




Introduction to the special issue ‘digital behavioral technologies, vulnerability, and justice’

Lisa Herzog ^a, Philipp Kellmeyer ^b and Verina Wild ^c

^aFaculty of Philosophy, Rijksuniversiteit Groningen, Groningen, Netherlands; ^bDepartment of Neurosurgery, University Medical Center Freiburg, Freiburg, Germany; ^cEthics of Medicine, University of Augsburg, Augsburg Germany

ABSTRACT

This short introduction presents the theme of the special issue and provides a preview of the articles.

KEYWORDS Digital behavioral technologies; justice; vulnerability; public health ethics; health apps

Introduction

We are currently witnessing how digital technologies substantially impact how we think, behave, and relate to others. We use smartphones to communicate, navigate, shop, consume content, and engage in many other daily activities. The ‘internet of things’ purports to introduce a further layer of digital interconnectedness into our lives. In medicine, new devices, for example, brain implants, can be used for therapeutic purposes, and emerging forms of brain–machine interaction now also extend into the consumer domain, for example by brain-computer interfaces for neurofeedback. In the overlapping areas of clinical technologies and health-oriented consumer devices, sensors and apps that track our behavior and body functions can be used for the purpose of improving our health, fitness, or well-being. These technologies raise urgent questions about privacy and produce other ethical tensions. While there is a great variety of technologies, what they have in common is that they track human bodies (or features thereof) and that they rely on the aggregation of data that they extract from individual users. We summarize them under the label of ‘digital behavioural technologies’ (see also Herzog et al. 2021).

In this special issue, we bring together contributions that provide analytical lenses for understanding these developments. Importantly, our focus includes

CONTACT Lisa Herzog l.m.herzog@rug.nl

a *societal* perspective on these phenomena, instead of an overly individualistic approach that would focus primarily on single individuals and their interaction with these new technologies. The basic rationale for doing so is that these technologies permeate societies that are characterized by various forms of vulnerability and multi-dimensional inequalities, many of which are unjust. Moreover, by their very nature as data-collecting, interconnected tools, these new technologies invite analysis that goes beyond individual considerations, even though the latter – e.g. as captured in the notion of ‘manipulation’ (see the contribution by Klenk) – remain important.

The bioethics literature has often had, and still has, a strong focus on single individuals, asking, for example, about the vulnerability of patients whose ability to give consent to medical procedures may be limited. While certainly a crucial ethical perspective, this focus does not take into account the social positions of individuals from a meso or macro perspective. Public health ethics and political philosophy take such a broader perspective and also look at effects on the structures of a society. This can serve as a basis for reflecting on possible unintended effects, especially on disadvantaged groups, who might need to be protected by regulating digital technologies. More broadly speaking, our hope is that with this special issue, we can contribute to the academic and public discussion about these new technologies and their effects, both on individuals and social structures, that takes into account a broad range of normative concerns, from the individual to the societal level, and especially including dimensions of justice.

The foundation for this special issue was laid in an international workshop ‘Digital Behavioural Technology, Vulnerability and Justice’ in 2019. The workshop brought together scientists from disciplines such as political philosophy, public health ethics, sociology, economics, technology and neuroscience. We would like to thank everyone involved in the workshop and in the publication of this special issue - especially given the difficult circumstances from early 2020 on – to have advanced the field of research in relation to digital technology, justice and vulnerability.¹

Preview of contributions

In their paper ‘Digital behavioral technology, vulnerability and justice: towards an integrated approach’ Lisa Herzog, Philipp Kellmeyer and Verina Wild

¹ The workshop was organized by Lisa Herzog and Verina Wild and took place at Technical University Munich and Ludwig-Maximilians-University Munich on July 1-3, 2019. Keynote speakers included Samia Hurst-Majno (University of Geneva), Philipp Kellmeyer (University Medical Center Freiburg), Karola Kreitmair (University of Wisconsin-Madison), and Jonathan Wolff (University of Oxford). It was generously supported by The Review of Social Economy and bidt (Bayerisches Forschungsinstitut für Digitale Transformation). The workshop and this special issue were partly funded by the German Federal Ministry of Education and Research as part of the project META mHealth: ethical, legal and social aspects in the technological age, grant number 01GP1791, PI: Verina Wild.

introduce and develop the main themes of this special issue. The paper provides an operational description of digital behavioral technologies (DBTs). These are apps and devices that collect and analyze digital data about the body and/or physiology, with which users can interact digitally and with the goal to modify the user's behavior. With the help of two illustrative cases the paper then unpacks dimensions of vulnerability and justice. After a critical assessment of the concept of vulnerability the paper suggests using it as a conceptual lens for the assessment of DBTs. It can help identify new vulnerabilities for users that go beyond a narrow, legalistic understanding of autonomy and 'informed consent' and include richer anthropological and psycho-social dimensions such as guilt or addictive potential. It also allows for understanding the introduction of DBTs as a potentially 'vulnerabilizing' phenomenon on a societal level, with implications for social justice. By drawing on the conception of structural injustice the paper then goes on to describe individuals using DBTs as socially embedded agents, whose options and choices are constrained by their positions of relative privilege or disadvantage along different dimensions, which create different kinds of vulnerabilities and vulnerabilizing factors. As a corrective to an overly individualistic consideration of DBTs these different social positions need to be taken into account. In the final sections the paper sketches an integrated approach for assessing the impact of DBTs and possibilities of laws and regulations. Participatory procedures involving potential users into production and design as well as top-down measures by law are suggested in order to prevent harm for individuals and societies, especially in relation to concerns of justice. These should go hand in hand with general reforms that address the underlying vulnerabilities, vulnerabilizing factors and structural injustices, which the arrival of DBTs makes all the more visible.

Tereza Hendl and Bianca Jansky contribute the paper 'Tales of self-empowerment through digital health technologies: a closer look at "Femtech"'. It explores the promise of women's empowerment through period and fertility apps and situates the analysis within a broader social and tech-industry context structured by systemic gender and other inequalities. The authors conducted a thematic analysis of 14 period and fertility apps in the timespan 2017–2020. The results show that the promotion material of apps included three major promises of empowerment: a better understanding of the body; to take control of the body; and to ownership of reproductive health. Empowerment is framed as a result of a woman acquiring data-driven knowledge about her body to step up in charge of it and exercise individual autonomy and choice in her menstrual, sexual and reproductive health and life more broadly. In a detailed criticism of this narrative the paper argues that while the majority of apps promote quasi-feminist tales of empowerment, their rhetoric is – with rare exceptions - proliferated with exclusionary ontologies, normative femininity, epistemic injustice and heterosexist notions of female sexuality. As such the discourse of empowerment is full of tensions and inconsistencies, constructing

an only seemingly empowered user who is, nevertheless, entrenched in patriarchal patterns of male domination over women. The findings stress the need for more empirical research, e.g. on user experience, for including users into design processes, and for grounding app design in inclusive and intersectional ontologies and epistemologies. Given the rapidly growing market and frequent use of these DBTs, the paper emphasizes the need to avoid reinforcing injustice, marginalization and reductionist and oppressive notions of normalcy, and instead to promote more empirically informed, collective and structural notions of user empowerment.

Hauke Berendt and Wulf Loh, in their paper 'Informed Consent and Algorithmic Discrimination - Is giving away your data the new vulnerable?', focus on the risk that algorithmically driven profiling and decision-making create further disadvantages for groups that are already on the lower end of various socio-economic hierarchies. The use of individuals' data is often based on forms of consent that are meant to express voluntariness, but Berendt and Loh question whether these can carry this normative weight. This holds in particular for disadvantaged groups, who might, for example, lack digital literacy or be particularly vulnerable to financial incentives or psycho-motivational effects such as cognitive scarcity, even if they would prefer to protect their privacy. Building on Hellman's understanding of discrimination as 'compounding historical injustices', they argue that such mechanisms can constitute morally problematic forms of discrimination. What is worse, they can lead to further discriminations, e.g. when it comes to access to jobs or housing. The authors distinguish different forms of discrimination, involving intentions to affect 'socially salient groups' or not, and involving proxy variables for certain groups or not. While direct intentional cases of discrimination are easy to grasp conceptually, this is more difficult for indirect and unintentional cases. As the authors show, however, Hellman's notion of discrimination as 'compounding injustice' can capture such cases as well, arguing that they violate individuals' legitimate expectations about just social structures.

In his paper '(Online) manipulation: sometimes hidden, always careless', Michael Klenk provides an in-depth analysis of different forms of manipulation through digital technologies. He challenges the common view that manipulation is mostly achieved via covert, hidden influence and shows how many forms of manipulation in digital contexts are rather overt. This makes it difficult, he argues, to distinguish overt manipulation from even more problematic forms of social influence such as coercion. To preserve our ability to distinguish intentional forms of online manipulation that could be perceived as coercive from the, as he argues, from more common forms of overt manipulation that are prevalent in online digital environments, he introduces the notion of *careless* influence. Careless influence, in his account, refers to the manipulator not caring to choose which means of influence may reveal the reason for the manipulation to the person being manipulated. He provides several examples

to show how this account of manipulation as careless influence avoids some of the pitfalls of the covertness thesis of manipulation and allows to distinguish manipulation from other kinds of social influence. Relating this account to the context of digital behavioral technologies, Klenk argues that this deeper conceptual and philosophical understanding of manipulation might enable us to better understand the potential impact of DBTs on vulnerable individuals and groups and the ensuing ethical tensions.

In their paper ‘How intelligent neurotechnology can be epistemically unjust. An exploration into the ethics of algorithms’, Sebastian Schleidgen, Orsolya Friedrich and Andreas Wolkenstein first introduce the notion of ‘intelligent’ neurotechnologies, i.e. neurotechnologies using AI-related methods, as epistemic devices insofar in that they produce information (e.g. about brain states) which enable inferences (e.g. on brain function) which, in turn, may produce knowledge upon which agents can act. In a series of illustrative case examples, the authors then demonstrate how intelligent neurotechnologies can be considered digital technologies that modify behavior.

From this conceptual basis, they then explore several scenarios in which epistemic problems and injustices might occur in the interaction between humans and intelligent neurotechnologies. Starting from simple cases in which improperly working neurotechnologies (a common problem in unvetted consumer devices) might lead to false inferences on a person’s brain function, they then discuss more complex epistemological problems such as cases in which properly working neurotechnologies engender justified, true beliefs which, however, fall short of constituting knowledge (e.g. about a person’s actual brain states). Furthermore, they discuss the problem that even if necessary and sufficient criteria for knowledge produced by neurotechnologies (as epistemic devices) are met, there remains the problem that the way that this knowledge is used depends on specific purposes which are not value-neutral and thus might produce ancillary ethical tensions. Finally, Schleidgen *et al.* highlight and discuss various forms of epistemic injustices, such as testimonial injustice or hermeneutical injustice, that might arise from human-neurotechnology interaction.

Collected together here in this special issue, the papers illustrate the broad range of how digital behavioral technologies might impact individuals and societies. They highlight vulnerability and justice as important dimensions that ought to be considered in developing digital behavioral technologies that are embedded in human rights and oriented towards human health, well-being, and flourishing.

Data availability statement

There are no data associated with this article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

Verina Wild was supported by the German Federal Ministry of Education and Research [BMBF, FKZ 01GP1791]. The work of author P. Kellmeyer was partially supported by a grant (no.00.001.2019) by the Klaus Tschira Foundation to the University Medical Center Freiburg.

Notes on contributors

Lisa Herzog is Professor of Political Philosophy at the University of Groningen, Netherlands. She works on issues of economic and social justice, normative questions about markets, economic democracy and the role of knowledge in democracy.

Dr. Philipp Kellmeyer is a neurologist at the University Medical Center Freiburg where he heads the Neuroethics and AI Ethics Lab at the Department of Neurosurgery. As a neuroscientist he works in the fields of neuroimaging and translational neurotechnology. In his research at the intersection of neuroethics, digital ethics and AI ethics, he works on ethical, legal, social and political challenges of human-technology interaction, particularly regarding neurotechnology, big data, artificial intelligence and XR technologies in medicine and biomedical research.

Verina Wild is Professor of Medical Ethics at the Medical Faculty of the University of Augsburg. She teaches and researches in the areas of bioethics and public health ethics, with a special focus on justice and vulnerability. From 2018-2024 she is the PI of the project "META", funded by the German Federal Ministry of Education and Research (BMBF). In the META-project the research group examines ethical, legal and social aspects of mobile health technologies. Prior to becoming a scholar in health ethics she has worked as a physician in internal medicine.

ORCID

Lisa Herzog  <http://orcid.org/0000-0001-9348-1154>

Philipp Kellmeyer  <http://orcid.org/0000-0001-5538-373X>

Verina Wild  <http://orcid.org/0000-0003-3012-7662>

References

Herzog, L., Kellmeyer, P., & Wild, V. (2021). Digital behavioral technology, vulnerability and justice: Towards an integrated approach. *Review of Social Economy*. <https://doi.org/10.1080/00346764.2021.1943755>.