2023.

[83] Fletcher et al (2024) report on this and other evidence in Implications of behavioural economics for the pro-competitive regulation of digital platforms.

encouraging shopping around, interventions to help users manage their privacy online, and interventions to help users manage addictive behaviours, and so on).

5.45 Without regulatory coordination, this could lead to a risk that users may become overloaded with choices and their effectiveness maybe reduced. There is evidence showing that users might experience fatigue due to repeated exposure to prompts across platforms and learn to ignore pop-ups/frictions over time, reducing their effectiveness.[84] Conversely, coordinated messages that have a common theme and branding maybe more impactful than individual, isolated prompts. We, therefore, consider that there can be value from regulators coordinating on their approaches to using prompts. Coordination and cooperation among regulators have increased considerably in recent years and is likely to become even more important in the future. Through the Digital Regulation Coordination Forum (DRCF) workplan, the Information Commissioner's Office (ICO), Financial Conduct Authority (FCA), Competition and Markets Authority (CMA) and Ofcom have developed approaches for delivering coherent regulatory outcomes where regulations overlap. For example, Ofcom and the ICO have worked together where the ICO's Age-Appropriate Design Code and Ofcom's work on regulating video-sharing platforms overlapped.[85] We will seek to build on this cooperation in the future in developing plans for user empowerment tools.

Conclusion

5.46 This section has set out the evidence on the effectiveness of a range of user empowerment tools. The evidence suggests that several such tools (including prompts, self-control tools, and media literacy) can help users make choices online that are more closely aligned to their preferences. We have noted some potential challenges with the use of these tools, in terms of the friction and costs they can impose on the user, and we have set out a proposed framework for identifying when interventions to help users make better choices maybe the most beneficial.

[84] For example, Bahr, G.S. and Ford, R.A., 2011. How and why pop-ups don't work: Pop-up prompted eyemovements, user affect and decision making. Computers in Human Behavior, 27(2), pp.776-783. Bravo-Lillo, C., Cranor, L., Komanduri, S., Schechter, S. and Sleeper, M., 2014. Harder to ignore? revisiting {Pop-Up} fatigue and approaches to prevent it. In 10th Symposium on Usable Privacy and Security (SOUPS 2014) (pp. 105-111).

6. Conclusion

6.1 This paper has discussed the ways in which we can support users to take actions to enhance their welfare, through user empowerment tools such as prompts, self-control and inoculation tools. It has discussed both the benefits and challenges of such tools in supporting users, in particular, the frictions and costs created by such tools, and the risks of interventions not being successful. To overcome these challenges, the paper has proposed a framework for considering when such interventions are more likely to be successful, and how and when to deploy them to maximise the chances of success. Further, this paper has also described the work that Ofcom has already conducted in relation to understanding how users engage with online services and the effects of prompts, defaults, and the framing of messages on user engagement.

A1. Risk factors addressed by empowerment tools

Table A1: A summary of risk factors and how to address them

COM-B conditions	Sub condition	Risk factor	Intervention
Capability	Cognitive skills	Users might not have the skills to manage online activities effectively.	Prompts, forced exposure, defaults
	Awareness	Users might not be (fully) aware of the negative impacts of excessive online time.	Prompts, inoculation, media literacy
	Attention span	Users need to sustain attention long enough to limit their time and engage in System 2 reasoning, especially in the presence of OCA.	Prompts, self-control tools
	Evaluating options	Users might not have the skills to evaluate alternatives to online activities.	Prompts, media literacy
	Memory	Users need to remember the negative impacts of excessive online time.	Prompts
Opportunity	Prompts in the environment	Users are often not encouraged to reduce/limit their time online by the platforms.	Prompts, defaults, frictions, self-control tools
	Resources & time	The resources provided to users to help them reduce their time online are often inadequate and do not incentivise take up. Can individuals allocate time away from screens?	Prompts, defaults, self-control tools
	Opportunities in the Environment	There are opportunities to create environments that support offline engagement/less online engagement, but the design of platforms often does not facilitate these behaviours.	Prompts, self-control tools, self-nudging
	Social and cultural norms	There is not a strong culture that promotes offline interactions more	Prompts, defaults , media literacy

		than online. It is the opposite: 'Collective trap'.	
	Role models	Role models such as social media bloggers who spend a lot of time online and incentivise it for their users	- Media literacy
Motivation	Beliefs about consequences:	Users might believe that there are no direct consequences of spending time online or of certain choices.	Media literacy, prompts, inoculation
	Identity	Users might not see themselves as people who value offline activities more than online activities or value managing their time online effectively. They might experience FOMO (fear of missing out) if they reduce their online time.	Media literacy, prompts, defaults
	Emotions	Online platforms can have many emotional triggers or OCAs that lead to excessive online use.	Prompts, frictions, defaults, inoculation
	Habits	Many users might already be in the habit of using online platforms, regularly.	Prompts, self-nudging, self-control tools
	Goals	Many users might not have a clear goal or desire to reduce their use.	Media literacy, defaults
	Beliefs in abilities/capabilities	Many users might not think that they can manage their time efficiently because of self-control problems.	Prompts, self-control tools, defaults