

THESIS





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**HYPER-ENGAGING MECHANISMS AND THE EU LEGAL FRAMEWORK:  
an analysis of the lawfulness of practices that increase the time and frequency of  
use of online platforms**

Supervisor:

Dr. Fabrizio Esposito, Professor at NOVA School of Law

May 2023

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A Dissertation submitted to NOVA School of Law in partial fulfilment of the requirements for obtaining the Master's Degree in Business Law and Technology.

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**Anti-plagiarism Statement**

I declare that I am the sole author of this dissertation and that the use of contributions or texts of others is duly referenced. I am aware that the use of unidentified elements from others constitutes a serious ethical and disciplinary fault.

*To my beloved grandpa, Roberto Travassos Ferreira*

*To my beloved stepdad, Miguel Angelo de Carvalho*

*No tribute is enough to show your importance in my life,  
but this is my way of thanking you for making it much  
happier.*

*Ao meu amado avô, Roberto Travassos Ferreira*

*Ao meu amado padrasto, Miguel Angelo de Carvalho*

*Nenhuma homenagem é suficiente para demonstrar a  
importância de vocês na minha vida, mas essa é minha  
maneira de agradecer-lhes por torná-la muito mais feliz.*



## ACKNOWLEDGMENTS

I want to express my profound gratitude to Professor Fabrizio Esposito, whose contribution was essential to completing this work. I am especially grateful for his support and encouragement from the very first moment, the precious suggestions, and his empathy and availability.

I also want to express my thankfulness to WhatNext.Law, which believed in my project from the beginning and granted me a research scholarship to carry out this work. I am very proud and grateful for being part of this inspiring team.

With all my heart, I want to thank my dear family for their tireless support and unconditional love. Bruno, my lovely husband, thank you for walking side by side with me on this crazy journey called life. Ana Luiza, my sister and best friend, thank you for being an endless source of support, love, and encouragement. Lucimara and Roberto, my wonderful parents, thank you for all your efforts to give me the tools I needed to write this dissertation today, especially for making me an optimistic believer who never gives up on the happy ending. Cleonice and Roberto, my beloved grandparents, thank you for being my fortress, for making my life sweeter, for all your care, and for always making me feel somehow special. Miguel, my inspiring stepdad, thank you for encouraging me to always go the extra mile, for bringing so much joy into my life, and for showing me that every second is worth enjoying. Claudia, my dear auntie, thank you for all your support, love, and friendship.

Last but not least, I also want to say thank you very much to NOVA's staff and professors, especially those who teach in the Law and Technology course, for their availability, support and amazing lessons.

Cheers!

## GENERAL NOTES

**Citation:** since this dissertation is written in British English, it adopts OSCOLA (Oxford University Standard for the Citation of Legal Authorities) rules for citations and bibliography.

**Number of characters:** the body of this dissertation, including spaces and footnotes, contains 183.263 characters.

**Abbreviations:** abbreviations are defined throughout the text.

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## Abstract

In the context of the attention economy, online platforms adopt practices that capture and hold users' attention, causing them to use these platforms more frequently and for prolonged periods. These practices, here called Hyper-engaging Mechanisms, involve a complex set of strategies that exploit people's cognitive vulnerabilities, directing their behaviour toward what is most profitable for the businesses. Besides being a form of manipulation, these mechanisms are related to negative consequences for users' health, especially the development of internet addiction. In view of these effects, this dissertation analyses the lawfulness of these practices under the EU legal framework. It focuses on the Unfair Commercial Practices Directive (UCPD) but also includes the Digital Services Act (DSA) and the proposal for the Artificial Intelligence (AI) Act. Based on the analysis, this work concludes that the UCPD prohibits Hyper-engaging Mechanisms and that the current text of the AI Act prohibits using AI to develop such mechanisms. The DSA, despite containing provisions that directly tackle Hyper-engaging Mechanisms, establishes that such provisions do not apply to practices already covered by the UCPD. Lastly, it is worth noting that this research does not aim to present definitive conclusions but rather to demonstrate the relevance of the posed problem and contribute to the discussion about the role of EU law in protecting human autonomy and health in the digital age.

**Keywords:** attention economy – online platforms – engagement – internet addiction – online manipulation – unfair commercial practices – digital services act – artificial intelligence act

## Resumo

No contexto da economia da atenção, as plataformas online adotam práticas que capturam e prendem a atenção dos usuários, fazendo com que eles as utilizem mais frequentemente e por períodos prolongados. Essas práticas, aqui chamadas de Mecanismos de Hiper-engajamento, envolvem um conjunto complexo de estratégias que exploram as vulnerabilidades cognitivas das pessoas, direcionando o seu comportamento para o que é mais lucrativo para as plataformas. Além de serem uma forma de manipulação, esses mecanismos estão relacionados a consequências negativas para a saúde dos usuários, especialmente ao desenvolvimento de adição à internet. Em vista desses efeitos, esta dissertação analisa a legalidade dessas práticas sob a legislação da UE. A análise foca na Diretiva das Práticas Comerciais Desleais (DPCD), mas também inclui o Regulamento Serviços Digitais (RSD) e o proposto Regulamento Inteligência Artificial (RIA). Com base na análise realizada, este trabalho defende que a DPCD proíbe os Mecanismos de Hiper-engajamento e que o texto atual do RIA veda o uso de inteligência artificial para o desenvolvimento desses mecanismos. O RSD, apesar de conter disposições que atacam diretamente os Mecanismos de Hiper-engajamento, estabelece que tais disposições não se aplicam às práticas já cobertas pela DPCD. Por fim, ressalta-se que este trabalho não almeja apresentar conclusões definitivas, mas sim demonstrar a relevância do problema apresentado e contribuir para a discussão acerca do papel da legislação da UE na proteção da autonomia e da saúde humanas na era digital.



**Palavras-chave:** economia da atenção – plataformas online – engajamento – adição à internet – manipulação online – práticas comerciais desleais – regulamento serviços digitais – regulamento inteligência artificial

## INTRODUCTION

In 2022, the average daily social media usage worldwide amounted to 2.45 hours per day per user.<sup>1</sup> Gamers spent 8.45 hours on average per week playing video games in 2021.<sup>2</sup> Numerous surveys and studies point to upward of 25% of humans using their phones and devices to the point of addiction.<sup>3</sup> Besides these significant numbers, an informal empirical observation shows that people of all ages are glued to their smartphones: on the metro, in restaurants, parks, gyms, family dinners and even at school or work.

The starting point of this research was curiosity about what makes online activities much more engaging than real life. So, in-depth research in the specialised literature was carried out, and the main reasons were identified. The current economic model demands fierce competition among online businesses for people's attention. Attention means data, and data mean money (for businesses). However, at the same time, attention means time (for humans), and both time and attention are limited resources. Thus, to be competitive within the market, online platforms developed sophisticated strategies to attract and hold users' attention,<sup>4</sup> which results in a scarcity of attention and, consequently, time for users to do other meaningful activities.<sup>5</sup>

These strategies involve different mechanisms that are primarily grounded in psychology, data analysis, and behavioural economics. They are often built on machine learning, which enables the generation of personalised responses and constant optimisation, and involve a design that affects the allocation of users' attentional resources and interacts with users' dopaminergic systems. As a

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<sup>1</sup> 'Daily time spent on social networking by internet users worldwide from 2012 to 2022' (*Statista*, 22 August 2022) <<https://www.statista.com/statistics/433871/daily-social-media-usage-worldwide/>> accessed 30 August 2022

<sup>2</sup> 'Average weekly hours spent playing video games in selected countries worldwide as of January 2021' (*Statista*, 27 July 2022) <<https://www.statista.com/statistics/273829/average-game-hours-per-day-of-video-gamers-in-selected-countries/>> accessed 30 August 2022

<sup>3</sup> David N Greenfield, 'What Makes the Internet and Smartphone So Addictive?' in Sean M Lane and Paul Atchley (eds), *Human Capacity in the Attention Economy* (American Psychological Association 2021)

<sup>4</sup> Adnan Veysel Ertemel and Ela Ari, 'A Marketing Approach to a Psychological Problem: Problematic Smartphone Use on Adolescents' (2020) *International Journal of Environmental Research & Public Health* <<https://www.mdpi.com/1660-4601/17/7/2471>> accessed 17 January 2022

<sup>5</sup> Herbert A Simon, 'Designing Organizations for an Information-rich World' in Martin Greenberger (ed), *Computers, communications, and the public interest* (The Johns Hopkins Press 1971)

result, these mechanisms impact users' rationality and promote behavioural reinforcement (i.e., repetition), which increases the time and frequency of use of online platforms by people.<sup>6</sup> Experts use different terms to refer to these mechanisms. So, due to the lack of an official term, they will be here referred to as Hyper-engaging Mechanisms.<sup>7</sup>

In addition to boosting the use of online platforms, which means directing people's behaviour towards what is beneficial for the businesses, these mechanisms also have collateral effects on users' well-being. Their functioning is likely to cause users to develop internet addiction and other disorders in the long term.<sup>8</sup> Therefore, besides manipulating users and harming their autonomy, this business model can also have negative impacts on users' health.

After identifying the source and the consequences of the 'problem', the focus of this dissertation was defined. It is first and foremost to find a way of protecting people from Hyper-engaging Mechanisms. Then, as a potential solution, this work investigates whether the deployment of these mechanisms by online platforms is lawful under the European Union (EU) legislation. Different legal instruments were analysed to identify those that could directly protect users from these mechanisms. Among the law currently in force, the best candidate is the Unfair Commercial Practices Directive.<sup>9</sup> Also, two other regulations may be applicable to these practices: the Digital Services Act<sup>10</sup> and the upcoming Artificial Intelligence Act.<sup>11</sup> This work thus examines these three

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<sup>6</sup> Christian Montag and others, 'Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories' (2019) *International Journal of Environmental Research and Public Health* < <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679162/> > accessed 17 January 2022

<sup>7</sup> The term 'Hyper-engaging Mechanisms' was inspired by the concept of 'hypernudge', created by Yeung, who defined it as "Big Data analytic nudges [that] are extremely powerful and potent due to their networked, continuously updated, dynamic and pervasive nature." So, 'Hyper-Engaging' means that engaging strategies are now enhanced by technology, particularly data processing and machine learning, and also by online platforms' pervasiveness and network effects. See Karen Yeung, 'Hypernudge': Big Data as a Mode of Regulation by Design' (2017) *Information, Communication & Society* <<https://doi.org/10.1080/1369118X.2016.1186713>> accessed 9 August 2022

<sup>8</sup> Montag and others (n 6) 2-10

<sup>9</sup> Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market [2005] OJ L149/22 (Unfair Commercial Practices Directive)

<sup>10</sup> Commission, 'Proposal for a Regulation on a Single Market For Digital Services' (Digital Services Act or DSA) COM (2020) 825 final [version of 15 June 2022]. This work has been updated in May 2023 according to the final version of the DSA, which entered into force on 16 November 2022.

<sup>11</sup> Commission, 'Proposal for a Regulation on Artificial Intelligence (Artificial Intelligence Act or AI Act) COM (2021) 206 final [version of 21 April 2021]. This work has been updated in May 2023 according to the current version of the proposal for the AI Act [version of 6 December 2022 – common position of the EU Council].

laws in detail to verify whether they really apply to these practices and how they could be used to protect users from them.

It is worth saying that this work does not intend to give definitive answers but to draw people's attention to Hyper-engaging Mechanisms. Although there are legal analyses on dark patterns and other forms of online manipulation, as well as several studies on the causes of internet addiction, it was not possible to find conclusive legal research on Hyper-engaging Mechanisms. Focused work is relevant in this case because these mechanisms contain relevant technical and consequential specificities that are and not fully covered by previous studies on related matters. Thus, this dissertation aims to fill this gap, putting the discussion on the lawfulness of Hyper-engaging Mechanisms on the table.

Part I of this work will analyse the issue, which is the deployment of Hyper-engaging Mechanisms by online platforms. The context where these mechanisms arise, how they work, and what are their impacts on users. Part II covers the legal analyses. The first section explains how the scope was defined, while the following sections detail the analysis of each legal instrument.

## PART I – THE ISSUE

The first part of this work focuses on Hyper-engaging Mechanisms. The first section presents the economic context in which these mechanisms develop. The second section analyses how Hyper-engaging Mechanisms work and how they affect people's behaviour. The third section examines the consequences of these mechanisms on users' health, while the fourth section analyses their consequences on users' autonomy.

### I. ATTENTION ECONOMY

Over the past decades, the technological capacity to process and transfer data has expanded radically. The dawn of the Information Age affected the world's economies and societies. Intangible resources, namely data and knowledge, became precious for all companies.<sup>12</sup> Also, many new types of business emerged, particularly in the technology industry. Among them are online platforms, which are businesses that apply technology to facilitate interactions between users, collect and process data from such interactions, and have network effects<sup>13</sup>. Social media, video games, streaming websites, and search engines are examples of online platforms.<sup>14</sup>

Unlike other business models, users of online platforms are not the source of companies' revenue, which comes from advertisers.<sup>15</sup> Most online platforms provide 'free' services for users in exchange for their data and attention. At the same time, advertisers (any natural or legal person) pay these platforms to show their content to users.<sup>16</sup> The value of this transaction for advertisers lies in two aspects: people spend a lot of time using online services, and platforms direct advertisers' content

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<sup>12</sup> Amy Kapczynski, 'The Law of Informational Capitalism' (2020) *The Yale Law Journal* <<https://www.yalelawjournal.org/review/the-law-of-informational-capitalism> > accessed 15 January 2022

<sup>13</sup> 'Network effects' refer to the fact that the value of an online platform increases when the number of people who use it increases. How much more people use the platform's services, the more people will want to use them too.

<sup>14</sup> Commission, 'Shaping Europe's digital future' (*Commission Official Website*, 7 June 2022) <<https://digital-strategy.ec.europa.eu/en/policies/online-platforms>> accessed 30 August 2022

<sup>15</sup> Vikram R Bhargava and Manuel Velasquez, 'Ethics of the Attention Economy: The Problem of Social Media Addiction' (2021) *Business Ethics Quarterly* <<https://doi.org/10.1017/beq.2020.32> > accessed 10 August 2021

<sup>16</sup> David S Evans, 'The Economics of Attention Markets' (2017) *SSRN Electronic Journal* <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3044858](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3044858) > accessed 10 August 2021

to targeted users based on personal data processing. Consequently, the more data and attention a platform receives from users (i.e., the longer users stay connected), the more attention and engagement it can sell to advertisers, which means more profits and market power.<sup>17</sup>

Following this logic and considering that attention and time are limited human resources, companies compete for them. To be ahead in this dispute, platforms apply strategies to influence users' allocation of these resources. These tactics can assume different formats, but their final aim is to attract and hold users' attention.<sup>18</sup> This competitive pressure produced this shift in which automated machine processes not only know users' behaviour but also shape their behaviour at scale.<sup>19</sup>

The concept of attention economy was first theorised by Simon in 1971: "in an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it."<sup>20</sup> In line with Simon's wise thought, the competition for users' attention results in a scarcity of attention and, consequently, time for other meaningful activities.

The attention-economy business model is not novel. Radio, television, and newspapers have a long run on such a model. However, the existing technology allows online platforms to personalise content and influence behaviour in ways that radio and television could not (and still cannot) do.<sup>21</sup> The trinity 'access, data, and speed' provided by the technological evolution turned this power of capturing attention into a superpower.<sup>22</sup>

Zuboff states that just as industrial capitalism aimed at the continuous intensification of the means of production, information capitalism (which she calls 'surveillance capitalism') aims to intensify the "means of behavioural modification".<sup>23</sup> And as the industrial age significantly impacted Earth's

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<sup>17</sup> Bhargava and Velasquez (n 15) 20

<sup>18</sup> Ertemel and Ari (n 4) 3

<sup>19</sup> Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (1st edn, PublicAffairs 2019) 15

<sup>20</sup> Simon (n 5) 40-41

<sup>21</sup> Bhargava and Velasquez (n 15) 21

<sup>22</sup> Nir Eyal, *Hooked: how to build habit-forming products* (Penguin 2014) 15

<sup>23</sup> Zuboff (n 19) 15



natural resources, the attention economy has substantially impacted the human experience on Earth.<sup>24</sup> In this sense, researchers from all fields have been studying the effects of algorithms on politics, economies, and societies. In recent years, the world watched the concentration of informational power in big tech companies and an increasing social polarisation that threatens some countries' democratic institutions. Specialists attribute these polarisation effects to the strategies applied by platforms to keep users engaged.<sup>25</sup>

The Information Age represents a big step in humanity's history. It has boosted efficiency, opened new business opportunities, and facilitated trading. It contributed to societies by accelerating the sharing of knowledge and easing access to information, even strengthening democracies. Furthermore, the competition for consumers' attention is much older than the attention economy. So, the use of attention and data *per se* is not the issue. Instead, the problem is the limitless strategies that have been applied in the race for market and informational power.

Data is not the 'new oil', as said by some authors, because, unlike oil, it is not there in nature waiting to be discovered. It is a social product. So, control over data and its production are socially and legally determined,<sup>26</sup> and the law has a fundamental role in granting that technology and data processing truly prioritise human value and are applied to optimise human living.<sup>27</sup>

Protecting humans' autonomy will not slow down the digital transformation but promote its long-term sustainable development while retaining users' trust and preventing harmful side effects for humanity. It is essential to keep in mind that time and attention are not only the currency of the attention economy but also the functional currency of how humans live their lives.<sup>28</sup> Both will end one day, so how do humans want to spend it? Independently of the answer, people must have the right to decide autonomously.

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<sup>24</sup> *ibid*

<sup>25</sup> Bhargava and Velasquez (n 15) 1-2; and Zeinep Tufekci, 'YouTube, the Great Radicalizer' (*The New York Times*, 10 March 2018) < <https://www.nytimes.com/2018/03/10/opinion/sunday/youtube-politics-radical.html> > accessed 06 September 2022

<sup>26</sup> Kapczynski (n 12) 1498-1499

<sup>27</sup> Hossein Hassani, Xu Huang, and Emmanuel Silva, 'The Human Digitalisation Journey: Technology First at the Expense of Humans?' (2021) *Information 2021* < <https://doi.org/10.3390/info12070267> > accessed 17 August 2021

<sup>28</sup> Greenfield (n 3) 27

## II. CONCEPTUAL FOUNDATIONS: HYPER-ENGAGING MECHANISMS

In the context of the attention economy, online platforms developed sophisticated ways to attract and hold users' attention to be competitive within the market. They have been using automated systems that constantly learn and improve the tracking and understanding of users' engagement patterns.<sup>29</sup> The collected data are processed to develop complex design and algorithmic strategies to prolong usage time,<sup>30</sup> which is directly related to the addictive potential of online platforms.<sup>31</sup> Scholars, designers, and psychologists employ different terms to refer to these mechanisms. So, due to the lack of an official concept, these tactics are here referred to as Hyper-engaging Mechanisms.

Hyper-engaging Mechanisms are subtle and usually create habitual behaviour patterns in users' lives.<sup>32</sup> They are often built on machine learning,<sup>33</sup> which enables the generation of algorithm-based personalised content and design (based on data) and constant optimisation.<sup>34</sup> These mechanisms are primarily grounded on psychology (analysis and exploitation of humans' vulnerabilities), data analysis (refinement of the algorithms based on users' behaviour), and behavioural economics (especially heuristics, which are the mental shortcuts people take to make decisions and form opinions).<sup>35</sup>

Humans' evolved biology serves humanity brilliantly in many ways but also includes weaknesses that can be exploited. Hyper-engaging Mechanisms take advantage of many of these natural 'entries', leveraging users' vulnerabilities to generate engagement and, ultimately, corporate

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<sup>29</sup> 'Engagement patterns' refer to what kind of content and/or design attracts users' attention. These patterns are identified based on the individual's response to a digital offering (e.g., time spent on some content, online searches, likes, clicks, etc.).

<sup>30</sup> Montag and others (n 6) 1-16

<sup>31</sup> Bhargava and Velasquez (n 15) 3-24

<sup>32</sup> Olatz Lopez-Fernandez and Daria J. Kuss, *Harmful Internet Use - Part I: Internet Addiction and Problematic Use* (European Parliamentary Research Service 2019) 12

<sup>33</sup> Machine learning is a subfield of artificial intelligence that gives computers the ability to learn without explicitly being programmed. See Sara Brown, 'Machine Learning, explained' (*MIT Management Sloan School*, 21 April 2021) <<https://mitsloan.mit.edu/ideas-made-to-matter/machine-learning-explained>> accessed 10 August 2021

<sup>34</sup> Naomi Fineberg and others, 'Manifesto for a European Research Network into Problematic Usage of the Internet' (2018) *European Neuropsychopharmacology* <<https://linkinghub.elsevier.com/retrieve/pii/S0924977X18303067>> accessed 10 August 2021

<sup>35</sup> Eyal (n 22) 72

revenue.<sup>36</sup> Thus, this kind of online manipulation is neither persuasion, which presents a direct appeal, nor coercion, which restricts acceptable options. It is an exploitation of cognitive vulnerabilities to guide one's decisions without doing so explicitly.<sup>37</sup>

The literature on Hyper-engaging Mechanisms categorises their aspects in different ways. Nevertheless, most authors cite: (i) the use of adaptive algorithms to personalise content (and design); and (ii) an engaging (also called addictive) design.<sup>38</sup> The design usually involves strategies (i) to capture users' attentional resources; (ii) to reinforce users' behaviour; and (iii) to manipulate users through the graphical interface. This division into categories aims to facilitate understanding and cite all aspects of the Hyper-engaging Mechanisms present in the literature. However, it is important to highlight that these strategies are interconnected and often applied simultaneously, as will be further explained.

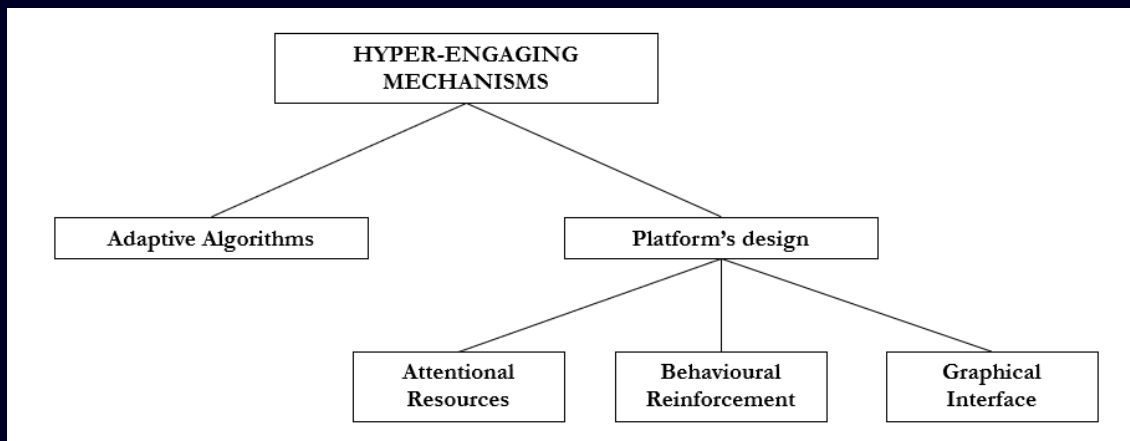


Figure 1 - Hyper-engaging Mechanisms

<sup>36</sup> Center for Humane Technology, 'How Social Media Hacks Our Brains' (1 January 2020) <<https://www.humanetech.com/insights/how-social-media-hacks-our-brains>> accessed 10 January 2022

<sup>37</sup> Gregory Day and Abbey Stemler, 'Are Dark Patterns Anticompetitive?' (2020) *Alabama Law Review*, Forthcoming <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3468321](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468321)> accessed 17 August 2021; and Alejandro Mujica and others, 'Addiction by Design: Some Dimensions and Challenges of Excessive Social Media Use' (2022) *Medical Research Archives* <<https://esmed.org/MRA/mra/article/view/2677>> accessed 17 August 2021; and Bhargava and Velasquez (n 15)

<sup>38</sup> Mujica and others (n 37) 3

## 1. Adaptive Algorithms

Online platforms are embedded with algorithms that personalise the content and design shown to each user to generate hyper-engagement (i.e., to make users spend more time connected). This refinement is done through the processing of users' data and machine learning<sup>39</sup> and received different names in the literature, like persuasion profiling or learning algorithms.<sup>40</sup> Here, they will be referred to as adaptive algorithms.<sup>41</sup>

Since these algorithms are built on machine learning, they can infer rules of future behaviour without being specifically programmed. What happens is that these algorithms lie in 'feedback loops', which means that their results are continually updated and improved based on constant analysis of users' online behaviour and data. They decide according to experience the sequence of actions to perform in order to achieve a given goal (in this case, hold users' attention). By analysing real-time data, these algorithms can accurately make inferences and predictions about users' identity, resources, habits, psychological traits, values, degree of deliberation, and transient states (such as mood and emotions).<sup>42</sup>

In practice, feedback loops work this way: the more one uses the platform, the more data the platform's algorithm has about what keeps that user engaged, and the more the algorithm feeds that user precisely with the content that will keep them hooked even longer, and so the more attractive the platform becomes for that individual.<sup>43</sup> It is worth noting that, besides the information a platform has about a specific user, it also has a vast amount of information about all its users (and even non-users), collected from sources that go beyond users interaction with this specific platform.<sup>44</sup> Moreover, algorithms test what works better for a user or a group of users and improve themselves based on these collective data.<sup>45</sup>

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<sup>39</sup> Fineberg and others (n 34) 1234

<sup>40</sup> Day and Stemler (n 37) 15; and Federico Galli, 'AI and Consumers Manipulation: What the Role of EU Fair Marketing Law?' (2020) *Católica Law Review* 40 <<https://revistas.ucp.pt/index.php/catolicalawreview/article/view/9320> > accessed 25 October 2021

<sup>41</sup> Bhargava and Velasquez (15) 13 - 24

<sup>42</sup> Galli (n 40) 40-41; and Lauren E Willis, 'Deception by Design' (2020) *Harvard Journal of Law & Technology* 121-131 <<https://papers.ssrn.com/abstract=3694575>> accessed 20 December 2021

<sup>43</sup> Bhargava and Velasquez (15) 2-24

<sup>44</sup> Willis (n 42) 121-131

<sup>45</sup> *ibid*

Social media, for example, adjust the content of each user's feed according to how much attention they gave to such content before. Streaming companies apply similar strategies. Other platforms, like videogames, also employ adaptive algorithms to verify which kind of design (e.g., colours, sizes, elements, voice tones) makes users more engaged. Although they are not (commonly) personalised to individual users as social media platforms, they also analyse users' general behaviour to make the game more engaging.<sup>46</sup> Besides using these algorithms for content and design purposes, most platforms also use them to show users targeted advertisements.

Processing user data to influence content is not new. Businesses (like television) have been using data analysis to adapt their content for many years. What is new is the level of granularity with which adaptive algorithms can tailor platforms to specific individuals and do so continuously, automatically, and in real-time.<sup>47</sup> A platform that is optimized in real-time is designed based on dimensions of a moment that might affect whether users respond in the manner desired by the business. This might include, for example, time of day, location, current activity, and emotional or physical state. Furthermore, online platforms not only have the power to micro-target users in real time but also collect much more data and can process them faster than ever before.<sup>48</sup>

Whereas these personalisation qualities are viewed on the one hand as having value for the user, they suggest that the internet does not simply act as a passive medium. Indeed, besides actively capturing users' attention by showing them what they want to see, adaptive algorithms amplify a sense of reward, thereby providing increased behaviour reinforcement (i.e., an individual's action results in a stimulus. This reinforcement increases the probability of (re)occurrence of that action),<sup>49</sup> which is directly connected with excessive internet use (and addiction).<sup>50</sup>

In addition, adaptive algorithms have impacts that go beyond hyper-engagement. When they learn users' preferences and then customise and curate the information they receive, a bubble is created for that user, in a phenomenon called 'filter bubble'. When people become invested in a particular view, they celebrate supportive information and dismiss contradictory information.<sup>51</sup> Taken to an

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<sup>46</sup> Bhargava and Velasquez (15) 2-24

<sup>47</sup> *ibid*

<sup>48</sup> Willis (n 42) 122

<sup>49</sup> See American Psychology Association (APA), 'Positive Reinforcement' APA Dictionary of Psychology < <https://dictionary.apa.org/positive-reinforcement> > accessed 12 August 2021

<sup>50</sup> Fineberg and others (n 34) 1234-1242

<sup>51</sup> Bhargava and Velasquez (15) 13-24

extreme, the result is that society subscribes to different versions of reality. When algorithms tell users what they want to believe, users become more polarised and lose a sense of themselves as a cohesive social group with shared understanding.<sup>52</sup>

## 2. Attentional Resources

Attention is taking possession of the mind, which implies withdrawal from some things to deal effectively with others.<sup>53</sup> It happens because attentional resources, i.e., how much capacity an individual has to process stimuli or information, are limited. Consequently, when individuals receive different stimuli (that can come from internal control or external environment) simultaneously, these resources have to be allocated, which is done through a process called attentional selection. In other words, when there is a competition in cognition for attentional resources, attention can be employed on only one ‘object’ or a very small number of ‘objects’.<sup>54</sup>

Attentional resources are vital for many cognitive processes, and the lack of such resources can produce multiple effects, ranging from failing to encode information to failing to act or make conscious choices. Cognitive processes can be categorised as ‘automatic’ or ‘controlled’. ‘Automatic processes’ are habitual and can be performed concurrently with other tasks. They are triggered by environmental context (e.g., external manipulation) rather than conscious intent. ‘Controlled processes’ require conscious intention or attention to complete but can become automatic with repetition.<sup>55</sup>

Hyper-engaging Mechanisms take advantage of these natural processes by constantly capturing and holding users’ conscious attention (‘controlled processes’) through design strategies (i.e., notifications, personalised content, ‘likes’, etc.). A depletion of resources for conscious attention

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<sup>52</sup> Center for Humane Technology (n 36); and Galli (n 40) 37-45

<sup>53</sup> William James, *The Principles of Psychology* (vol I, Holt 1890) 443-444

<sup>54</sup> Paul Atchley, Sean Lane, and Kacie Mennie, ‘A General Framework for Understanding the Impact of Information Technology on Human Experience’ in Sean M Lane and Paul Atchley (eds), *Human Capacity in the Attention Economy* (American Psychological Association 2021)

<sup>55</sup> *ibid*



causes users to act and behave automatically, meaning that their ability to direct their own choices rationally (i.e., their autonomy) is compromised.<sup>56</sup>

Furthermore, online platforms' competition for users' attention inspires people to multitask, which is in itself an obstacle for individuals to focus on one activity at a time. When users frequently switch attention from one task to another, they experience an 'attention residue' whereby thoughts about the previous activity interfere with the current one, affecting their cognitive control and emotions.<sup>57</sup>

In conclusion, Hyper-engaging Mechanisms involve design strategies that interact with users' natural cognitive processes, leaving them with fewer conscious resources to make rational decisions. So, besides capturing and holding users' attention *per se*, these mechanisms also involve features that put users in a mental state where they are more susceptible to manipulation and with a lower capacity to make autonomous decisions. This state of vulnerability can then be exploited by other features of Hyper-engaging mechanisms and is directly related to individuals' lack of self-control regarding screen time.<sup>58</sup>

### 3. Behavioural Reinforcement

Adaptive algorithms and manipulation of attentional resources essentially capture and hold users' attention, prolonging usage time. However, what makes users come back to the platforms (several times a day)? What makes people crave to check their smartphones so frequently? Researchers say that one reason is that online platforms' design takes advantage of humans' dopaminergic (reward) systems.<sup>59</sup>

Dopamine is the brain's means for reinforcing humans' behaviour.<sup>60</sup> The evolutionary value of the dopaminergic system consists in it being the trigger that teaches and reminds humans to eat and

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<sup>56</sup> *ibid*; and Center for Humane Technology (n 36)

<sup>57</sup> Center for Humane Technology (n 36)

<sup>58</sup> Atchley, Lane, and Mennie (n 54) 11-21

<sup>59</sup> Mujica and others (n 37) 3-24

<sup>60</sup> Oscar Arias-Carrión and others, 'Dopaminergic Reward System: A Short Integrative Review' (2010) *International Archives of Medicine* <<http://www.intarchmed.com/content/3/1/24>> accessed 18 April 2022

procreate by attaching craving for repetition to memories of satiation and pleasure.<sup>61</sup> So, under normal conditions, the dopamine circuit controls an individual's responses to natural rewards, such as food, sex, and social interactions, and is, therefore, an essential determinant of motivation and incentive drive.<sup>62</sup> Additionally, dopamine also participates in the consolidation of memory, which is considered a form of learning (from experience).<sup>63</sup> It tells the memory centres in the brain to pay attention to that rewarding experience so that it can be repeated in the future.<sup>64</sup>

In simplistic terms, the activation of the dopaminergic system tells the individual to repeat what they did before to get that pleasant reward.<sup>65</sup> Even after the reward has been devalued by the absence of appropriate drive states (e.g., hunger or thirst), this stimulus-reward association can remain potent for some time. Over time, this behavioural reinforcement contributes to individuals creating habits and once a habit has been established, it remains largely autonomous until the significance of motivational stimuli has been extinguished or devalued through experience.<sup>66</sup> Besides learning and creating habits, dopamine is also related to addiction, as will be further explained.<sup>67</sup>

Dopamine does not correspond directly to pleasure and the satisfaction of desire ('liking' or 'enjoyment') but rather to 'wanting' and expectation.<sup>68</sup> The anticipation of receiving a possible, pleasant reward provides the most significant elevation of dopamine in humans' brains,<sup>69</sup> meaning that this neurotransmitter plays a more significant role in the motivation to get a reward than the pleasure of the reward itself.<sup>70</sup> In addition, researchers discovered that variable rewards result in an exceptionally high amount of dopamine release and greater learning. In other words, variability and/or uncertainty increases humans' desire.<sup>71</sup>

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<sup>61</sup> Gerald Moore, 'The pharmacology of addiction' (2018) *Parrhesia* < <https://dro.dur.ac.uk/20420/2/20420.pdf> > accessed 18 April 2022

<sup>62</sup> Icahn School of Medicine at Mount Sinai, 'Brain Reward Pathways' (2018) < [https://neuroscience.mssm.edu/nestler/nidappg/brain\\_reward\\_pathways.html](https://neuroscience.mssm.edu/nestler/nidappg/brain_reward_pathways.html) > accessed 20 March 2022

<sup>63</sup> Arias-Carrión and others (n 60) 1-4

<sup>64</sup> Moore (n 61) 190-211

<sup>65</sup> Icahn School of Medicine at Mount Sinai (n 62)

<sup>66</sup> Arias-Carrión and others (n 60) 1-4; and Moore (n 61) 190-211

<sup>67</sup> Stephanie Watson, 'Dopamine: The pathway to pleasure' (*Harvard Health*, 20 July 2021) < <https://www.health.harvard.edu/mind-and-mood/dopamine-the-pathway-to-pleasure> > accessed 20 April 2022

<sup>68</sup> Moore (n 61) 190-211

<sup>69</sup> Greenfield (n 3) 27

<sup>70</sup> Anna Lembke, *Dopamine Nation: Finding Balance in the Age of Indulgence* (Dutton 2021) 41

<sup>71</sup> *ibid* 52-54; and Arias-Carrión and others (n 60) 1-4

The dopaminergic system (i.e., the brain circuit involved in ‘wanting’) is much more powerful than the brain circuit involved in ‘enjoyment’. So, the feeling of wanting something can be so strong that even when people find what they want, they do not get much satisfaction. The design of online platforms often capitalise on the potency of ‘wanting’, providing endless possibilities for seeking and variable rewards but few experiences that satiate. Users might find fleeting pleasure but no enduring satisfaction.<sup>72</sup>

The dopamine cycle depicted below (Figure 2) begins on the left side with a state of desire, referred to here as ‘wanting’, which is akin to a type of craving for stimulation that either arises from boredom or from habit formation in which organisms have learned that certain actions will lead to certain rewards. ‘Wanting’ leads to ‘seeking’ behaviours intended to find sources of stimulation or to procure previously encountered rewards. Seeking leads organisms to ‘anticipate’ the rewards that are being sought. ‘Triggers’ represent specific signals that rewards may be coming or are near, which prompt additional actions related to the receipt or consumption of the ‘reward’. Since the ‘anticipated reward’ is often more potent than the received reward, this ensures that wanting and seeking continue, fuelling the next cycle in the series.<sup>73</sup>

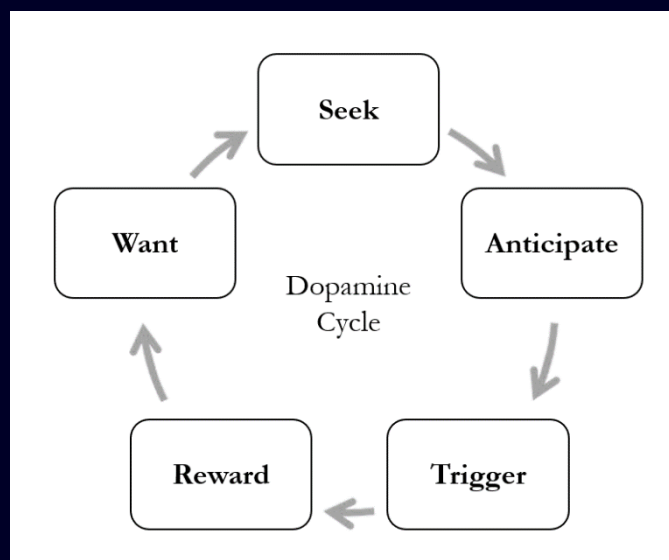


Figure 2 - The Dopamine Cycle<sup>74</sup>

<sup>72</sup> Eyal (n 22) 13

<sup>73</sup> Mujica and others (n 37) 16

<sup>74</sup> Mujica and others (n 37) 16

Online platforms take advantage of users' dopaminergic systems to make their services more engaging. An excellent way to explain how platforms do this is by presenting a behavioural model. Behavioural models describe how Hyper-engaging Mechanisms can be applied to make users create a new habit. In other words, how online platforms are developed in a way that promotes frequent, long-duration, and long-lasting usage.

The first famous behaviour model developed for designing persuasive technologies is the Fogg Behaviour Model (FBM). Professor Brian Jeffrey Fogg, who founded Stanford's Persuasive Technology Lab (later renamed Behaviour Design Lab), developed the FBM. He published this model in 2009, and since then, it has inspired designers, engineers, companies, and even other models.<sup>75</sup>

According to the FBM, for a person to perform a target behaviour, they must be sufficiently motivated, be able to perform the aimed behaviour, and be triggered to act. These three factors must occur at the exact moment; else, the behaviour will not happen. So, to induce behaviour, the technology needs to create or boost these three factors in a given time. Fogg relates motivation to humans' natural motivations, like pleasure and pain, hope and fear, and social acceptance and rejection, and says that platforms can use these motivations to induce the aimed behaviour. Regarding ability, online platforms need to make the behaviour easier to do. The lesser time, money, and mental or physical effort the user needs to spend, the easier it is for them to behave in a certain way. The trigger, in turn, relates to the previous elements and shall motivate, facilitate, and/or call the user for action. The type of trigger will vary according to the intended behaviour.<sup>76</sup>

Although the FBM is very important and still very useful, some new models are more updated and complete. One of the most recognised ones, especially by technology designers, is the Hook Model (HM), developed by Nir Eyal and presented in his 2014 book "*Hooked: how to build habit-forming products*". This model was based on consumer psychology, human-computer interaction,

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<sup>75</sup> Brian Jeffrey Fogg, 'A Behavior Model for Persuasive Design' (2009) Proceedings of the 4th International Conference on Persuasive Technology (ACM Press) <<http://portal.acm.org/citation.cfm?doid=1541948.1541999>> accessed 17 March 2022

<sup>76</sup> *ibid*

behavioural economics, and analyses of today's most successful habit-forming products. As the book's name anticipated, the HM is a pattern for building habit-forming technology.<sup>77</sup>

Thus, the HM's goal is not to change one-time behaviours. Instead, it is a design pattern to create spontaneous engagement that will occur with significant frequency and last as much as possible. So, considering that the dopaminergic system is the part of the human brain responsible for behaviour reinforcement and habits, the HM teaches how tech companies can exploit this pathway to make using their products or services a frequent and long-lasting habit.

Habits are automatic behaviours triggered by situational cues or, in other words, things people do with little or no conscious thought. As explained before, this reduction of consciousness is related to the allocation of attentional resources. Brains understand that habitual behaviours do not require much attention because they are automatic. Furthermore, after the new habit is unconsciously formed, not using that product or service will cause discomfort to the user until the 'desire' is satisfied.<sup>78</sup>

Moreover, Eyal says that once the habit is created and customers form routines around a product, they depend upon it, becoming less sensitive to price and less likely to switch to other products. For example, it is standard practice for game developers to delay asking users to pay money until they have played consistently and habitually. The reason is that once the compulsion to play is in place and the desire to progress in the game increases, converting users into paying customers is easier.<sup>79</sup>

Although habit-forming products condition users' behaviours, Eyal argues that it is essential to maintain a sense of user autonomy. When users' autonomy is threatened, they often rebel against doing a new behaviour, which psychologists name 'reactance'. So, to create a new habit, users need to believe they are acting according to their own choices. The HM then must be subtle.<sup>80</sup>

The core of the HM is a four-phase cycle ('hook cycle') that, according to Eyal, the technology or platform shall put users through to hook them. The cycle is constituted by: (i) a trigger for users to start using the product; (ii) an action users do to satisfy the trigger; (iii) a variable reward for the

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<sup>77</sup> Eyal (n 22) 19-38.

<sup>78</sup> *ibid*

<sup>79</sup> *ibid*

<sup>80</sup> *ibid* 77-107

action done; and (iv) some type of investment that, ultimately, makes the product more valuable to the user and/or increases the chances of they coming back.<sup>81</sup> The intention is to make users run through the cycle as often as possible, endlessly, until they form a habit. From the financial perspective, Eyal says the HM increases the value of a company by boosting the customer lifetime value, which is “the amount of money made from a customer before that person switches to a competitor, stops using the product, or dies”.<sup>82</sup>

The figure below (Figure 3) presents how the HM phases directly relate to those of the dopamine cycle. The connection between their phases will be further analysed below. But, in summary, except for the investment phase, which does not have a direct correlation with the dopamine cycle, the HM is designed to cause the necessary stimulus humans’ brains need to complete an entire dopamine cycle, which is what makes a person create a new habit.<sup>83</sup> In practice, the HM generates limitless cycles that keep users on automatic pilot in a time-distorting, distractible, and vigilant neurophysiologic state, which may inhibit them from making intentional choices.<sup>84</sup>

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<sup>81</sup> Nir and Far, ‘The Hook Model: How to Manufacture Desire in 4 Steps’ (Nir and Far, 2022) < <https://www.nirandfar.com/how-to-manufacture-desire/> > accessed 28 April 2022

<sup>82</sup> Eyal (n 22) 19

<sup>83</sup> Mujica and others (n 37) 1-16

<sup>84</sup> Greenfield (n 3) 37



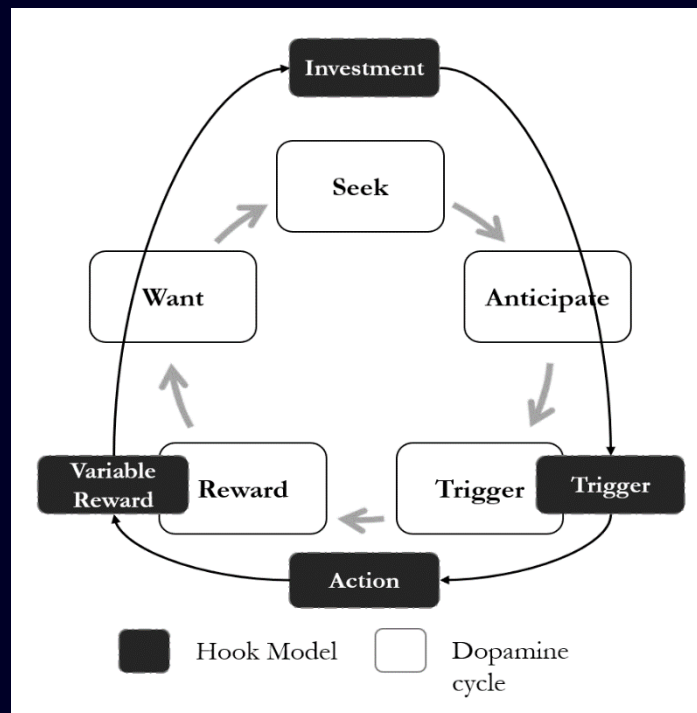


Figure 3 - Hook Model and the dopamine cycle

### i. Trigger

The HM's trigger is directly related to the dopamine cycle's trigger, in the sense that the former intentionally stimulates the latter to signal to the brain that a potential reward is coming.<sup>85</sup>

In the HM, triggers come in two types: external and internal. Habit-forming technologies start by cueing users to action with external triggers (e.g., notifications). These triggers usually attempt to reduce the thinking required to take the desired action, increasing the likelihood of the behaviour occurring unconsciously. By running through several Hook Cycles, users begin to form associations between the product and their internal triggers, so it becomes attached to existing behaviours and emotions. Soon users are internally triggered every time they feel or act a certain way. Thus, a new habit is formed, and no external cue is needed. Essentially, external triggers spark new habits, but associations with internal triggers keep users hooked.<sup>86</sup>

<sup>85</sup> Mujica and others (n 37) 16

<sup>86</sup> Eyal (n 22) 34-48

Regarding external triggers, online platforms' notifications are the best example. Sensory notification instruments work strategically on users' emotions to start and replay the cycle of capturing attention.<sup>87</sup> As humans' attention is a limited resource, the brain's 'salience network', which helps humans to recognise threats and opportunities, acts as a circuit breaker, signalling when the brain should direct its resources to some new, external source. Vibrations, red dots, flashing lights, banners, etc., constantly grab users' attention by interacting with this network.<sup>88</sup>

In practice, when users receive a notification from a platform, it activates a reward cue for the possibility of something being there. It creates a combination of a classical conditioning response loop and a rewards conditioning. A neurological connection is formed because users associate the notification with the biochemical pleasure response they receive from the elevation of dopamine—and they expect a reward. This expectation is resistant to extinction, so users have to find nothing pleasurable on the platform for a long time to stop checking their phones or computers naturally.<sup>89</sup> In turn, when they check and find something desirable, they likely receive a secondary reinforcing dopamine hit, which further increases the reward loop. It is very similar to what happens when people play with slot machines.<sup>90</sup>

Concerning internal triggers, Eyal says that companies must analyse the frustration or pain point in emotional terms to identify potential internal triggers to which their product may attach. Habit-forming products aim to create this association so that the user identifies the company's product or service as a source of relief for their pain or discomfort. For example, after using Instagram for a while, users start to associate the platform with their social connection needs. Then, no external trigger is necessary to call them to use the platform. When they feel lonely or bored, they will access the service.<sup>91</sup>

Lastly, although there is no literature about this specific point, it is interesting to reflect on whether internal triggers only exploit existent humans' pains or if they create new needs. Since, as exposed before, online platforms do not provide real and durable relief but instead increase users' desire,

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<sup>87</sup> Santiago Giraldo-Luque, Pedro Nicolas Aldana Afanador, and Cristina Fernandez-Rovira, 'The Struggle for Human Attention: Between the Abuse of Social Media and Digital Wellbeing' (2020) Healthcare < <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7712353/> > accessed 17 August 2021

<sup>88</sup> Center for Humane Technology (n 36)

<sup>89</sup> Greenfield (n 3) 36-37

<sup>90</sup> *ibid* 32-33

<sup>91</sup> Eyal (n 22) 34-48

this maximisation of craving maybe creates a compulsive habit that is not related to a pre-existent vulnerability. Nevertheless, this new compulsive habit is *per se* an emotional pain, like excessive social comparison that becomes a mental-health issue.<sup>92</sup>

## ii. Action

In the HM, after the trigger comes the action, which is the behaviour done in anticipation of a reward. Since habits are behaviours done with little or no conscious thought, the less effort required to perform the desired action, the more likely it will occur. After the action, the next step is the reward, which will provide the user with temporary satisfaction. So, the action often relates to the reward. Instagram, for example, keeps updating its software to ease the act of posting a photo. After posting the picture, the user expects to receive ‘likes’, which are the reward. Both the action and the reward are linked with humans’ need for social acceptance (motivator).<sup>93</sup>

In the dopamine cycle, the action happens between the trigger and the reward. Right after the trigger, “brain dopamine firing decreases not just to baseline levels (i.e., a tonic level of dopamine firing even in the absence of rewards), but below baseline levels”.<sup>94</sup> This transient dopamine deficit state is what motivates users to seek out their rewards by acting. Therefore, dopamine levels below baseline, caused by the trigger, drive craving, which generates a purposeful action to obtain the reward.<sup>95</sup>

## iii. Variable reward

The HM’s third step is the variable reward phase, in which online platforms ‘reward’ users for the action taken in the previous step to strengthen their motivation to repeat this action in the future. The difference between the HM and a simple feedback loop is this model’s ability to create desire by generating unpredictable results (i.e., variable rewards). Without variability, once users found out what would happen next, they would be less excited about the experience. So, to maintain users’ interest, experiences must offer infinite variability. Platforms like YouTube, Instagram, TikTok, and Twitter leverage user-generated content to provide visitors with a never-ending

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<sup>92</sup> Georgia Wells, Jeff Horwitz, and Deepa Seetharaman, ‘Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show’ (*The Wall Street Journal*, 14 September 2021) < <https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739> > accessed 12 April 2022

<sup>93</sup> Eyal (n 22) 49-76

<sup>94</sup> Lembke (n 70) 51

<sup>95</sup> *ibid*

stream of newness. The variable reward is one of the most potent tools in the Hyper-engaging Mechanisms toolbox.<sup>96</sup>

As explained before, the brain's dopaminergic system is directly involved in humans' hunt for rewards. These rewards can be food, water, money, 'likes' (i.e., social acceptance), 'tweets' (i.e., social connection), drugs, or any other human need or source of pleasure. However, variable (or unpredictable) rewards cause a higher dopamine release in humans' brains, which means a stronger desire for users. Besides that, uncertainty creates a focused state that suppresses the areas of the brain associated with judgment and reason. So, herein lies the power of variability.<sup>97</sup>

Eyal distinguishes three types of variable rewards that platforms can use: the tribe, the hunt, and the self. Rewards of the tribe type relate to the search for social rewards fuelled by connection with other people. The best example of these rewards is the 'like'. Rewards of the hunt type relate to the search for material resources and information. This mechanism, which humans used to guarantee their survival, can now be exploited to make them search for 'rewards', like 'tweets' or videos. Lastly, rewards of the self type are related to the search for intrinsic rewards of mastery, competence, and completion. Video game prizes are a perfect example of this type of reward.<sup>98</sup>

The HM's variable reward generates the 'reward stimulus' in the brain's dopamine cycle, which means the moment when individuals (and their brains) get what they want. It is the moment when the dopamine levels are at the highest and when the behaviour (i.e., action done to get the reward) is memorised to be repeated in the future. After that, dopamine levels will decrease, and the dopaminergic system will make the individual wants, seeks, and anticipates that reward repeatedly, sensitising them to the trigger that will start the cycle again.<sup>99</sup>

#### **iv. Investment**

In the investment phase, users are prompted to put something of value in the platform (e.g., time, data, effort, social capital, money) to increase the likelihood of them keep using the product and

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<sup>96</sup> Eyal (n 22) 77-107

<sup>97</sup> *ibid* 13

<sup>98</sup> *ibid* 77-107

<sup>99</sup> Lembke (n 70) 53

running through the Hook Cycle again. During this phase, users often set future triggers that companies use to reengage them and/or others in the future.<sup>100</sup>

Although users do not stay hooked forever, switching to a competitor is more difficult when they have made a personal investment in a platform. The non-transferable value created and stored in these services often discourages users from leaving. Connecting with friends, stating preferences, building virtual assets (like reaching a high number of followers), and learning to use new features are all investments users make to improve their experience. These commitments can be used to make the trigger more engaging, the action easier, and the reward more exciting throughout each Hook Cycle. The big idea behind the investment phase is to leverage the user's understanding that the service will get better with use (and personal investment).<sup>101</sup>

On Twitter, for example, the investment may come in the form of following another user. There is no immediate reward for following someone, no stars or badges to affirm the action. However, following is an investment in the platform that increases the likelihood of the user checking Twitter in the future to see the tweets of the people they follow. In general, users invest in platforms by actively or passively providing data.<sup>102</sup>

The investment phase does not relate to a specific phase of the dopamine cycle. Still, as it comes after the variable reward, it is known that it happens after the reward phase of the dopamine cycle, which means the stage where the dopamine levels are well above the tonic baseline and users are still feeling a good sensation.<sup>103</sup> So, as Eyal says, this is the moment when users are primed to reciprocate.<sup>104</sup>

#### 4. Interface Design

Although Hyper-engaging Mechanisms have changed over time, and online platforms explore different strategies according to the content they offer, some elements are common and

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<sup>100</sup> Eyal (n 22) 123

<sup>101</sup> *ibid* 77-107

<sup>102</sup> *ibid* 116-117

<sup>103</sup> Lembke (n 70) 51-52

<sup>104</sup> Eyal (n 22) 131

noteworthy regarding interface design. Platforms generally employ features that take advantage of humans' desire for social validation and social reciprocity, and features that erode natural stopping cues (i.e., internal control).<sup>105</sup> These elements do not come alone. They are often part of a complex pool of design strategies and can be employed in different phases of a behaviour model.

### i. Dark patterns

Dark patterns can be defined as “digital interfaces that steer, deceive, coerce, or manipulate consumers into making choices that often are not in their best interests”.<sup>106</sup> At this point, it is relevant to highlight that Hyper-engaging Mechanisms and dark patterns are different concepts. Although they often walk together and both exploit users' cognitive vulnerabilities and biases, here dark patterns are a subtype of Hyper-engaging Mechanisms.

In the most common definitions, dark patterns are based on the graphical design of platforms' interfaces, while Hyper-engaging Mechanisms involve interface design but also content and techniques that are embedded in the software. Another dissimilarity is that dark patterns are used for different purposes, whereas Hyper-engaging Mechanisms refer to strategies focused on increasing the time and frequency of use of online platforms. The goal of creating a separate concept is to cover the full depth and complexity of Hyper-engaging Mechanisms while preserving the current conceptual foundation of dark patterns.

With this approach, what happens in practice is that some dark patterns are employed as part of the Hyper-engaging Mechanisms' strategies. Among the design patterns usually described as 'dark', those that can be associated with hyper-engagement are the 'scarcity effect' (or 'scarcity claims') and the 'infinite scroll' or 'autoplay'.<sup>107</sup>

The appearance of scarcity affects humans' perception of value. When users see something that will last just for a short period, they value it more than when they know that it will be on the platform 'forever' or for an extended period.<sup>108</sup> In practice, when platforms apply this dark pattern, they induce users to access their services more often because they do not want to lose the

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<sup>105</sup> Bhargava and Velasquez (n 15) 6-20

<sup>106</sup> Francisco Lupiáñez-Villanueva and others, *Behavioural Study on Unfair Commercial Practices in the Digital Environment: Dark Patterns and Manipulative Personalisation* (European Commission, EU Consumer Programme, Publications Office of the European Union 2020) 20

<sup>107</sup> See Lupiáñez-Villanueva and others (n 106) and Eyal (n 22).

<sup>108</sup> Eyal (n 22) 70



opportunity to see some content or receive a temporary reward. Instagram, for example, use this resource in its ‘stories’ (they just last for 24 hours). Whereas many videogames give different prizes (rewards) each day, to induce users to play them daily. This mechanism is strictly related to users’ fear of missing out (FOMO), which is the feeling some users feel when they are disconnected from the platforms and then believe that they are losing the opportunity to see or share content.<sup>109</sup>

Natural stopping cues cause the individual to stop and reflect before continuing an action. They can assume any form, but in essence, they promote a significant pause that gives people time to think.<sup>110</sup> ‘Infinite scrolls’ and ‘autoplay’ are the best examples of how platforms erode such natural stopping cues, increasing usage time.<sup>111</sup>

As soon as one video ends on websites like YouTube and Netflix, the following video automatically begins with similar content or the next TV series episode. This feature is known as ‘autoplay’. Social media platforms apply the same logic, although with a different interface. In Pinterest, for example, when users scroll to the bottom of the page, some images appear cut off (i.e., incomplete). However, these images offer a glimpse of what is ahead, even if barely visible. To relieve their curiosity, all users need to do is scroll to reveal the whole picture, and this logic repeats forever. This design is called ‘infinite scroll’.

‘Autoplay’ and ‘infinite scroll’ remove aspects of the interface that could give users time to think, like the existence of an ‘end’ in a page or a break after the end of a video. In other words, platforms remove aspects that could activate users’ natural stopping cues. In essence, these dark patterns are strongly associated with humans’ hunt for variable rewards.<sup>112</sup> They have a significant contribution in making users keep clicking, watching, and scrolling, mindlessly consuming content, often with minimal oversight from cognitive control regions of the brain.<sup>113</sup>

## ii. Social pressure

Humans drive towards social reciprocity and social acceptance. Technology created new ways of showing feelings and appreciation and also new expectations and demands. The best example of

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<sup>109</sup> *ibid* 48; and Greenfield (n 3) 37-38

<sup>110</sup> Mujica and others (n 37) 17

<sup>111</sup> Bhargava and Velasquez (n 15) 6-20; and Lupiáñez-Villanueva and others (n 106) 33

<sup>112</sup> Eyal (n 22) 13

<sup>113</sup> Center for Humane Technology (n 36)

the social pressure mechanism is WhatsApp: if a user sends a message to a friend, the sender is presented with two grey ticks, which means the message has successfully arrived at the recipient's phone. If the recipient reads the message, the grey ticks turn blue. As both sides know about these rules, social pressure emerges. Above all, both parties likely expect a fast answer if the message apparently has been read. The grey-to-blue ticks create a constant sense of alert, making users check their smartphones more frequently.<sup>114</sup>

### iii. Social comparison

Humans naturally evaluate their self-worth by comparing themselves to others. Self-esteem involves an ongoing process of self-affirmation and fighting off threats to self-worth. Humans' habit of measuring themselves against others sometimes inspires them to achieve more, but comparisons more commonly lead to negative emotions: envy, shame, anxiety, or conceit. Social media dramatically escalates the scope and stakes of users' comparisons. It floods them with highly curated images featuring people in special moments, showing only what they want users to see. Influencers establish standards of excellence, and users tether their self-image to those ideals. The 'likes' – which activate powerful reward circuits in the brain – become a commentary on the deepest part of users. This is a recipe for obsessive comparison and self-doubt, that leads users to access social media to compare themselves and 'measure' their self-worth compulsively.<sup>115</sup> In video games, for example, this element is sometimes applied by giving users the chance to buy special features according to their level in the game. These features create a constant comparison among players and make them play more to have access to special items.

## 5. Hyper-engaging Mechanisms in practice: Fortnite

According to the literature, video games are among the platforms with the highest addictive potential.<sup>116</sup> Indeed, video-gaming addiction is classified as a disorder in the ICD-11.<sup>117</sup> In line with

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<sup>114</sup> Montag and others (n 6) 5-8

<sup>115</sup> Center for Humane Technology (n 36)

<sup>116</sup> Lopez-Fernandez and Kuss (n 32) 15

<sup>117</sup> World Health Organization, 'ICD-11 for Mortality and Morbidity Statistics: Disorders due to addictive behaviours' (version February 2022) <<https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2fid%2fentity%2f499894965>> accessed 02 March 2022

that and considering that video games bring many good examples of Hyper-engaging Mechanisms, the game *Fortnite* will be analysed here, with the aim of showing how these complex mechanisms are applied in practice.

Fortnite is one of the most popular video games globally, with 250 million registered players. Most Fortnite weekly players (60%) are aged 10-17, and the game consumes an average of 25% of these players' free time.<sup>118</sup> Besides these incredible numbers, Fortnite is an emblematic example of a freemium business model<sup>119</sup> built to maximise small purchases within the game environment.<sup>120</sup> As part of its strategy, Fortnite is designed for hyper-engagement and can manipulate users, particularly children, to spend more time than they rationally want on the platform.<sup>121</sup> Indeed, there are documented cases of addiction to Fortnite by children who needed severe medical intervention to stop playing.<sup>122</sup> For all these reasons, this specific video game was chosen to be analysed here.

Specialists argue that Fortnite's business model necessitates its developer, Epic Games, to make the game addictive by design because only engaged players that keep returning to the game will (eventually) be tempted to spend money on a free-to-play game.<sup>123</sup> As Eyal wrote, once the compulsion to play is in place and the desire to progress in the game increases, converting users into paying customers is easier.<sup>124</sup> Moreover, Fortnite also earns money from advertisements.

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<sup>118</sup> National Research Group, 'Fortnite the New Social Media?' (4 June 2019) <[https://assets.ctfassets.net/0o6s67aqvwnu/5z4ja8fNx2NputEG49AVWs/ff1f591ad988f9a30856bab68e3908bb/NRG\\_Fortnite\\_White\\_Paper.pdf](https://assets.ctfassets.net/0o6s67aqvwnu/5z4ja8fNx2NputEG49AVWs/ff1f591ad988f9a30856bab68e3908bb/NRG_Fortnite_White_Paper.pdf)> accessed 27 January 2022

<sup>119</sup> Freemium is a type of business model that offers basic features of a product or service to users at no cost and charges a premium for supplemental or advanced features. See Troy Segal, 'Freemium' (*Investopedia*, 02 December 2021) <<https://www.investopedia.com/terms/f/freemium.asp>> accessed 02 August 2022

<sup>120</sup> Marijn Sax and Jef Ausloos, 'Getting Under Your Skin(s): A Legal-Ethical Exploration of Fortnite's Transformation into a Content Delivery Platform and its Manipulative Potential' (2021) *Interactive Entertainment Law Review*, 4(1) 1 <<https://ssrn.com/abstract=3764489>> accessed 24 August 2021

<sup>121</sup> *ibid* 3-27

<sup>122</sup> Silvia Márquez-Arbués and others, 'Adicción al Fortnite con necesidad de desintoxicación hospitalaria' (2021) 38 *Revista de Psiquiatría Infanto-Juvenil* 59 <<https://www.aepnya.eu/index.php/revistaepnya/article/view/401>> accessed 01 March 2022; and Matthew Barbour, 'Girl, 9, in rehab for Fortnite addiction after becoming so hooked she wet herself to keep playing' (*Mirror* 11 June 2018) <<https://www.mirror.co.uk/news/uk-news/girl-9-rehab-after-becoming-12673590>> accessed 01 March 2022

<sup>123</sup> Sax and Ausloos (n 120) 5

<sup>124</sup> Eyal (n 22) 38

Companies can use the platform to publicise their products/services.<sup>125</sup> So, like other platforms, the more time users spend on it, the more profitable it becomes. The attention economy logic.

Fortnite is an ever-developing multiplayer game where users battle to be the last survivor or collaborate to create the Fortnite world of their dreams. Fortnite has three core modes: ‘Battle Royale’<sup>126</sup> and ‘Creative’,<sup>127</sup> which are free, and ‘Save the World’,<sup>128</sup> which is paid.<sup>129</sup> The main goal of the game is to earn access to items (i.e., skins, weapons, and *emotes* – which are dance moves and taunts) that are purely cosmetic ‘upgrades’ for users’ avatars. Although these items do not give a competitive advantage to players, they are trendy and desired by them.<sup>130</sup>

The game is organised in cyclical 10-week seasons. During each season, users are presented with a season-specific progression tree subdivided into ‘levels’. For the duration of a season, they can progress on this tree and unlock season-specific items.<sup>131</sup> Also, Fortnite works with rotating daily and weekly challenges, which give access to unique items for a limited time.

These progression system and periodical challenges are the core mechanics in the game to create a hyper-engaging experience. It is an example of how variable rewards can be used to attach users to a product. Each season provides users with new unpredictable rewards (i.e., ‘season-specific items’), so they need to play all the levels in ten weeks to find out which rewards they will receive. If they do not achieve this ‘goal’, they will need to buy these season-specific items or never have the opportunity to earn or buy them again. The same logic applies to daily and weekly challenges,

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<sup>125</sup> Jaime Lee, ‘Unrolling: Fortnite’ (*AdRoll Blog*, 23 November 2021) <<https://www.adroll.com/blog/unrolling-fortnite>> accessed 28 April 2022

<sup>126</sup> In the *Battle Royale* mode, the player is in a match of 100 players, in an attempt to be the last one standing and gain a Victory Royale. Players can compete alone, or with a squad of 1, 2 or 3 other players to aid them in battle.

<sup>127</sup> The *Creative Mode* is an open sandbox where players can create their own custom islands, or discover featured islands created by the community. There is no set story and script in this mode as it is left open by island creators.

<sup>128</sup> In *Save the World*, the player takes on the role of a Hero, with the task of fighting against The Storm, rescuing Survivors, building structures, and upgrading and expanding a Storm Shield to protect the area. Multiple levels of progression are given for players to utilize in order to better reach their goals. Players can play the missions solo or join with up to three friends.

<sup>129</sup> PlayStation Store, ‘Fornite’ (2022) <[https://store.playstation.com/pt-br/product/UP1477-CUSA07022\\_00-FORTNITETESTING1](https://store.playstation.com/pt-br/product/UP1477-CUSA07022_00-FORTNITETESTING1)> accessed 30 April 2022; and Fortnite Wiki, ‘Fortnite: Battle Royale’ <[https://fortnite.fandom.com/wiki/Fortnite:\\_Battle\\_Royal](https://fortnite.fandom.com/wiki/Fortnite:_Battle_Royal)> accessed 30 April 2022.

<sup>130</sup> Sax and Ausloos (n 120) 13-14

<sup>131</sup> *ibid* 14

where users are incentivised to play the game every day and week to get items only available during these specific periods.<sup>132</sup>

In summary, users can ‘buy’ temporary special items with attention or money. These mechanics employ not only the power of variable rewards to stimulate the dopaminergic system but also the ‘scarcity effect’. Users do not want to lose a temporary and variable reward, so they cannot miss one day of playing. The feeling of scarcity then works as a potent internal trigger to stimulate users to play.

Fortnite adopts a layered rewarding approach: users receive fixed rewards just for participating in a match, timed rewards for returning to the game, random rewards when players open chests in Battle Royale matches, and variable rewards when completing challenges. This approach also connects with the power of rewards. While fixed rewards generate the anticipation that stimulates users to keep playing, random rewards add exciting uncertainty (which increases the levels of dopamine), and the variable rewards give players a sense of control and achievement.<sup>133</sup> Here, it is possible to see that the same platform can apply several ‘hook cycles’ simultaneously, generating different stimuli to the dopaminergic system. So, although the triggers may be connected (or be the same), each kind of reward requires a different action and a different investment. It induces users to behave as the game wants: participate in the matches, return to the game, and keep playing (to find chests and complete the challenges).

Another important aspect to consider is that Fortnite itself is a new kind of immersive social network, where users can hang out with their friends, (voice) chat, and express (and play with) their personality with the endless collection of items.<sup>134</sup> Within this context, humans’ tendency for ‘social comparison’ can be exploited. As much as users play, the more items they conquer, and the more things they will have to show to their (online) friends. Besides that, the game also exploits the ‘social pressure’ among players. When users play in a squad with their friends, teamwork is key to killing off enemies and staying in the game. There is no way to pause in the middle of a game,

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<sup>132</sup> ibid 13-16

<sup>133</sup> ibid 16

<sup>134</sup> ibid 13-19

so if a player quits early, the other team members will be affected. There is a peer pressure element here that makes users not quit the game.<sup>135</sup>

In Battle Royale mode, users have to use Fortnite's ever-shrinking landscape to hide from other players looking to take them out. Just surviving as the map shrinks is an achievement in itself and plays into the idea of feeling rewarded. And because every game is different (the environment changes), each time one plays, they will find new places to explore, which keeps them returning to the game.<sup>136</sup> Here, it is possible to see how even the map and the game environment can be used as a variable reward, taking advantage of humans' craving for dopamine.

Looking at Fortnite, it is possible to see how complex and subtle Hyper-engaging Mechanisms are. Just the 'visible' part of these mechanisms was analysed here, mainly because the intention is not to speculate<sup>137</sup> but to analyse those features that influence users to play frequently and for as much time as possible. Indeed, Fortnite's design effectively employs all the elements of the HM. Notifications are used as an *external trigger*, while the scarcity effect is especially employed as an *internal trigger*. Although rewards are usually part of a game, Fortnite generates a huge number of *variable rewards* that change daily, weekly, seasonally, and at every level. All these rewards require an *action* related to frequently playing, playing for long periods, or spending money, which are *investments* in the platform.

This design stimulates players' dopaminergic system and captures, holds, and manipulates their attentional resources. Fortnite also exploits other human vulnerabilities, like the 'scarcity effect', the 'social pressure', and the 'social comparison'. Also, the ever-changing gaming environment and the fact that the game never ends are like the 'infinite scrolls'. Basically, it is an infinite game with infinite hook cycles and an endless source of dopamine.

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<sup>135</sup> Natasha Wyncarczyk, 'The Ways Fortnite Gets Kids Addicted' (*The Sun*, 2022) <<https://www.thesun.co.uk/tech/6501566/why-is-fortnite-so-addictive/>> accessed 31 March 2022

<sup>136</sup> *ibid*

<sup>137</sup> As an example, Fortnite's privacy policy authorises the platform to employ adaptive algorithms to personalise players' experience. However, it is not possible to say how these algorithms work, and then this aspect was not analysed here. See Epic Games, 'Privacy Policy' (2021) <<https://www.epicgames.com/site/en-US/privacypolicy?lang=en-US>> accessed 27 April 2022

Based on Fortnite's numbers, it is possible to say that this design effectively prolongs usage periods and increases usage frequency. In turn, it is also noticeable that the fun associated with the game does not require the employment of Hyper-engaging Mechanisms.<sup>138</sup> Epic Games would probably keep making a lot of money with advertisement and freemium subscriptions without using this strategy. Moreover, these mechanisms could be used to promote a healthier relationship between players and the game, especially because this successful business model does not come at no cost to users. Actually, Hyper-Engaging Mechanisms can negatively impact users' health, potentially leading to addictions and other diseases, and harm users' autonomy. These consequences will be detailed in the following sections.

### III. IMPACTS OF HYPER-ENGAGING MECHANISMS ON USERS' HEALTH

First, it is important to clarify that, although psychologists and psychiatrists widely recognise internet addiction,<sup>139</sup> the use of the term 'addiction' to refer to excessive internet use is not pacified in the literature.<sup>140</sup> Most specialists on the topic share similar conclusions on how humans' brains interact with online platforms and what are the consequences of excessive internet usage. Still, some prefer to use concepts like 'problematic internet use (PIU)' instead of 'addiction to the internet'.<sup>141</sup> While recognising the controversies surrounding the idea of addiction, it is not necessary to settle them here since it does not affect the legal analysis. For practical purposes, the emerging consensus that compulsive and excessive internet use constitutes a behavioural addiction will be adopted here.<sup>142</sup>

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<sup>138</sup> Bhargava and Velasquez (n 15) 13

<sup>139</sup> *ibid* 4

<sup>140</sup> Beatriz Fernandes, Berta Rodrigues Maia, and Halley M Pontes, 'Adição à internet ou uso problemático da internet? Qual dos termos usar?' (2019) 30 *Psicologia USP* 1 <<http://www.scielo.br/j/psup/a/r5ZmQRHmQchy5QmmdGMB4zh/?format=html&lang=pt>> accessed 11 August 2021; and Lopez-Fernandez and Kuss (n 32) 11

<sup>141</sup> Greenfield (n 3) 27-40; and Francesca C Ryding and Linda K Kaye, "Internet Addiction": A Conceptual Minefield' (2017) 16 *International Journal of Mental Health and Addiction* 225-229 <<https://link.springer.com/article/10.1007/s11469-017-9811-6>> accessed 10 August 2021

<sup>142</sup> [Bhargava and Velasquez \(n 15\) 3-8](#)



Griffiths' theory is a reference in this area and has been verified and endorsed by several studies.<sup>143</sup> According to him, addictions consist of six standard components, all of which are present in internet addiction.<sup>144</sup> These six components overlap with the clinical criteria for psychological diagnosis of non-substance addictions.<sup>145</sup> Another similarity between internet addiction and other substance and behavioural addictions comes from functional neuroimaging studies. These studies have shown that the same areas of the brain active in other recognised addictions are active in the brains of those who meet the diagnostic criteria for internet addiction.<sup>146</sup> Moreover, the exact molecular pathways (e.g., dopaminergic system) that operate in substance addictions are present in internet addiction.<sup>147</sup>

Even though the term internet addiction is used as if it refers to a single kind of addiction, it is actually an umbrella term that encompasses several specific addictions. Most specialists agree that individuals are addicted to the experiences, rewards, and content provided by specific platforms, not to the internet *per se*.<sup>148</sup> In other words, the internet is just the medium through which users access addictive platforms. Despite that, the literature uses the term internet addiction when referring to aspects that are common to all specific addictions. This approach is also adopted here. Nevertheless, it is worth citing that researchers usually mention the following specific addictions: cyber sexual addiction, social media addiction, net compulsions (gambling, shopping, or day trading), information overload (web surfing and information searching), and video-game

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<sup>143</sup> Bhargava and Velasquez (n 15) 3-8; Lopez-Fernandez and Kuss (n 32) 7; and World Health Organization (WHO), *Public Health Implications of Excessive Use of the Internet, Computers, Smartphones and Similar Electronic Devices* (Meeting Report : Main Meeting Hall, Foundation for Promotion of Cancer Research, National Cancer Research Centre, Tokyo, Japan, 27-29 August 2014, 2015) 14-15 < [http://apps.who.int/iris/bitstream/10665/184264/1/9789241509367\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/184264/1/9789241509367_eng.pdf) > accessed 10 August 2021

<sup>144</sup> These components are salience (the addictive activity dominates the addict's thoughts, feelings, and behaviour); mood modification; tolerance (the addict engages in increasing amounts of the action to achieve its former effects); withdrawal (the addict experiences distress or unpleasant physical effects when unable to access the activity); conflict (the addict has conflicts within oneself or with those around them or experiences other adverse circumstances or damage); and relapse (unable to control oneself, the addict reverts to the activity after trying to stop). See Mark Griffiths, 'A "Components" Model of Addiction within a Biopsychosocial Framework' (2005) 10 *Journal of Substance Use* < <http://www.tandfonline.com/doi/full/10.1080/14659890500114359> > accessed 15 March 2022

<sup>145</sup> [Bhargava and Velasquez \(n 15\) 3-8](#)

<sup>146</sup> Bernardo Dell'Osso and others, 'Learning to Deal with Problematic Usage of the Internet' (2018) *European Cooperation in Science and Technology (COST Action CA16207)* 10 < <https://www.internetandme.eu/download-learning-to-deal-with-problematic-usage-of-the-internet/> > accessed 10 August 2021

<sup>147</sup> [Bhargava and Velasquez \(n 15\) 3-8](#); Lopez-Fernandez and Kuss (n 32) 16; and WHO (n 143) 16

<sup>148</sup> Ryding and Kaye (n 141) 226; and Matthias Brand and others, 'Which Conditions Should Be Considered as Disorders in the International Classification of Diseases (ICD-11) Designation of "Other Specified Disorders Due to Addictive Behaviors"?' (2020) *Journal of Behavioral Addictions* 3-5 < <https://pubmed.ncbi.nlm.nih.gov/32634114/> > accessed 10 August 2021

addiction.<sup>149</sup> The most prominent activities currently being researched are social media and video-gaming because these platforms appear to have more substantial addictive potential.<sup>150</sup> Indeed, video-gaming addiction is already classified as a disorder in the ICD-11<sup>151</sup> and was listed in the DSM-5's<sup>152</sup> annexe for future study.

The power of all addictions, including those related to the internet, is the psychoactive ability to alter mood and consciousness, distort time, and therefore impact health and balanced living. All addictions take time and attention and involve hyper-focusing on pleasurable substances or behaviours.<sup>153</sup> Behavioural addictions, which is the case of addictions related to the internet, are defined as an irresistible urge, impulse, or drive to repeatedly engage in a given action and an inability to reduce or cease this behaviour (loss of self-control) despite serious negative consequences to the person's physical, mental, social and/or financial wellbeing.<sup>154</sup>

From a practical perspective, internet addiction involves a persistent pattern of maladaptive behaviour, characterised by either an irresistible preoccupation with or excessive internet use for more extended periods than planned, leading to clinically significant distress and/or impaired functioning. Individuals addicted to the internet focus excessive hours on internet-related activities at the expense of broader life activities, including those associated with fulfilling basic needs.<sup>155</sup>

From a neurological perspective, internet addiction directly relates to how users' attentional resources are hijacked through the activation of dopaminergic pathways in the brain.<sup>156</sup> Over time, it results in an overall reduction of levels of accessible dopamine, which means that everyday life becomes boring compared with highly stimulatory virtual rewards.<sup>157</sup> Moreover, with repeated exposure to the same or similar stimulus, the initial feeling of pleasure gets weaker and shorter,

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<sup>149</sup> Bhargava and Velasquez (n 15) 3-8; and Lopez-Fernandez and Kuss (n 32) 11; Dell'Osso and others (n 146) 6; and WHO (n 143) 13

<sup>150</sup> Montag and others (n 6) 2-4

<sup>151</sup> World Health Organization, 'ICD-11 for Mortality and Morbidity Statistics: Disorders due to addictive behaviours' (n 117)

<sup>152</sup> American Psychiatric Association, '*Diagnostic and Statistical Manual of Mental Disorders*' (5<sup>th</sup> edn, American Psychiatric Publishing 2013) 795

<sup>153</sup> Greenfield (n 3) 29-30

<sup>154</sup> Elisa Wegmann and Matthias Brand, 'Affective and Cognitive Processes Involved in Behavioral Addictions' (2021) 118 *Addictive Behaviours* < <https://www.sciencedirect.com/science/article/abs/pii/S0306460321000708> > accessed 10 August 2021; and WHO (n 143) 8

<sup>155</sup> WHO (n 143) 14

<sup>156</sup> Greenfield (n 3) 27-28

<sup>157</sup> Lopez-Fernandez and Kuss (n 32) 17; and Greenfield (n 3) 33

and the after-response of pain gets stronger and longer. That is, with repetition, humans need more stimulus to get the same effect (i.e., tolerance).<sup>158</sup>

Therefore, from both practical and neurologic perspectives, the factors that cause individuals to become internet addicts are directly related to the functioning and purposes of Hyper-engaging Mechanisms.<sup>159</sup> These mechanisms take advantage of users' dopaminergic system and attentional resources causing them to access platforms frequently and for prolonged periods, which are the exact components involved in internet addiction.

Some researchers argue that compulsive internet users are not internet addicts but only use the internet as a medium for other addictive behaviours. Compulsive pornography consumption, for example, is not a problem caused by only the internet. However, previous studies have pointed out that online pornography use is rising. The increased 'triple-A' (accessibility, affordability, and anonymity) provided by the internet has enhanced the potential risk for the problematic use of online pornography.<sup>160</sup> It is the same logic for online gaming and gambling, whereas social media and streaming problematic use would not exist without the internet.

Internet addiction can start at any age, and anyone can potentially become addicted.<sup>161</sup> Of course, not all internet users become addicted. There are various reasons why particular individuals are vulnerable to becoming addicted to multiple behaviours, including genetics, environmental factors, and individual vulnerabilities. However, everyone's brain is sensitive to Hyper-engaging Mechanisms and can be vulnerable to internet addiction. So, it is impossible to predict who is more or less susceptible to it.<sup>162</sup>

Addiction is a problem *per se*, but it usually generates associated disorders. Internet addiction has physical and social consequences of clinical and public health significance, which have already been proved in hundreds of studies.<sup>163</sup> Clinical reports point to various physiologic sequela caused by

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<sup>158</sup> Lembke (n 70) 46

<sup>159</sup> Ertemel and Ari (n 4) 2-5

<sup>160</sup> Kyoung Min Kim and others, 'What Types of Internet Services Make Adolescents Addicted? Correlates of Problematic Internet Use' (2020) 16 *Neuropsychiatric Disease and Treatment* < <https://www.dovepress.com/what-types-of-internet-services-make-adolescents-addicted-correlates-o-peer-reviewed-fulltext-article-NDT> > accessed 10 August 2021

<sup>161</sup> Fineberg and others (n 34) 1234-1242

<sup>162</sup> Montag and others (n 6) 4-8

<sup>163</sup> WHO (n 143) 14

internet addiction,<sup>164</sup> including changes in the brain's physical structure.<sup>165</sup> Excessive internet use is also associated in many studies with depression, poor mental wellbeing, anxiety, unhappiness, social phobia, substance disorders, higher distress,<sup>166</sup> suicidal thoughts, self-harming,<sup>167</sup> a deficit in cognitive functions,<sup>168</sup> poor memory, and mood alteration.<sup>169</sup> All these disorders can affect both children and adults.<sup>170</sup>

Some studies have found evidence that depression and anxiety lead some people to become addicted to social media. However, longitudinal experimental studies have addressed this causality issue and provided grounds for believing that, even considering that there are cases where conditions such as depression and anxiety lead some users to become addicted to online platforms, addiction to these platforms also causes a significant number of users to develop these disorders.<sup>171</sup>

In conclusion, notwithstanding the specificities of each platform or type of internet addiction, the sources of addiction are the same, and they are strictly related to Hyper-engaging Mechanisms functioning. So, online platforms *per se* are not the problem, but the Hyper-engaging Mechanisms deployed in most of them. Besides negatively affecting users' health, these mechanisms harm their autonomy, as will be exposed below.

#### IV. IMPACTS OF HYPER-ENGAGING MECHANISMS ON USERS' AUTONOMY

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<sup>164</sup> Greenfield (n 3) 29-32

<sup>165</sup> Many studies indicate the reduction of replicable grey matter in the dorsolateral prefrontal cortex and anterior cingulate cortex, which are regions implicated in reward processing and inhibitory control, in people with PIU. See Jeremy E Solly and others, 'Structural gray matter differences in Problematic Usage of the Internet: a systematic review and meta-analysis' (2022) *Nature, 27 Molecular Psychiatry* < <https://www.nature.com/articles/s41380-021-01315-7> > accessed 20 April 2022

<sup>166</sup> Fineberg and others (n 34) 1238

<sup>167</sup> Hassani, Huang, and Silva (n 27) 8

<sup>168</sup> Lopez-Fernandez and Kuss (n 32) 17

<sup>169</sup> Bhargava and Velasquez (n 15) 3-8; WHO (n 143) 15; Davoud Nikbin, Mohammad Iranmanesh and Behzad Foroughi, 'Personality Traits, Psychological Well-Being, Facebook Addiction, Health and Performance: Testing Their Relationships' (2021) 40 *Behaviour & Information Technology* < <https://doi.org/10.1080/0144929X.2020.1722749> > accessed 10 August 2021; and Center for Humane Technology (n 36)

<sup>170</sup> Dell'Osso and others (n 146) 16; and Min Kim and others (160)

<sup>171</sup> Bhargava and Velasquez (n 15) 12-13

Manipulation is a debatable concept, particularly when defining the boundaries between acceptable persuasion and unacceptable manipulation.<sup>172</sup> According to the literature, there are three primary forms of influencing someone: persuasion, coercion, and manipulation. While the first one is usually socially and legally acceptable, the others are not. Persuasion presents a perceptible appeal and usually means attempting to influence someone by offering reasons they can think about and evaluate. Coercion is also perceptible and means influencing someone by constraining their options, such that their only rational course of action is the one the coercer intends.<sup>173</sup>

Different from persuasion and coercion, manipulation is a hidden form of influence. When someone is manipulated, they are not constrained (coerced) or convinced (persuaded). Instead, they are directed, outside their conscious awareness, to act for reasons they cannot recognise, and toward ends they may wish to avoid. The manipulated person is unaware (and could not easily become aware) that their decision or behaviour is being influenced because manipulation circumvents their rational, deliberative decision-making faculties.<sup>174</sup>

The literature thus cites two essential dimensions of manipulation: unawareness of influence and impossibility or diminished possibility of rational choice.<sup>175</sup> From a legal perspective, both dimensions are relevant because both suggest an infringement of a person's autonomy.<sup>176</sup> The notion of autonomy points to an individual's ability to make meaningfully independent decisions by freely facing the existing possibilities. It happens when the individual can think and deliberate about options, considering them against the background of their own beliefs, desires and commitments, and ultimately deciding for reasons that they recognise and endorse as their own choice, without any obscure influence.<sup>177</sup> Manipulation, therefore, prevents individuals from exercising their autonomy.<sup>178</sup>

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<sup>172</sup> Philipp Hacker, 'Manipulation by Algorithms. Exploring the Triangle of Unfair Commercial Practice, Data Protection, and Privacy Law' (2021) *European Law Journal* (Forthcoming) 3 < [https://www.academia.edu/47777739/Manipulation\\_by\\_Algorithms\\_Exploring\\_the\\_Triangle\\_of\\_Unfair\\_Commercial\\_Practice\\_Data\\_Protection\\_and\\_Privacy\\_Law?auto=citations&from=cover\\_page](https://www.academia.edu/47777739/Manipulation_by_Algorithms_Exploring_the_Triangle_of_Unfair_Commercial_Practice_Data_Protection_and_Privacy_Law?auto=citations&from=cover_page) > accessed 25 August 2021

<sup>173</sup> Daniel Susser, Beate Roessler, and Helen Nissenbaum, 'Technology, autonomy, and manipulation' (2019) 8 *Internet Policy Review* (2) < <http://policyreview.info/articles/analysis/technology-autonomy-and-manipulation> > accessed 9 May 2022

<sup>174</sup> *ibid* 2-14

<sup>175</sup> Hacker (n 172) 3-4 ; and Susser, Roessler, and Nissenbaum (n 173) 2-14

<sup>176</sup> Hacker (n 172) 3-4

<sup>177</sup> Susser, Roessler, and Nissenbaum (n 173) 2-14

<sup>178</sup> Hacker (n 172) 3-4

Manipulation can be executed through different methods, one of which is the exploitation of humans' cognitive biases and vulnerabilities. This method is widely employed by different forms of *online manipulation*, which is defined by Susser et al. as “the use of information technology to covertly influence another person’s decision-making, by targeting and exploiting decision-making vulnerabilities”.<sup>179</sup> It is noteworthy that all humans are exposed to biases and vulnerabilities. No one controls or rationally perceives their brain’s natural processes and pathways. When external factors interact with these processes, people can hardly perceive or avoid them.

As the previous sections expose, Hyper-engaging Mechanisms involve a pool of complex strategies that interact with users’ neurological and psychological systems, exploiting their cognitive vulnerabilities. This interaction directly affects users’ decision-making processes and induces them to use online platforms more often and for longer periods.<sup>180</sup> These mechanisms, therefore, compromise users’ capacity to make autonomous choices and present all the characteristics to be deemed a form of online manipulation.<sup>181</sup>

Although no kind of online manipulation is acceptable, these mechanisms take away from individuals the freedom to decide how they want spend the functional currency of their lives (their time), and they do so by means of strategies that can negatively impact users’ health. For all these reasons, protecting people from Hyper-engaging Mechanisms, particularly in the context of the attention economy, is extremely relevant. In light of that, the second part of this dissertation will discuss whether and how the EU legal framework protects users from these practices.

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<sup>179</sup> Susser, Roessler, and Nissenbaum (n 173) 6

<sup>180</sup> Day and Stemler (n 37) 15-22

<sup>181</sup> See Susser, Roessler, and Nissenbaum (n 173); Day and Stemler (n 37) 15-22; Lupiáñez-Villanueva and others (n 106) 91-92

## PART II – THE LAW

The second part of this work analyses Hyper-engaging Mechanisms from a rights-based perspective. Considering all aspects presented in the first part, and focusing on these mechanisms' consequences for users' autonomy, Part II analyses whether and how the EU legal framework protects users from Hyper-engaging Mechanisms.

### I. ANALYSIS OF THE EU LEGISLATION APPLICABLE TO HYPER-ENGAGING MECHANISMS

To conduct this part of the research, the European legislation applicable (now or soon) to online platforms in relation to its users was analysed. The focus was to identify those laws that could directly protect users from Hyper-engaging Mechanisms. To delimit the scope, these mechanisms were considered broadly and generally, meaning that legislations applicable only to a specific non-structural strategy were disregarded.<sup>182</sup>

Among the reviewed documents, three EU legislations were considered relevant for the purposes of this work. The first one has been in force for a while and contains very important provisions prohibiting unfair practices: the *Unfair Commercial Practices Directive* (UCPD). The other two regulations are not (fully) applicable at the time of writing this work but tackle online manipulative/exploitative practices directly. One is the *Digital Services Act* (DSA), which entered into force on 16 November 2022.<sup>183</sup> And the second one is the *Artificial Intelligence Act* (AI Act),

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<sup>182</sup> Those legislations that could not directly protect users from Hyper-engaging Mechanisms (e.g., competition law) were disregarded. Legislations that might apply only to a specific non-structural aspect of Hyper-engineered Mechanisms were also not considered in the analysis (e.g., General Data Protection Regulation only applies to adaptive algorithms). In turn, legislations that can be applied to strategies that are structural to these mechanisms were considered (e.g., AI Act applies to machine learning).

<sup>183</sup> Parlamento Europeu, 'Serviços digitais: novas regras para um ambiente em linha mais seguro e aberto' (*Atualidade Parlamento Europeu*, 05 July 2022) < <https://www.europarl.europa.eu/news/pt/press-room/20220701IPR34364/servicos-digitais-novas-regras-para-um-ambiente-em-linha-mais-seguro-e-aberto> > accessed 05 August 2022. This work has been updated in May 2023 according to the final version of the DSA, which entered into force on 16 November 2022.



proposed by the EU Commission in April 2021, and that is now being discussed by the co-legislators, the EU Parliament, and the Council.<sup>184</sup>

Although all three legislations will be analysed, the UCPD occupies a central role in this part of the work for two reasons: the first and most important one is that the DSA does not apply to practices covered by the UCPD (as will be further explained) and the AI Act is still in its proposal phase. The second reason is that the UCPD has been in force for more than 17 years and provides much more material to discuss the challenges involved in protecting users from Hyper-engaging Mechanisms. The experience with the UCPD is thus very useful for discussing improvements in the other regulations. The following sections will detail how each of these laws (i.e., UCPD, AI Act, and DSA) can be applied to Hyper-engaging Mechanisms and what are the potential issues in this regard.

## II. UNFAIR COMMERCIAL PRACTICES DIRECTIVE

The UCPD regulates unfair commercial practices in business-to-consumer transactions within the EU. The Directive applies to all commercial practices that occur before, during and after a transaction.<sup>185</sup> Online platforms (*traders*)<sup>186</sup> provide online services (*product*)<sup>187</sup> to users (*consumers*)<sup>188</sup>, and this relationship (*commercial practice*)<sup>189</sup> falls within the scope of the UCPD. The Court of Justice of the European Union (CJEU), in the *Verband Sozialer Wettbewerb* case, confirmed that the UCPD applies to online platforms.<sup>190</sup>

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<sup>184</sup> Note that the version of the AI Act considered here is subject to significant changes throughout the approval process. This work has been updated in May 2023 according to the current version of the proposal for the AI Act [version of 6 December 2022 – common position of the EU Council].

<sup>185</sup> UCPD, art. 3(1)

<sup>186</sup> *Trader* means any natural or legal person who, in commercial practices covered by the UCPD, is acting for purposes relating to his business. See UCPD, art. 2 (b).

<sup>187</sup> *Product* means any good or service, including digital service. See UCPD, art. 2(c).

<sup>188</sup> *Consumer* means any natural person who, in commercial practices covered by the UCPD, is acting for purposes which are outside his trade, business, craft or profession. See UCPD, art. 2 (a).

<sup>189</sup> *Commercial practices* mean any act, omission, course of conduct or representation, or commercial communication by a trader directly connected with the promotion, sale or supply of a product to consumers. See UCPD, art. 2 (d).

<sup>190</sup> This Case regards practices of an online sales platform and these practices were considered covered by the scope of the UCPD. See C-146/16, *Verband Sozialer Wettbewerb eV v DHL Paket GmbH* [2017] ECLI:EU:C:2017:243

In December 2021, the European Commission released a new notice on the interpretation and application of the UCPD (Guidance). The document replaces the previous UCPD guidance from 2016, and its purpose is to facilitate the proper application of the Directive and increase awareness amongst all interested parties.<sup>191</sup> The Guidance also endorsed that the Directive covers commercial practices between online platforms and users. Indeed, this new version covered several potential unfair practices within the digital environment.<sup>192</sup>

The UCPD has a three-layer structure. It combines explicit outright prohibitions (Annex I or ‘blacklist’), that have to be deemed unfair under any circumstances, with two specific prohibitions and a general prohibition that require case-by-case analysis by national enforcement authorities.<sup>193</sup> A commercial practice is unfair and therefore prohibited if it is listed in Annex I, or if it is ‘misleading’ (Arts. 6 and 7), ‘aggressive’ (Arts. 8 and 9), or falls within the scope of the ‘general clause’ (Art. 5). Except for the blacklist, for a practice to be judged unfair it has to cause or be likely to cause the ‘average consumer’ to take a ‘transactional decision’ that they would not have taken otherwise. Therefore, the unfairness of a practice is necessarily tied to the concept of the average consumer.<sup>194</sup>

## 1. The average and the vulnerable consumers

According to the UCPD, the ‘average consumer’ is a consumer who can be considered reasonably well-informed, observant, and circumspect, considering social, cultural, and linguistic factors.<sup>195</sup> The Directive adopted the average consumer benchmark, which had already been developed in

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<sup>191</sup> European Commission, ‘Unfair Commercial Practices Directive’ < [https://ec.europa.eu/info/law/law-topic/consumer-protection-law/unfair-commercial-practices-law/unfair-commercial-practices-directive\\_pt](https://ec.europa.eu/info/law/law-topic/consumer-protection-law/unfair-commercial-practices-law/unfair-commercial-practices-directive_pt) > accessed 24 July 2022

<sup>192</sup> Commission Notice, ‘Guidance on the interpretation and application of Directive 2005/29/EC of the European Parliament and of the Council concerning unfair business-to-consumer commercial practices in the internal market’ (Guidance on the interpretation and application of UCPD) (2021) 87 < <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021XC1229%2805%29&qid=1640961745514> > accessed 23 February 2022

<sup>193</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 53

<sup>194</sup> Hanna Schebesta and Kai P Purnhagen, ‘An Average Consumer Concept of Bits and Pieces-Empirical Evidence on the Court of Justice of the European Union’s Concept of the Average Consumer in the UCPD’ (2019) Wageningen Working Papers in Law and Governance 6 < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3366290](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3366290) > accessed 25 October 2021; and Fabrizio Esposito and Mateusz Grochowski, ‘The Consumer Benchmark, Vulnerability, and the Contract Terms Transparency: A Plea for Reconsideration’ (2022) 18 European Review of Contract Law 7 < <https://papers.ssrn.com/abstract=4109474> > accessed 25 July 2022

<sup>195</sup> UCPD, Recital 18

the case law of the CJEU, to allow National courts and authorities to adjust the concept on a case-by-case basis<sup>196</sup> and to strike the right balance between the need to protect consumers and the promotion of free trade in an openly competitive market.<sup>197</sup> According to Recital 18, the average consumer test is for the national courts and authorities to determine the typical reaction of the average consumer in a given case.<sup>198</sup> So, it is the behaviour of the average consumer that determines whether the commercial practice is unfair rather than the fact that a particular individual consumer was adversely affected by the trader's practice.<sup>199</sup>

Art. 5(3) UCPD refers to commercial practices that are likely “to distort the economic behaviour only of a clearly identifiable group of consumers who are particularly vulnerable to the practice or the underlying product because of their mental or physical infirmity, age or credulity in a way which the trader could reasonably be expected to foresee”.<sup>200</sup> In this case, the average consumer will be considered the average member of that group. It is worth citing that there is some discussion in the literature on whether this list of sources of vulnerability provided in Art. 5(3) is exhaustive or not, especially considering that only static personal factors are listed.<sup>201</sup> In spite of that, according to the Directive, the average consumer is the standard, while the vulnerable consumer is the exception to the rule.<sup>202</sup>

The average consumer is not somebody who needs only a low level of protection, essentially because the UCPD has to be interpreted having in mind Art. 114 of the Treaty, which provides for a high level of consumer protection.<sup>203</sup> However, many scholars argue that this benchmark, jointly with the vulnerable consumer, may not be enough to ensure robust consumer protection.<sup>204</sup> A key concern about employing the average consumer as a standard is whether focusing on an

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<sup>196</sup> UCPD, Recital 18

<sup>197</sup> Guidance on the interpretation and application of UCPD (n 192) 33

<sup>198</sup> UCPD, Recital 18

<sup>199</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 59

<sup>200</sup> UCPD, art. 5(3)

<sup>201</sup> Natali Helberger and others, ‘EU Consumer Protection 2.0: Structural asymmetries in digital consumer markets’ (2021) The European Consumer Organisation (BEUC) 9 < <https://www.beuc.eu/brochure/eu-consumer-protection-20-structural-asymmetries-digital-consumer-markets-0> > accessed 07 September 2022

<sup>202</sup> *ibid* 53

<sup>203</sup> Guidance on the interpretation and application of UCPD (n 192) 33

<sup>204</sup> Helberger and others (n 201); Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 28-29; and Cristina Poncibò and Rossella Incardona, ‘The Average Consumer, the Unfair Commercial Practices Directive, and the Cognitive Revolution’ (2008) 30 *Journal of Consumer Policy* Issue 35 < <https://papers.ssrn.com/abstract=1084038> > accessed 26 July 2022

average artificial consumer is sufficient to protect those consumers who fall below that standard and can even be more in need of protection from the law.<sup>205</sup> The UCPD's approach fails to underline that all consumers need protection in some situations and implies that all less-than-average consumers are left without protection under that rule unless they can be considered vulnerable.<sup>206</sup>

The image of the average consumer as “a reasonably well informed and reasonably observant and circumspect” person does not truly reflect actual consumer behaviour.<sup>207</sup> This standard requires consumers to enjoy a level of information and reasonable behaviour that they do not have. Cognitive and behavioural science studies show that even well-informed and highly educated consumers base their decisions on customs and feelings rather than an analytical process. Thus, all consumers are subject to various cognitive biases and vulnerabilities (as analysed in Part I).<sup>208</sup>

Besides that, vulnerability is not a (semi-)static property of a person that exists independently of this person's relation to their environment.<sup>209</sup> It does not necessarily pre-exist in the commercial transaction and can be triggered by situational or relational influence, even within such a transaction.<sup>210</sup> Indeed, “it is precisely a person's dynamic relationship to their environment that causes them to move in and out of states of vulnerability, depending on the circumstances.”<sup>211</sup> Scholars then argue that the dichotomy between average and vulnerable consumers no longer reflects the reality of commercial transactions<sup>212</sup> because, from a real perspective, the vulnerable consumer is the norm rather than the exception.<sup>213</sup>

This discussion on human vulnerability matters a lot in the context of the attention economy. The digital environment has enabled the processing of massive amounts of personal data and the deployment of highly personalised persuasion strategies that test, discover, and build on users' vulnerabilities.<sup>214</sup> It exposes consumers to particular risks of manipulation and exploitation.<sup>215</sup>

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<sup>205</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 67; and Esposito and Grochowski (n 194) 18-23

<sup>206</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 28

<sup>207</sup> *ibid*

<sup>208</sup> Poncibò and Incardona (n 204) 30-35; and Galli (n 40) 50

<sup>209</sup> Helberger and others (n 201) 26

<sup>210</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 70-71; and Galli (n 40) 50

<sup>211</sup> Helberger and others (n 201) 26

<sup>212</sup> Galli (n 40) 51

<sup>213</sup> Helberger and others (n 201) 29

<sup>214</sup> Helberger and others (n 201) 15

<sup>215</sup> Esposito and Grochowski (n 194) 14

Hyper-engaging Mechanisms, for example, potentially affect any person's behaviour, not a specific vulnerable group. However, they do so by exploiting people's cognitive vulnerabilities, which *per se* places all users in a vulnerable situation, affecting their ability to deal with a commercial transaction rationally.<sup>216</sup>

In fact, due to the high personalisation and automation of digital commercial practices, there is nothing like the average consumer on the internet. According to an individual's profile, a specific manipulative strategy might exist, thus a potential personalised outcome. In this scenario, the ability of consumers to escape manipulation is impractical unless they decide not to interact with the business anymore.<sup>217</sup>

Digital vulnerability, as defined by Helberger et al., "is inherently relational and architectural in nature and results from power imbalances between consumers and sellers: consumer vulnerabilities can be identified and/or created because consumers interact with sellers within digital environments that can learn about them and be adapted accordingly. Given the data-driven nature of contemporary digital commercial practices, every consumer is dispositionally vulnerable to being profiled and targeted exploitatively".<sup>218</sup>

Considering the characteristics of digital vulnerability, Helberger et al. argue that the best term to refer to the so-called digital vulnerability is '*digital asymmetry*' because it focuses on the structural effects of how technology is used within the digital economy instead of focusing on the internal aspects of vulnerability.<sup>219</sup> Digital asymmetry covers all digital vulnerability's aspects: it is *relational* (users interact with the digital environment providing data), *architectural* (interfaces are complex and designed by the operator), and *knowledge-based* (operator benefits from insights about the consumer).<sup>220</sup>

Besides online platforms' computational and manipulative power, the economic and social dependence on these services has been consistently increasing in recent years.<sup>221</sup> The COVID-19 pandemic has accelerated this trend by shifting previously physical interactions into the digital

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<sup>216</sup> Helberger and others (n 201); and text to n 37 ch 2 pt 1.

<sup>217</sup> Galli (n 40) 51-52

<sup>218</sup> Helberger and others (n 201) 25

<sup>219</sup> *ibid* 54

<sup>220</sup> Lupiáñez-Villanueva and others (n 106) 73

<sup>221</sup> Hassani, Huang, and Silva (n 27) 1-12

sphere. Users' dependence on platforms also makes them vulnerable because they depend on these platforms to participate in the online environment and to carry out daily activities.<sup>222</sup> So, it is possible to add that digital asymmetry is *contextual*, meaning that it is embedded in the attention economy dynamics, where consumers rely on technology for several activities and platforms intend to increase such dependency *ad infinitum*.

Criticising the average consumer benchmark is relevant because this concept impacts the perspective from which courts analyse the case, and the current role of the vulnerable consumer criterion is that of a vantage point from which commercial practices can be assessed.<sup>223</sup> So, recognising the existent digital asymmetry and establishing that the vulnerable consumer is the norm, rather than the exception, represents a conceptual shift and a new focus on identifying and declaring unfair those practices that exploit vulnerabilities and power asymmetries, instead of defining if a consumer is 'average' or 'vulnerable'.<sup>224</sup> This perspective is also more realistic and potentially grants consumers more effective protection.<sup>225</sup>

Most of CJEU's case law on the average consumer test relies on the text of the UCPD, specifically Recital 18, and considers the consumer's perception in the abstract, not providing further guidance on this matter. However, some recent cases use the Recital as a source for characterising the average consumer but consider the context where this consumer is situated (e.g., information asymmetry) or even the expectations of a relevant number of consumers.<sup>226</sup> The specific discussion on digital asymmetry has not reached the CJEU yet. Still, recent documents from the EU Commission endorsed the idea that the concept of vulnerability also covers context-dependent vulnerabilities.

In the report on dark patterns, the Commission adopted the exact interpretation of the European Consumer Organisation's (BEUC) report on this matter: "most if not all consumers are potentially vulnerable in the digital environment, due to the asymmetry of information whereby online traders collect a vast amount of data on consumers and can use this information to target their offer and

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<sup>222</sup> Helberger and others (n 201) 153

<sup>223</sup> *ibid* 13

<sup>224</sup> *ibid* 29

<sup>225</sup> *ibid* 75-76

<sup>226</sup> Joined Cases C-54/17 and C-55/17 *Wind Tre SpA v Vodafone Italia SpA* [2017] ECLI:EU:C:2018:710, para 54; and Case C-310/15 *Vincent Deroo-Blanquart v Sony Europe Limited* [2016] ECLI:EU:C:2016:633, para 35

exploit vulnerabilities”.<sup>227</sup> Whereas the Guidance states that “the characteristics that define vulnerability in Article 5(3) are indicative and non-exhaustive. The concept of vulnerability in the UCPD is dynamic and situational, meaning, for instance, that a consumer can be vulnerable in one situation but not in others”.<sup>228</sup> In addition, some upcoming legislation, like the DSA, seems to be taking digital asymmetry into consideration, as will be further discussed.<sup>229</sup>

Criticism of the average consumer has existed for a while, and the discussion on digital asymmetry gained a lot of space in recent years. Given the recent cases in which the CJEU considered some contextual aspects when assessing consumer behaviour and the approach of the Commission’s documents to vulnerability, there is hope that the average consumer benchmark will be interpreted more realistically or that the vulnerable consumer will be interpreted more dynamically.

## 2. The transactional decision test and the digital asymmetry

Except for the blacklisted practices (Annex I UCPD), for a practice to be deemed unfair under the UCPD’s provisions, it has to cause or be likely to cause the average consumer to take a transactional decision that they would not have taken otherwise.<sup>230</sup> ‘*Transactional decision*’ means “any decision taken by a consumer concerning whether, how and on what terms to purchase, make payment in whole or in part for, retain or dispose of a product or to exercise a contractual right concerning the product, whether the consumer decides to act or to refrain from acting”.<sup>231</sup>

According to the CJEU in the *Trento Sviluppo* case, the concept of transactional decision is broad and “therefore covers not only the decision whether or not to purchase a product but also the decision directly related to that decision, in particular, the decision to enter the shop”.<sup>232</sup> So, any decision related to a product is a transactional decision.<sup>233</sup> Accordingly, commercial practices aimed

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<sup>227</sup> Lupiáñez-Villanueva and others (n 106) 73

<sup>228</sup> Guidance on the interpretation and application of UCPD (n 192) 100

<sup>229</sup> DSA, Recital 64

<sup>230</sup> UCPD, art. 2(e) and art. 5

<sup>231</sup> UCPD, art. 2(k)

<sup>232</sup> C-281/12 *Trento Sviluppo srl, Centrale Adriatica Soc. coop. arl v Autorità Garante della Concorrenza e del Mercato* [2013] ECLI:EU:C:2013:859, para 36

<sup>233</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 59



to capture the consumer's attention that do not result in a purchase are covered by the UCPD.<sup>234</sup> Indeed, the Guidance endorses that the decision to continue using a service by browsing or scrolling is a transactional decision.<sup>235</sup>

The UCPD does not require demonstrating whether the average consumer's decision has actually been distorted. It allows an assessment of whether the commercial practice is *likely* to cause this consumer to take a transactional decision that they would not have taken otherwise.<sup>236</sup> The Directive does not define what exactly can be regarded as 'likely' or how such likelihood can be demonstrated. Considering that, as previously discussed, the average consumer benchmark may not represent real consumers, proving that a practice is likely to impact the decision of an (unrealistic) consumer may be challenging, especially within the digital environment.

Hyper-engaging Mechanisms and other forms of online manipulation are often organic and make users' behaviour appear like an exercise of free will.<sup>237</sup> These mechanisms are embedded in the online platforms' structure and exploit users' vulnerabilities.<sup>238</sup> Galli argues that with AI applications mediating business-to-consumers relationships and learning instantly and continuously from experience, "manipulation becomes an act of behavioural engineering where companies only need to master the art of reinforcements and punishments that can reliably produce the specific behaviour that the company selects. This implies that manipulation becomes a structural feature of a commercial practice mediated by AI that no longer alters consumer behaviour but creates, shapes, and precisely engineers wanted behaviours through skilful coding".<sup>239</sup> Users, unaware of how online platforms utilise their habits, mental models, and heuristics to influence their behaviours, cannot recognise the artificial modulation of their choices and, eventually, oppose it.<sup>240</sup>

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<sup>234</sup> Lupiáñez-Villanueva and others (n 106) 70

<sup>235</sup> Guidance on the interpretation and application of UCPD (n 192) 96-97

<sup>236</sup> *ibid* 32

<sup>237</sup> Day and Stemler (n 37) 4

<sup>238</sup> Text to n 37 ch 2 pt 1.

<sup>239</sup> Galli (n 40) 43-44

<sup>240</sup> Antonio Davola, 'Fostering Consumer Protection in the Granular Market. The Role of Rules on Consent, Misrepresentation and Fraud in Regulating Personalized Practices' (2021) Amsterdam Law School Research Paper 2 < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3791265](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3791265) > accessed 25 October 2021

Together with the intrinsic opaque essence of manipulation, the use of AI generates additional layers of opacity, namely (i) the corporate secrecy of the algorithms; (ii) the technical illiteracy of consumers over AI processes and digital practices; and (iii) the intrinsic lack of transparency of some machine learning algorithms (also known as ‘*black boxes*’). The UCPD’s structure was established considering offline commercial practices, and then, despite the tangible negative impacts of online manipulation, this multi-faceted opacity challenges the current transactional test.<sup>241</sup>

Therefore, due to this context, the biggest challenge when applying the UCPD’s tests to Hyper-engaging Mechanisms (or online manipulation in general) is to measure the extent to which they impact a transactional decision and violate individual autonomy.<sup>242</sup> As an example, while there are several studies on the relation between Hyper-engaging Mechanisms and excessive internet usage, it was not possible to find any measurement of the impacts of these mechanisms in the research carried out for this dissertation (i.e., for how much more time a person uses a given platform due to these mechanisms).

The digital asymmetry and the characteristics of manipulative practices make it challenging (if not impossible) to conduct a test that simulates the real online environment. Hyper-engaging Mechanisms, for example, are embedded in lots of online platforms, including very big ones. They are based on complex design strategies involving adaptive algorithms (built on a huge amount of data), behavioural reinforcement tactics, graphical design, and intelligent systems that continuously learn how to achieve their engagement goals more effectively.<sup>243</sup> They are so multifaceted and robust that it seems unfeasible to simulate them to test to what extent they impact consumers’ decisions. So, how to demonstrate that Hyper-engaging Mechanisms are likely to distort consumers’ behaviour? Of course, some specific features can be tested (e.g., infinite scroll), which would be very useful, but it hardly represents all the complexities of reality.

In line with this, the BEUC report recommends reversing UCPD’s burden of proof as a key tool to protect consumers from the effects of digital asymmetry.<sup>244</sup> This implies that unfairness of digital

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<sup>241</sup> Lupiáñez-Villanueva and others (n 106) 92-93

<sup>242</sup> *ibid*

<sup>243</sup> Text to n 35 ch 2 pt 1.

<sup>244</sup> Helberger and others (n 201) 75-76

practices would be presumed, and it would be up to the trader to demonstrate that they comply with the law.<sup>245</sup> The UCPD does not regulate the burden of proof and establishes that it is on national law to determine that, being “appropriate to enable courts and administrative authorities to require traders to produce evidence as to the accuracy of factual claims they have made”.<sup>246</sup> Still, in the *Europamur Alimentación* case, the CJEU ruled that the UCPD prohibits the reversal of the burden of proof since it would constitute a more restrictive measure, which is forbidden. The CJEU argued that if a practice is not listed in Annex I, its unfairness cannot be based on a presumption that the trader is required to rebut.<sup>247</sup>

Consequently, considering the current UCPD’s provisions and the CJEU ruling, Hyper-engaging Mechanisms would require a case-by-case analysis by the court/authority, where they would have to pass the conventional tests, including the ‘transactional’ one. Here, this challenge was accepted, and the results are presented below.

### 3. Applying the UCPD tests to Hyper-engaging Mechanisms

The UCPD is a very relevant Directive on consumer protection, and the discussions presented above aim to maximise such protection, especially within the digital environment. Although some advances are seen in the Commission’s documents, the debate on Hyper-engaging Mechanisms (or digital asymmetry) in the context of the UCPD has not yet reached the CJEU. So, it is not possible to affirm what contextual aspects would be considered by the Court in a real case.

Based on the research carried out for this dissertation, the author advocates that the UCPD, by being a principle-based Directive, is flexible and broad enough to cover online practices, including Hyper-engaging Mechanisms.<sup>248</sup> There are challenges, mainly because the UCPD was elaborated before the rise of many technologies. Nevertheless, there is space to interpret the provisions focusing on the goals of the Directive, which are to contribute to the proper functioning of the

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<sup>245</sup> *ibid* 71

<sup>246</sup> UCPD, Recital 21

<sup>247</sup> C-295/16 *Europamur Alimentación SA v Dirección General de Comercio y Protección del Consumidor de la Comunidad Autónoma de la Región de Murcia* [2017] ECLI:EU:C:2017:782, para 42

<sup>248</sup> Lupiáñez-Villanueva and others (n 106) 72; and Guidance on the interpretation and application of UCPD (n 192) 5

EU market and to achieve a high level of consumer protection by prohibiting unfair commercial practices that are likely to distort consumers' behaviour.<sup>249</sup>

To support this perspective, it is necessary to submit Hyper-engaging Mechanisms to the UCPD's tests. To do that and to delimit the scope of the analysis, these mechanisms will be considered as a whole, in a general and broad way, even though they are not always the same.<sup>250</sup> First, it is necessary to verify if the deployment of Hyper-engaging Mechanisms (or a broader practice that covers this one) is listed in Annex I UCPD. It is not, and then a case-by-case analysis is necessary. Second, for practical reasons, the transactional test will be applied before going through the specific provisions. In a real case, the second step would probably be to assess if this practice is 'misleading' or 'aggressive'.

As discussed before, the digital asymmetry, jointly with the characteristics of Hyper-engaging Mechanisms, create obstacles to empirically demonstrating to what extent these mechanisms impact users' behaviour. So, the focus here will be on how these mechanisms interact with users' minds according to the specialised literature and on empirical studies on other forms of online manipulation.

As presented in Part I of this work, the specialised literature says that Hyper-engaging Mechanisms exploit humans' vulnerabilities, eroding users' self-control and making them act automatically and irrationally, with the aim of generating engagement by increasing the time and frequency with which users access online platforms.<sup>251</sup> In summary, Hyper-engaging Mechanisms manipulate users to make the decision that (financially) benefits the platform.

Considering that all humans, even the average consumer, have cognitive vulnerabilities that can be exploited through manipulation, Hyper-engaging Mechanisms are likely to significantly impair any user's ability to make a rational decision, thereby causing them to make a transactional decision that they would not have taken otherwise (e.g., using a platform more often and for longer periods). So, although it is impossible to 'measure' the impacts of these mechanisms, it is reasonable to affirm that they are *likely* to impact the average consumer's decisions. The essential reason is that

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<sup>249</sup> UCPD, art. 1

<sup>250</sup> Hyper-engaging Mechanisms always have the same purpose and the strategies behind them follow the same logic. However, the way each platform applies these strategies varies.

<sup>251</sup> Text to 29 ch 2 pt 1.

this consumer's characteristics ("reasonably well-informed and reasonably observant and circumspect") do not shield their cognitive vulnerabilities, especially in the context of digital asymmetry.

As said before, no studies were found measuring Hyper-engaging Mechanisms' impacts on users' decisions. Still, the report of the EU Commission on dark patterns represents an attempt to measure the effects of online manipulative strategies on consumers' behaviour and decisions.<sup>252</sup> Although these practices are not the same, both are forms of online manipulation through the exploitation of cognitive vulnerabilities. The results of the Commission's analyses and other studies referred to in the report showed that dark patterns are effective at influencing consumers' behaviour and that exposure to dark patterns leads consumers to make choices that are inconsistent with their preferences.<sup>253</sup>

The research indicated that dark patterns are present in 97% of the 75 most popular websites and apps used by EU Consumers, where there is usually a combination of several dark patterns in each interface design. Within this research, it was noted that personalisation practices are notoriously difficult to detect, given the complexity of tracing how specifically these practices are applied.<sup>254</sup> The Commission identified that a critical issue is the lack of consumer awareness and the lack of consumer complaints regarding the use of dark patterns by traders. Dark patterns are hidden, subtle and manipulative in nature, so they are difficult to spot (even when consumers are given instructions and specifically asked to identify them) and, consequently, report. The average consumer's ability to perceive the use of dark patterns is rather limited, and even when they detect the existence of dark patterns, they are often compelled to accept these practices to participate in the online environment. Consumers see dark patterns as part of their everyday digital experience.<sup>255</sup> The study then confirms the presence of digital asymmetry and the opaqueness of online manipulation.

Within the study, the Commission conducted a behavioural experiment to investigate the impacts of dark patterns on consumers' decisions (i.e., whether the exposure to dark patterns leads consumers to make choices that they would not have taken otherwise and satisfies the transactional

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<sup>252</sup> Lupiáñez-Villanueva and others (n 106)

<sup>253</sup> ibid 93-96

<sup>254</sup> ibid 120

<sup>255</sup> ibid 85-86

decision test of the UCPD).<sup>256</sup> The results of this experiment confirmed that dark patterns had an impact on users' decisions and led to choices that were inconsistent with their preferences. Furthermore, it revealed that although vulnerable consumers were more likely to make inconsistent choices, average consumers are also susceptible to the effect of dark patterns, and a significant proportion of them also made inconsistent choices.<sup>257</sup>

The average probability of making an inconsistent choice when exposed to dark patterns was 47.24% for average consumers and 50.89% for (situationally)<sup>258</sup> vulnerable consumers. Whereas in the control group (not exposed to dark patterns), the average probability of making a choice inconsistent with one's preferences was 37.80% for average consumers and 45.47% for (situationally) vulnerable consumers.<sup>259</sup> The presence of dark patterns, therefore, increased the inconsistent choices of both the average and the vulnerable consumers.<sup>260</sup> The results of this experiment confirmed that even when consumers are well informed and given enough time to take a transactional decision, their choices are still often inconsistent with their preferences.<sup>261</sup>

It is worth noting that the minimum impact observed in the research of a specific dark pattern was an increase of inconsistency of 6.02% for average consumers and 4.16% for vulnerable consumers (in relation to the control group: 37.8% and 45.47%, respectively). The Commission considered these results satisfactory for the transactional decision test of the UCPD.<sup>262</sup> Based on this observation, it is possible to say that, in this case, the Commission considered 4.16% as enough to satisfy the 'likelihood' required by the UCPD.

In summary, dark patterns are likely to distort the average consumer's behaviour and decisions. Considering that Hyper-engaging Mechanisms involve similar manipulative strategies and the

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<sup>256</sup> This experiment was an online experiment that tested the impacts of unfair practices on consumers' decision-making (actual behavioural impacts) in six Member States (Bulgaria, Germany, Italy, Poland, Spain, and Sweden) with 7430 participants. The online experiment was also designed in a way that the practices investigated were similar to those in the scoping lab experiment. There were eight experimental conditions: three dark patterns, four dark patterns with protective measures, and a control group, which enabled the assessment of consumer behaviour in the absence of dark patterns.

<sup>257</sup> Lupiáñez-Villanueva and others (n 106) 120-123

<sup>258</sup> The online experiment put half of the participants in a state of situational vulnerability through time pressure while putting the other half in a state of motivated delay, which proxies an average consumer who is reasonably circumspect and well-informed.

<sup>259</sup> Lupiáñez-Villanueva and others (n 106) 103

<sup>260</sup> It is worth remembering that it is really hard to simulate reality in this kind of experiment, which may have a relevant impact on the results.

<sup>261</sup> Lupiáñez-Villanueva and others (n 106) 121

<sup>262</sup> *ibid*

literature on how these mechanisms interact with users' brains, it is reasonable to affirm that Hyper-engaging Mechanisms are also likely to materially distort the average consumer's economic behaviour, and alter their transactional decisions. Indeed, the Guidance says that the use of algorithms to capture "the consumer's attention, which results in transactional decisions such as continuing to use the service (e.g., scrolling through a feed), to view advertising content or to click on a link" is a problematic commercial practice under the UCPD.<sup>263</sup>

After submitting Hyper-engaging Mechanisms to this 'transactional decision test', it is time to check whether this practice meets the specific requirements to constitute a misleading or an aggressive practice; or if it is contrary to the requirements of 'professional diligence'. To be deemed unfair and thus prohibited, a commercial practice needs to fulfil one of the options of this last test (misleading/aggressive/contrary to professional diligence) and, in any case, the intention or negligence of the trader and the proof of actual loss or damage are not relevant.<sup>264</sup>

### 3.1. Arts. 6 and 7 UCPD: misleading practices

Arts. 6 and 7 UCPD provide the requirements for a practice to be deemed misleading. All misleading practices refer somehow to failing to provide material information to consumers clearly and truthfully. Art. 6 describes a '*misleading action*', which is a practice that contains false information or in any way, including overall presentation, deceives (or is likely to deceive) the average consumer concerning specific elements of the product.<sup>265</sup> Art. 7 describes a '*misleading omission*', which is a practice that omits material information (including commercial intent, if not apparent from the context) from consumers or provides such information in an unclear, unintelligible, ambiguous, or untimely manner.<sup>266</sup> In both cases, the action or omission has to cause or be likely to cause the consumer to take a transactional decision that they would not have taken otherwise.

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<sup>263</sup> Guidance on the interpretation and application of UCPD (n 192) 96-97

<sup>264</sup> UCPD, art. 11(2); Lupiáñez-Villanueva and others (n 106) 40; and Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 57

<sup>265</sup> UCPD, art. 6

<sup>266</sup> UCPD, art. 7; and Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 63-65



At first sight, it appears that deploying Hyper-engaging Mechanisms can be considered a misleading practice. Someone could argue, for example, that this practice is a misleading action, as the overall presentation of online platforms deceives users regarding the risks imposed by Hyper-engaging Mechanisms to their health and autonomy. Or someone could say that this practice is a misleading omission because users are not informed about such risks, which is, of course, material information.<sup>267</sup> Nevertheless, the issue in applying Arts. 6 and 7 to Hyper-engaging Mechanisms is that these articles require that the provision of false/deceptive information or the omission of material information causes or be likely to cause the average consumer to take a transactional decision that they would not have taken *otherwise*. This implies that the average consumer would make a different choice if the material information on these mechanisms were clearly provided.

Hyper-engaging Mechanisms cannot be overcome by providing (clear) information because users are unable to comprehend the digital architecture, and then information in whatever form cannot remedy the existing digital asymmetry.<sup>268</sup> Even when consumers receive the information, they cannot understand it or consider analysing it too costly.<sup>269</sup> In practice, information does not shield users' brains from online manipulation and Hyper-engaging Mechanisms' effects, as it was demonstrated in the Commission's study.<sup>270</sup> In addition, these mechanisms are strictly related to addiction, making it even harder for consumers to assess the risks, even when warned about them.<sup>271</sup>

What distorts users' behaviour in this case is the manipulative practice *per se* and not the lack of (or the deceptive) information about it.<sup>272</sup> So, the legal solution must tackle the structural side, the digital architecture, by other means than information.<sup>273</sup> Consequently, Arts. 6 and 7 UCPD are not good candidates to tackle the deployment of Hyper-engaging Mechanisms.

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<sup>267</sup> UCPD, art. 6 or 6(b)

<sup>268</sup> Helberger and others (n 201) 51

<sup>269</sup> Cătălina Goata and Stephan Mulders, "Move Fast and Break Things": Unfair Commercial Practices and Consent on Social Media' (2019) 8 Journal of European Consumer and Market Law 143 <<https://kluwerlawonline.com/journalarticle/Journal+of+European+Consumer+and+Market+Law/8.4/EuCML2019026>> accessed 25 October 2021

<sup>270</sup> Text to n 252 ch 1 pt 2.

<sup>271</sup> Text to n 159 ch 3 pt 1.

<sup>272</sup> Eliza Mik, 'The Erosion of Autonomy in Online Consumer Transactions' (2016) 8 Law, Innovation and Technology 32 <<https://www.tandfonline.com/doi/full/10.1080/17579961.2016.1161893>> accessed 3 August 2022

<sup>273</sup> Helberger and others (n 201) 51

### 3.2.Arts. 8 and 9 UCPD: aggressive practices

According to Art. 8 UCPD, a commercial practice is aggressive if: (i) it involves harassment and/or coercion and/or undue influence; (ii) it significantly impairs or is likely to significantly impair the average consumer's freedom of choice; and (iii) it causes or is likely to cause the average consumer to take a transactional decision they would not have taken otherwise. The factual context and all features and circumstances of a practice have to be considered when assessing it.<sup>274</sup> Regarding the concepts, the UCPD only defines 'undue influence', which requires: (i) the trader to be in a position of power in relation to the consumer; (ii) the trader to exploit such position to put pressure on the consumer; and (iii) this significantly limits<sup>275</sup> the consumer's ability to make an informed decision.<sup>276</sup>

Art. 9 UCPD provides a list of factors that should be considered in establishing whether there has been harassment, coercion, or undue influence.<sup>277</sup> They are "(a) timing, location, nature, or persistence of the practice; (b) whether there was threatening or abusive language/behaviour; (c) exploitation of a specific misfortune or circumstance of such gravity as to impair the consumer's judgement, of which the trader is aware; (d) onerous or disproportionate non-contractual barriers to the exercise of contractual rights; and (e) any threat to take action that cannot legally be taken".<sup>278</sup>

Some scholars question, on the one hand, whether Art. 9 provides an exhaustive list so that domestic courts are precluded from considering additional factors. On the other hand, they discuss whether a practice can only be deemed aggressive if all factors listed in Art. 9 are considered.<sup>279</sup> Another discussion, regarding Art. 9(c), is whether this provision requires the trader to be aware of the consumer's situation and exploit it, implying that the trader has to intentionally exploit consumers' vulnerability for a practice to be deemed undue influence.<sup>280</sup> This is the line of

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<sup>274</sup> UCPD, art. 8; and Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 66

<sup>275</sup> UCPD, art. 2(j), when describing undue influence, provides that it "significantly limits the ability" instead of 'it is likely to significantly limit'. Taking into consideration the writing of art. 8 and all UCPD's framework, it seems reasonable to consider that likelihood is sufficient for all sorts of aggressive practices. See Helberger and others (n 201) 70

<sup>276</sup> UCPD, art. 2(j)

<sup>277</sup> UCPD, art. 9

<sup>278</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 66

<sup>279</sup> *ibid*

<sup>280</sup> Hacker (n 172) 10

thought of Hacker, who says that “the exploitation of emotional or cognitive weaknesses may be an unintentional side-effect of contractual optimisation by means of machine learning”, and then such practices could not be considered aggressive under the UCPD.<sup>281</sup>

The *Wind Tre*<sup>282</sup> and the *Orange Polska*<sup>283</sup> cases contain important information regarding aggressive practices, especially those involving undue influence. In both cases, the CJEU did not analyse or require the intention or awareness of the trader, which would be completely contrary to the UCPD.<sup>284</sup> In the *Orange Polska*, the CJEU ruled that it “constitutes an aggressive commercial practice through the exertion of undue influence where the trader or its courier adopt unfair conduct, *the effect of which is to put pressure on the consumer* such that his freedom of choice is significantly impaired, such as conduct that *makes that consumer feel uncomfortable or confuses his thinking concerning the transactional decision to be taken*”.<sup>285</sup> Here it is clear that what matters are the potential effects of the trader’s conduct and not the intention or awareness behind it.

Besides that, the CJEU took into consideration one aspect that is not listed in Art. 9 in this ruling, which was the “conduct that makes that consumer feel uncomfortable or confuses his thinking”,<sup>286</sup> and did not analyse or refer to all the factors listed in this Article to judge if the practice was unfair or not. Therefore, it is possible to conclude that Art. 9 shall be interpreted as a non-exhaustive list of aspects to be considered when analysing a practice, like a guideline rather than a checklist.

Still on Art. 9, Hacker argues that manipulative practices are a form of deception, which does not comply with the pressure required for a practice to be considered an undue influence, meaning that “influence must be exerted in a way consciously perceived by the consumer – one cannot be pressured without noticing it”.<sup>287</sup>

In the *Purely Creative* case, the CJEU affirmed that “the practice referred to in paragraph 31 of Annex I to the Unfair Commercial Practices Directive is considered, under that directive, to be aggressive because the reference to a prize seeks *to exploit the psychological effect created in the mind of the*

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<sup>281</sup> *ibid* 10-11

<sup>282</sup> *Wind Tre* (n 226)

<sup>283</sup> C-628/17 *Prezes Urzędu Ochrony Konkurencji i Konsumentów v Orange Polska* [2019] ECLI:EU:C:2019:480

<sup>284</sup> UCPD, art. 11(1)

<sup>285</sup> *Orange Polska* (n 283) paras 49 and 50 [emphasis added]

<sup>286</sup> Helberger and others (n 201) 68

<sup>287</sup> Hacker (n 172) 10-11

consumer by the perspective of having won something and *to cause him to take a decision which is not always rational* and which he would not have taken otherwise”.<sup>288</sup> This statement of the Court clarifies that psychological exploitation, of which the consumer is unaware, is an aggressive practice and that such practice causes the consumer to make a decision that is not always rational.<sup>289</sup>

In addition, in the *Orange Polska* case, the Court stated that undue influence “is not necessarily impermissible influence but influence which, without prejudice to its lawfulness, actively entails, through the application of a certain degree of pressure, the forced conditioning of the consumer’s will”.<sup>290</sup> Considering that pressure directly relates to influence, its meaning is related to ‘persuading’ someone,<sup>291</sup> and not ‘forcing’ someone, which would be coercion (that is a separated concept in the UCPD). Arguably, the provision on undue influence relates more closely to the exercise of psychological pressure, particularly through the exploitation of power imbalances.<sup>292</sup>

In both *Wind Tre*<sup>293</sup> and the *Orange Polska*<sup>294</sup> cases, the CJEU emphasises that “account should also be taken of the fact that the objective pursued by Directive 2005/29 is, *inter alia*, to achieve a high level of consumer protection against unfair commercial practices and that objective is based on the assumption that, in relation to a trader, the consumer is in a weaker position, particularly with regard to the level of information, especially in a sector as technical as the telecommunications services sector, in which it cannot be denied that there is a major imbalance of information and expertise between the parties”.<sup>295</sup> Here, it is possible to see that the Court acknowledges that there is an information asymmetry, particularly in some sectors, and that such imbalance has to be considered to achieve a high level of consumer protection.

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<sup>288</sup> C-428/11 *Purely Creative Ltd and Others v Office of Fair Trading* [2012] ECLI:EU:C:2012:651, para 49 [emphasis added]

<sup>289</sup> Indeed, the Guidance gives as an example of an aggressive practice employed by games that involve “behavioural biases or manipulative elements relating to, e.g., the timing of offers within the gameplay (e.g., offering micro-transactions during critical moments in the game), pervasive nagging, or the use of visual and acoustic effects to put undue pressure on the player”. This is a good example of how manipulation can be used to put pressure on users. They do not need to realise that they are being manipulated to feel under pressure to take a decision. See Guidance on the interpretation and application of UCPD (n 192) 104.

<sup>290</sup> *Orange Polska* (n 283) para 33

<sup>291</sup> Natali Helberger, ‘Profiling and Targeting Consumers in the Internet of Things – A New Challenge for Consumer Law’ (2016) SSRN 19 <<https://papers.ssrn.com/abstract=2728717>> accessed 31 July 2022

<sup>292</sup> Marijn Sax, Natali Helberger and Nadine Bol, ‘Health as a Means Towards Profitable Ends: MHealth Apps, User Autonomy, and Unfair Commercial Practices’ (2018) 41 *Journal of Consumer Policy* 124 <<https://doi.org/10.1007/s10603-018-9374-3>> accessed 3 August 2022

<sup>293</sup> *Wind Tre* (226)

<sup>294</sup> *Orange Polska* (n 283)

<sup>295</sup> *Orange Polska* (n 283) para 36; and *Wind Tre* (226) para 54

This idea would be perfectly aligned with the digital asymmetry if the Court had not, in both cases, associated the provision of information with protecting freedom of choice or conduct. The CJEU stated that “for a service or product to be solicited, the consumer must have made a free choice. That supposes, in particular, that the information provided by the trader to the consumer is clear and adequate”.<sup>296</sup> At this point, the CJEU appears to combine the provisions on misleading actions/omissions (Arts. 6 and 7) with the provisions on aggressive practices, considering that provision of information is not an aspect to be considered in the latter.<sup>297</sup> It is possible that the CJEU considered this aspect because of the specific context of the practices, but it is not possible to affirm.

‘Undue influence’, according to Art. 2(j), “significantly limits the consumer’s ability to make an informed decision”. Limiting the consumer’s ability differs from not providing the consumer with (clear) information. Aggressive practices are strictly connected with freedom of choice and conduct, different from misleading practices, which are directly connected with the lack of or false information.<sup>298</sup> As the CJEU stated in the *Purely Creative* case, aggressive practices cause the consumer “to take a decision which is not always rational”.<sup>299</sup> So, these practices are connected with rationality and autonomy, not information.

The Guidance corroborates this observation: “The use of information about the vulnerabilities of specific consumers or a group of consumers for commercial purposes is likely to have an effect on the consumers’ transactional decision. Depending on the circumstances of the case, such practices could amount to a form of manipulation in which the trader exercises ‘undue influence’ over the consumer, resulting in an aggressive commercial practice prohibited under Arts. 8 and 9 UCPD”.<sup>300</sup>

Hyper-engaging Mechanisms constitute a form of undue influence. First, they are deployed in a context where the trader (i.e. online platforms providers) is in a position of power in relation to the consumer (i.e. users) due to the digital asymmetry.<sup>301</sup> In this sense, it is worth noting that Arts.

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<sup>296</sup> *Orange Polska* (n 283) paras 34 and 35; and *Wind Tre* (226) paras 45 and 46

<sup>297</sup> *Helberger and others* (n 201) 69

<sup>298</sup> *ibid*

<sup>299</sup> *Purely Creative* (288) para 49

<sup>300</sup> Guidance on the interpretation and application of UCPD (n 192) 100

<sup>301</sup> Text to 295 ch 2 pt 2.

8 and 9 as well as the CJEU rulings give space to consider the structural effects of digital asymmetry.<sup>302</sup> Second, these mechanisms take advantage of such power asymmetry to manipulate users by exploiting their cognitive vulnerabilities, which is a form of psychological pressure. Third, this manipulation is likely to significantly limit users ability to make a rational and informed decision, because even if they received information, their ability to act rationally is compromised and then they would not be able to circumvent these practices anyway.<sup>303</sup>

As vastly explored in the above sections, Hyper-engaging Mechanisms harm users' autonomy and are likely to significantly impair the average consumer's freedom of choice and conduct regarding the decision on how often and for how long they want to use online platforms. So, considering that these mechanisms are a form of undue influence, deploying them constitutes an aggressive commercial practice according to Arts. 8 and 9 UCPD.

### 3.3.Art. 5(2): general clause

Art. 5(2) UCPD provides a general prohibition that works as a '*safety net*', meaning that its function is to catch unfair commercial practices which were not caught by Arts. 6–9 nor by the list of prohibited practices in Annex I.<sup>304</sup> Art. 5(2) establishes that a commercial practice is unfair if: (a) it is contrary to the requirements of professional diligence, and (b) materially distorts or is likely to materially distort the economic behaviour of the average consumer. Here, the average consumer can be the one to whom the product reaches or is addressed, or, in the case of a practice directed to a particular group, the average consumer will be the average member of that group.<sup>305</sup>

'*Professional diligence*' means "the standard of special skill and care which a trader may reasonably be expected to exercise towards consumers, commensurate with honest market practice and/or the

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<sup>302</sup> Helberger and others (n 201) 70-71

<sup>303</sup> In this sense: "As far as aggressive practices are concerned, the concept of 'undue influence' seems to fit the discussion. This is described as the exploitation of a position of power to apply pressure and limit the consumers' ability to make an informed decision (Article Art. 2, lit. j). Considering the digital asymmetry effects, it is possible to argue that tech companies are in a position of power over consumers so that any exploitation of such position could lead to undue influence." See Galli (n 40) 49.

<sup>304</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 58

<sup>305</sup> UCPD, art. 5(2)

general principle of good faith in the trader's field of activity".<sup>306</sup> In the *Deroo Blanquart v Sony* case, when evaluating the trader's professional diligence, the CJEU mentioned that "the facts that the consumer was correctly informed, that the combined offer met the expectations of a significant proportion of consumers and that it was possible for the consumer to accept all the elements of that offer or to cancel the sale, are likely to satisfy the requirements of honest market practices or the principle of good faith in the field of the manufacturing of computer equipment for the general public, the trader thereby demonstrating care towards the consumer."<sup>307</sup>

It is interesting to note that professional diligence shall be assessed in light of the trader's specific field of activity. Based on that, the CJEU evaluated whether the commercial practice was aligned with "the requirements of honest market practices or of the principle of good faith". Complying with such requirements demonstrated the care of the trader towards the consumer. Among the requirements, when analysing what could be reasonably expected from the trader, the CJEU considered that the practice met the "expectations of a significant proportion of consumers"<sup>308</sup> instead of considering only the abstract expectations of the average consumer.

Regarding the use of Hyper-engaging Mechanisms, the field of activity to be considered is the online platforms' market. Although this practice is widespread within the market, it hardly complies with the honesty or good faith requirements due to its manipulative foundations. Here, the effects of digital asymmetry must be considered since this is the context in which users interact with online platforms, and it is fundamental to remember that they are in a disadvantaged position. Within this context, online platforms are embedded with algorithms and design strategies that exploit users' vulnerabilities and harm their autonomy. This practice increases the imbalance between trader and consumer, whose interests are not considered.<sup>309</sup>

Responsibility does not require intention (negligence, for example, exists without intention). So, when the UCPD does not require intention but prohibits and 'punishes' unfair commercial practices, the trader is responsible for its commercial choices and their consequential effects independently of its intent. This implies that if the trader deploys opaque models, it is at its own

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<sup>306</sup> UCPD, art. 2(h)

<sup>307</sup> *Deroo Blanquart* (307) para 38; and Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 58

<sup>308</sup> *ibid*

<sup>309</sup> Twigg-Flesner, and Thomas Wilhelmsson (n 193) 58



risk.<sup>310</sup> The trader is responsible for its choices and for granting that its business does not harm people. It is part of the required care it must exercise toward consumers.

Leiser supports that the ‘professional diligence’ standard allows the integration of a sector’s best practices and codes of conduct into the determination of fairness.<sup>311</sup> As an example, “the Association for Computing Machinery’s (ACM) Code of Ethics and Professional Conduct encourages members to ‘avoid harm’, ‘be transparent and provide full disclosure of all pertinent system capabilities, limitations, and potential problems to the appropriate parties’, and ‘respect privacy’ (...).”<sup>312</sup> In practices when it is hard to establish what could be reasonably expected from traders, codes of conduct seem to be a good referential. In this example, it is possible to see that computer machinery professionals (subject to this code) should avoid harm, be transparent, and respect privacy.

Considering the context involving Hyper-engaging Mechanisms and their consequences, it is reasonable to say that deploying them is not aligned with honest market practices nor with the principle of good faith. Thus, this practice is contrary to the duty of care that the trader must exercise toward consumers. Due to the effects of digital asymmetry and the opaqueness of such practice, it is challenging to establish what consumers expect from online platforms. Nevertheless, based on the Commission’s study on dark patterns, it is possible to affirm that, in general, users are not aware of online manipulation.<sup>313</sup> Moreover, considering that the Directive only cites what can be reasonably expected from the trader (and not who expects), it is possible to say that, at the minimum, people’s autonomy must be respected, and such right must override the financial interests of the trader. In summary, when a trader deploys Hyper-engaging Mechanisms, it is not acting according to the required professional diligence.<sup>314</sup>

The second aspect to be assessed according to Art. 5(2) is whether the commercial practice materially distorts or is likely to materially distort the average consumer’s economic behaviour. “To materially distort the economic behaviour of consumers’ means using a commercial practice

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<sup>310</sup> Hacker (n 172) 20

<sup>311</sup> Mark R Leiser, “‘Dark Patterns’: The Case for Regulatory Pluralism’ (2020) SSRN <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3625637](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3625637) > accessed 2 August 2022

<sup>312</sup> *ibid* 15-16 and references

<sup>313</sup> Lupiáñez-Villanueva and others (n 106) 85-87

<sup>314</sup> Jan Trzaskowski, ‘Data-Driven Value Extraction and Human Well-Being under EU Law’ (2022) *Electronic Markets* 7 <<https://link.springer.com/article/10.1007/s12525-022-00528-0>> accessed 5 May 2022

to appreciably impair the consumer's ability to make an informed decision, thereby causing the consumer to take a transactional decision that he would not have taken otherwise."<sup>315</sup>

The impacts of Hyper-engaging Mechanisms on consumers' behaviour and transactional decision have already been discussed. Once again, the digital asymmetry plays an important role, especially because this context itself is likely to impair users' ability to make an informed decision, in the sense that users cannot understand the complexities of the digital structure, even if they are provided with information. This asymmetry and, consequently, this impairment are aggravated by the exploitation of users' cognitive vulnerabilities through Hyper-engaging Mechanisms, which can distort (and shape) users' behaviour. These effects potentially affect anyone, including the average consumer. Therefore, such mechanisms are likely to impair the average consumer's ability to make an informed and rational decision. Also, as exposed before, they are likely to cause the average consumer to take a transactional decision that they would not have taken otherwise.

In this analysis, Hyper-engaging Mechanisms have been considered in general, and particular features or circumstances were not analysed individually. However, it is worth noting that, in some cases, especially regarding personalised practices or online platforms that clearly affect a specific group, it would be possible to apply the second part of Art. 5(2)(b).<sup>316</sup> Moreover, there are cases where Hyper-engaging Mechanisms are embedded in platforms that are directed at vulnerable consumers (e.g., children), and then it would be possible to apply Art. 5(3).<sup>317</sup> In these cases, the average member of the affected group is the reference (instead of the UCPD's average consumer).

In conclusion, in case the use of Hyper-engaging Mechanisms is not considered an aggressive practice, it can be deemed an unfair commercial practice according to Art. 5(2) UCPD, because it is contrary to the required professional diligence and is likely to distort the average consumer's economic behaviour, negatively affecting their transactional decisions.

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<sup>315</sup> UCPD, art. 2(e)

<sup>316</sup> UCPD, art. 5(2)(b): "(...) A commercial practice shall be unfair if it materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average member of the group when a commercial practice is directed to a particular group of consumers".

<sup>317</sup> UCPD, art. 5(3): "Commercial practices which are likely to materially distort the economic behaviour only of a clearly identifiable group of consumers who are particularly vulnerable to the practice or the underlying product because of their mental or physical infirmity, age or credulity in a way which the trader could reasonably be expected to foresee, shall be assessed from the perspective of the average member of that group".

#### 4. Final remarks on the UCPD

The UCPD's structure is based on maximum harmonisation and seeks to establish a single set of European rules to combat unfair commercial practices.<sup>318</sup> In practice, Member States shall not adopt stricter rules than those provided for in the Directive,<sup>319</sup> and the Directive utilises broad clauses to catch as many commercial practices as possible.<sup>320</sup> On the one hand, some scholars argue that the Directive is incompatible with unfair digital practices because its concepts are not flexible enough to cover such practices.<sup>321</sup> On the other hand, part of the academia supports that the UCPD is, among the legislation currently in force, the best option to protect consumers from online manipulation.<sup>322</sup>

The UCPD, aiming to achieve a high level of consumer protection, does not focus on protecting consumers individually. Instead, it is an instrument to ban unfair practices from the market. This characteristic is particularly relevant to the issue of Hyper-engaging Mechanisms, where it is difficult to separate the impact of manipulation on individual consumers from its repercussion from a broader societal perspective.<sup>323</sup>

Throughout this section, some concepts of the Directive were criticised, but it was supported that the UCPD is sufficiently broad and flexible to ban online manipulation, including Hyper-engaging Mechanisms.<sup>324</sup> Although these practices did not exist (at least as they are today) when the Directive was elaborated, this work advocates that the principle-based provisions and prohibitions of the UCPD can be interpreted as covering unfair digital practices.<sup>325</sup> In brief, the analysis concluded that deploying Hyper-engaging Mechanisms constitutes an unfair practice under Arts. 8 and 9 UCPD or Art. 5(2) UCPD subsidiarily.

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<sup>318</sup> UCPD, Recital 12; and Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 47

<sup>319</sup> Guidance on the interpretation and application of UCPD (n 192) 5

<sup>320</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 49

<sup>321</sup> Galli (n 40) 50-60

<sup>322</sup> Mik (272) 32

<sup>323</sup> Galli (n 40) 49

<sup>324</sup> Giovanni Sartor, 'New Aspects and Challenges in Consumer Protection: Digital services and artificial intelligence' (2020) European Parliament 36-37 <[https://www.europarl.europa.eu/thinktank/en/document/IPOL\\_STU\(2020\)648790](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)648790) > accessed 15 April 2022; and Lupiáñez-Villanueva and others (n 106) 72

<sup>325</sup> Guidance on the interpretation and application of UCPD (n 192) 99

However, some critical aspects were identified regarding the application of the UCPD to digital practices. First, the digital asymmetry, including a more realistic interpretation of the average consumer, should be considered when assessing these practices' unfairness. This concept is fundamental to empowering consumers and rebalancing the digital environment. Second, it is essential that the focus of legislators, authorities, and courts, which is still heavily rooted in the information model, shifts toward an autonomy model.<sup>326</sup> As vast explained, information is insufficient to protect users in the attention economy. Thus, protecting their autonomy is crucial.<sup>327</sup>

Third, it is noticeable that, although the UCPD is able to protect consumers from online manipulation and Hyper-engaging Mechanisms, these (and many other) practices are still part of users' everyday experience. Therefore, there may be an enforcement issue. One of the reasons pointed out is that users do not notice these practices, and even when they notice, they disregard them because they assume that this is part of their everyday online experience.

Another potential reason is that the former version of the UCPD did not provide a right of action for individual consumers in circumstances where they have been the victims of an unfair commercial practice. Instead, it only required "adequate and effective means to combat unfair commercial practices".<sup>328</sup> However, the Modernisation Directive, which the Member States were required to apply since May of 2022, introduced individual remedies for consumers in the new Art. 11a UCPD. This provision emphasises that consumers should have access to proportionate and effective remedies, which include compensation for damages and, where relevant, price reduction or termination of the contract.<sup>329</sup> This new provision will potentially incentivise users to report unfair practices more frequently.

Lastly, considering the analyses carried out throughout this dissertation, the best way to protect users from Hyper-engaging Mechanisms under the current legislation seems to be include this

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<sup>326</sup> Gert Straetmans, 'Trade Practices and Consumer Disinformation' in Gabriele Siegert, M. Bjørn Rimscha and Stephanie Grubenmann (eds), *Commercial Communication in the Digital Age* (De Gruyter Saur, 2017) 89-103

<sup>327</sup> Sax, Helberger, and Bol (n 292) 104

<sup>328</sup> Howells, Twigg-Flesner, and Thomas Wilhelmsson (n 193) 84

<sup>329</sup> Bram Duivenvoorde, 'The Upcoming Changes in the Unfair Commercial Practices Directive: A Better Deal for Consumers?' (2019) 8 (6) *Journal of European Consumer and Market Law* 227-228 < <https://kluwerlawonline.com/journalarticle/Journal+of+European+Consumer+and+Market+Law/8.6/EuCML2019043> > accessed 25 October 2021

practice in Annex I UCPD. However, this conclusion may change according to the interpretation of the upcoming regulations, which can tackle Hyper-engaging Mechanisms more directly.

### III. DIGITAL SERVICES ACT<sup>330</sup>

The DSA aims to rebalance the responsibilities of the parties involved in the digital environment (i.e., users, online platforms, and public authorities) according to EU values, placing citizens at the centre. Its rules promote a safer digital space for users and protect their fundamental rights; establish a powerful transparency and a clear accountability framework for platforms; and intend to foster innovation, growth, and competitiveness, both in the European Single Market and globally.<sup>331</sup>

The DSA entered into force on 16 November 2022. It will be directly applicable across the EU from 17 February 2024.<sup>332</sup> As regards the obligations for very large online platforms and very large online search engines, the DSA will apply four months after their designation (as ‘very large’ businesses).<sup>333</sup>

The DSA is a very important step for users’ autonomy in the digital world. It has significant provisions to protect users from online manipulation and to guarantee that online platforms respect their fundamental rights. Moreover, considering that the DSA includes not only transparency requirements but also prohibitions and accountability measures, it may be more effective in protecting consumers than the existing legislation. Nevertheless, the approach of the DSA regarding practices already prohibited by the UCPD may be an obstacle to applying this act to Hyper-engaging Mechanisms, as will be further explained.

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<sup>330</sup> This section has been updated in May 2023 according to the final version of the DSA, which entered into force on 16 November 2022. The original version was based on the DSA proposal [version of 15 June 2022]. Most of the changes were to article numbers and none affected the original analysis and conclusions.

<sup>331</sup> Commission, ‘The Digital Services Act package’ (05 July 2022) < <https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package> > accessed 30 July 2022; and Commission, ‘The Digital Services Act: ensuring a safe and accountable online environment’ < [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment\\_en#what-are-the-key-goals-of-the-digital-services-act](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en#what-are-the-key-goals-of-the-digital-services-act) > accessed 30 July 2022

<sup>332</sup> DSA, art. 93

<sup>333</sup> Commission, ‘The Digital Services Act package’ (330)

The DSA applies to intermediary services offered to users that have their place of establishment or are in the EU.<sup>334</sup> One type of intermediary service is those information society services of ‘hosting’, which consists of the storage of information provided by, and at the request of users.<sup>335</sup> In the DSA, online platforms are classified as providers of hosting services that store and disseminate information to the public at the request of users.<sup>336</sup> The Regulation thus applies to online platforms’ services.

According to Recital 79, providers of very large online platforms<sup>337</sup> “can be used in a way that strongly influences safety online, the shaping of public opinion and discourse, as well as online trade”. These platforms are generally designed “to benefit their often advertising-driven business models and can cause societal concerns”.<sup>338</sup> Under DSA, “providers of very large online platforms and of very large online search engines should therefore assess the systemic risks stemming from the design, functioning and use of their service, as well as from potential misuses by the recipients of the service, and should take appropriate mitigating measures in observance of fundamental rights”.<sup>339</sup>

Among the four categories of risks that should be assessed in-depth, the DSA indicates those risks related to the “*design, functioning or use, including through manipulation, of very large online platforms and of very large online search engines with an actual or foreseeable negative effect on the protection of public health, minors, and serious negative consequences to the person’s physical and mental well-being (...)*”. Such risks may also stem “*from online interface design that may stimulate behavioural addictions of recipients of the service*”.<sup>340</sup>

Two aspects are important here. One is the definition of ‘*online interface*’ adopted by the DSA: “any software, including a website or a part thereof, and applications, including mobile applications”.<sup>341</sup> This definition is broader than the common definition of an online interface (also known as web

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<sup>334</sup> DSA, art. 2(1)

<sup>335</sup> DSA, art. 3(g)(iii)

<sup>336</sup> DSA, art. 3(i)

<sup>337</sup> Very large platforms are online platforms which reach a number of average monthly active recipients of the service in the Union equal to or higher than 45 million, and which are designated as very large online platforms by the EU Commission. See DSA, art. 33(1).

<sup>338</sup> DSA, Recital 79

<sup>339</sup> DSA, Recital 79

<sup>340</sup> DSA, Recital 83 [emphasis added]

<sup>341</sup> DSA, art. 3(m)

or user interface), which usually refers to “the way in which information is made available to the user on the screen”.<sup>342</sup> And the other is that, although the second part of the Recital focuses on the interface, the first part encompasses “the design, functioning, or use” of the service. So, it is possible to say that this Recital directly tackles all aspects of Hyper-engaging Mechanisms.

Recital 67 DSA focuses on dark patterns. These practices are defined as “online interfaces of online platforms that materially distort or impair, either purposefully or in effect, the ability of recipients of the service to make autonomous and informed choices or decisions. Those practices can be used to persuade the recipients of the service to engage in unwanted behaviours or into undesired decisions which have negative consequences for them”.<sup>343</sup> Service providers should be prohibited from deceiving or nudging users and from distorting or impairing their autonomy, decision-making, or choice via the structure, design or functionalities of an online interface.<sup>344</sup> Considering the definition of online interface by the DSA, it is possible to say that the concept of dark patterns covers Hyper-engaging Mechanisms. Nevertheless, at the same time, it is interesting to note that the DSA approached dark patterns and “interface design that may stimulate behavioural addictions” in separated Recitals.

Art. 25 (1) establishes that “online platforms shall not design, organise or operate their online interfaces in a way that deceives, *manipulates* or otherwise materially distorts or impairs the ability of recipients of their service to make *free* and informed decisions”.<sup>345</sup> It is interesting to note that this article’s writing remembers the UCPD provisions. It also does not require the intention of the platform and focuses on the effects of the practices. However, unlike the UCPD, it does not refer to practices that are ‘likely’ to cause a such effect but only to those that actually have an impact. Meanwhile, it refers explicitly to online practices and includes two very important aspects: manipulation is clearly prohibited, and users’ ability to make ‘free decisions’ (not only informed decisions) has to be protected. At first sight, this article seems to be the perfect provision to ban

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<sup>342</sup> Cambridge Dictionary, ‘interface’ < <https://dictionary.cambridge.org/dictionary/english/interface> > accessed 07 September 2022; and PCMag, ‘user interface’ < <https://www.pcmag.com/encyclopedia/term/user-interface> > 07 September 2022

<sup>343</sup> DSA, Recital 67

<sup>344</sup> *ibid*

<sup>345</sup> This article does not apply to providers of online platforms that qualify as micro or small enterprises within the meaning of the Annex to Recommendation 2003/361/EC. See DSA, art. 29(1).



Hyper-engaging Mechanisms (and also online manipulation in general) in all their forms and aspects.

Art. 34(1) establishes that providers of very large platforms shall carry out risk assessments to “identify, analyse and assess any systemic risks in the Union stemming from the design or functioning of their service and its related systems, including algorithmic systems, or from the use made of their services”.<sup>346</sup> These assessments shall be carried out at least once every year and include any actual or foreseeable negative effects on the exercise of fundamental rights and consumer protection.<sup>347</sup> Moreover, these platforms shall put in place reasonable, proportionate, and effective mitigation measures tailored to the specific systemic risks identified pursuant to the risk assessment, with particular consideration to the impacts of such measures on fundamental rights. Such measures may include adapting the design, features or functioning of their services, including their online interfaces, and “taking awareness-raising measures and adapting their online interface for increased user information”.<sup>348</sup>

The risk assessment requirement (Art. 34 DSA) plays an important role here since very large platforms will be responsible for evaluating the potential risks (which means the *likelihood* of something bad happening) within their services and mitigating such risks. Nevertheless, it is very important that in the case of Hyper-engaging Mechanisms (and also online manipulation in general), the solution adopted by online platforms, in line with Art. 35(1), is not related to increasing users’ awareness or information. As exposed before, the only way of protecting users from online manipulation is by banning it. In this case, informative measures can only be helpful for traders as an excuse to keep deploying manipulative practices.

It is noteworthy that the obligations imposed by the DSA are enforceable through private actions. Individuals affected by breaches of the DSA’s obligations (or an organisation on their behalf) can lodge a complaint with the competent authority and also seek compensation from providers in respect of any damage or loss suffered due to a violation of the regulation. Platforms that do not

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<sup>346</sup> DSA, art. 34(1)

<sup>347</sup> DSA, art. 34(1)(b)

<sup>348</sup> DSA, art. 35(1)(a) and (i)

comply with DSA provisions are also subject to fines (up to 6% of the annual worldwide turnover).<sup>349</sup>

In summary, the DSA contains provisions that directly and clearly prohibit Hyper-engaging Mechanisms and online manipulation. It also grants users the right to claim compensation through private action, which may increase enforceability. Moreover, it defines the measures that providers of very large platforms (which have a higher impact on influencing users) must adopt to comply with the legal requirements. Nevertheless, there may be some issues when applying this Act to Hyper-engaging Mechanisms.

The first (and probably most important) one is that the DSA does not cover practices already covered by the UCPD. Art. 25 (2) establishes that: “*this prohibition shall not apply to practices covered by Directive 2005/29/EC [UCPD] or Regulation (EU) 2016/679 [GDPR]*”. Such problematic exception is confirmed by Recitals 10 and 67 DSA. Recital 10 establishes that “for reasons of clarity, it should also be specified that this Regulation should be without prejudice to Union law on consumer protection, in particular Directive 2005/29/EC [UCPD] (...) However, to the extent that these rules pursue the same objectives as those laid down in this Regulation, the rules of this Regulation apply in respect of issues that are not or not fully addressed by those other acts as well as issues on which those other acts leave Member States the possibility of adopting certain measures at national level.”<sup>350</sup> Recital 67 says that “those rules on dark patterns should be interpreted as covering prohibited practices falling within the scope of this Regulation to the extent that those practices are not already covered under Directive 2005/29/EC [UCPD] or Regulation (EU) 2016/679 [GDPR]”<sup>351</sup>.

The idea is that the DSA is a horizontal instrument (applicable to different sectors) that will coexist with and be complemented by existing sector-specific legislation.<sup>352</sup> So, the interaction between the UCPD and the DSA is of complementarity.<sup>353</sup> However, the scope of the UCPD is broader

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<sup>349</sup> DSA, art. 52 and art. 53 and 54 DSA; and Martin Husovec and Irene Roche Laguna, ‘Digital Services Act: A Short Primer’ in *Principles of the Digital Services Act* (forthcoming, Oxford University Press 2023) 12 <<https://ssrn.com/abstract=4153796> > accessed 19 July 2022

<sup>350</sup> DSA, Recital 10 [emphasis added]

<sup>351</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation or GDPR)

<sup>352</sup> Husovec and Laguna (n 348) 2

<sup>353</sup> Lupiáñez-Villanueva and others (n 106) 82

and thus, in the case of Hyper-engaging Mechanisms, although the provision of the DSA is much more specific, it is possible to argue that such practice is fully covered by the UCPD (that does not allow the Member States to adopt stricter measures).

Following this line of thought, the DSA will not apply to the deployment of Hyper-engaging Mechanisms by online platforms. It is not good news because the provisions of the UCPD are not exactly the perfect fit for online practices and, indeed, there is a lack of enforcement of such provisions. So, the DSA could be more effective than the UCPD in protecting users from these manipulative practices.

The CJEU recently ruled, in *Meta Platforms Ireland* case, that “the infringement of a rule relating to the protection of personal data may at the same time give rise to an infringement of rules on consumer protection or unfair commercial practices”.<sup>354</sup> This approach, where different legislations are violated at the same time and then both apply to a practice, seems to be more effective in granting a high level of protection for users. Moreover, other approaches could have been adopted, like applying to each case the legislation that grants consumers a higher level of protection or applying those measures that are more specific to the practice (instead of establishing the opposite). It is difficult to find sense in a specific law not being applied in favour of more general law.

Another potential issue is the technical part. Hyper-engaging Mechanisms are very subtle, and, despite the clear provisions, it will probably not be easy to establish clear boundaries between acceptable persuasion and prohibited manipulation regarding these practices. The line between ‘engaging’ and ‘addictive’ is very thin and may require the involvement of people with different backgrounds to settle the limits (i.e. psychologists, designers, developers, etc.). This aspect is very important, especially considering that the Art. 25, different from the UCPD, does not prohibit practices that are *likely* to harm users’ autonomy but only those that actually harm.

In conclusion, by the letter of the law and without further guidance, the DSA will not be applicable to the deployment of Hyper-engaging Mechanisms by online platforms because this practice is

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<sup>354</sup> C-319/20 *Meta Platforms Ireland v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V.* [2022] ECLI:EU:C:2022:322

already prohibited by the UCPD. However, there is hope that this conclusion will change due to a more coherent interpretation of the text or (who knows) an update of the law.

#### IV. ARTIFICIAL INTELLIGENCE ACT<sup>355</sup>

The AI Act is a proposal for an EU regulatory framework on artificial intelligence ('AI'). It is the first attempt to globally regulate AI horizontally. Its aim is "to improve the functioning of the internal market by laying down a uniform legal framework in particular for the development, marketing and use of artificial intelligence in conformity with Union values".<sup>356</sup> The proposal is now being discussed by the co-legislators, the EU Parliament, and the Council. The document's final version will be released once the Council and the Parliament agree on a common version of the text.<sup>357</sup>

The AI Act will apply to providers placing on the market or putting into service AI systems in the EU, users of AI systems located within the EU, and providers and users of AI systems that are located in a third country, where the output produced by the system is used in the EU. It will also apply to importers and distributors of AI systems and to product manufacturers placing on the market an AI system together with their product and under their own name.<sup>358</sup> According to the Regulation, 'provider' is an AI system's developer or deployer,<sup>359</sup> whereas 'user' is a legal or natural person that uses an AI system under its authority.<sup>360</sup>

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<sup>355</sup> It is essential to highlight that the comments exposed here are based on the current version of the proposal for the AI Act. The Regulation is still a work in progress, and the final version may have different provisions relating to AI systems and Hyper-engaging Mechanisms. This work has been updated in May 2023 according to the current version of the proposal [version of 6 December 2022 – common position of the EU Council]. The original version was based on the Commission proposal [version of 21 April 2021]. Although the AI Act's text has been significantly modified, which partially changed the original analysis, the conclusions remain the same.

<sup>356</sup> AI Act, Recital 1

<sup>357</sup> European Parliament, 'Proposal for a Regulation on a European approach for Artificial Intelligence' (*Legislative Train Schedule*, 23 June 2022) < <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-regulation-on-artificial-intelligence> > accessed 15 August 2022

<sup>358</sup> AI Act, art. 2

<sup>359</sup> AI Act, art. 3(2)

<sup>360</sup> AI Act, art. 3(4)

The AI Act's goals are to promote excellence in AI and trustworthy AI by means of ensuring that any AI system or improvements “are based on rules that safeguard the functioning of markets and the public sector, and people’s safety and fundamental rights”.<sup>361</sup> The Regulation also tackles online manipulation but, in this case, such manipulation has to involve an AI system that is likely to cause psychological or physical harm.<sup>362</sup> It is possible to say that the AI Act prohibits Hyper-engaging Mechanisms or at least a relevant part of them. However, the list of requirements is more extensive. Therefore, the scope of the AI Act is narrower than the DSA’s scope, and the approach to Hyper-engaging Mechanisms is less direct.

The Regulation defines AI system as a “system that is designed to operate with elements of autonomy and that, based on machine and/or human-provided data and inputs, infers how to achieve a given set of objectives using machine learning and/or logic- and knowledge based approaches, and produces system-generated outputs such as content (generative AI systems), predictions, recommendations or decisions, influencing the environments with which the AI system interacts”.<sup>363</sup> According to Art. 2(5), the AI Act shall not affect the application of the provisions on the liability of intermediary service providers set out in the DSA.

Considering that Hyper-engaging Mechanisms, in general, are developed utilising software that is designed to operate with elements of autonomy and that, based on data and inputs, infers how to achieve a given goal by means of machine learning, generating outputs like content, recommendations, and decisions that influence the environments they interact with, they, therefore, include an AI system. Although in this work the focus is on those legislations that can cover all aspects of Hyper-engaging Mechanisms, which is not the case with the AI Act, machine learning is a very relevant part of this manipulative practice, and thus the Regulation may be a very important tool to fight against it.

The AI Act adopted a risk-based method, defining four categories of risk: unacceptable risk, high risk, limited risk, and minimal or no risk. Among the unacceptable risks, Art. 5 (1)(a) provides that it is prohibited “the placing on the market, putting into service or use of an AI system that *deploys*

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<sup>361</sup> Commission, ‘A European approach to artificial intelligence’ (*Shaping Europe’s digital future*, 11 August 2022) < <https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence> > accessed 15 August 2022

<sup>362</sup> AI Act, art. 5(1)

<sup>363</sup> AI Act, art. 3(1)

*subliminal techniques beyond a person's consciousness with the objective to or the effect of materially distorting a person's behaviour in a manner that causes or is reasonably likely to cause that person or another person physical or psychological harm*".<sup>364</sup>

Recital 16 of the AI Act provides that "AI-enabled *manipulative techniques can be used to persuade persons to engage in unwanted behaviours, or to deceive them by nudging them into decisions in a way that subverts and impairs their autonomy*, decision-making and free choices. (...) AI systems materially distorting human behaviour, whereby physical or psychological harms are likely to occur, are particularly dangerous and should therefore be forbidden". This Recital fits perfectly with the Hyper-engaging Mechanisms, touching on their consequences for both users' health and autonomy.

According to Recital 16, it is not necessary that the provider or the user have the intention to cause harm, as long as such harm results from the manipulative AI-enabled practice. Such intention may not be presumed if the distortion of human behaviour results from factors external to the AI system which are outside of the control of the provider or the user. Also, Recital 16 clarifies that the prohibitions for such AI practices are complementary to the provisions contained in the UCPD.<sup>365</sup> This approach brought by Recital 16 increases the regulation's potential to ban online manipulative practices, as intention to cause harm is not a requirement and the regulation complements the UCPD, instead of not applying to practices already covered by it.

Considering that the regulation is still not in force and that the current version of the text is not the final version, it is hard to predict what will be the practical challenges when applying the AI Act. Considering the current text, the 'harm' requirements are an obstacle to applying the regulation to AI systems that harms people's autonomy but does not cause physical or mental harm. Also, proving the causality between an AI system and a mental harm may involve several complexities (i.e., it is a subtle system and an invisible harm).

Since the AI Act is still a work in progress, it is worth saying that one of the most relevant aspects of this regulation is developing a very good definition of what are AI systems, mainly because this term generates discussion, and such definition basically defines what will and what will not be covered by the Act.

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<sup>364</sup> AI Act, art. 5(1)(a)

<sup>365</sup> AI Act, Recital 16

In conclusion, Hyper-engaging Mechanisms are generally built on or involve an AI system that manipulates users by obscuringly exploiting their cognitive vulnerabilities to distort their behaviour, causing them to spend more time using an online platform. As exposed before, excessive internet usage is likely to cause users physical and/or psychological harm in the long term. Therefore, in line with Art. 5 (1)(a) and Recital 16 of the AI Act's current version, the deployment of AI systems as Hyper-engaging Mechanisms shall be prohibited.



## CONCLUSION

In the attention economy, there is fierce competition for consumers' attention and, consequently, for their time. That is because people's attention means money for several online businesses, so the more attention they receive, the more money they can make. To succeed in this scenario, online platforms are embedded with Hyper-engaging Mechanisms that capture and hold users' attention. These mechanisms involve a complex pool of strategies that exploit users' cognitive vulnerabilities, eroding their rationality and self-control and shaping their behaviour according to the business' interest. Here, these mechanisms were analysed in parts and divided into adaptive algorithms that personalise content and design; strategies that impact the allocation of users' attentional resources; a method aimed at reinforcing behaviour by interacting with users' dopaminergic system (here demonstrated through the Hook Model); and interface design strategies that take advantage of users' desires and natural cues.

Hyper-engaging Mechanisms potentially increase the time and frequency users access online platforms. These effects, jointly with the neurologic impacts of these mechanisms, are directly associated with internet addiction and other disorders. Besides that, Hyper-engaging Mechanisms manipulate users, covertly directing their behaviour to what is more profitable to the businesses. Their method of manipulation is neither persuasion, which presents a direct appeal, nor coercion, which restricts acceptable options. It is an exploitation of cognitive vulnerabilities to guide users' decisions. Since all humans are exposed to cognitive vulnerabilities, anyone can be affected by this kind of online manipulation.

Therefore, the consequences of these mechanisms for users of online platforms are extremely relevant. Given that, this work analysed whether the deployment of Hyper-engaging Mechanisms by online platforms is lawful under the EU legislation. Different legal instruments were analysed to identify those that could directly protect users from these mechanisms. The preliminary conclusion was that the UCPD, the DSA, and the AI Act were the best candidates for this purpose.

Among these three, the UCPD is the only one fully in force at the moment of writing this dissertation and was the focus of the legal analysis. Although the Directive's provisions were developed before the emergence of many technologies and online practices, they are flexible and

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broad enough to cover Hyper-engaging Mechanisms. An essential part of this analysis was the observation that manipulative practices cannot be overcome by providing information to users due to the structural effects of digital asymmetry and the fact that information does not shield users' brains against the exploitation of their vulnerabilities.

Considering that, the UCPD's provisions on misleading practices (Arts. 6 and 7 UCPD) are not the best option for protecting users. In turn, the deployment of Hyper-engaging Mechanisms constitutes an aggressive practice under Arts. 8 and 9 UCPD, since these mechanisms are a form of undue influence and are likely to significantly impair the average consumer's freedom of choice and conduct regarding the decision on how often and for how long they want to use online platforms. Subsidiarily, this practice is also prohibited under Art. 5 (2) UCPD because it is contrary to the required professional diligence and is likely to distort the average consumer's economic behaviour, causing them to take a transactional decision that they would not have taken otherwise. In brief, the analyses on the UCPD concluded that Hyper-engaging Mechanisms are prohibited under the Directive.

Unlike the UCPD, the DSA was developed focusing on online practices and technology advancements. Indeed, Art. 25(1) DSA directly tackles and prohibits Hyper-engaging Mechanisms. This Article prohibits online platforms from designing their online interfaces in a way that manipulates or otherwise materially distorts or impairs users' ability to make free and informed decisions, which is precisely what these mechanisms do. However, Art. 25(2) DSA throw cold water on this idea, establishing that this prohibition shall not apply to practices covered by the UCPD. So, by the letter of the law and considering that the UCPD already prohibits these practices, the DSA will not apply to Hyper-engaging Mechanisms.

The AI Act is still a work in progress and can change a lot before its enactment. Notwithstanding that, the current version prohibits AI systems that deploy subliminal techniques beyond a person's consciousness to materially distort a person's behaviour in a manner that is likely to cause that person physical or psychological harm. Machine learning, which is an AI system, is a fundamental part of Hyper-engaging Mechanisms, and that is why the AI Act was included in the analysis. Thus, in line with the Regulation, the use of AI to build Hyper-engaging Mechanisms will be prohibited because these mechanisms manipulate users to distort their behaviour and are likely to cause psychological harm to them.

Despite the existence of a robust EU legal framework, including the UCPD, which is perceived as flexible enough to cover most unfair commercial practices, some adjustments may be necessary to better respond to Hyper-engaging Mechanisms. The analysis shows that some tests required by the UCPD are not the perfect fit for online manipulative practices. In view of that, the inclusion of these practices in Annex I UCPD (outright prohibitions) was proposed. Also, it was noted that there is a lack of enforcement of the Directive's provisions regarding online manipulation, which will potentially be overcome by the recent introduction of Art. 11a UCPD. This article provides individual remedies for consumers who can now claim damages compensation, which may incentivise them to report unfair practices more frequently.

The DSA and the AI Act texts demonstrate that legislators are aware and trying to do something regarding online manipulation, which includes Hyper-engaging Mechanisms. Nevertheless, the DSA, which could be the perfect Regulation to ban these practices, unreasonably create an exception for practices already covered by the UCPD and the GDPR. It is not possible to predict how these legislations will interact in practice, but reconsidering this approach appears to be relevant. A general consideration is that it is essential that the focus of legislators, authorities, and courts, which is still heavily rooted in the information model, shifts toward an autonomy model.<sup>366</sup> As vast explained in this work, information is insufficient to protect users in the attention economy. Thus, protecting their autonomy is crucial.<sup>367</sup>

Online platforms, in general, are helpful and provide entertainment for users. Nevertheless, the immense benefits associated with internet use do not require the employment of Hyper-engaging Mechanisms.<sup>368</sup> The online platforms' market is controlled by big tech companies that would still make money with advertisement and freemium subscriptions despite manipulating users. Indeed, although this aspect was not analysed in this work, the literature cites that online manipulation also impacts collective welfare, especially competition.<sup>369</sup> If these mechanisms are so good to manipulate users, they should be used to promote a healthier online environment, and not the opposite.

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<sup>366</sup> Straetmans (326) 89-103

<sup>367</sup> Sax, Helberger, and Bol (n 292) 104

<sup>368</sup> Bhargava and Velasquez (n 15) 13

<sup>369</sup> Lupiáñez-Villanueva and others (n 106) 91

Finally, this dissertation did not aim to cover all the complexities of Hyper-engaging Mechanisms nor provide definitive legal solutions. Instead, the goal was to call everyone's attention to this problem, demonstrate its relevance, and contribute to the discussion on the role of the EU law in protecting humans' autonomy and health in the fast-developing attention economy. Hopefully these goals have been achieved.

## BIBLIOGRAPHY

—— ‘Average weekly hours spent playing video games in selected countries worldwide as of January 2021’ (*Statista*, 27 July 2022) <<https://www.statista.com/statistics/273829/average-game-hours-per-day-of-video-gamers-in-selected-countries/>> accessed 30 August 2022

—— ‘Daily time spent on social networking by internet users worldwide from 2012 to 2022’ (*Statista*, 22 August 2022) <<https://www.statista.com/statistics/433871/daily-social-media-usage-worldwide/>> accessed 30 August 2022

American Psychiatric Association, ‘*Diagnostic and Statistical Manual of Mental Disorders*’ (5<sup>th</sup> edn, American Psychiatric Publishing 2013)

American Psychology Association (APA), ‘Positive Reinforcement’ APA Dictionary of Psychology <<https://dictionary.apa.org/positive-reinforcement>> accessed 12 August 2021

Arias-Carrión O and others, ‘Dopaminergic Reward System: A Short Integrative Review’ (2010) *International Archives of Medicine* <<http://www.intarchmed.com/content/3/1/24>> accessed 18 April 2022

Atchley P, Lane S, and Mennie K, ‘A General Framework for Understanding the Impact of Information Technology on Human Experience’ in Sean M Lane and Paul Atchley (eds), *Human Capacity in the Attention Economy* (American Psychological Association 2021)

Barbour M, ‘Girl, 9, in rehab for Fortnite addiction after becoming so hooked she wet herself to keep playing’ (*Mirror* 11 June 2018) <<https://www.mirror.co.uk/news/uk-news/girl-9-rehab-after-becoming-12673590>> accessed 01 March 2022

Bhargava V and Velasquez M, ‘Ethics of the Attention Economy: The Problem of Social Media Addiction’ (2021) *Business Ethics Quarterly* <<https://doi.org/10.1017/beq.2020.32>> accessed 10 August 2021

Brand M and others, ‘Which Conditions Should Be Considered as Disorders in the International Classification of Diseases (ICD-11) Designation of “Other Specified Disorders Due to Addictive Behaviors”?’ (2020) *Journal of Behavioral Addictions* <<https://pubmed.ncbi.nlm.nih.gov/32634114/>> accessed 10 August 2021

WhatNext.Law

<https://whatnext.law>  
[info@whatnext.law](mailto:info@whatnext.law)

Brown S, 'Machine Learning, explained' (*MIT Management Sloan School*, 21 April 2021) < <https://mitsloan.mit.edu/ideas-made-to-matter/machine-learning-explained> > accessed 10 August 2021

Cambridge Dictionary, 'interface' < <https://dictionary.cambridge.org/dictionary/english/interface> > accessed 07 September 2022

Center for Humane Technology, 'How Social Media Hacks Our Brains' (1 January 2020) <<https://www.humanetech.com/insights/how-social-media-hacks-our-brains>> accessed 10 January 2022

Comission, 'Shaping Europe's digital future' (*Commission Official Website*, 7 June 2022) <<https://digital-strategy.ec.europa.eu/en/policies/online-platforms>> accessed 30 August 2022

Commission, 'A European approach to artificial intelligence' (*Shaping Europe's digital future*, 11 August 2022) < <https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence> > accessed 15 August 2022

Commission, 'Guidance on the interpretation and application of Directive 2005/29/EC of the European Parliament and of the Council concerning unfair business-to-consumer commercial practices in the internal market' (Guidance on the interpretation and application of UCPD) (Commission Notice 2021) 87 < <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021XC1229%2805%29&qid=1640961745514> > accessed 23 February 2022

Commission, 'Proposal for a Regulation on a Single Market For Digital Services' (Digital Services Act) COM (2020) 825 final [version of 15 June 2022]<sup>370</sup>

Commission, 'Proposal for a Regulation on Artificial Intelligence (Artificial Intelligence Act) COM (2021) 206 final [version of 21 April 2021]<sup>371</sup>

Commission, 'The Digital Services Act package' (05 July 2022) < <https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package> > accessed 30 July 2022

Commission, 'The Digital Services Act: ensuring a safe and accountable online environment' < [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment\\_en#what-are-the-key-goals-of-the-digital-services-act](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en#what-are-the-key-goals-of-the-digital-services-act) > accessed 30 July 2022

Commission, 'Unfair Commercial Practices Directive' < [https://ec.europa.eu/info/law/law-topic/consumer-protection-law/unfair-commercial-practices-law/unfair-commercial-practices-directive\\_pt](https://ec.europa.eu/info/law/law-topic/consumer-protection-law/unfair-commercial-practices-law/unfair-commercial-practices-directive_pt) > accessed 24 July 2022

---

<sup>370</sup> This work has been updated in May 2023 according to the final version of the DSA, which entered into force on 16 November 2022.

<sup>371</sup> This work has been updated in May 2023 according to the current version of the AI Act [6 December 2022].

Davola A, 'Fostering Consumer Protection in the Granular Market. The Role of Rules on Consent, Misrepresentation and Fraud in Regulating Personalized Practices' (2021) Amsterdam Law School Research Paper 2 < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3791265](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3791265) > accessed 25 October 2021

Day G and Stemler A, 'Are Dark Patterns Anticompetitive?' (2020) Alabama Law Review, Forthcoming < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3468321](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3468321) > accessed 17 August 2021

Dell'Osso B and others, 'Learning to Deal with Problematic Usage of the Internet' (2018) European Cooperation in Science and Technology (COST Action CA16207) < <https://www.internetandme.eu/download-learning-to-deal-with-problematic-usage-of-the-internet/> > accessed 10 August 2021

Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market [2005] OJ L149/22 (Unfair Commercial Practices Directive)

Duivenvoorde B, 'The Upcoming Changes in the Unfair Commercial Practices Directive: A Better Deal for Consumers?' (2019) 8 (6) Journal of European Consumer and Market Law < <https://kluwerlawonline.com/journalarticle/Journal+of+European+Consumer+and+Market+Law/8.6/EuCML2019043> > accessed 25 October 2021

Epic Games, 'Privacy Policy' (2021) <<https://www.epicgames.com/site/en-US/privacypolicy?lang=en-US>> accessed 27 April 2022

Ertemel A and Ari E, 'A Marketing Approach to a Psychological Problem: Problematic Smartphone Use on Adolescents' (2020) International Journal of Environmental Research & Public Health < <https://www.mdpi.com/1660-4601/17/7/2471> > accessed 17 January 2022

Esposito F and Grochowski M, 'The Consumer Benchmark, Vulnerability, and the Contract Terms Transparency: A Plea for Reconsideration' (2022) 18 European Review of Contract Law < <https://papers.ssrn.com/abstract=4109474> > accessed 25 July 2022

European Parliament, 'Proposal for a Regulation on a European approach for Artificial Intelligence' (*Legislative Train Schedule*, 23 June 2022) < <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-regulation-on-artificial-intelligence> > accessed 15 August 2022

Evans D, 'The Economics of Attention Markets' (2017) SSRN Electronic Journal < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3044858](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3044858) > accessed 10 August 2021

Eyal N, *Hooked: how to build habit-forming products* (Penguin 2014)

Fernandes B, Maia B, and Pontes H, 'Adição à internet ou uso problemático da internet? Qual dos termos usar?' (2019) 30 Psicologia USP



<<http://www.scielo.br/j/pusp/a/r5ZmQRHmQchy5QmmdGMB4zh/?format=html&lang=pt>  
> accessed 11 August 2021

Fineberg N and others, 'Manifesto for a European Research Network into Problematic Usage of the Internet' (2018) European Neuropsychopharmacology <<https://linkinghub.elsevier.com/retrieve/pii/S0924977X18303067>> accessed 10 August 2021

Fogg B, 'A Behavior Model for Persuasive Design' (2009) Proceedings of the 4th International Conference on Persuasive Technology (ACM Press) <<http://portal.acm.org/citation.cfm?doid=1541948.1541999>> accessed 17 March 2022

Fortnite Wiki, 'Fortnite: Battle Royale' <[https://fortnite.fandom.com/wiki/Fortnite:\\_Battle\\_Royal](https://fortnite.fandom.com/wiki/Fortnite:_Battle_Royal)> accessed 30 April 2022.

Galli F, 'AI and Consumers Manipulation: What the Role of EU Fair Marketing Law?' (2020) Católica Law Review <<https://revistas.ucp.pt/index.php/catolicalawreview/article/view/9320>  
> accessed 25 October 2021

Giraldo-Luque S, Afanador P, and Fernandez-Rovira C, 'The Struggle for Human Attention: Between the Abuse of Social Media and Digital Wellbeing' (2020) Healthcare <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7712353/>> accessed 17 August 2021

Goanta C and Mulders S, "'Move Fast and Break Things": Unfair Commercial Practices and Consent on Social Media' (2019) 8 Journal of European Consumer and Market Law <<https://kluwerlawonline.com/journalarticle/Journal+of+European+Consumer+and+Market+Law/8.4/EuCML2019026>> accessed 25 October 2021

Greenfield D, 'What Makes the Internet and Smartphone So Addictive?' in Sean M Lane and Paul Atchley (eds), *Human Capacity in the Attention Economy* (American Psychological Association 2021)

Griffiths M, 'A "Components" Model of Addiction within a Biopsychosocial Framework' (2005) 10 Journal of Substance Use <<http://www.tandfonline.com/doi/full/10.1080/14659890500114359>> accessed 15 March 2022

Hacker P, 'Manipulation by Algorithms. Exploring the Triangle of Unfair Commercial Practice, Data Protection, and Privacy Law' (2021) European Law Journal (Forthcoming) 3 <[https://www.academia.edu/47777739/Manipulation\\_by\\_Algorithms\\_Exploring\\_the\\_Triangle\\_of\\_Unfair\\_Commercial\\_Practice\\_Data\\_Protection\\_and\\_Privacy\\_Law?auto=citations&from=cove\\_r\\_page](https://www.academia.edu/47777739/Manipulation_by_Algorithms_Exploring_the_Triangle_of_Unfair_Commercial_Practice_Data_Protection_and_Privacy_Law?auto=citations&from=cove_r_page)> accessed 25 August 2021

Hassani H, Huang X, and Silva E, 'The Human Digitalisation Journey: Technology First at the Expense of Humans?' (2021) Information 2021 <<https://doi.org/10.3390/info12070267>> accessed 17 August 2021

Helberger N, 'Profiling and Targeting Consumers in the Internet of Things – A New Challenge for Consumer Law' (2016) SSRN <<https://papers.ssrn.com/abstract=2728717>> accessed 31 July 2022



— and others, ‘EU Consumer Protection 2.0: Structural asymmetries in digital consumer markets’ (2021) The European Consumer Organisation (BEUC) < <https://www.beuc.eu/brochure/eu-consumer-protection-20-structural-asymmetries-digital-consumer-markets-0> > accessed 07 September 2022

Husovec M and Laguna I, ‘Digital Services Act: A Short Primer’ in *Principles of the Digital Services Act* (forthcoming, Oxford University Press 2023) < <https://ssrn.com/abstract=4153796> > accessed 19 July 2022

Icahn School of Medicine at Mount Sinai, ‘Brain Reward Pathways’ (2018) < [https://neuroscience.mssm.edu/nestler/nidappg/brain\\_reward\\_pathways.html](https://neuroscience.mssm.edu/nestler/nidappg/brain_reward_pathways.html) > accessed 20 March 2022

James W, *The Principles of Psychology* (vol I, Holt 1890)

Kapczynski A, ‘The Law of Informational Capitalism’ (2020) The Yale Law Journal < <https://www.yalelawjournal.org/review/the-law-of-informational-capitalism> > accessed 15 January 2022

Kim K and others, ‘What Types of Internet Services Make Adolescents Addicted? Correlates of Problematic Internet Use’ (2020) 16 *Neuropsychiatric Disease and Treatment* < <https://www.dovepress.com/what-types-of-internet-services-make-adolescents-addicted-correlates-o-peer-reviewed-fulltext-article-NDT> > accessed 10 August 2021

Lee J, ‘Unrolling: Fortnite’ (*AdRoll Blog*, 23 November 2021) <<https://www.adroll.com/blog/unrolling-fortnite>> accessed 28 April 2022

Leiser M, “‘Dark Patterns’: The Case for Regulatory Pluralism’ (2020) SSRN < [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3625637](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3625637) > accessed 2 August 2022

Lembke A, *Dopamine Nation: Finding Balance in the Age of Indulgence* (Dutton 2021)

Lopez-Fernandez O and Kuss D, *Harmful Internet Use - Part I: Internet Addiction and Problematic Use* (European Parliamentary Research Service 2019)

Lupiáñez-Villanueva F and others, *Behavioural Study on Unfair Commercial Practices in the Digital Environment: Dark Patterns and Manipulative Personalisation* (European Commission, EU Consumer Programme, Publications Office of the European Union 2020)

Márquez-Arbués S and others, ‘Adicción al Fortnite con necesidad de desintoxicación hospitalaria’ (2021) 38 *Revista de Psiquiatría Infanto-Juvenil* <<https://www.aepnya.eu/index.php/revistaepnya/article/view/401>> accessed 01 March 2022

Mik E, ‘The Erosion of Autonomy in Online Consumer Transactions’ (2016) 8 *Law, Innovation and Technology* <<https://www.tandfonline.com/doi/full/10.1080/17579961.2016.1161893>> accessed 3 August 2022

Montag C and others, 'Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories' (2019) *International Journal of Environmental Research and Public Health* < <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679162/> > accessed 17 January 2022

Moore G, 'The pharmacology of addiction' (2018) *Parrhesia* < <https://dro.dur.ac.uk/20420/2/20420.pdf> > accessed 18 April 2022

Mujica A and others, 'Addiction by Design: Some Dimensions and Challenges of Excessive Social Media Use' (2022) *Medical Research Archives* < <https://esmed.org/MRA/mra/article/view/2677> > accessed 17 August 2021

National Research Group, 'Fortnite the New Social Media?' (4 June 2019) < [https://assets.ctfassets.net/0o6s67aqvwnu/5z4ja8fNx2NputEG49AVWs/ff1f591ad988f9a30856bab68e3908bb/NRG\\_Fortnite\\_White\\_Paper.pdf](https://assets.ctfassets.net/0o6s67aqvwnu/5z4ja8fNx2NputEG49AVWs/ff1f591ad988f9a30856bab68e3908bb/NRG_Fortnite_White_Paper.pdf) > accessed 27 January 2022

Nikbin D, Iranmanesh M, and Foroughi B, 'Personality Traits, Psychological Well-Being, Facebook Addiction, Health and Performance: Testing Their Relationships' (2021) *40 Behaviour & Information Technology* < <https://doi.org/10.1080/0144929X.2020.1722749> > accessed 10 August 2021

Nir and Far, 'The Hook Model: How to Manufacture Desire in 4 Steps' (Nir and Far, 2022) < <https://www.nirandfar.com/how-to-manufacture-desire/> > accessed 28 April 2022

Parlamento Europeu, 'Serviços digitais: novas regras para um ambiente em linha mais seguro e aberto' (*Atualidade Parlamento Europeu*, 05 July 2022) < <https://www.europarl.europa.eu/news/pt/press-room/20220701IPR34364/servicos-digitais-novas-regras-para-um-ambiente-em-linha-mais-seguro-e-aberto> > accessed 05 August 2022

PCMag, 'user interface' < <https://www.pcmag.com/encyclopedia/term/user-interface> > 07 September 2022

PlayStation Store, 'Fornite' (2022) <[https://store.playstation.com/pt-br/product/UP1477-CUSA07022\\_00-FORTNITETESTING1](https://store.playstation.com/pt-br/product/UP1477-CUSA07022_00-FORTNITETESTING1)> accessed 30 April 2022

Poncibò C and Incardona R, 'The Average Consumer, the Unfair Commercial Practices Directive, and the Cognitive Revolution' (2008) *30 Journal of Consumer Policy* Issue < <https://papers.ssrn.com/abstract=1084038> > accessed 26 July 2022

Ryding F and Kaye L, "'Internet Addiction": A Conceptual Minefield' (2017) *16 International Journal of Mental Health and Addiction* 225-229 < <https://link.springer.com/article/10.1007/s11469-017-9811-6> > accessed 10 August 2021

Sartor G, 'New Aspects and Challenges in Consumer Protection: Digital services and artificial intelligence' (2020) *European Parliament* < [https://www.europarl.europa.eu/thinktank/en/document/IPOL\\_STU\(2020\)648790](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)648790) > accessed 15 April 2022; and Lupiáñez-Villanueva and others (n 106) 72

Sax M and Ausloos J, 'Getting Under Your Skin(s): A Legal-Ethical Exploration of Fortnite's Transformation into a Content Delivery Platform and its Manipulative Potential' (2021) *Interactive Entertainment Law Review* <<https://ssrn.com/abstract=3764489>> accessed 24 August 2021

— and Helberger N and Bol N, 'Health as a Means Towards Profitable Ends: MHealth Apps, User Autonomy, and Unfair Commercial Practices' (2018) 41 *Journal of Consumer Policy* <<https://doi.org/10.1007/s10603-018-9374-3>> accessed 3 August 2022

Schebesta H and Purnhagen K, 'An Average Consumer Concept of Bits and Pieces-Empirical Evidence on the Court of Justice of the European Union's Concept of the Average Consumer in the UCPD' (2019) *Wageningen Working Papers in Law and Governance* <[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3366290](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3366290)> accessed 25 October 2021

Segal T, 'Freemium' (*Investopedia*, 02 December 2021) <<https://www.investopedia.com/terms/f/freemium.asp>> accessed 02 August 2022

Simon H, 'Designing Organizations for an Information-rich World' in Martin Greenberger (ed), *Computers, communications, and the public interest* (The Johns Hopkins Press 1971)

Solly J and others, 'Structural gray matter differences in Problematic Usage of the Internet: a systematic review and meta-analysis' (2022) *Nature*, 27 *Molecular Psychiatry* <<https://www.nature.com/articles/s41380-021-01315-7>> accessed 20 April 2022

Straetmans G, 'Trade Practices and Consumer Disinformation' in Gabriele Siegert, M. Bjørn Rimscha and Stephanie Grubenmann (eds), *Commercial Communication in the Digital Age* (De Gruyter Saur, 2017)

Susser D, Roessler B, and Nissenbaum H, 'Technology, autonomy, and manipulation' (2019) 8 *Internet Policy Review* <<http://policyreview.info/articles/analysis/technology-autonomy-and-manipulation>> accessed 9 May 2022

Trzaskowski J, 'Data-Driven Value Extraction and Human Well-Being under EU Law' (2022) *Electronic Markets* 7 <<https://link.springer.com/article/10.1007/s12525-022-00528-0>> accessed 5 May 2022

Tufekci Z, 'YouTube, the Great Radicalizer' (*The New York Times*, 10 March 2018) <<https://www.nytimes.com/2018/03/10/opinion/sunday/youtube-politics-radical.html>> accessed 06 September 2022

Watson S, 'Dopamine: The pathway to pleasure' (*Harvard Health*, 20 July 2021) <<https://www.health.harvard.edu/mind-and-mood/dopamine-the-pathway-to-pleasure>> accessed 20 April 2022

Wegmann E and Brand M, 'Affective and Cognitive Processes Involved in Behavioral Addictions' (2021) 118 *Addictive Behaviours* <<https://www.sciencedirect.com/science/article/abs/pii/S0306460321000708>> accessed 10 August 2021

Wells G, Horwitz J, and Seetharaman D, 'Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show' (*The Wall Street Journal*, 14 September 2021) <<https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739>> accessed 12 April 2022

Willis L, 'Deception by Design' (2020) *Harvard Journal of Law & Technology* <<https://papers.ssrn.com/abstract=3694575>> accessed 20 December 2021

World Health Organization (WHO), *Public Health Implications of Excessive Use of the Internet, Computers, Smartphones and Similar Electronic Devices* (Meeting Report : Main Meeting Hall, Foundation for Promotion of Cancer Research, National Cancer Research Centre, Tokyo, Japan, 27-29 August 2014, 2015) <[http://apps.who.int/iris/bitstream/10665/184264/1/9789241509367\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/184264/1/9789241509367_eng.pdf)> accessed 10 August 2021

World Health Organization, 'ICD-11 for Mortality and Morbidity Statistics: Disorders due to addictive behaviours' (version February 2022) <<https://icd.who.int/browse11/1-m/en#/http%3a%2f%2fid.who.int%2f%2fid%2fentity%2f499894965>> accessed 02 March 2022

Wynarczyk N, 'The Ways Fortnite Gets Kids Addicted' (*The Sun*, 2022) <<https://www.thesun.co.uk/tech/6501566/why-is-fortnite-so-addictive/>> accessed 31 March 2022

Yeung K, 'Hypernudge': Big Data as a Mode of Regulation by Design' (2017) *Information, Communication & Society* <<https://doi.org/10.1080/1369118X.2016.1186713>> accessed 9 August 2022

Zuboff S, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (1st edn, PublicAffairs 2019)

## CASE LAW

C-146/16 *Verband Sozialer Wettbewerb eV v DHL Paket GmbH* [2017] ECLI:EU:C:2017:243

C-281/12 *Trento Sviluppo srl, Centrale Adriatica Soc. coop. arl v Autorità Garante della Concorrenza e del Mercato* [2013] ECLI:EU:C:2013:859

C-295/16 *Europamur Alimentación SA v Dirección General de Comercio y Protección del Consumidor de la Comunidad Autónoma de la Región de Murcia* [2017] ECLI:EU:C:2017:782

C-319/20 *Meta Platforms Ireland v Bundesverband der Verbraucherzentralen und Verbraucherverbände – Verbraucherzentrale Bundesverband e.V.* [2022] ECLI:EU:C:2022:322

C-428/11 *Purely Creative Ltd and Others v Office of Fair Trading* [2012] ECLI:EU:C:2012:651

WhatNext.Law

<https://whatnext.law>  
[info@whatnext.law](mailto:info@whatnext.law)

C-628/17 *Prezes Urzędu Ochrony Konkurencji i Konsumentów v Orange Polska* [2019]  
ECLI:EU:C:2019:480

C-310/15 *Vincent Deroo-Blanquart v Sony Europe Limited* [2016] ECLI:EU:C:2016:633

Joined Cases C-54/17 and C-55/17 *Wind Tre SpA v Vodafone Italia SpA* [2017]  
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