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# When corporate dataveillance brings beneficial experiences:

## Service-specific qualitative evidence for YouTube

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### Abstract

Entertainment, information seeking, socialization: internet users are constantly dataveilled when relying on various online services to meet their diverse needs. Yet research that considers online-service peculiarities in shaping personal experiences in response to corporate data collection and analysis is scarce. This study investigates young adults' dataveillance imaginaries, sense of dataveillance, and behavioral responses on YouTube, which extensively displays personalized content based on digital traces. Our thematic analysis of semi-structured interviews with frequent users demonstrated the perceived self-evidence of dataveillance on this major platform. Users tended to accept and take advantage of, rather than resist, pervasive dataveillance practices. The results also revealed that on YouTube, dataveillance brings greater benefits because it fosters user satisfaction and confirmed that individual attitudes and behaviors related to dataveillance are highly context-dependent. Our fresh service-specific approach contributes to refining user-centered research on everyday dataveillance beyond its expected adverse consequences.

Keywords: dataveillance; profiling; digital traces; imaginaries; behavior; YouTube

### 1. Introduction

Corporate dataveillance is ubiquitous in today's digital landscape. Corporations constantly collect and analyze people's digital traces from online services they rely on to meet their everyday needs. This top-down data surveillance (Clarke, 1988) is a key component of the ongoing digitalization of society, conceptualized as a "co-evolutionary interaction" of datafication, algorithmization, and platformization (Latzer, 2022, p. 335). Accordingly, platformized services have become optimal spaces to generate big data from human activities and algorithmically process this asset to create capital. Dataveillance specifically derives from datafication and interplays with algorithmic selection to profile individuals based on their digital traces (Büchi et al., 2020; Latzer, Hollnbuchner, Just, & Saurwein, 2016; Van Dijck, 2014). For corporations, such profiling is highly advantageous for aims such as economic profit or risk management when engaging in practices like targeted advertising and credit scoring (Christl, Kopp, & Riechert, 2017). For individual internet users, profiling is most visible through the personalization of

online content, ads, or services and can bring personal benefits such as productivity and cost savings (Lupton, 2020; Plangger & Montecchi, 2020). Nonetheless, dataveillance practices can lead to harmful – and often unintended – consequences for users, such as privacy infringement, social sorting, and self-restricted internet use due to perceived dataveillance (Büchi, Festic, & Latzer, 2022; Clarke, 1988; Solove, 2006). This rationale has driven extensive privacy research in the social sciences (for an overview, see Acquisti, Brandimarte, & Loewenstein, 2015).

Beyond this worrisome picture, how individuals experience the diverse manifestations and consequences of corporate dataveillance in their everyday lives is not yet fully understood. This study hence adopts a *user-centered* and *service-specific approach* to respond to the calls for empirical research on the sense-making of, feelings about, and responses to dataveillance across contexts (Büchi et al., 2022; Strycharz, Kim, & Segijn, 2022; Strycharz & Segijn, 2022). Specifically, we investigate young adults' *dataveillance imaginaries* and *sense of dataveillance* on YouTube, i.e., their sense-making of dataveillance and the extent to which they feel dataveilled, as well as their *behavioral responses*, i.e., their (intended) behaviors in response to their dataveillance imaginaries and sense of dataveillance. Our research questions are:

*RQ1: What are young adults' dataveillance imaginaries and sense of dataveillance on YouTube?*

*RQ2: How do young adults respond to their dataveillance imaginaries and sense of dataveillance when using YouTube?*

To answer these questions, we conducted a reflexive thematic analysis of ten semi-structured interviews with adults aged 18 to 29 who regularly consume content on YouTube. In doing so, our work advances research on the context-dependence of personal experiences with everyday corporate dataveillance in three ways and provides important insights to inform future theoretical contributions and policy initiatives.

First, studies conducted with adult samples in the context of general internet use showed diverse and even opposite attitudes and behaviors in response to dataveillance, data collection, and online surveillance (Plangger & Montecchi, 2020; Sörum & Fuentes, 2023; Zhang et al., 2024). Our work thus contributes to explaining these variations by considering the characteristics peculiar to the online service and the demographic group using it. There is still a lack of substantial evidence on how these attitudes and behaviors relate to the specific online service used. To narrow this gap, we examined users' experiences on YouTube, a prominent corporate actor engaging in dataveillance and major online service. YouTube extensively displays personalized content to its users based on their digital traces on the platform and other Google services they use (Goodrow, 2021; YouTube Help, n.d.). For many, it is also an essential platform, considering its dual nature as a social media and video service that enables interactions, content creation, and consumption for purposes such as recreation and learning (Khan, 2017). Additionally, our study is also specific in the demographic it examines. On a descriptive and comparative level, existing research has shown that the context-dependence of dataveillance perceptions and behaviors applies not only to services used but also to individual differences pertaining to, for instance, demographic characteristics or internet skills (Kalmus, Bolin, & Figueiras, 2024; Marinelli & Parisi, 2024; McClain, Faverio, Anderson, & Park, 2023; Segijn & van Ooijen, 2020; Zhang, Boerman, Hendriks, Araujo, & Voorveld, 2023). Considering this, this study focuses on a specific group, young adults, because they use YouTube frequently (Gottfried, 2024; NETendances, 2023) and are thus particularly exposed to dataveillance.

Second, the service- and platform-specific body of research that conveys a comprehensive perspective on both attitudes and behaviors related to corporate dataveillance or online surveillance practices in the adult population remains limited (e.g., Augusto & Simões, 2017). Although scholars have devoted more attention to social media platforms, these studies tend to focus either on social media use in general or only on sense-making processes and attitudes (e.g., Alvarado, Heuer, Vanden Abeele, Breiter, & Verbert, 2020; Büchi, Fosch-Villaronga, Lutz, Tamò-Larrieux, & Velidi, 2023; Kennedy, Elgesem, & Miguel, 2017; Pangrazio & Selwyn, 2018; Southerton & Taylor, 2020). This study thus contributes to expanding

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knowledge on personal sense-making, feelings, and behaviors related to dataveillance and how these aspects connect together.

Third, while the neighboring disciplines of privacy research (Marwick & Hargittai, 2019; Young & Quan-Haase, 2013) and algorithm studies (Karizat, Delmonaco, Eslami, & Andalibi, 2021; Sued, 2022) have contributed to this topic, fewer studies (e.g., Armstrong et al., 2023; Lupton, 2020) have adopted a user-centered dataveillance perspective explicitly focusing on people's lived experiences of being constantly monitored through their digital traces. We contribute to this crucial research area by empirically refining and challenging our normatively shaped understanding of how dataveillance can help or hinder individuals from seizing online opportunities or fulfilling their needs.

In the next chapter, we detail our theoretical background and review existing empirical literature. Then, we describe our methods, present and discuss our results, and conclude by highlighting our findings and contributions.

## 2. Dataveillance from a user-centered perspective: Theoretical background and existing research

This chapter discusses *dataveillance as a distinguishing characteristic of life in digitized societies* and introduces the key concepts that theoretically inform this user-centered article: *dataveillance imaginaries*, *a sense of dataveillance*, and related *behavioral responses*. Our work explicitly focuses on users' experiences with top-down institutional dataveillance, distinguishing these from experiences with social or peer surveillance when using online services like social media (e.g., Duffy & Chan, 2019; Young & Quan-Haase, 2013). (Corporate) dataveillance practices shape individual dataveillance imaginaries and their sense of dataveillance, which can both, in turn, influence behaviors when using online services (Büchi et al., 2022; Kappeler, Festic, & Latzer, 2023). Such behavioral responses can prevent or facilitate the meeting of personal needs and, therefore, underline the importance of understanding the context-specific consequences of dataveillance on people's lives and their underlying determinants.

### *2.1 Dataveillance on YouTube*

Dataveillance represents the *automated, continuous, and (unspecific) collection, storage, analysis, and sharing of digital traces by public and corporate actors* (Büchi et al., 2022, p. 1; Strycharz & Segijn, 2022, p. 575). It is a form of surveillance, i.e., "the watching, listening to, or recording of an individual's activities" (Solove, 2006, p. 490), relying on data points and carried out by institutional actors, not individuals themselves (Büchi et al., 2022; Clarke, 1988). Legitimized and driven by the logic of datafication, the ubiquitous dataveillance of everyday online activities is, on the one hand, unspecific due to its continuity, opacity, and automation (Büchi et al., 2022; Van Dijck, 2014). On the other hand, dataveillance is also specific from an actor perspective when aiming to influence individuals and potentially change their behaviors (Degli Esposti, 2014), for instance, when displaying personalized ads to encourage purchases (Strycharz & Segijn, 2022). The concept of *surveillance culture* especially relates to the prevalence and significance of dataveillance. Lyon (2017) argued that a surveillance culture has emerged given the extensive surveillance possibilities enabled by digital technologies and their widespread application at the individual and institutional levels. This culture structures and surrounds people in their daily lives and pushes them to adopt a particular vision of this phenomenon and react to it.

One purpose of dataveillance is profiling, i.e., "the systematic and purposeful recording and classification of data related to individuals" (Büchi et al., 2020, p. 2). Profiling implies the algorithmic processing of people's digital traces to detect patterns and infer individual characteristics, thereby creating profiles (Hildebrandt, 2008). On YouTube, dataveillance becomes visible to users through this algorithmic profiling. The platform extensively personalizes content, ads, and search results displayed on

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its interface based on users' inferred profiles. These profiles are built from various digital traces collected about users, such as their location, what they previously watched, clicked on, and liked, and their activities when using other Google services (Covington, Adams, & Sargin, 2016; Goodrow, 2021; YouTube Help, n.d.). As YouTube states, "data [users] provide to Google and YouTube helps us improve [their] experience when using our services" (YouTube Help, n.d.). The platform hence legitimizes dataveillance by claiming that it enables it to provide a beneficial service to the user. The next sections detail how individuals experience dataveillance.

### *2.2 Dataveillance imaginaries and a sense of dataveillance*

Our user-centered perspective first draws on the concepts of dataveillance imaginaries and a sense of dataveillance. People develop their own *dataveillance imaginaries*, i.e., "sense-making processes of dataveillance," which can include diverse imagined "actors," "workings," "data types," and "consequences" (Kappeler et al., 2023, pp. 2–4). These imaginaries, conceptually borrowed from Lyon's (2017) surveillance imaginaries, are nurtured by personal experiences, knowledge, and media coverage. Imaginaries are rooted in Taylor's (2002) "social imaginaries" of living in society and enable scholars to analyze personal and common sense-making toward dataveillance practices. By encompassing individual understandings, dataveillance imaginaries also relate to the concepts of "surveillance beliefs" (Strycharz & Segijn, 2022) and "folk theories," i.e., the "intuitive, informal theories […] to explain the outcomes, effects, or consequences of technological systems" (DeVito, Gergle, & Birnholtz, 2017, p. 3165).

In addition to understanding how people make sense of dataveillance, it is relevant to consider to what extent they feel dataveilled. Rooted in user-centered research on dataveillance, the concept of a *sense of dataveillance* is particularly suited to capturing the personal "sense of being subject" to dataveillance practices and the feeling of "being constantly watched" through one's digital traces (Büchi et al., 2022, p. 2). Exposure to and imaginaries about dataveillance practices can "shape a sense of dataveillance" (Kappeler et al., 2023, p. 2). This concept shares similarities with terms such as "perceived surveillance" (Segijn & van Ooijen, 2020) or "the perception of being observed" (Lefkeli, Tulan, & Gürhan-Canli, 2022). While these terms also encapsulate this individual belief or feeling of being monitored online – whether on a cognitive or sensory basis – a sense of dataveillance specifically relates to dataveillance as conceptualized in the present study. Exploring people's sense that their digital traces are being collected and analyzed is necessary to determine, first, whether salient dataveillance practices like algorithmic profiling increase it and, second, what factors are associated with it, such as unpleasant personalized online experiences, changed media use, or privacy concerns (Büchi et al., 2023; Strycharz et al., 2022; Zhang et al., 2023).

Given the above, we consider that people's dataveillance imaginaries and sense of dataveillance are closely intertwined. Our analysis did not separate both aspects from one another but rather captured the diversity of sense-making processes and feelings of being dataveilled, considering our focus on YouTube. This open approach aligns with existing empirical research, which tends to focus on exploring and describing online users' perceptions of corporate dataveillance and profiling, including their awareness, attitudes, feelings, and understandings. Qualitative evidence, including service-specific evidence, suggests that adults and Internet users in Global North countries tend to hold diverse and mixed attitudes and feelings about dataveillance and various degrees of awareness and understanding (Alvarado et al., 2020; Büchi et al., 2023; Dencik & Cable, 2017; Kennedy et al., 2017; Lupton, 2020; Plangger & Montecchi, 2020; Ruckenstein & Granroth, 2020; Zhang et al., 2024). For instance, some people saw profiling practices as beneficial because they provided relevant online services (Lupton, 2020). Others expressed ambivalent attitudes because such practices elicit both satisfaction and creepiness by capturing intimate details to make better predictions (Ruckenstein & Granroth, 2020). In a mixed-methods study, Plangger and Montecchi (2020) identified from interviews four types of attitudes: the "protectionists," "pragmatists," "apathists," and "capitalists" (p. 41). Each type assigned varying degrees of importance to

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privacy protection and advantages retrieved from corporate surveillance. Furthermore, there are indications from quantitative studies that attitudes and concerns about dataveillance, data collection, and profiling practices greatly vary depending on the type of online activities, actors involved, type of data, intended use, and participants' sociodemographics (Kalmus et al., 2024; Marinelli & Parisi, 2024; Segijn & van Ooijen, 2020; Vitak et al., 2022; Zhang et al., 2023). A study found that social media elicited the highest feelings of being watched among a representative sample of the Dutch population, ahead of other types of online services and smart devices, and these perceptions were associated with younger and more educated respondents (Zhang et al., 2023).

### *2.3 Behaviors in response to dataveillance imaginaries and a sense of dataveillance*

Dataveillance imaginaries and a sense of dataveillance can lead to distinct online behaviors. As emphasized in privacy research, how people manage their online information depends on what is deemed acceptable and expected in terms of data flows in a given context (Acquisti et al., 2015; Nissenbaum, 2019). Behavioral responses are therefore inherently contextual (Strycharz & Segijn, 2022) and connect with Lyon's (2017) surveillance practices, which are "activities that relate to being surveilled (*responsive*) and also modes of engagement *with* surveillance (*initiatory*)" (p. 830). Whereas responsive practices focus on counteracting surveillance, initiatory practices center on individual participation in surveillance, for instance of others or oneself.

Considering this, empirical evidence has shown that people adopt diverse behaviors when encountering (corporate) data collection or surveillance practices. These include privacy protection (McClain et al., 2023), "self-inhibition" of internet use (Büchi et al., 2022), and other types of "coping tactics," such as trusting the online service used (Hartley & Schwartz, 2020). An emerging strand of qualitative research in the Global North has specifically examined how sense-making processes and feelings about dataveillance practices affect behavioral responses. Differences in contexts or individual understandings, skills, or attitudes may lead people to keep using online services the same way due to satisfaction or helplessness toward dataveillance practices, using them less, or adopting data management strategies (Armstrong et al., 2023; Augusto & Simões, 2017; Gruber & Hargittai, 2023; Hartley & Schwartz, 2020; Kappeler et al., 2023; Sörum & Fuentes, 2023). For example, Sörum and Fuentes (2023) identified three main "sociotechnical imaginaries" about corporate data collection. Participants belonging to the "good data" imaginary positively embrace and normalize related practices, whereas those linked to the "dystopian" imaginary resignedly accept them and tend to stay passive despite negative perceptions. In contrast, those from the "activist" imaginary actively combat them and deploy strategies such as using privacy-enhancement tools or not using certain services.

Closely related is research on "algorithmic resistance" (Velkova & Kaun, 2021), which investigates individual actions based on the logic of algorithmic profiling to influence personalized outputs. While implicitly linked to dataveillance, this perspective focuses more on user interactions with algorithms to resist their governance, for instance, by engaging with specific content through viewings, likes, or comments on platforms like TikTok and YouTube (Karizat et al., 2021; Sued, 2022). Our service-specific approach also connects to, but differs from, the extensive yet debated literature on "affordances." Whereas this field centers on the relational role between platforms and users to "enable and constrain specific uses" (Ronzhyn, Cardenal, & Batlle Rubio, 2023, p. 3178), we instead focus here on how dataveillance practices specific to YouTube shape both attitudes and behaviors. Our study thus contributes to clarifying the rich but mixed empirical evidence summarized above by explicitly considering the peculiarities of the online service used, an approach adopted to a limited extent in user-centered research related to corporate dataveillance.

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## 3. Methods

This qualitative study is based on ten semi-structured interviews with young adults integrating the walkthrough method (Light, Burgess, & Duguay, 2018) and analyzed with reflexive thematic analysis (Braun & Clarke, 2022b). This approach contributes to user-centered research on dataveillance and its consequences by thoroughly investigating individual experiences on YouTube.

### *3.1 Participants*

We selected participants based on our target population: French-speaking young adults from 18 to 34 years old living in Quebec, Canada, who regularly access YouTube to consume content. We recruited participants from this age range because YouTube is highly used among younger adults, making them particularly subjected to dataveillance. According to a representative survey, 73% of adult social media users in Quebec use YouTube for recreational purposes, and this percentage rises to over 80% in the 18-24 and 25-34 age groups (NETendances, 2023, p. 17). We also sought to better distinguish the experiences of these users from those of other age groups, given the variety of attitudes and behaviors reported in the literature (Plangger & Montecchi, 2020; Sörum & Fuentes, 2023; Zhang et al., 2024). Participants also had to access YouTube at least once a week for at least one year to guarantee "sufficient experience," following the criteria used by Alvarado and colleagues (2020, p. 8) to study individual beliefs related to YouTube recommendations. We excluded English-speaking Canadians and YouTube content creators to increase sample homogeneity (Robinson, 2014) and pursue our research aim of investigating dataveillance imaginaries, sense of dataveillance, and behavioral responses in a very specific context.

We advertised our study as being about "YouTube use" to avoid priming during recruitment. The first author shared a flyer and a screening questionnaire to fill out on social media, with student associations, and via snowball techniques, inviting her social network to share this material with people meeting the inclusion criteria. The final sample included ten young adults: eight women and two men aged 18 to 29. As a main occupation, seven participants are employed, and three are students. Although our sample's gender distribution is unbalanced, this is unlikely to substantially impact the results. We used purposive sampling and followed a maximum variation strategy to ensure participant diversity and strengthen the significance of the patterns identified in the analysis (Patton, 2002, p. 235). Additionally, gender differences in YouTube use for recreation are relatively small (80% of male users compared to 67% of female users; NETendances, 2023, p. 17), and past research has generally found no significant gender differences in perceived surveillance or acceptance of dataveillance practices (Segijn & van Ooijen, 2020; Zhang et al., 2023). Our analytical approach also focuses on participants' experiences as described and understood by themselves rather than adopting a critical or gendered perspective. Participants' sociodemographic characteristics are shown in Table 1. To ensure confidentiality, all names are pseudonyms.

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**Table 1.** Sociodemographic characteristics of participants
*The education level is based on the education system in Quebec and corresponds to the highest degree obtained (Gouvernement du Québec, n.d.). Low level: Secondary School Diploma. Medium level: Certificate or diploma of vocational studies, Diploma of College Studies. High level: Bachelor's degree, Master's degree, Ph.D., or another type of university certificate or diploma.*

| Participant | Age | Gender | Main occupation | Education level |
|---|---|---|---|---|
| Rose | 23 | Female | Student | Low |
| Marie | 26 | Female | Employed person | High |
| Anna | 18 | Female | Student | Low |
| Chloe | 26 | Female | Employed person | High |
| Jade | 28 | Female | Employed person | High |
| Thomas | 25 | Male | Employed person | High |
| Julie | 29 | Female | Employed person | High |
| William | 29 | Male | Employed person | High |
| Lili | 22 | Female | Student | Medium |
| Olivia | 28 | Female | Employed person | High |

Our sample size enabled an in-depth analysis of interview transcripts (Brinkmann & Kvale, 2015) and was appropriate because data saturation was reached by observing recurring patterns as the interviews progressed (Fusch & Ness, 2015). Nonetheless, data saturation is difficult to apply due to its absence of clear thresholds, lack of compatibility with thematic analysis, and the uniqueness of each study (Braun & Clarke, 2022a; Fusch & Ness, 2015). Therefore, the concept of *information power* (Malterud, Siersma, & Guassora, 2016) also helped determine a suitable sample size, where "the more information the sample holds, […] the lower amount of participants is needed" (p. 1753). Our sample held enough information power considering the distinct aim of the study, target population, and theoretical framework used. Table 2 details participants' YouTube use characteristics. All participants are experienced users, and most are heavy users. All have been using the platform for over five years, and more than half use it daily. All participants use YouTube for entertainment but also for other purposes.

**Table 2.** YouTube use characteristics of participants
[a]*The average usage time of Rose, Chloe, Jade, Thomas, and Lili can vary.*

| Participant | YouTube experience | Average weekly access | Average usage time (per use or day)[a] | Main purposes of use |
|---|---|---|---|---|
| Rose | 10-15 years | Daily | 30-40 minutes per use | Entertainment, tutorials, background noise |
| Marie | 10-15 years | Daily | 2 hours per day | Entertainment, education tool, relaxation, personal health |
| Anna | 5-10 years | 3-4 times per week | 20-30 minutes per use | Entertainment |
| Chloe | 15 years or more | 4-5 times per week | 20-60 minutes per use | Entertainment, learning, workout, tutorials |
| Jade | 15 years or more | Daily | 2 hours per day | Entertainment, information seeking, background noise |
| Thomas | 10-15 years | Daily | 5-6 hours per day | Background noise, learning, entertainment, music listening |
| Julie | 15 years or more | Once a week | 20 minutes per use | Entertainment, tutorials |
| William | 10-15 years | 3-4 times per week | 60-90 minutes per use | Entertainment, learning |
| Lili | 5-10 years | Daily | 3-4 hours per day | Workout, entertainment, background noise |
| Olivia | 10-15 years | Daily | 1-3 hours per day | Background music, entertainment, information seeking, learning |

### *3.2 Data collection*

The first author conducted the semi-structured interviews via Zoom in February and March 2023. Participants signed a consent form. The average interview length was 67 minutes, allowing a comprehensive exploration of participants' experiences with dataveillance on YouTube. We designed an interview protocol that remained flexible during the sessions, leaving room for adjustments and further probing (Legard, Keegan, & Ward, 2003). The design of the questions was in part informed by two interview protocols focusing on people's sense-making and interactions with algorithmic systems (Hargittai, Gruber, Djukaric, Fuchs, & Brombach, 2020; Karizat et al., 2021). These works were valuable because dataveillance becomes visible on YouTube through algorithmic profiling. Our prepared questions did not include words like "surveillance," "algorithm," or "data."

During the interviews, we asked participants questions about their attitudes and behaviors related to dataveillance practices on YouTube, such as personalized content and targeted advertising. Questions were grouped into thematic blocks. We first explored participants' YouTube experience and invited them to look at their YouTube app to explain how they use the platform. This variation of the walkthrough method (Light et al., 2018) aimed to increase the salience of dataveillance practices, help remember past experiences (Møller & Robards, 2019), and facilitate observation of personalized profiles. Afterward, we examined participants' dataveillance imaginaries, sense of dataveillance, and further attitudes, such as their attitudes regarding privacy on YouTube. We investigated dataveillance imaginaries by asking how they make sense of personalization (e.g., How do you think the content you see appears on your app?) and data collection and analysis practices (e.g., How do you think YouTube has/may have information about you? How do you think [this information] is used?). To measure their sense of dataveillance, we asked about their feelings towards these dataveillance practices, to what extent they felt observed when using YouTube, and how this manifested. Finally, we explored their behavioral responses by asking them whether their sense-making and feelings about these dataveillance practices influence how they use the platform. We also included questions about their self-inhibition, algorithm skills, privacy protection, and behavioral intentions, asking, for instance, whether they have ever avoided searching content or changed recommended content on purpose, their familiarity with the "Your data in YouTube" section, and their likelihood to change their YouTube use after the interview.

### *3.3 Data analysis*

We used reflexive thematic analysis[1] with a general experiential and realist approach to develop themes close to perceptions and experiences shared by participants and followed the six phases suggested by Braun & Clarke (2022a, 2022b, pp. 35–36). The analysis mainly conveyed a semantic meaning close to what participants said but on a more aggregated and abstract level involving some latent interpretation (Braun & Clarke, 2006). The analysis was both deductive, i.e., guided by the concepts of dataveillance, dataveillance imaginaries, and a sense of dataveillance, and inductive, i.e., based on interview material. An iterative coding and theme generation process with repeated feedback loops was employed. We extensively coded interview transcripts using the "open coding" feature in the MAXQDA software, generating more than 2800 codes. To organize this material, we assigned to each code a shorter "coded idea," summarizing the core idea behind the code. A coded idea could be assigned to more than one code. During coding, we created codes and coded ideas that closely aligned with both our theoretical lens and past research (i.e., more deductively, such as "dataveillance is continuous," "profiling is a black box," "trade-off," or "resignation") and with the experiences shared by participants during the interviews to remain sensitive to unexpected patterns (i.e., more inductively, such as "personalization is positive," "extension of the self," "intimate relationship," or "voluntary contributing to dataveillance"). We then grouped coded ideas with similar meanings on a thematic map (Braun & Clarke, 2006) to form themes

[1] The reflexive analytical approach is detailed here: https://osf.io/58fm2/?view_only=101651769be94d2c94fca1624989a86f

 

addressing our research questions derived from our theoretical framework. We discarded codes falling outside this scope throughout this process. Themes were progressively refined, and their prevalence across interviews and excerpts was assessed.

## 4. Results and discussion

This chapter presents and discusses our thematic analysis of the interviews with frequent YouTube users aged 18 to 29. We developed themes focusing on their *dataveillance imaginaries* and *sense of dataveillance* on YouTube (RQ1), considering these aspects closely intertwined, and their *behavioral responses* to their imaginaries and sense of dataveillance (RQ2). Overall, our results underscored the perceived self-evidence of dataveillance on the platform, generally leading users to accept and orient their use to benefit from it. The results further revealed that participants' imaginaries, sense of dataveillance, and behavioral responses are aligned. Despite some concerns, they were generally aware, tolerant, and appreciative of dataveillance practices on the platform. They tended to perceive greater advantages than inconveniences from these practices, given their lack of resistance, voluntary interaction with them, and unchanged YouTube use.

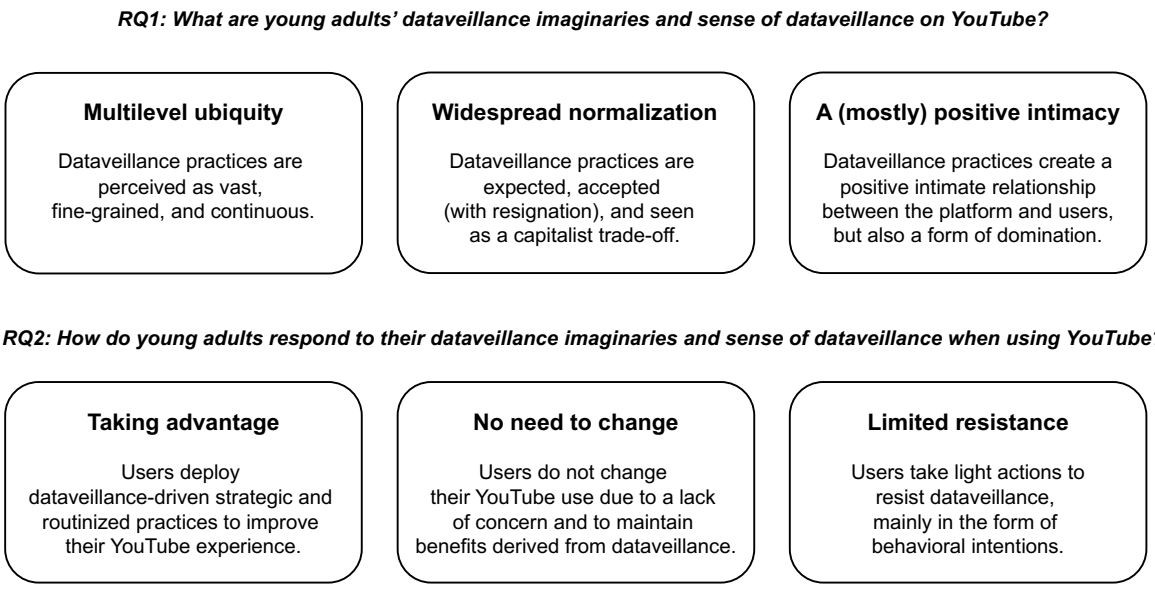


**Figure 1.** Themes illustrating young adults' dataveillance imaginaries, sense of dataveillance, and related behavioral responses on YouTube

### *4.1 Dataveillance imaginaries and a sense of dataveillance on YouTube*

YouTube users' intertwined dataveillance imaginaries and sense of dataveillance revolved around three themes. First, dataveillance was perceived as ubiquitous, pervading all possible actions on YouTube and connecting with other online services. Second, dataveillance seemed widely normalized because participants tended to expect, accept, and justify it as a capitalist trade-off for YouTube services. Third, dataveillance fostered a predominantly positive intimacy between users and the platform due to YouTube's ability to understand their interests and display highly personalized content.

#### *4.1.1 Multilevel ubiquity*

During the interviews, participants evoked imaginaries related to the vastness, detailed character, and continuity of the phenomenon. Dataveillance practices were first seen as vast and difficult to grasp fully

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because they had no clear boundaries and were linked to Google or other online services. When asked what kind of data YouTube can have about him, William said:

> Not only information about me in relation to how I use the platform, but being connected with my login name, my Google login, I imagine that there must be a multitude of data other than my YouTube usage with this login name. That's why it's free, by the way. (William, 29)

This quote illustrates the perceived vastness of dataveillance and underlines the transactional role that user data plays. Participants also commonly shared the idea that detailed and refined data were collected for purposes such as recommending content and ads. Collected data could be *raw*, i.e., directly gathered from YouTube activity or related to the YouTube or Google ecosystems, or *inferred*, i.e., created and deduced from raw data. Raw data mentioned included watch history, search history, type of content watched, viewing time, location, likes, comments, and subscriptions. Inferred data comprised information such as gender, relational status, interests, occupation, personal attributes, and buying habits. For Marie, what YouTube inferred about her was based on ultra-precise raw data:

> All the information, every click you make. Just when you go on the app and you click on history. If I see it, they see it too. Each account has a lot of statistics. When you have skipped the ad or watched the whole thing. Whether you have watched the whole video or...It's all written in their statistics. (Marie, 26)

As suggested here, the entire YouTube experience appears subjected to dataveillance. Lastly, the ubiquity of this phenomenon was demonstrated by its perceived continuity. This aspect was raised by several participants when questioned about the frequency of information-gathering practices on YouTube. For many, data were constantly collected, saved, and processed. Dataveillance may even occur when the YouTube app is not used, a possibility mentioned by Olivia (28) and Jade (28). This might be linked to the default tracking settings, the location feature, or staying connected on the platform. In short, the vast, detailed, and continuous nature of dataveillance imagined by participants closely echoes theoretical understandings (Büchi et al., 2022; Strycharz & Segijn, 2022; Van Dijck, 2014) and signals that YouTube users seemed to be well aware of dataveillance and perceived it as a prevalent phenomenon.

#### *4.1.2 Widespread normalization*

Sense-making processes and feelings also centered around the idea that dataveillance was the norm on YouTube. Dataveillance practices were generally expected and not perceived as a form of surveillance, in contrast to our theoretical understanding. For example, Chloe (26) did not feel observed when using the platform: "[...] YouTube is still going to collect the information I am giving it because, well, I am using its service. But I don't think I feel like I am being watched to any extent, no." Some users also remained detached or neutral toward dataveillance or deliberately expected to be profiled, like Julie (29), who expressed surprise by the lack of personalization after looking at the ads displayed on her app. As dataveillance is integral to users' experience on YouTube, accepting it was also part of the norms. Some users felt they had no choice but to agree to it, sometimes with resignation. For instance, Jade was asked whether she feels observed on the platform and responded:

> Yeah for sure, but I think it's inevitable...We want to have content that looks like us, to have it [...] it's not magic [...] there has to be data. [...] there has to be data to build on. They have to see habits. So yeah I know that, it's definitely based on something. (Jade, 28)

This quote suggests that dataveillance is perceived as a necessary condition for enjoying personalized content. Finally, normalized dataveillance was also understood as part of a capitalist logic. There was an implicit trade-off between some users and the platform, where dataveillance practices pay in exchange for YouTube experiences. For example, Thomas (25) viewed data as a currency for accessing YouTube. For him, this was a *win-win* situation: "I give my information, then they give me free entertainment, learning [opportunities]. So I gain from having free access to this platform, and if my data must pay for this, then let them pay." Some participants also saw dataveillance as a model that benefits corporate

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actors: data from their YouTube activities can be sold to third parties, and profiling practices increase their usage time and enable targeted advertising on the platform.

This perceived normalization supports previous research; compared to other age groups, younger people tend to be more accepting of corporate dataveillance practices (Kalmus et al., 2024; Segijn & van Ooijen, 2020). Many participants used YouTube daily. They were highly familiar with dataveillance practices and had come to expect and integrate them into their habits; hence, they did not generally feel monitored on the platform. They also implicitly understood the economic value given to their data to keep them on the platform and provide them with accessible and relevant content (Plangger & Montecchi, 2020). This echoes the literature on the privacy calculus (Dinev & Hart, 2006), where potential gains in self-disclosure outweigh perceived risks. Nonetheless, some were critical of dataveillance by expressing resignation or similar views. These attitudes align with the powerless attitudes toward online surveillance and data-gathering practices found elsewhere (Dencik & Cable, 2017; Sörum & Fuentes, 2023) and highlight the perceived imbalance between YouTube and its users (Andrejevic, 2014).

#### *4.1.3 A (mostly) positive intimacy*

Finally, dataveillance created a sense of intimacy between users and the platform. Participants tended to perceive this intimacy positively because profiling practices could grasp and understand their interests and desires. Therefore, such monitoring was associated with benefits such as enjoyment, satisfaction, and discovery, enabling participants to consume well-suited content. Rose said she developed over time a "bond of trust" with her "favorite platform" and felt less scared by the profiling practices on YouTube than on Instagram:

> It seems, on YouTube, less scary to me because […] they are trying to get to know me, but at the same time I am okay with it because I have videos, new creators that appear or content that I had not necessarily watched […]. (Rose, 23)

This intimate relationship was further emphasized by Lili (22), who noticed that YouTube stopped recommending content that no longer represented her interests at some point. She appreciated the change as if YouTube closely followed her "evolution" and "vibe." She got the impression that the platform could "understand" her, which she found useful. Thanks to this intimate bond nurtured by profiling practices, diverse gratifications can be retrieved from content consumption on the platform (Buf & Ștefăniță, 2020). At the same time, such intimacy also raised negative feelings and imagined consequences (Kappeler et al., 2023) for some due to the disproportionate power gained by YouTube. This perceived domination was generally associated with these potential effects: heavy personalization could reduce content diversity and lead to addiction, and dataveillance practices may influence users on a cognitive or behavioral level. Some users also shared conflicted views toward dataveillance, recognizing its negative and positive aspects or desiring and disliking profiling. This aspect relates to the concept of "intimacy of surveillance" (Ruckenstein & Granroth, 2020), which emphasizes the inherent dichotomy of corporate dataveillance because it fosters both expectation and rejection of profiling practices due to their intimate but invasive character.

### *4.2 Behaviors in response to dataveillance imaginaries and a sense of dataveillance on YouTube*

Our thematic analysis also generated three types of behavioral responses to participants' dataveillance imaginaries and sense of dataveillance. First, users deployed strategic and routinized practices driven by the logic of dataveillance to optimize their YouTube experience. Second, most did not change their YouTube use as dataveillance did not raise significant concerns. Third, users' resistance toward dataveillance was limited and mainly consisted of behavioral intentions.

#### *4.2.1 Taking advantage*

Participants first interacted with dataveillance to their own advantage. They used strategies or tactics to produce or limit their digital traces and, in doing so, could improve their experience on the platform.

Dataveillance-driven responses included watching specific videos or avoiding this action to influence personalized content. For instance, Thomas (25) was highly aware that his actions were recorded to build his user profile. When he wanted to learn about a new topic, he intentionally created digital traces by searching content on YouTube or voluntarily talking to his smartphone:

> Participant: As a joke, I'm going to pick up my phone, I am [going to say]: 'I want to learn how to snowboard.' […] My FBI agent, I guess, will do its job.
>
> Interviewer: Okay, I get it. Does it usually work when you do that?
>
> Participant: Yeah.

Thomas used the term "FBI agent" to describe the "perceived surveillance of conversations" (Frick et al., 2021) conducted by his smartphone. In this quote, he acknowledges and contributes to his monitoring.

This theme was further illustrated by the routines adopted by users, which revolved around profiling practices considering their prevalence and practicality. For William, the manual search tool seemed unnecessary:

> I used the "search bar" more [before], but now the content offered to me is so personalized that I often don't even need to use the "search bar" because the videos that I want to watch are the first ones that are suggested. (William, 29)

Many participants also shared that their usual routine on YouTube starts by looking at the recommended content displayed on their homepage or subscription section. Dataveillance, therefore, had functional purposes for them. Taking advantage of dataveillance echoes discussions on engagement with digital traces and initiatory surveillance practices (Kennedy, 2018; Lyon, 2017). Users oriented their YouTube use toward dataveillance because it is intrinsically linked to the platform's functioning and brings them benefits, such as optimized use.

#### *4.2.2 No need to change*

Another type of reaction to imaginaries and a sense of dataveillance was the absence of behavioral response. For instance, data-gathering practices did not trigger Julie (29) to change her YouTube use due to the perceived triviality of the data collected: "No, I am not going to use [it] differently. [...] it's nothing illicit, it's commonplace, so I don't mind them telling I don't know who that I watched videos of this, of that." This quote implies that Julie had "nothing to hide." In fact, she explicitly used this argument afterward when asked if data-gathering practices could impact her life. It made no sense for Julie to imagine that YouTube could misuse her information because that could be detrimental to the platform. Moreover, limiting dataveillance was not a valuable option for Jade and William because it would worsen their experience on YouTube. Jade said that she would not change her settings or log out of her account after the interview:

> Because in fact the interest that I see in their access to […] my data is also that they can suggest content that is interesting to me. So if I remove it or if [...] I change it quite a bit, then I might have less content that interests me. (Jade, 28)

Most participants also indicated that they generally do not think about privacy when using YouTube and have not changed their privacy settings in the past. No participants used the incognito mode, and most were unfamiliar with the data management tool "Your data in YouTube."

The quotes above suggest that the perceived low sensitivity of digital traces, the absence of privacy concerns, and the benefits derived from dataveillance are associated with unchanged YouTube use. Kappeler and colleagues (2023) also observed the same behavior when using other online services and pointed out the role played by trust in dataveillance actors and positive and resigned attitudes toward this phenomenon and its consequences. As users' imaginaries and sense of dataveillance relate to the high awareness, normalization, and enjoyment of dataveillance practices on YouTube, they were less likely to have significant concerns or adopt data- and privacy-protective behaviors. This type of response further highlights the importance of considering the context in individual reactions to dataveillance practices (Marwick & Hargittai, 2019; Strycharz & Segijn, 2022).

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#### *4.2.3 Limited resistance*

The last behavioral response we observed centered on light actions to resist dataveillance practices and effects. This resistance was limited and mainly consisted of behavioral intentions. Strategies included restricting data-gathering practices or the potentially addictive effects of profiling. Some participants said they wanted to pay more attention to the mechanisms of dataveillance, such as William, who would like to explore the data management and privacy settings on YouTube:

> I would like to maybe [try] deleting some search [and] content viewing history [to] see how [...] it is going to be shown to me or just go look at the data policy, see if there are things in there that I find [...] that don't make sense that I didn't know were being done. (William, 29)

Earlier in the interview, he also directly examined the settings on his device. He realized he could turn off search and watch histories, geolocation, and personalized advertising and found this possibility "interesting." Anna (18) and Olivia (28) also shared that they sometimes limit what they click on, slightly self-inhibiting their behavior on the platform. For instance, Olivia mentioned she is careful about her digital traces because she "accepts but questions" profiling practices. She linked her behavior to her imaginaries:

> It may not have that much impact on what I do, but that's why I try to, I am really not encouraged to share, to contribute to the YouTube community with likes, with comments. I try to be a little bit more anonymous because if I am anonymous [...] they have less data on my profile, my habits, how I interact with the platform. (Olivia, 28)

In sum, behavioral intentions mentioned by some participants signal they were aware of potential adverse outcomes of dataveillance. Still, these did not appear as incentives strong enough to take actual actions, which connects to the privacy calculus (Dinev & Hart, 2006). The interview setting may have also increased behavioral intentions, as the topic of dataveillance was discussed in depth. Moreover, the perceived sensitivity of digital traces can contribute to self-inhibition when searching online (Penney, 2016). As users did not tend to perceive their activities and data as sensitive, they seemed less likely to restrict their YouTube use. However, caution is advised because past behaviors may be difficult to remember.

## 5. Conclusion

The central argument and contribution of this article is that individual *dataveillance imaginaries*, *sense of dataveillance*, and related *behavioral responses* need to be studied from a service-specific perspective. There is still a lack of comprehensive, user-centered research that considers the context-dependence of people's experiences with corporate dataveillance despite its pervasiveness, significance, and potential consequences in everyday life. This study addresses this gap by investigating sense-making of, feelings about, and behaviors in response to dataveillance when using the social media and video service YouTube. This platform requires careful examination due to its extensive profiling practices, high popularity (especially among younger people), and close links with other widely used Google services. We conducted a reflexive thematic analysis of semi-structured interviews with young adults aged 18 to 29. While our results reflect the experiences of our specific sample, they showed that dataveillance was perceived as a ubiquitous and normalized phenomenon, fostering a mostly positive sense of intimacy between participants and YouTube. Users behaviorally responded to their imaginaries and sense of dataveillance by taking advantage of dataveillance, showing limited resistance, or not changing their YouTube use. Our analysis further suggests that users' sense-making of and feelings about dataveillance connect with their behavioral responses. Participants were generally aware of dataveillance practices, tolerated them, and enjoyed them despite expressing some concerns. Considering this, they tended to perceive greater benefits from these practices than inconveniences given their voluntary contribution to dataveillance to improve their YouTube experience, integration of dataveillance practices into their routine on the platform, and lack of privacy and data protection.

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This study makes three main contributions to dataveillance research. First, we contribute to explaining variations in personal attitudes and behaviors in response to corporate dataveillance found in the empirical literature by considering both online-service peculiarities and demographic characteristics. Our approach demonstrates that on YouTube, and for young adults specifically, dataveillance seems to lead to greater benefits because it helps ensure satisfaction when using the platform. This finding aligns with the privacy calculus literature (Dinev & Hart, 2006), existing evidence on this age group (e.g., Marwick & Hargittai, 2019; Southerton & Taylor, 2020), and suggests that responsive surveillance practices (Lyon, 2017), like self-inhibition and privacy protection, may be less prevalent when using YouTube. Second, this study advances our current understanding of everyday dataveillance imaginaries, sense of dataveillance, and related behavioral responses, as well as how these aspects can relate to each other in a specific context. Specifically, our findings reveal the perceived *self-evidence* of dataveillance on YouTube for experienced and frequent users. Personalized content pervasively displayed on the platform makes dataveillance easily perceptible and deeply linked to YouTube's workings. For users, dataveillance hence appears as an implicit condition to seek gratifications on YouTube, such as entertainment and optimized use (Buf & Ștefăniță, 2020). This aspect resonates with the surveillance culture advanced by Lyon (2017) and engagement with everyday surveillance. The self-evidence of dataveillance suggests that users are part of a widespread dataveillance culture on YouTube that nudges them to embrace rather than react to this phenomenon. Third, our findings challenge previous contributions (Clarke, 1988; Dencik & Cable, 2017) that normatively shape our understanding of dataveillance as a phenomenon negatively affecting people's lives. We provide evidence, expanding initial but briefly detailed indications (Lupton, 2020; Sörum & Fuentes, 2023; Zhang et al., 2024), that those subjected to dataveillance can also perceive it positively and may even take advantage of it. Our argument is not to justify dataveillance as it is, considering its tangible risks, but to keep broadening discussions that consider the users' perspective and engagement with their digital traces (Kennedy, 2018).

The main limitations of this study concern the sample size and the chosen data collection method. Although our sample size was justified due to appropriate information power (Malterud et al., 2016), the number of participants remained small. Including more participants could have contributed to capturing different or unexpected patterns of dataveillance imaginaries, sense of dataveillance, and behavioral responses. In addition, while producing in-depth knowledge on YouTube users' lived experiences of being dataveilled, the interview method has inherent biases and measures behavioral responses in a limited way. First, unconscious social desirability or interviewer bias may have affected participants' answers. Second, actual behaviors could not be assessed systematically during the interviews. The walkthrough method may have helped participants describe how they generally use YouTube in real life and remember their past behaviors (Møller & Robards, 2019), but recall issues cannot be excluded. Therefore, more research is needed to better measure how people's imaginaries and sense of dataveillance impact their daily online activities beyond self-reported behaviors and intended behaviors. Promising avenues include mixed- and multi-method approaches aiming at triangulation that consider, for instance, changes over time and natural settings (see also Büchi et al., 2022, 2023; Strycharz et al., 2022).

Regarding practical implications, we found that participants were generally unaware of and did not use YouTube's privacy-enhancement tools. This highlights the need for continued data literacy efforts among young people (Segijn & van Ooijen, 2020) and those having a limited understanding of risks associated with dataveillance. While approaches like fostering "personal pedagogies of data" to enhance individuals' awareness, understanding, and critical thinking about their digital traces (Pangrazio & Sefton-Green, 2020, p. 216), along with public and educational initiatives, are crucial, this responsibility also lies with dataveillance actors themselves. Involvement from corporations remains required, considering that social media create environments nudging users to integrate data sharing into their habits (Southerton & Taylor, 2020). Online services should thus make privacy-enhancement tools more salient to users.

In sum, this article confirms that individual experiences and consequences related to everyday corporate dataveillance are highly context-dependent. This opens the door to future work focusing on

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specific (types of) online services across life domains. It also informs future theoretical contributions and policy initiatives by narrowing the gap on how individuals engage with dataveillance in which contexts and why.

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# Who Are the Targets of Deepfakes?

## Evidence From Flagged Videos on TikTok and YouTube

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### Abstract

This study draws on a dataset of 1394 flagged deepfakes from YouTube and TikTok annotated by the race, gender, profession and nationality of the 'targeted' individuals. The findings indicate that, by stark contrast to pornographic sites, mainstream deepfakes overwhelmingly feature individuals who are white, male, and—when in politics—authoritarian. A complementary qualitative analysis suggests that very few videos have a political edge, even when featuring politicians. Instead, it is proposed that the chief function of mainstream deepfakes is to be seen as a *carnivalesque* (apolitical) profanation of the faces of power. These findings challenge previous studies on the demographics of deepfake targets and broaden the scope of the current literature by shedding further light on how AI-assisted video doctoring is used beyond porn and disinformation.

Keywords: Deepfakes, Generative AI, TikTok, YouTube, Social Media, Satire, Disinformation

### 1. Introduction

The academic as well as popular literature on deepfakes has mushroomed in recent years, with two foci being particularly salient (see Gosse & Burkell, 2020). The first is pornography, which is often argued to be the primary context in which synthetic media technologies are employed. A 2021 report by Deeptrace (Ajder et al., 2019) claimed that as much as 96% of deepfakes were pornographic, and that 100% featured faces of female celebrities, primarily from the United States and South Korea. A subsequent report from Home Security Heroes (2023) similarly found that 98% of existing videos were pornographic, of which 99% featured female targets. Even though both reports rely on a questionable methodological design, these numbers suggest that the deepfake phenomenon is perhaps primarily a pornographic one. This has led feminist scholars as well as digital ethicists to call attention to the various ways in which deepfakes threaten women, both as individuals and as a collective (Harris, 2019; Maddocks, 2020; Öhman, 2019), and law scholars have begun to explore the various legal options to combat the phenomenon (Harris, 2019; Mashinini & Africa, 2020; Perot & Mostert, 2020).

The second focus in the literature has been political disinformation (Citron & Chesney, 2019; Diakopoulos & Johnson, 2021). Here, the problem has largely been framed in epistemic terms, and sometimes with straight-out apocalyptic undertones. Indeed, words like "epistemic apocalypse"

(Habgood-Coote, 2023), "infocalypse" (Schick, 2020a), or "epistemic maelstrom" (Rini, 2008, 8) signal that the advent of synthetic media is about to destroy the last shards of ground truth in an already polarized media landscape. Given these warnings, the vast majority of literature on deepfakes, particularly within the technical sciences, has come to focus on means of detection, i.e., how to tell reality from fake (see literature reviews by Godulla et al., 2021; Westerlund, 2019). Yet, the apocalyptic narratives have lately received pushback or been nuanced by a series of scholars with more modest verdicts (Habgood-Coote, 2023; Kalpokas & Kalpokiene, 2022; Kerner & Risse, 2021; Nieweglowska et al., 2023). Synthetic media content can already be indistinguishable from reality, yet to date, there is no known case where a significant share of the public has fallen for a doctored media artefact for an extended period of time. Even the infamous synthetic images of Donald Trump's arrest, commonly used to illustrate the dangers of deepfakes, were only spread for a (relatively) brief moment before being removed from mainstream platforms. As suggested by Nieweglowska et al. (2023, 1), deepfakes are not necessarily shared as a means of persuasion, but rather to reinforce one's "identity and social position." Thus, as Kalpokas & Kalpokiene (2022, 48) note, "much of the current debate about deepfakes is ignited more by panic than by fact and reasonable prediction."

Naturally, the above are praiseworthy pursuits, and even some of the apocalyptic warnings deserve to be taken seriously, at least in the long-term. Yet, an excessive focus on hypothetical doomsday scenarios poses the risk of overshadowing what is already going on. The significance of synthetic media lies not only in what it can potentially do in the future, but in how the technology is already employed—in its current role in society. And in today's media landscape, most people come into contact with deepfakes through mainstream platforms like YouTube and TikTok (see data on traffic below) which have stricter rules on both mis/dis-information and nudity than do alternative platforms. For example, both YouTube and TikTok require doctored content to be clearly disclosed as such, regularly remove deceptive videos that may pose political harm, and outright bans pornographic content and nudity.1 Hence, whatever deepfakes are used for on the big video-sharing platforms, it falls beyond the two current foci of academic literature. In view of this lacuna, the goal of the present article is to provide a baseline knowledge about whom is targeted in deepfakes on the major video-sharing platforms and what cultural function these videos serve since. As such, the present study sets out to answer the following research questions:

> RQ1: Who is featured in deepfakes shared on mainstream platforms?
> RQ2: What is the cultural function of deepfakes shared on mainstream platforms?

These questions shed light on how (non-pornographic) synthetic media are actually shared and consumed within the mainstream. They allow for a more informed and nuanced debate, not least in the context of politics where focus has been placed almost exclusively on disinformation. For instance, what is the goal of doctoring videos of political figures, if not to deceive? Are liberal politicians more likely to be targeted than conservative ones? Are women more commonly targeted than men? These types of questions become possible only in light of a thorough base-line knowledge about the deepfakes shared on social media.

To answer the research questions, the study draws on a set of 1394 videos scraped using the search term "deepfake" on TikTok and YouTube, which is manually annotated by the gender, occupation, race and nationality of the individuals targeted in the videos. The findings suggest that, by stark contrast to e.g., pornographic sites, deepfakes on the mainstream services overwhelmingly use the faces of white men in the entertainment industry or in politics. They appear to be used, not so much to formulate a political or social critique, but as a means to augment artistic imagination, showing off technological

[1] For a full list of restrictions, see https://www.youtube.com/howyoutubeworks/our-commitments/fighting-misinformation/ and https://www.tiktok.com/community-guidelines/en/integrity-authenticity/

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savvy, or what may be interpreted as a form of "carnivalesque" profanation. In other words, much of the current significance of synthetic media lies beyond disinformation and epistemic collapse—not in its ability to deceive but in its ability to enhance and animate users' imagination.

## 2. Methodology

The methodological procedure of this study has three components: 1) data collection, including manual annotation of the data, 2) a descriptive statistical analysis of the demographic composition of the targeted individuals, and 3) a qualitative analysis of a selected sample of the data.

### *2.1 Data*

To get to the videos that ordinary internet users are most likely to encounter in everyday life, data were collected from the two largest venues for sharing (non-deceptive) deepfakes—YouTube and TikTok. The two platforms provide similar services, but also have notable differences.

YouTube started as a web-based video-sharing platform (notably to share a video of the accidental exposure of Whitney Huston's nipple during the 2004 Superbowl half-time show (see Sheffield, 2020), but was acquired by Alphabet in 2006. As of 2023, it has become world's second largest social media platform, with 2.86 billion monthly active users world-wide, which accounts for about half of the world's internet users. 400 hours of video is uploaded to the site every minute, making it by far the largest depository of video material in history. Due to YouTube's policy on nudity and sexually explicit content, the site has not been used to share deepfake pornography. According to its misinformation policy, it also prohibits content that has been "technically manipulated or doctored in a way that misleads users (beyond clips taken out of context) and may pose a serious risk of egregious harm" (Youtube, n.d.). As an example of what may cause such "egregious harm," the policy cites "a video that has been technically manipulated to make it appear that a government official is dead." The practical implication of the policy has largely been interpreted as a requirement to flag the synthetic nature of deepfakes in the caption, though it has not led to a complete vanishing of deepfakes that do not declare themselves as such.

Compared to many other social media, YouTube provides a very versatile platform. It is used for such diverse purposes as political communication, learning, marketing, identify formation and sheer leisure (see Soukup, 2014). The user base includes everything from Hollywood production conglomerates to political parties and private individuals. Though it has a strong and accurate recommendation algorithm, the platform's utility is arguably too broad to afford the kind of handheld "binging" commonly associated with TikTok (see Schellewald, 2023 below).

Unlike YouTube, TikTok emerged largely as a mobile app rather than a web page. And unlike most global social media platforms, it emerged from China. The platform attracts roughly half the number of users that YouTube has (1 billion 2023), but is highly popular among young people, and has maintained a rapid growth since its start. TikTok has a stricter policy on doctored content than does YouTube, possibly as a result of pressure from American policymakers who have expressed serious doubt in the company's credibility and democratic legitimacy.[2] For example, the terms of service demand that users clearly flag manipulated content, but also prohibits deepfakes that use faces of private individuals or minors, even when this is clearly stated by the channel (TikTok, 2023). However, like YouTube, TikTok appears to enforce this policy mainly on deepfakes that are deemed to pose political threats—there are plenty of doctored videos that are not marked as such but are arguably too unrealistic to pose any serious threat of deception.

While providing features that already exist on other platforms (especially YouTube), TikTok stands out from its competitors in at least two respects. The first is the aggressive personalization of its algorithm (Bhandari & Bimo, 2022; Schellewald, 2023). Almost from the very moment users first open the app,

[2] At the time of writing at least the state of Montana has issued a complete ban of the app, but a nationwide closure is also looming.

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they encounter content that is closely tailored to their interests in a way that other platforms have not been able to keep up with. The second feature is its situated usage. Whereas platforms like YouTube are designed with the active consumption of the content in focus, TikTok has managed to become an integrated part of many users' daily routine. Rather than each video providing an "experience," the app provides an ongoing buzz that keeps users culturally up-to-date and releases them from boredom while at the same time demanding very little in return (see (Bhandari & Bimo, 2022, 9). "It's almost like a bridge between living room and bed" as one of Schellewald's (2023, 1573) interviewees put it.

Despite the above differences, the platforms are comparable for the purposes of this study in that they are both mainstream video-sharing services whose main technological function is to provide users with content they are likely to enjoy.

Data were scraped from both services using the custom data scraping tool Apify, specifically the YouTube Scraper and TikTok Scraper features. For YouTube, the scraper collected all hits for the search-term "deepfakes," which resulted in a total of 465 items. This number does not appear to capture the totality of videos that mention the term "deepfake" in the description, which is likely due to the fact that YouTube's search algorithm (like Google's) seldom presents an exhaustive list of hits, but provides different results depending geographical region (in this case the United States). There is, however, no reason to believe that this introduces any systematic bias to the results. At least, there is no commonly accepted way of circumventing the platform's own search function.[3] For TikTok, the scraper retrieved all videos tagged with "deepfake" resulting in a total of 949 hits. This list appears to be more comprehensive than that from YouTube but may potentially suffer from similar limitations regarding scope.[4]

Upon retrieval, the datasets were manually annotated to identify the individuals whose faces or voices had been replicated in the videos (i.e., the "targets") and their demographic characteristics. This approach diverges from the aforementioned report by Deeptrace (Ajder et al., 2019) which attempted to automate the identification process by parsing through the video URLs using the python library SpaCy which includes a name recognition feature (notably, the authors focus on pornographic content only).[5] While efficient, such an approach is not very accurate. Indeed, many videos in the present datasets were not tagged with any names, despite using the faces of several famous individuals. Some videos tagged names of individuals that were not featured (supposedly to get a wider reach) and others tagged the names of fictional characters rather than the actors who play them (e.g., "Aragorn as Harry Potter"). For this reason, the material was annotated manually. Table 1 presents a list of variables and values by which the data were annotated.

[3] One possibility is going through Google search, but that merely switches the bias of one search engine for another's.

[4] It may be noted that the two searches were performed 5 months apart (TikTok in March 2023, YouTube in August), although this should not introduce any significant bias since the focus here is not to compare the platforms, but to get a representative sample on what kind of deepfakes users may encounter in mainstream social media.

[5] The Home Security Heroes report arguably also uses an automated process, though unlike Deeptrace they reveal nothing about their methodology.

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**Table 1.** Variables and values for annotation

| Variables | Values |
|---|---|
| Type of video | Commentary/Not Commentary/Not Related to Deepfakes |
| Type of target | Cartoon/Natural person |
| Type of doctoring | Voice/Video |
| Gender | Male/Female/Other |
| Race | White/Black/Latino/Asian/Middle Eastern |
| Nationality | Country Name |
| Name (if identifiable) | Name |
| Occupational sector (if identifiable) | Entertainment/Politics/Other |
| Political affiliation, if politician | Liberal, Conservative, Authoritarian/Populist[6] |

This methodology relies heavily on the coder's personal ability to recognize the featured individuals (in cases where the text did does disclose), yet even in cases where an individual natural person was impossible to identify, demographic qualities such as race and gender could still be annotated. The annotation was performed by a single person. The full datasets and a detailed coding protocol including definitions is provided at the following GitHub repository: https://github.com/carlohman/Code-for-deepfake-analysis.git

### *2.2 Analytical procedure*

The analytical procedure consisted of two steps. In the first step, a series of descriptive statistical measurements were made to illustrate the demographic breakdown of the targets. A multivariate regression analysis was also performed using a T-test to measure the effects of the various features of the videos and targets on the number of views. All statistical analysis were performed in R. The code can be accessed on the aforementioned GitHub depository.

In addition to the mere statistical description of the content, a sub-sample of 100 videos per site were selected for an interpretive qualitative analysis, focusing on the surrounding context and the relationship between the individual targeted and the original source. The process was guided by the following (interpretive) questions:

- What appears to be the intended effect/meaning of the video (e.g., comedy, humiliation, celebration, etc.)?
- What is the relationship between the targeted individual and the individual/character onto whom they are superimposed (e.g., opposite gender, enemies, friends, colleagues)?
- How does the video appear to be received by the audience (e.g., reactions in the comments)?
- What is the relationship between the video in question and other clips using synthetic media (e.g., following a trend, responding to previous videos)?

The goal of this study, as mentioned in the previous section, is to establish a baseline knowledge about non-deceptive deepfakes—quantitatively and qualitatively. As such, this second step is not meant to present a complete ethnographic review of the material, but is intended as a complement to the statistical

[6] Assessment of whether heads of state and members of the ruling party are to be listed as authoritarian/populist is based on The Economist Intelligence Units democracy index (2024). Cut-off is made at 6 and lower. This covers the vast majority of cases. In the six cases where the target is from a democratic country, yet not clearly call within the liberal nor conservative category, Levitsky and Ziblatt's (2019) four indicators of anti-democratic behavior is used as the basis for assessment.

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analysis, and as a basis for further qualitative analysis along the lines of e.g., (Allison, 2021; Ayers, 2021; Glick, 2023; Holliday, 2021).

## 3. Findings

Overall, the findings show that, by stark contrast to pornographic deepfake sites, the targets of deepfakes on mainstream platforms are overwhelmingly male (YouTube 89%; TikTok 72%) and white (YouTube 87%; TikTok 61.5%). They primarily belong to two sectors—entertainment and politics, and within the latter category, the biggest share are authoritarian/populist. While the videos target demographics that are typically associated with social and political privilege, they are neither to be interpreted as satire nor mere humiliation/degradation. Rather, they appear to hold three key cultural functions: (1) Augmentation of artistic imagination, (2) showing off technological savvy, and (3) mere amusement, or what may be referred to as a form of *carnivalesque profanation.* Below, these findings are further detailed alongside possible explanations of the emerging patterns.

### *3.1 General numerical overview*

Not all hits proved relevant for the demographic analysis. For example, out of the initial 949 TikTok hits, 227 were categorized either as news reporting/commentary, did not involve any sign of doctoring (such as parodies of deepfakes), or were deepfakes of cartoon characters. The remaining 722 used faces or voices of natural persons. On YouTube, half of the 465 videos were commentary and/or tutorials on how to create deepfakes, and 53 were cartoons, leaving 137 videos featuring natural persons. While the commentary/cartoons may not be relevant for the demographic breakdown, it is notable that almost half of the deepfake related content that users may encounter on YouTube is meta-content (videos commenting on the phenomenon). Or put differently, the hype seems to overshadow the actual visibility of doctored content, at least on YouTube.

The videos were posted by 356 different channels, 84 from YouTube and 272 from TikTok, giving an average of roughly 2.2 videos per channel. In total, the videos had a little over 361 million views on YouTube, and 668.7 million on TikTok, i.e., a total of a little over one billion. The view count is very unevenly distributed across the videos (and channels). The top 22 videos on TikTok account for almost a third of the views, and on YouTube, the top 7 channels stand for almost a third of the views.

To put these numbers in context, the Home Security Hero report (2023) found that, in 2023, the total number of views on the top 10 dedicated deepfake pornography sites was a little over 303 million. Even if it is difficult to make an exact comparison, these numbers indicate that the consumption of deepfakes on mainstream sites is comparable in size to, or even larger than, the pornographic side of the phenomenon. Given that the current sample probably only captures a fraction of the actual deepfakes on the platforms, whereas the data from the pornographic sites covers all videos, the difference is presumably even larger, possibly by orders of magnitude

### *3.2 Male/female ratio*

The first thing that stands out in the demographic breakdown of the data is the overwhelming dominance of male targets (see Figure 1). On YouTube, only about 1 in 10 of the targets is a woman. The ratio is a little more balanced on TikTok, where 72% of the targets are male, but this is almost exclusively due to a single dance trend which uses the face of an unidentified Asian woman. If excluding this trend, only 9% of the videos use the face of a female target. No individuals within either platform fell within the "other" category of gender.

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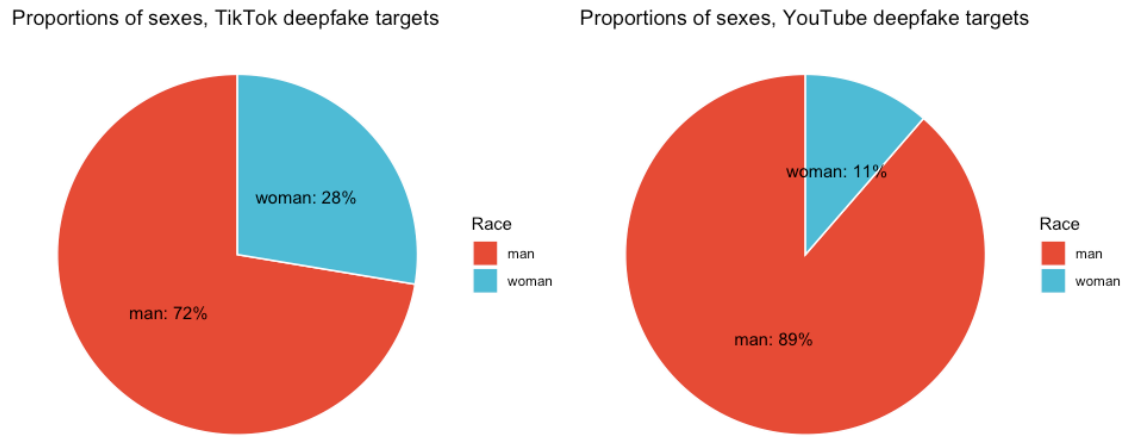


**Figure 1:** Gender distribution among deepfake targets on TikTok and YouTube

The numbers appear to support previous claims that, at least within YouTube video artist communities, mainstream deepfakes largely target white male "stars" (see Holliday, 2021). There are a number of possible hypotheses that may explain this dominance. The first, and most obvious one, is that deepfakes, when not pornographic, generally target famous and/or powerful individuals, and most people in power are men. Had more women been in positions of political power, there would possibly have been more deepfakes using their faces. While intuitive, this explanation has weaknesses. Only 6 videos on TikTok, and none on YouTube, feature female politicians, which is far below the female representation in politics in most parts of the world. Moreover, the women that are targeted are primarily Hollywood actresses and singers (see below) not politicians, and in the data, this category too is dominated by middle-aged white men. While it is true that, overall, men dominate in Hollywood casting, middle-aged white men can hardly be said to be the "it-boys" of the day in terms of media visibility. Indeed, in terms of internet culture, someone like Sylvester Stallone has little on actresses like Zendaya or Florence Pugh. The underrepresentation of women in positions of power hence poses a relevant, yet insufficient explanation.

Another possible hypothesis is that superimposing male faces is less stigmatized than using female ones, due to the latter being closely associated with pornography and harassment. Content creators may feel less guilt when using the face of, e.g., Stallone, than Jennifer Lawrence, because of the social context of power asymmetry between the sexes. While possible, such a hypothesis needs to be confirmed by further qualitative analysis. Are those creating deepfakes on TikTok and YouTube really the kind of people who feel concerned about such matters? Only further investigations can tell, but given the fact that at least 26% of deepfake porn consumers feel guilty about it, and that 73% of them would report to the authorities were someone close to them to fall victim to such content, there appears to be at least a general awareness of the stigma and possible harm even among users (see Home Security Hero, 2023).

Even notwithstanding these explanations, the male dominance is remarkable, especially in contrast to the pornographic sites, which nearly exclusively feature women. Future research should investigate this pattern more closely. Why are men so over represented in deepfakes on mainstream platforms when other sites have it the other way around? How do creators explain this? And what does it say about the cultural function of the phenomenon?

### *3.3 Race and nationality*

The second thing that stands out in the data is the dominance of white targets. 87% of the YouTube targets are white, and the rest Asian, Black or "other." On TikTok, 61.5% are white, 23.7% Asian, 10.4% Black and the remaining 4.4% were "other races" (see Figure 2). However, almost all Asian targets on TikTok

can be attributed to two so-called *trends* (a format repeated by multiple private users). If these are subtracted from the data, the diagram turns overwhelmingly in favor of whites. While the distribution is not too far from the racial composition of the United States, the two platforms are used virtually all around the world and so one may have expected a more even distribution.

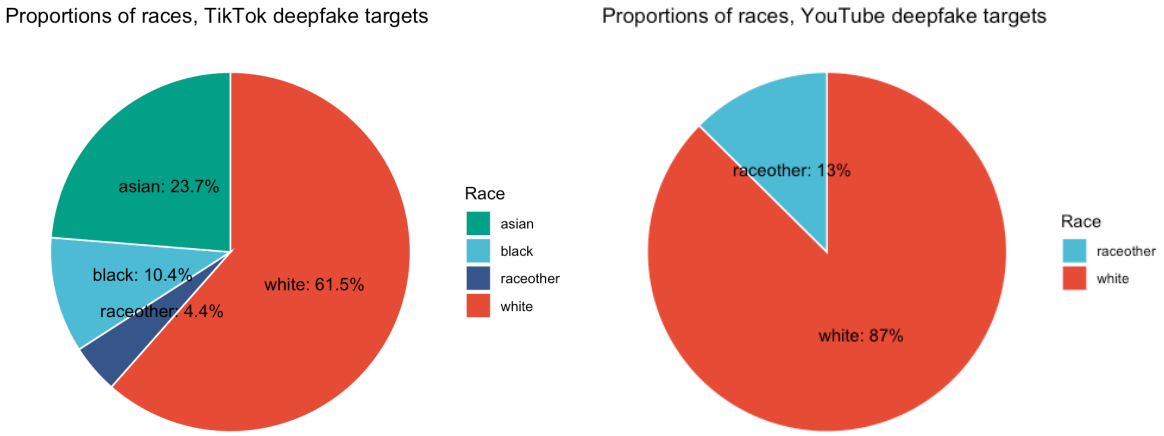


**Figure 2:** Racial distribution among deepfake targets on TikTok and YouTube

A possible explanation for the dominance of white targets would be that predominantly non-white nationalities use languages other than English to a higher degree than majority-white ones, and so would not be picked up by the crawler. However, few languages using the Latin alphabet have their own words for "deepfake" but use the English word, meaning that the crawler has likely picked up a somewhat even distribution of geographic origins. Still, white faces are greatly overrepresented as compared to internet users at large. Another explanation would be that the search is made from a US IP address, which could skew the hits to be more "relevant" to US users. And indeed, 45% of the targets are American. It is thus expected that the racial composition of deepfake targets resembles that of the United States. Even so, the white targets are hugely over-represented compared to the racial composition of the US, especially on YouTube. Although white people in general have far more access to institutions of power (both domestically in majority-white countries and globally), it does not seem that the deepfakes target white individuals in their capacity as white, but rather reflect an underlying asymmetry in terms of visibility.

In any case, the racial patterns are worth exploring further, especially with regards to how they compare to the pornographic sites. Although Home Security Hero (2023) provides some indications, such as the fact that 53% of pornographic deepfakes feature South Korean women, plenty of questions remain. Do white targets dominate in e.g., American pornographic deepfakes too? What is the explanation? And what does this say about the phenomenon at large?

### *3.4 Most common occupation*

The third thing that stands out in the data is the professions of the targets, i.e., the industry or sector to which they belong. Perhaps unsurprisingly, the largest group are individuals in the entertainment industry, especially actors. On TikTok, 58% of targets are in the entertainment industry (of which the absolute majority are actors), 29% are politicians and the remaining 13% "other."[7] On YouTube, the share of entertainers is even more extreme, accounting for 75.5% of the content. This is largely due to the numerous videos featuring clips from movies where one actor's face has been superimposed onto another's body with captions like "What if Tobey Maguire starred in Marvel's spiderman movies?" (more on this below).

[7] The "other" category comprises a wide range of professions, including royalty, athletes and scientists, etcetera.

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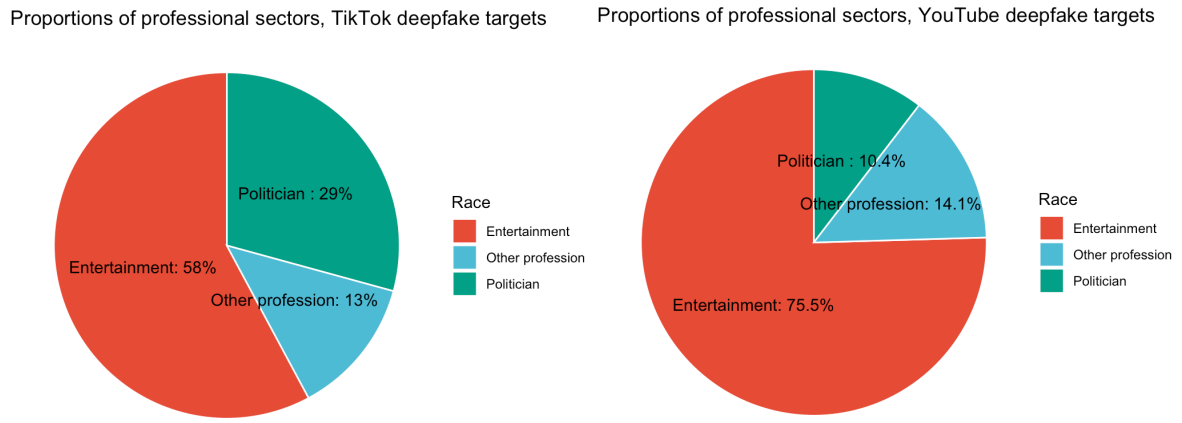


**Figure 3:** Occupational distribution among deepfake targets on TikTok and YouTube

The frequency of politicians, on the other hand, is harder to attribute to any specific type of video or trend. On YouTube, the presence of political deepfakes is so small that it hardly makes sense to draw any statistical inferences from it, but the distribution is 41% authoritarian, 47% liberal and 12% conservative. On TikTok, on the other hand, where political figures stand for a little less than one in three targets, 58% are classified as populist/authoritarian, compared to 39% liberal and only 4% conservative.

There are several possible explanations to the dominance of authoritarians. One is that individuals such as Donald Trump and Jair Bolsonaro are already associated with fake news and disinformation. Making a deepfake using their faces may thus be seen as an implicit or explicit comment on the absurd relationship to reality brought about by their admission to the realm of politics. A second, but related explanation, is that the fame of such individuals (especially Donald Trump) is based on, and intertwined with "internet culture" (e.g., 4Chan etc.) They are already commonly used in memes, and so their presence in deepfakes is merely a side product of them being part of an internet "lore." A third explanation is that male populist politicians exhibit a hyper-masculinity that can be mocked using deepfakes, for example by superimposing their face onto a female body. Female leaders like Marinne le Pen and Giorgia Meloni would have been possible targets, but appear only in one video on TikTok. Possibly, this is due to their lack of mockable masculinity. What strengthens this theory further is that the most frequent faces within the entertainer category, Arnold Schwarzenegger and Sylvester Stallone, arguably also exhibit a form of hyper-masculine persona. A more elaborate analysis of possible interpretations follows in the qualitative analysis.

### *3.5 Views*

Though the frequency with which various target characteristics occur in the videos may inform our understanding of the supply of deepfakes, it is flawed as a means to measure their consumption. For example, about one in three TikTok deepfakes include politicians, yet these videos may, hypothetically, have a disproportional number of views, meaning that the consumption of the phenomenon is more political than indicated by the supply level alone.

A first look at the total number of views for each target/video characteristic indicates considerable variation (see Figure 4). For example, on TikTok, videos featuring male targets have a total of almost 560 million views, whereas women have only 144 million (not even one third of that of men). Videos featuring non-white targets on YouTube have a combined view count of 9.5 million compared to white targets, who total close to 30 million views—almost 2.4 times as many. When computing the average view count

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for each characteristic, rather than the total, these differences are somewhat moderated, which suggests that the patterns are to some extent driven by a relatively small number of viral videos with tens of millions of views. Nevertheless, some notable variations remain. For example, videos featuring white targets on YouTube have an average of 1.6 million views, whereas videos featuring targets of other races have an average of only 0.48 million. Similarly, the difference between, e.g., videos featuring entertainers (1.2 million) and other professions (0.58 million) on TikTok is more than double.

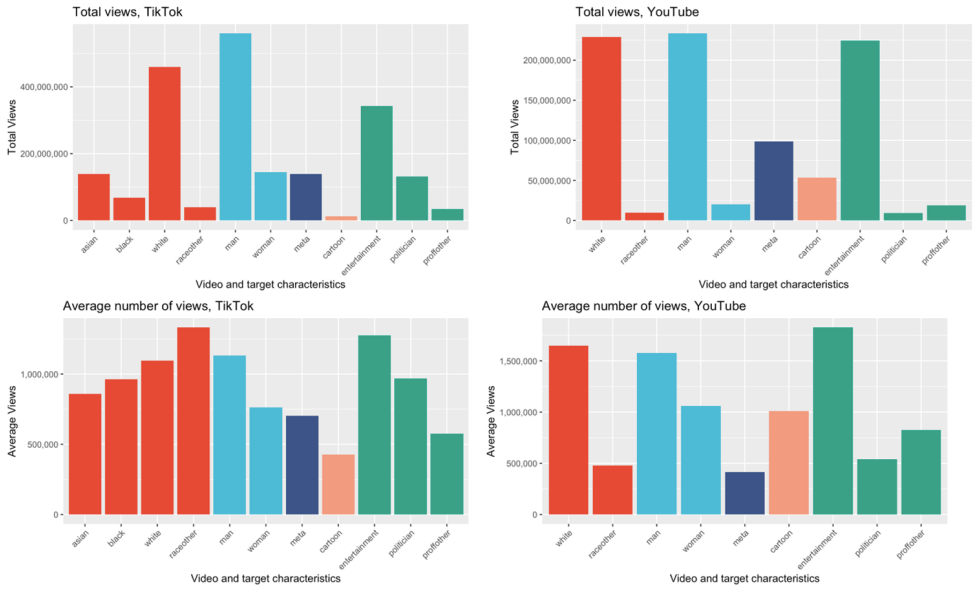


**Figure 4:** Variation in views across video and target characteristics

Overall, the patterns that emerge from looking at views is that white men within entertainment and politics dominate here too. The question is only to what extent the pattern is statistically significant, i.e., whether the target characteristics *drive* views. To test this, a multivariate regression analysis was performed using a T-test as a measure of correlation, and with views loged (see attached R code in the GitHub repository). Notably, almost none of the target characteristics had statistically significant effects. For TikTok, the only exception was gender, where videos starring male targets showed a positive T-value of 3.66 and a $p$ value approaching zero. On YouTube, only *professional sector* came out statistically significant, with videos featuring entertainers displaying a T-value of 3.869 and $p$ value approaching zero, and videos starring politicians displaying a T-value of 2.864 and a $p$ value of 0.004.

The lack of statistically significant correlations should however not be interpreted as if the target characteristics do not matter for the extent to which a video is viewed. As indicated by the above plots, there is plenty of variation in the data. The result of the regression is probably rather due to the low number of observations within the minority characteristics. For example, there are only a handful of videos of women on YouTube. The big take-away is that videos featuring women and non-white targets are both rare *and* receive fewer views, although the former makes it difficult to compute the latter with statistical significance. In summary, taking views into account seems to confirm the patterns that emerged from merely counting the number of videos: the key targets of deepfakes on mainstream platforms are male, white and politicians or entertainers.

### *3.6 Interpretive analysis*

In addition to the statistical analysis, a subset of 100 videos were also analyzed qualitatively so as to interpret their cultural meaning and context. Although more qualitative data, e.g., interviews or online ethnographic approaches, would be required to say something definitive about the motivations behind the

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sharing and production of deepfakes, the present analysis provides an empirical contribution to the budding discussion on the cultural domestication of deepfakes as it (see e.g., Allison, 2021; Ayers, 2021; Glick, 2023; Holliday, 2021). Three cultural functions stand out stand out as particularly salient: (1) Augmentation of artistic imagination, (2) showing off technological savvy, and (3) mere amusement, or what may be interpreted as a form of *carnivalesque profanation.* Each is accounted for below, but extra focus is placed on the latter, as it arguably holds a key to understanding the production of deepfakes on deeper level.

#### *3.6.1 Augmentation of artistic imagination*

Strikingly, many videos in the sample actually appeared to aspire to a higher artistic value, e.g., engaging in discussions on the casting of Hollywood movies by "recasting" scenes by using the face(s) of the desired actor(s). As noted by Holliday (2021, 910), this type of video is commonly presented with explicit or implicit reference to Hollywood casting gossip. In the sample used in this study, this is especially common for franchises, like Spiderman, where the lead character has been played by multiple actors in the relatively recent past. But there are also other types of recasting videos, such as Indian channels that recast Hollywood movies with Indian actors (living and dead). Another example is a YouTube channel that appears to be exclusively dedicated to making deepfakes of Elvis Presley's face superimposed onto imitators. In the description to one of the videos, the channel's owner states:

> I would like to say that this is just a simple way to honor Elvis. It's impossible to reproduce the real Elvis in his completely unique personality. The goal is purely entertainment and reminding us of the great Elvis Presley. We can get closer using a more or less similar body model, but it will never be real, the real is long gone and only God could make another one like him. I think that what this technology already provides is something unthinkable even for our days.

As indicated by the quote (and indeed by the subsequent comments from viewers) the cultural function of these types of videos is not to mislead or show off, but to pay tribute to an idol. It is a means to augment one's imagination to help visualize what would have been possible were Elvis alive. Similarly, simulating what it would have been like, had this or that actor been casted in a given movie, are also a way of augmenting users' experiences of not only consuming but actively interacting with content in what Holliday (2021) calls a "take two" ramification. This kind of augmentation of creative imaginaries is reflected in a large number of videos in the dataset and may be a topic for further exploration in and of itself. It indicates that synthetic media is not just something that may disrupt the people consume entertainment, it is already happening.

#### *3.6.2 Showing off technological savvy*

In addition to the artistic function, the purpose of a great number of videos appears to be mere technological showing off in the sense of "look what is possible with this technology." There are entire channels dedicated to swapping faces of seemingly random actors in seemingly random scenes of various movies—all to reach maximally realistic results. On TikTok especially, some influencers even appear to exclusively post videos of themselves putting on the faces of various celebrities (at the request of followers). Since they do not engage in any particular activity once the face is superimposed, the main purpose is presumably just to show off one's technological skills and inspire awe at the wonders of technology. This is also aligned with the survey conducted by Home Security Hero (2023), which found that 57% of deepfake consumers attribute their interest in deepfakes to mere technological curiosity.

#### *3.6.3 Carnivalesque profanation*

The most common cultural function, however, is using deepfakes for comical effects. One of the most common tropes used to achieve such an effect is a middle-aged hypermasculine actor's face superimposed onto a female body (e.g., Arnold Schwarzenegger's face and voice on the body of Elaine from Seinfeld).

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The contrast between the original and the superimposed face creates a comical effect which borders the absurd (see Holliday, 2021). Anyone could be anything—the borders are broken.

A great many videos featuring political targets fall into this category. Contrary to what is argued by Glick (2023), who sees a great satirical potential in deepfakes, most of the videos in the present data seem more focused on making political targets sing, dance or appear in funny TV shows. For example, one of the most prolific trends in the data is a reoccurring series of videos in which Joe Biden, Donald Trump and Barack Obama play Minecraft and talk over Discord alongside a series of more or less frequent high-profile guests like Joe Rogan, Ben Shapiro and Hilary Clinton. In these videos, the deepfake technology is applied only to the voices of the targets, which "reads" a script written by the video's creator, in which the presidents are portrayed as a group of friends who engage in harsh and profane banter. For illustration, consider this excerpt from one of the videos:

> Biden: Boys, are you down for a sleepover at the White House?
> Obama: I'm down bro.
> Trump: Me too.
> Biden: Ok, make sure to bring a tooth brush, a phone charger, some candy and a sleeping bag.
> Trump: Joe, it's the White House, why the fuck would we bring sleeping bags? We're not camping.
> Obama: Plus, don't you already have all that stuff provided?
> Biden: I was just kidding guys, that was a test.
> Obama: Do you guys wanna play Mario Cart at the sleepover?
> Trump: Yeah, I'm down bro.
> […]
> Trump: Okey, where should we order the pizza from?
> Obama: Of course, Trump the fat ass is already thinking about pizza.
> Trump: Shut the fuck up, we're getting Papa John's.

Here, as in the plethora of similar videos, there is no obvious political message beyond making fun of the individual characters. As noted by previous commentators, the use is *playful* and *comical* rather than provocative (Ayers, 2021; Holliday, 2021) To add a further qualification to the mere concept of "playfulness," I propose that the cultural function of the videos is rather to be interpreted as what Russian literary scholar Mikhail Bakhtin called *the carnivalesque* (1984), i.e., a challenge of hierarchies based on laughter, profanities and a general assault on stable identities.

The epitome of carnivalesque is the absurd comedy of Renaissance novelists like Rabelais, Cervantes and Bocaccio, which are filled with farts, excrements, sex and silliness. According to Bakhtin, this literary tradition is an extension of medieval festivals like the Feast of the ass and the Venetian Carnival, where hierarchies were temporarily put on hold to give room for the bodily experience of laughter and sex. Mock priests would wander the streets yelling profanities, men would dress as women, nobility as pleb, and so forth, all under the protection of masks that created a constant flux of identity. As elaborated by cultural historian James H. Johnson (2011, 184) in *Venice Incognito*:

> … masks encourage and affirm what the carnivalesque reveals. In place of dogma, certainty, and a fixed order on earth, the carnivalesque offers a universe that is open-ended and forever in flux. In the clarifying light of a world inverted, truth becomes relative. Masks convey to all that rank is arbitrary and status is only skin deep. Masks wean their wearers from conformity to the self and blur the line between reality and make-believe.[8]

The parallel to medieval carnivals may seem far-fetched, yet, when thus described, the role of the carnival mask bears a striking similarity to the way deepfakes are employed on today's video-sharing platforms. Much like carnivalesque masks, synthetic media is "blurring the line between reality and make-believe," not to actually persuade anyone of an alternate reality, but to provoke laughter and engage in collective

[8] For full clarity, Johnson is drawing on Bakhtin here.

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profanity. One of its chief cultural functions is making the faces of quasi-sacred institutions like the US presidency and other semi-worshipped celebrities appear in contexts where they would never otherwise be seen.[9] Thus, the sharing of deepfakes on social media may be understood as a form of ongoing carnival, an heir of the Feast of fools, or the prose of Rabelais.

What does this say about the political significance of the phenomenon? To Bakhtin, the communal laughter and shapelessness of the carnivalesque held a revolutionary potential in revealing the arbitrary nature of hierarchy. As pointed out by Umberto Eco (1984), however, there is a distinction to be made between satire (humor with a political edge) and mere *clownishness*, where the carnivals of medieval and renaissance Europe arguably belong to the latter. Laughter is never politically potent when merely switching the roles of the powerful and the powerless, such as by profaning the faces of power through masks. Such shuffling of identities rather reinforces the universality of the oppressive structure. True satire, holds Eco, is always *dangerous* in that it challenges not only *who* holds power, but the structure which gives them legitimacy.

From the interpretive analysis of the videos in this study, it is clear that deepfakes on social media typically fall within the clownishness category. None of the analyzed videos appear to have a discernable political finesse. Whether this makes them harmless and politically impotent (as would be held by Eco), or whether this is what makes them an interesting cultural force (see Bakhtin) is not immediately clear. In fact, it is already a matter of debate. Ayers (2021, 1022), for example, has argued that the current swapping of identity merely reinforces masculine hegemony, noting that "creators take a seemingly apolitical, comical, 'safe' approach to identity rather than an explicitly critical stance." Holliday (2021), on the other hand, sees a far more radical potential and argues that deepfakes are "undoing" gender, and relieves the inherently performative nature of identity. Similarly, Glick (2023) points to the amazing possibilities of deepfakes imaginaries as a means to make "threatening and seemingly untouchable figures appear weak, vulnerable, and exposed" which can "help envision a more equitable and just future." While the present analysis pivots slightly in the direction of Ayers, a more thorough theoretical analysis is needed to say anything conclusive. The goal here is merely to provide empirical evidence for both sides to draw from.

### *3.7 Summary*

Two research questions were put forth at the outset of this study. In response to the first one—*Who is featured in deepfakes shared on mainstream platforms?*—the above analysis shows that deepfakes typically feature white men from the entertainment industry or (less often) politics. Although a number of explanations for these patterns can be hypothesized, we ultimately need more qualitative analysis before saying anything with confidence as to why these patterns emerge and why some of them are so strong. To the second research question—*What is the cultural function of deepfakes shared on mainstream platforms?*—we may point to at least three key functions: (1) Augmentation of artistic imagination, (2) showing off technological savvy, and (3) *carnivalesque profanation.* It is important to recall that, while the analysis provided in this study suggests an interpretation of the content itself, it is unable to get to the actual motives of the creators. For this, further qualitative data, e.g., interviews with content creators, is needed.

## 4. Concluding comments

How do the findings relate to the larger literature on synthetic media? In one sense, they can be understood as a contribution to the growing pushback against the alarmist rhetoric surrounding the topic (see Habgood-Coote, 2023; Kalpokas & Kalpokiene, 2022; Kerner & Risse, 2021; Nieweglowska et al., 2023). As others have shown before, there is reason to treat narratives of an approaching "epistemic

[9] Although Donald Trump is perhaps, by his very persona, already a form of defilation of the sacredness of the presidential office.

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apocalypse" with a healthy dose of caution, despite the seriousness of the proposed risks. The fact that there are currently plenty of deepfakes, with billions of views, on platforms that actively ban deceptive content, should add to this skepticism insofar as it points to alternate interpretations of the phenomenon's significance. In any case, it appears that the "high-profile" dramatic events (to use the words of Kalpokas & Kalpokiene, 2022, 4) that have dominated much of the literature (see e.g., Diakopoulos & Johnson, 2021; Schick, 2020b) are perhaps not the most urgent aspects to explore. It should be stressed, however, that the present study *does not attempt to say anything* about the proportion of deceptive vs. non-deceptive deepfakes on the studied platforms. Since the former is, by its very nature, impossible to quantify, the study can merely confirm a considerable presence of the latter.

A second contribution is about the demographics of deepfake targets. Previous studies of the faces featured in non-pornographic deepfakes, albeit not academic, have found a large presence of female targets. For example, the Home Security Heroes report (2023) finds that 77% of targets outside the pornographic sites are female. The report from Deeptrace (2019), which looks only at YouTube, finds 39% female targets. By contrast, the gender balance in this study is almost the reverse, with female targets in clear minority (28% on TikTok and 11% on YouTube). These discrepancies are possibly due to sampling strategies. Both of the previous reports namely identify deepfakes based on a list of channels dedicated solely to deepfake production, as opposed to going through search. While both approaches constitute legitimate sampling methods, the latter (as used in this study) almost certainly encompasses a broader variety. Notwithstanding the methodological differences, it can be stated that the strong dominance of female targets in the pornographic content is not reflected beyond the porn-specific sites. This strong male dominance warrants further inquiry into the cultural function of deepfake production.

Within the context of demographics, the strong dominance of white targets on both platforms, as well as the over-representation of authoritarians within the political targets also warrant further exploration. It is tempting to read these data as an indication that non-deceptive deepfakes represent a form of social critique or resistance since all the over-represented groups are associated with power. The interpretive analysis, however, does not support this. Although authoritarian politicians are common (especially due to the presence of Donald Trump), there is rarely any political finesse to the videos. They remain at the level of carnivalesque clownishness. Why authoritarians and whites are so over-represented is thus still an enigma in need of further investigation. There is clearly something going on here which cannot be explained by the present data alone.

Overall, the chief contribution of this study lies not merely in its corroboration nor questioning of previous literature. Rather, it lies in its broadening of the scope of the current debate by pointing to the rich, yet empirically unexplored, flora of non-deceptive deepfakes.[10] Given the seriousness of the possible disinformation threat, it is understandable that this (seemingly harmless) aspect has hitherto flown largely under the academic radar. Yet, if anything, the present study shows that the sheer size of the phenomenon, in combination with the enigmatic patterns of the target demographics, warrants further exploration. Indeed, now that a baseline knowledge about this side of the deepfake phenomenon is established, plenty of new questions arise. In particular, the study points to the need for more qualitative analysis of the communities and contexts surrounding the production and dissemination of deepfakes. What are the motives behind sharing them? If not sexual desire nor political sabotage, why do people spend hours producing them? How do they select their targets when not driven by sexuality? Answering such questions may not only give us a better understanding of the direction and potential of synthetic media generally, but may also inform the already heated debates regarding its deceptive qualities.

[10] While there is research on non-deceptive deepfakes (see Allison, 2021; Ayers, 2021; Glick, 2023; Holliday, 2021) it has largely taken a theoretical and (at most) interpretive angle, meaning that very little is empirically confirmed.

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# Sociotechnical imaginaries and digital orientalism in social media discourses about Asian "tech nations"

## A critical exploration using computational methods

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### Abstract

Sociotechnical imaginaries and national imaginaries are intrinsically linked, as visions for the role of technology often go hand in hand with aspirations for economic growth and political power within specific countries. Discourses around Asian "tech nations" such as China and South Korea exemplify this dynamic, as they are frequently portrayed as technology leaders. Arguably, digital technologies have become prominent features in the portrayal and perception of nation states, while, simultaneously, expectations surrounding these technologies shape the sociotechnical imaginaries that emerge around them. A critical analysis of this relationship—and how it becomes manifest through framing practices in global media discourses—can reveal the extent to which oversimplified (mis)representations amount to forms of digital orientalism, particularly among foreign commentators. These include the selective emphasis on either predominantly negative or positive portrayals of Asian countries and their relationships with emerging technologies. Digital orientalist sentiments conflate sociotechnical and national imaginaries to promote highly selective representations of a given "Eastern" culture and its role in technological development. Social media platforms such as Twitter (now *X*) are important sites for such tech-nation discourses, featuring media commentators, politicians, entrepreneurs, and tech professionals. This article offers a critical analysis of discussions on Twitter about China, India, Japan, and South Korea in the context of digital technology. Using computational text analysis on a large sample of tweets from 2010 to 2021 (N = 2,077,232), the study explores how Asian countries are portrayed within the global Anglophone tech discourse and the extent to which they are subject to forms of digital orientalism. The findings highlight how online discourses, sociotechnical imaginaries, and national imaginaries intersect, with an emphasis on both commonalities and differences in the framing of Asian countries based on cultural, political, and economic factors.

Keywords: tech discourses; socio-technical imaginaries; nation states; computational methods

## 1. Introduction

Social media discourses about emerging technologies contribute to the formation and dissemination of "sociotechnical imageries" (Jasanoff & Kim, 2009): prevalent interpretative frameworks about the implications, effects, uses, benefits, and risks that give societal meaning to technologies. These imaginaries are constructed and shared through the strategic use of language that emphasises selected aspects as well as real or hypothetical impacts of technology (Nguyen, 2023). Cultural norms and the social, political, and technological factors configuring discourses are crucial in this complex process. Digital media communication plays an important role in the formation of sociotechnical imaginaries, as it can shape respective framing practices—what aspects of a technology are highlighted and in which way—and determine the structure of discourses in terms of their social composition (who speaks) and technological foundation (what media technologies are used to speak). The concept of sociotechnical imaginaries underlines that technologies are not simply material matters devoid of social and cultural context but that non-technical factors are likely to be most influential in perceptions, evaluations, and adoptions of emerging technologies, including ethical implications (Lindgren, 2024).

Arguably, sociotechnical imaginaries are never exclusively about technologies. Discourses around technologies tend to link them to political, cultural, social, and economic questions and implications. Importantly, sociotechnical imaginaries often go hand in hand with narratives and imaginaries about nation states, their societies, and (dominant) cultural formations. This includes geopolitical ambitions and aspirations towards economic prowess as well as technological sovereignty. A case in point is the media discourse about an alleged arms race in the development of artificial intelligence (AI) between China and the USA. Both present themselves as global leaders in AI and are portrayed as competitors for geopolitical influence in a zero-sum game echoing the nuclear armaments race of the cold war, especially in Western news media coverage (Nguyen & Hekman, 2022). Relatedly, China is often imagined as a society that underwent rapid and expansive digitalisation (Keane & Chen, 2017). Other examples are narratives portraying countries as influential technology hubs, such as South Korea or Israel (Lee, 2024; Mashiah, 2024), as well as stories centering on the emancipatory potentials of technology, especially for the so-called Global South (Arora, 2019).

Discourses about technology and nations are initiated and maintained from two general directions. First, domestic voices frequently link their nation state projects to technology. Governments worldwide drive technology-nation-state discourses, promoting their preferred national imaginaries based on current political agendas (Smuha, 2020). Tech entrepreneurs, media commentators, and social media influencers contribute to these discussions when outlining how, for example, big data, AI, blockchain, the Internet of Things (IoT), or 5G matter for national development and global competitiveness. Second, foreign views construe imaginaries about countries and their relation to technology, sometimes corresponding with "domestic" narratives but often —intentionally— misrepresenting as well as oversimplifying more complex empirical realities. Plenty of media commentators and tech experts have portrayed foreign places as inspirational examples for how to adopt technology or warned about how they could become economic, political, or even existential threats (Nguyen & Hekman, 2022; Nguyen, Wang & Mutsvairo, 2024).

Historically, especially Asian countries have been associated with technology developments from both domestic and foreign perspectives, which are entangled in a complex relationship of mutual influence and ignorance. Notions of "tech-savvy" cultures and tech nations emerged in the 1980s and 1990s with the economic rise of Japan and South Korea (Hart, 1987; Ostry, 1997; Lee & Joshi, 2015). In the 2010s, China became renown for rapid technology adoption, datafication, and AI innovation (Appelbaum & Parker, 2012; Liu, 2021; Nguyen & Hekman, 2022). India gained reputation for ambitious tech policies aiming to boost domestic development and global competitiveness (Thomas, 2013; Athique, 2019). These Asian countries are examples for the intrinsic relationship between imaginaries about the nation state and sociotechnical imaginaries: digital technologies are prominent features in future visions for specific

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nation states while, simultaneously, the respective aspirations and expectations towards technologies shape the sociotechnical imaginaries about them.

Critically analyzing this relationship can unearth how both influence each other within discursive contexts where domestic and foreign perspectives contribute to the construction of different imaginaries linking countries and technology. Empirically investigating discursive practices reveals where especially foreign views distort the relationship between nation states and technology and, in the case of Asia specifically, potentially contribute to forms of digital orientalism: the selective and stereotypical portrayal of the "exotic" East through a technology lens. Simply put, digital orientalism emerges when reductive views on both technology and nation states are intertwined to make evaluative statements about a given country.

The present article offers a critical-empirical analysis of social media discourses on the four aforementioned Asian countries, examining their connection to the broader concept of "tech" as an umbrella term for emerging digital trends. A large volume of English Twitter (now X) data about China, India, Japan, and South Korea and "tech" for the decade between 2010 and 2021 is analysed with computational methods for automated text analysis (N1=2,077,232). The main objective is to chart out the dominant emphasis frames for technology in relation to each country and to explore what social media discourses can reveal about the intricate relationship between sociotechnical imaginaries and the imaginaries of (Asian) nation states. Emphasis frames (Chong & Druckman, 2007) refer here to the specific aspects or dimensions highlighted in representations of a complex issue—for example, whether technology is primarily presented as political, economic, or cultural. Importantly, emphasis framing goes hand in hand with issue specification, such as references to concrete social entities, problematisations, questions, processes, and relationships. When combined with more explicitly evaluative valence framing (e.g., sentiment), emphasis framing can be considered a building block of the narratives that shape sociotechnical and national imaginaries. This strongly suggests that text-analytical approaches can reveal the specific discursive practices through which emphasis and valence framings become manifest (Nguyen & van Es, 2024).

While acknowledging the relevance of domestic narratives, the present analysis focuses on foreign—that is, mostly external—perspectives that share their imaginaries in the global Anglophone Twittersphere by highlighting selected aspects of technology and Asian countries. It is likely that Orientalist views are typically held by foreign commentators (Said, 1978). Analytical focus is placed on commonalities and differences in the portrayal of the selected countries in the context of digital technology developments, especially to illustrate misconceptions that reflect digital orientalist views. As such, the study can be considered historical in nature, as it looks back on a decade of social media discourse on a platform that has undergone considerable—and rapid—changes in recent years following its rebranding under new and controversial ownership. For the remainder of this article, the platform is referred to as Twitter, not X. While offering a critical reflection on the past, the study's insights nevertheless provide productive stimuli for further theorising the political implications of sociotechnical and national imaginaries in global technology discourses, and they demonstrate the potential of computational methods for this kind of analysis.

The study's main question therefore is How do sociotechnical and national imaginaries intersect in social media discourses about Asian countries, and to what extent do these discourses display forms of digital orientalism? The analysis is further guided by two sub-research questions:

*SQ1: What are the dominant emphasis frames pertaining to tech that are associated with Asian countries in Anglophone social media discourses on Twitter?*

*SQ2: What are the differences in the framing of Asian countries in the context of tech?*

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Answering these questions provides the foundation for critical reflection on the complex relationship and dynamics between sociotechnical imaginaries, national imaginaries, and digital orientalism.

The article is structured as follows: first, it highlights the intrinsic link between sociotechnical imaginaries and national imaginaries as mutually affective discursive constructions. These are then connected to digital orientalism as a reductive lens through which Asian countries are viewed in technology discourses. It is subsequently argued that social media platforms such as Twitter play a key role in enabling these discourses, which involve a diverse set of communicators (including, among others, journalists, experts, government representatives, entrepreneurs, and technologists). After establishing the conceptual framework, the methodology and setup of the computational text analysis are introduced. The results and critical analysis focus on historical trends in the framing of Asian countries in social media texts over the sampled timeframe. The paper concludes with a critical discussion of digital orientalism as a key component of contemporary technology discourses, along with reflections on the benefits and limitations of the methodological approach.

## 2. Sociotechnical imaginaries and national imaginaries

Historically, technologies have been essential to modern nation state projects, since the latter locate considerable socio-economic, political, and military power potentials in advancing the former. Aspirations to acquire and develop new technologies are of interest to most forms of government, regardless of their ideological underpinnings. Nevertheless, differences in worldviews, governance practices, culture, the available material and social resources, and societal components needed for tech development matter greatly for the materialisation of intentions and aspirations. Coccia argues that the "social, political, and economic ecosystem of nations affects pathways of scientific and technological development, as well as the understanding and appreciation of science and technology in society" (2019, p.2). Stimulating the formation of such ecosystems is a key goal of governments devising policies for tech development.

However, policies are not merely technocratic instruments for steering action in desired directions; they result from and affect narratives about the present and future of nation states and their approaches to technology from specific ideological perspectives (Jasanoff & Kim, 2009). It is in this context where sociotechnical imaginaries connect to national imaginaries (Steger, 2009). Both are manifestations of social imaginaries (Steger, 2009): frameworks for social action and communication influenced by ideology. Imaginaries are infused with normative assumptions, values, and beliefs shaping how to perceive and think about specific issues, contexts, and relationships and how to pursue corresponding courses of action. They are formed within discourses and are contingent regarding socio-cultural and political factors; while imaginaries can temporarily attain a paradigm-like dominance, they are inherently dynamic and subject to change. Sociotechnical imaginaries center on the (desireable and undesirable) role of technology in society, while national imaginaries construe collectively shared visions for what society and culture should look like in the first place, as well as how "the nation" should position itself vis-à-vis other countries on the world stage.

Imaginaries are built and shared through stories about technologies and societies. Accordingly, imaginaries can be broken down into narratives and the framing practices within them. For example, a sociotechnical imaginary that presents AI as "superhuman" draws on narratives emphasising the alleged superiority of algorithms. This is achieved through emphasis framing, which highlights episodes where algorithms appear to make better and faster decisions—for instance, in cancer diagnoses or legal cases (Bunz & Braghieri, 2021). Valence framing may further reinforce the "superhuman" image by associating AI with qualities such as "more efficient," "more accurate," or "never tired" when compared to human capabilities. The tonality and core message of such narratives can be dissected through the specific use of language that enacts framing practices. Analysing these practices can unearth how issues and entities are talked into being, perceived, assessed, or problematised (Bareis & Katzenbach, 2022).

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In the present study, discourses are understood as dynamic accumulations of different narratives—i.e., related communicative acts that construct specific framings of a given issue and/or entity—centred around a shared focal point, such as AI, big data, or digital technology more broadly (Figure 1). Discourses evolve over time, as narratives emerge, shift, expand, diversify, and gain or lose acceptance within specific socio-cultural contexts. These narratives give rise to imaginaries—both sociotechnical and national—which, while analytically distinguishable, are often deeply intertwined. Multiple imaginaries can coexist, with some more widely held than others across social units (individuals and collectives) within a given socio-cultural configuration. The present understanding of discourse draws on Hepp et al. (2012), who define discourses as the condensation of public, media-based communication anchored around shared thematic concerns. Ultimately, discourses about technology and nation states can be analysed by identifying and exploring imaginaries, which can then be critically examined in terms of the framing practices embedded in narratives—both textual and visual—as well as the (under)representation of diverse societal perspectives.

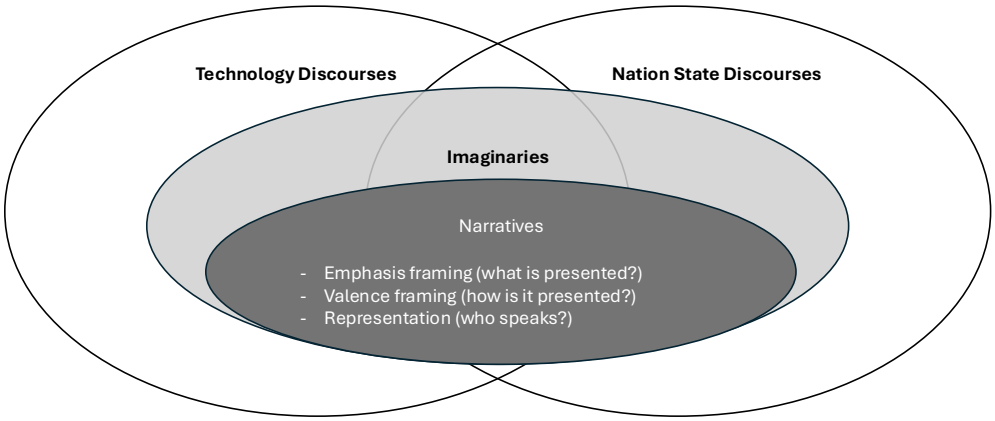


**Figure 1.** Conceptual Framework.

Grand narratives about innovation and technology in respect to nation state projects usually focus on four general "pay-offs": 1) increased efficiency and higher living standards; 2) economic growth and wealth, including global economic competitiveness; 3) global political soft power; and 4) military power. During the past decade, such narratives have shifted attention to digital and data-driven technologies: big data, AI, IoT, blockchain, and 5G (Nguyen & Hekman, 2022). These and similar digital technologies are often subsumed under the buzzword "tech", which carries strong techno-capitalist notions that emphasise the economic value of technology development.

Arguably, promoting —and exaggerating— narratives about technological progress is to some extent more important for governments than practical implementations and material achievements, as myths about technological capabilities enabled by supposedly smart and visionary leadership can support a desired self-representation in domestic and global media discourses. Consequently, trending digital technologies are important topics in governmental narratives surrounding policy-making and self-portrayal that feed into forms of 'techno-nationalism' (Rikap & Lundvall, 2021). Respective narratives place emphasis on a given country's exceptionalism in technology development, such as AI and its growing role in generating economic wealth or security-centric geopolitics (Bächle & Bareis, 2022; Sarkin & Sotoudehfar, 2024; Hine & Floridi, 2022). Dominating emerging digital technologies is considered essential in politics and business to be taken seriously as a competitor in the techno-capitalist

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global economy and hard power politics. For Asian countries such as China, where anti-colonialist sentiments are an essential part of political discourse culture, technological progress is viewed as a key factor in achieving and maintaining sovereignty (Mahoney, 2022).

Simultaneously, countries and their real and imagined technological capabilities are frequently subject of foreign discourses about them (Lengen, 2022). Dominant participants are often domain experts, entrepreneurs, journalists, pundits, and academics/scientists. Media discourses varyingly assign technological prowess and degrees of global influence to different countries, whereby the respective framing approaches and resulting narratives often seem to depend on current political climates and trends. For example, while in the early 2000s China's technological development was observed and commented on with awe, sentiment largely flipped to the opposite in the later 2010s, when the country was more frequently portrayed as a challenger to Western powers. The alleged tech rivalry between China and the West that has emerged in media discourse in recent years represents only one dimension of the broader negative framing of the country, particularly within U.S. political discourse (Ooi & D'Arcangelis, 2018). Geopolitical tensions concerning global political influence, clashing economic interests, and ideological differences are important factors that play into these shifting perceptions among foreign discourse participants within the wider (digital) media landscape.

Importantly, domestic and foreign discourses are intrinsically linked through a complex relationship of mutual influence, as local discussions feed into global ones—and vice versa. No national public discourse is ever fully detached from transnational or global formations, nor is it immune to foreign communicative stimuli (Nguyen, 2017). Nevertheless, both dimensions are analytically distinguishable to some extent, based on factors such as language, intended audiences, and the communicative goals of public speakers (e.g., a politician addressing a nationally framed target audience). Social media platforms facilitate the formation of discourses that may focus primarily on local or regional contexts and audiences, as well as those with more global orientations. They are spaces where one can rapidly transition into the other—such as when a local politician's statement, originally intended for a domestic audience, is cited in a post shared with a foreign or global readership. The "borders" between local, regional, transnational, and global discourses are inherently fuzzy, and depending on the context, the direction of communication can quickly expand. This does not make a clear distinction between these discursive scopes impossible, but it does caution against conceptualising discourses as closed or self-contained entities (Nguyen, 2017).

While some foreign commentators provide nuanced portrayals of Asian countries in the context of tech, they can tend to provide one-sided narratives focused on selected aspects that may misrepresent and distort empirical realities. It is here argued that sociotechnical imaginaries, national imaginaries, and new forms of Orientalism intersect.

## 3. Digital orientalism and technology discourses

Sociotechnical imaginaries and related national imaginaries can offer distorted representations of technologies, societies, and cultures—often through exaggerated positive or negative portrayals. Some imaginaries are overly enthusiastic about the capabilities of technology and how certain countries allegedly excel at unlocking its potential for economic benefits and general improvement of life. Others may overemphasise more remote risks of technology—often depicted through dystopian scenarios—and portray foreign countries' use of emerging technologies as more threatening than it actually is. Such extremes result from deliberate, politically motivated framing practices, particularly among highly invested and outspoken discourse participants in business and politics.

In the context of East Asian countries and digital tech, one-dimensional, distorted framings can be linked to a longer history of politically motivated misrepresentation in Western discourses centred on Orientalism. One of the most influential conceptualisations of Orientalism for critical research, especially in the context of postcolonial studies, was introduced by Edward Said in 1978. He contends that Western colonial powers historically constructed distorted and mostly fictional representations of Eastern societies

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through cultural and media outputs, such as arts, literature, and scholarship. This Western "gaze" cast colonized peoples into exoticized, stereotyped, and ultimately inferior positions. The resulting representation of Easterners in orientalist discourses served as justification for perpetuating Western dominance over colonial subjects (Said, 1978). A key component of orientalist views is the focus on and exaggeration of selected aspects of more complex empirical realities. Often, orientalist discursive practices present non-Western social and cultural formations in a negative light, emphasizing alleged inferiorities and/or potential threats.

While Asian countries are free from direct Western colonial oppression in the current world order, discourse strategies and framing approaches among foreign commentators can still reflect Orientalist sentiments, also in the context of digital technology. The term *digital orientalism* attempts to capture this continued tendency in how Western commentators present non-Western regions and socio-cultural formations. Although it is a relatively recent term without a firm definition, it has been proposed to describe how Western discourse practices reflect distorted, oversimplified views that feed into stereotypes and can potentially harm intercultural understanding.

For example, Mayer (2019) observes a strong negative framing of the Chinese government's official digitalisation strategy, reflective of "techno-skepticism" in European political discourse. This, Mayer posits, can be regarded as a new form of "digital orientalism" (2019) that primarily focuses on hypothetical risks and threats, while ignoring the relatively mundane and risk-free realities of technology adoption in practice. Relatedly, Mahoney (2023) identifies a strong link between technophobia and Sinophobia, connecting current manifestations of digital orientalism with its historical predecessors of anti-Chinese sentiment. However, emphasis now shifts to risks and threats that digital technology allegedly poses in the hands of a more assertive China on the global stage.

Concerning big tech platforms and social media specifically, Alimardani and Elswah (2021) identify another problematic dimension to digital orientalism: the prevalence of platform policies that put non-Western users at a disadvantage by disproportionally delimiting freedom of expression of specific cultural groups. Their case study shows how social media such as Facebook seem to apply harsher content moderation rules on Arab users than on other groups, possibly reflecting orientalist views that cast them in a negative light.

While earlier notions of digital orientalism tend to emphasise negative framings and stereotypes—centred on authoritarianism, prejudice, risk, and threat—reductive, one-dimensional, and inaccurate portrayals of how Eastern societies relate to digital technology continue to manifest in various forms. Taking a broader critical view of Western narratives about digital technology in the Global South, Arora (2019) argues that Western commentators often present inaccurate and reductive accounts of digital transformation in these regions. They tend to overemphasise the role of digital technology in development—an area that frequently falls short of expectations—while overlooking that most non-Western users share similar motivations with their Western counterparts, primarily using technology for entertainment and distraction. Digital orientalist views can misrepresent the non-Western Other and their use of digital technology in different ways, portraying them as focused solely on daily survival, in need of help and guidance, or virtually devoid of agency. Discourses about digital technology in the Global South, such as Africa, are exemplary for this (Nguyen, Wang & Mutsvairo, 2024).

However, there are also positive stereotypes reflecting digital orientalism sentiments. For example, Japan is often portrayed as a tech-savvy society and culture that is particularly open to embracing robots and AI in daily life. The Japanese government actively contributes to this narrative by prioritising technological development and adoption in its policies, and by promoting these aspects culturally through nation-branding campaigns advertising "Cool Japan" abroad (Tamaki, 2019). This demonstrates that domestic and global discourses are closely interlinked. Visions of a technology-affine Japan, however positive they may be, can still result in oversimplified and stereotyped portrayals among foreign perspectives. The downsides of technology use—such as inequality, exploitation, and other ethical challenges—are often overlooked. Similarly, South Korea has been frequently hailed as a technology hub

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and digital innovation leader (Chung, 2020), especially in digital governance, consumer electronics, and smart technologies. While it is a fact that the countries' technology companies are major global players, boosting the domestic economy, their modes of operation have frequently raised critical questions about corruption and undue political influence (Oh, 2017). China has been subject to both extremes in global discourses at different times, with overly positive portrayals praising its rapid digital transformation especially —in the early stages— and extremely negative ones highlighting perceived threats becoming more visible in recent years (Lee, 2018; Keane, 2019; Liu, 2021; Davis, 2024; Moore, 2022). Positive portrayals of specific Asian countries as extremely tech-affine illustrate a form of digital orientalism that fabricates fantasies of technological utopias, where the respective foreign cultures are exoticised as wondrous places to be inspired by.

In the present study, digital orientalism is considered to encompass a wide spectrum of reductive and oversimplifying framing practices that can emphasise either mostly negative or positive portrayals of East Asian countries. Examples include framing Japan as an advanced, tech-savvy society to learn from or portraying China's advancements in AI as a global risk. Digital orientalist framings connect sociotechnical and national imaginaries to promote a highly selective representation of a given culture and the role of technology within. Analysing media discourses through this lens can reveal how certain hypes surrounding both desirable and undesirable uses of technology are associated with specific countries. However, digital orientalist framings shared by foreign commentators are not separate from sociotechnical imaginaries and the broader narratives about nation state projects as promoted by domestic speakers from the countries in question. Arguably, both dimensions are often intrinsically linked, each affecting the other. For example, publicly voiced aspirations to lead in AI development by Asian governments may trigger negative—and potentially racist—counter-framings by foreign commentators.

## 3. Tech discourses on Twitter

Twitter has been described as a dynamic communication space with global reach and potential for hosting digital public spheres (Pond and Lewis, 2017). The original platform provided users with means for communicating, connecting, and consuming content. Users formed communities of varying densities and strengths of mutual ties. Some were loosely connected audiences with shared interests that emerged only temporarily; others were tightly knit communities around common causes, issues, and subjects of interest. The platform popularised the use of hashtags to label user-generated content with keywords. Hashtags serve two interrelated purposes: technically, they facilitate orientation through the vast volume of content by clustering related tweets for more precise searches and recommendations. Discursively, hashtags are framing devices that indicate what the content of a social media posting is about and may communicate a political position (Ferra & Nguyen, 2017). Twitter and similar platforms do not substitute previous media technologies' infrastructural roles in the formation of mediatised public spheres but have transformed their underlying configurations.

Between 2010 and 2021, the number of monthly active users on Twitter grew from approximately 50 million to over 350 million globally (WithBlaze, n.d.). A considerable proportion of users have consistently been based in the United States; in 2021, 75 million users—around 24% of the global user base—were located in the USA. Regarding the four Asian countries examined in this study, there were approximately 58 million active monthly users in Japan and 24 million in India in 2021. While the latter figure represents only a small fraction of India's total population, it still placed the country third in terms of global Twitter user numbers (Omnicore Agency, n.d.). South Korea had 15.9 million users, making Twitter one of the most popular social media platforms in the country at the time (Guan et al., 2022). China presents a special case, as the platform is officially banned. However, several tens of millions of users were still estimated to access Twitter via VPNs (Deccan Chronicle, 2016).

Over time, Twitter became a "hotspot" for tech discourses, as some of the most influential tech entrepreneurs and tech communities used it to discuss trends and developments among themselves and

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with a general audience, such as IoT, blockchain, self-driving cars, or non-fungible tokens (NFTs). For example, Åkerlund and Nylén (2021), in their mixed-methods study, demonstrate how Twitter discourse on the Internet of Things (IoT) shifted from a primarily technical framing to one focused on practical value. They emphasise that social media discourses ultimately consist of user-generated content, making "it imperative to pay specific attention to who is responsible for defining IoT on Twitter" (Åkerlund & Nylén, 2021, p. 4). Focusing on the IoT as well, Zubiaga et al. (2018) observe that Twitter users discussed not only business potentials but also risks and threats, such as privacy invasion. Other studies have explored how trends like generative AI are perceived and evaluated by Twitter users (Giordano et al., 2024), or have used the platform to probe public opinion on blockchain (Mnif et al., 2021). These studies highlight the diversity of perspectives on technology issues, showing that tech discourses on Twitter often address topics at the intersection of innovation and research, business and finance, regulation, politics, and social or cultural implications. However, while these studies have yielded valuable empirical insights, it is important to note that Twitter discourses have never been fully representative of "society" as a whole. The platform has tended to amplify the voices of experts, journalists, and politicians (Dagoula, 2019), and is marked by demographic biases in its user base (Mellon & Prosser, 2017).

Structurally, X—as the latest iteration of the platform—retains most of its core functionalities. However, crucial aspects such as content moderation policies and the composition of the user base have changed considerably in recent years, potentially affecting the thematic focus and tone of current discourses. Thus, while valuable for examining recent technology discourses, the present analysis is somewhat limited in capturing current trends on the platform.

## 3. Methods & data

To recap, social media platforms serve as sites of discourse in which sociotechnical and national imaginaries are constructed through narratives that emphasise specific aspects of technologies and nations (emphasis framing), often articulated from an evaluative standpoint (valence framing). These narratives can potentially express digital orientalist views in various forms. Given that such discourses are primarily articulated through typed language within media-specific communication formats and at large scale, computational methods for text analysis are particularly well-suited for investigating the complex relationship between imaginaries and digital orientalism.

Accordingly, an automated content analysis was applied to a large volume of texts retrieved from Twitter (Atteveldt et al., 2022). Specifically, topic modelling via BERTopic (Grootendorst, 2022) was used to cluster texts and identify emphasis frames. Here, topics—understood as bag-of-words representations of text clusters—are conceptualised as emphasis frames (Nguyen et al., 2024) and are referred to as such throughout the remainder of the article. In addition, the most frequently used hashtags per country were compared to explore framing through this media-specific discursive practice. All analyses were conducted in Python 3, and manual inspection of sample texts was carried out to validate the computational findings.

### *3.1 Data collection and data exploration*

The data were retrieved via Twitter's now-defunct Academic Application Programming Interface (API), which allowed for full-archive keyword searches. The exact search query used was "[COUNTRY] tech" for tweets in English, where [COUNTRY] was replaced with China, India, Japan, and South Korea, respectively. The term "tech" was selected to cast a wide net for capturing tweets related to technological developments. Within Twitter's API, a space between keywords functioned as a Boolean "AND" operator. The timeframe spans from 2010 to 2021. First, four separate datasets were compiled, each containing tweets that mentioned the respective country and the word "tech" (see Table 1). Next, exact duplicates (i.e., identical posts by the same account) and retweets were removed. The datasets were then

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merged for preprocessing and further analysis, resulting in a combined dataset of N1 = 2,085,992 tweets. As the study's main goal is to explore foreign perspectives within global discourses, data collection was limited to English-language content. While this still includes some domestic voices—for example, official Chinese government accounts that tweet in English—the dataset is more likely to reflect content from the global Anglophone Twittersphere rather than from within the four Asian countries.

**Table 1.** Data.

| Country | All Tweets | Analysed Tweets |
|---|---|---|
| China | 1.353.659 | 854174 |
| India | 1.341.936 | 779110 |
| Japan | 651.335 | 383053 |
| South Korea | 142.224 | 69655 |
| Total | 3.489.154 | 2.085.992 |

Overall, between 2010 and 2021, the frequency of relevant postings increased sharply until 2012, followed by a steady decline in the subsequent years (Figure 2). There are notable differences in the number of tweets per country. For China and India, the full-archive search yielded a similar volume of tweets, following an almost identical trajectory over time. In contrast, tweet volumes for Japan and South Korea were lower, with distinct peaks in activity. These observations are indicative only of the sampled data. It is likely that other keyword combinations related to technology debates—such as #AI or #cloudcomputing—have gained popularity over time, potentially influencing the visibility of country-specific tech discourse on the platform.

Nevertheless, each country is indeed discussed in relation to tech with the two most populous Asian countries more frequently represented in this keyword combination than the other two. Potential reasons are topicality and newsworthiness that especially China acquired for tech issues, as well as India's growing role as a source of and market for tech. 2012 marks the height of tweet activity for tech in relation to China and India, respectively, before steadily declining in the years after.

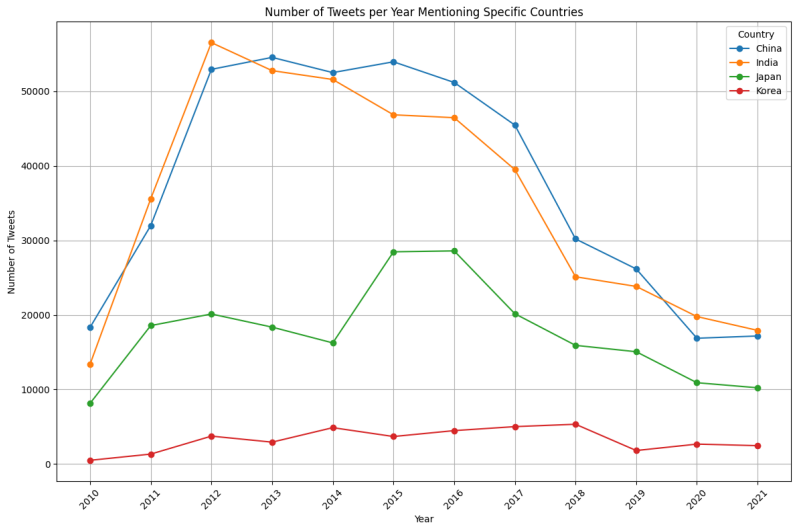


**Figure 2.** Distribution of Tweets per country over time.

Furthermore, a relatively small number of unique accounts posted the sampled tweets (Table 2). Comparing the top 100 accounts based on frequency of postings, reveals similarities and noticeable differences (Figure 3). Their backgrounds were manually checked for this categorisation to gain a quick overview. News media accounts are a strong presence. This category includes mainstream news and special interest outlets focusing tech. Another frequently represented group are tech experts, commentators, and influencers. These usually have a background in entrepreneurship, investment, research, or journalism. Personal accounts often include users with a tech background. Tech companies and governmental organisations are the smallest category.

**Table 2.** Unique Twitter accounts per country-specific dataset.

| Country | Number of unique accounts |
|---|---|
| China | 2689 |
| India | 2654 |
| Japan | 365 |
| South Korea | 1401 |

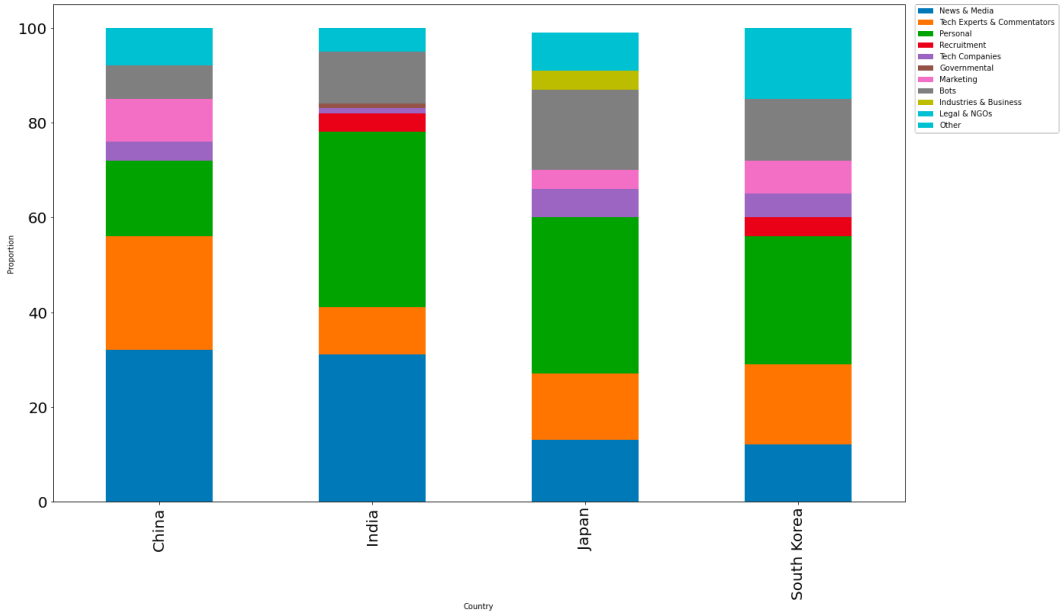


**Figure 3.** Categories in Top 100 Twitter.

### *3.2 Preprocessing & automated text analysis*

Prior to the automated text analysis, several standard preprocessing steps were applied to the data. The tweets were stripped of punctuation, all words were lowercased, tokenized, lemmatized, and stop words removed (Atteveldt et al., 2022). To keep track of which country-specific search query an original tweet was retrieved from, each tweet was pre-labelled with one of the four countries. This ensured that each tweet could be traced back to its country-specific subset, even after subsequent analytical steps and the enrichment of the dataset with additional columns for emphasis frames and meta-frames. The final dataset for analysis eventually included the following columns: username, timestamp, tweet (unprocessed

original), country (i.e, what subset it originally belonged to), emphasis frame, and meta frame (Screenshot 1).

| | username | created_at | tweet | Country | topic | meta |
|---|---|---|---|---|---|---|
| 8000 | | 2012-01-04 20:35:03+00:00 | Tech News: Study shows China and India's socia... | China | Tech News China II | Tech Trends & Innovation |

**Screenshot 1.** Final Dataset Columns.

For clear and interpretable results with text clustering methods, it is often sufficient to focus only on nouns in a corpus (Nguyen & Hekman. 2022; Burscher et al., 2016). Thus, SpaCy (model: en_core_web_trf) was used for part-of-speech-tagging (PoS) and the filtering of nouns. The pre-processed texts were primarily used for automated text clustering via BERTopic, while for the hashtag analysis and other word counting methods the original tweets were considered more suitable. All data were fully anonymised and are presented in aggregated form, except for representative examples for the identified frames. Usually, transformer-based approaches such as BERTopic require minimal preprocessing. However, after comparing results, the stricter feature selection focused on nouns yielded clearer outcomes with the standard BERT model.

The automated text analysis aimed for an emphasis frames analysis. An emphasis frame is considered as a topical focus that several texts share. For example, tweets that primarily mention the words “war”, “military”, “weapons”, and “army” can be considered the Military and Armed Conflict emphasis frame. BERTopic clusters the tweets in a similar fashion. It is an advanced topic modelling technique utilising embeddings generated with Bidirectional Encoder Representations from Transformers (BERT) for more accurate and fine-grained topic extraction from text data. The method combines vector representations for creating embeddings with clustering algorithms such as Hierarchical Density-Based Spatial Clustering of Applications with Noise (HDBSCAN). For each document cluster the most dominant words are extracted, which serve for human intepretation and labeling. Since BERTopic uses transformer-based embeddings and can detect semantic relationships between words, it is better suited for short texts than conventional topic modeling methods such as Laten Dirichlet Allocation (LDA). However, there are still limitations: BERTopic may label some short texts more quickly as noise if they do not fit a topic well or can oversegment, i.e., tweets about the same topic may be split into two different topics based on different wordings. Human inspection of the results is therefore important for fine-tuning preprocessing steps and collapsing similar topics.

Applying BERTopic can be computationally demanding, despite its built-in mechanisms to reduce processing load through dimensionality reduction techniques such as Uniform Manifold Approximation and Projection (UMAP). For the present study, it was necessary to train the model on a smaller yet representative sub-set of the full dataset. A stratified sample of 25% was compiled (N2 = 519251 tweets), reflecting the proportions to which the different countries were represented in the full dataset N1. The trained model was then applied to the full dataset (N1 = 2,085,992 tweets), which combines all four complete country-specific subsets originally collected. BERTopic generated a total of 1582 interpretable topics that can be considered as emphasis frames for N2=1.130.563 tweets, while the remaining texts could not be classified (indicated by topic number -1, which stands for “noise”). This is a clear limitation of the approach, as the “noise cluster” may still include emphasis frames that can be discerned by a human. Still, the generated topics provided detailed insights into the social media discourse, accurately clustering even niche topics.

1582 emphasis frames were considered too large for a summarising comparative analysis. Thus, only the most frequent 250 emphasis frames were manually labelled, validated, and grouped into larger meta-frames based on shared similarities. During the process, purely marketing-centric emphasis frames were

excluded (tweet clusters consisting almost exclusively of advertisements and product announcements). This further reduced the number of labelled emphasis frames to 230 with a total volume of relevant tweets of N3=511723. The labelling process went as follows: for each of the top 230 emphasis frames a random sample of 10% was manually reviewed and considered in the labelling along the top words extracted by the BERTopic model. Importantly, this was necessary to explore the bag-of-words representations in context (appendix 1). Manual inspection revealed whether any of the four specific Asian countries was frequently mentioned in the reviewed tweets, even if not explicitly included in the bag-of-words representation. These findings informed the final labelling. One example is the emphasis frame China & Cybersecurity. The bag-of-words representation for this cluster—after preprocessing—consists of dominant keywords such as "cyberattack, hacking, hacker, attack, hack, hacking attack, cyberespionage, cyberwar, news hacker, claim". However, upon inspecting 10% of the original tweets in this cluster, it became clear that most referred to China. Additionally, this emphasis frame was more likely to appear in tweets retrieved via the China-specific search query.

Next, these emphasis frames were assigned to a meta-frame that grouped them with other similar frames. For example, emphasis frames around issues such as "Facebook in India", "Google in India", and "Twitter Japan" were grouped under the meta-frame Big Tech & Social Media. This reduced the top 230 emphasis frames to 28 meta-frames, providing a birds-eye-view of the data (appendix 2).

## 4. Findings

### *4.1 Country-specific differentiation within a techno-capitalist master frame*

To begin the critical analysis of discourses surrounding technology and Asian countries, an exploration of the most prevalent hashtags already yields notable insights. There is considerable similarity across tweets for each country, as a dominant techno-capitalist meta-narrative appears to shape the hashtag landscape. Figures 4 to 7 display the top 100 hashtags by frequency, selected from a total of 112,859 unique hashtags across all tweets (N = 2,085,922), grouped by country. Frequencies range from 23,768 for the most common hashtags in the word clouds to 2,189 for the least frequent, excluding general tags such as #china, #india, #japan, #korea/#southkorea, and #tech.

The hashtag #tech is primarily associated with products (e.g., #gadgets, #honorview20—a smartphone brand offered by the Chinese tech company Huawei—and #iphone), product marketing (e.g., #worldsfirsttechnology, an advertising slogan for the HONOR View phone), and business and entrepreneurship (e.g., #startups, #apple, #business). Another prominent category includes references to broader technology trends, such as #blockchain, #ai, and #robot.

Despite these similarities, the hashtag overview also reveals differences between countries and their specific tech-related concerns. For instance, hashtags such as #infosec, #cybersecurity, and #privacy—indicating discussions around cybersecurity—appear among the top 100 in tweets about China, while #jobs and #indiajobs are more distinctive to India. Tweets referring to Japan more frequently include #robots, #robotics, and #gaming, whereas #blockchain and #IoT are comparatively more prevalent in tweets about South Korea.

Still, most hashtags suggest that a techno-capitalist master frame—or "grand narrative"—centred on innovation, commercialisation, and economic potential preconfigures sociotechnical imaginaries from a techno-capitalist perspective in the broader Twitter discourse about the different countries, at least during the analysed period. This master frame resembles that found in Western media discourses around emerging technologies, where a business- and innovation-centric focus is relatively typical (Nguyen & Hekman, 2022). Given Twitter's popularity among technology experts, entrepreneurs, marketers, technologists, and tech journalists, these initial observations are not surprising and align with previous research on sociotechnical imaginaries associated with specific technological trends, such as AI (e.g., Brennen et al., 2018).

 

However, it is important to note that the social media platform also serves as an important site for digital advertising and marketing, where tech products are often mentioned in relation to a particular country as a targeted market. While tech products can be understood as material manifestations of sociotechnical imaginaries, advertising- and marketing-oriented communication primarily serves commercial purposes and may only indirectly reflect the intersection of sociotechnical and national imaginaries. Such posts can be insightful, but they are often one-dimensional, typically limited to announcing the launch of a product or service. Therefore, to gain deeper insights into prevalent emphasis framings and country-specific narratives, it is essential to move beyond hashtag analysis.

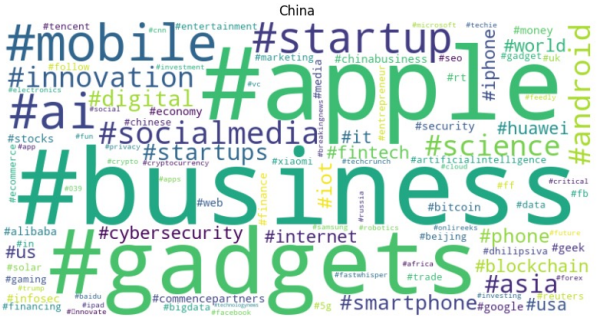


**Figure 4.** Top 100 Hashtags China.

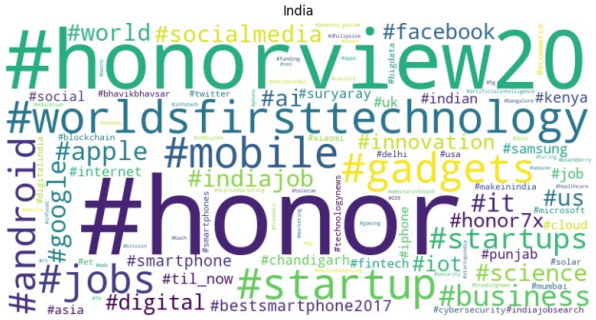


**Figure 5.** Top 100 Hashtags India.

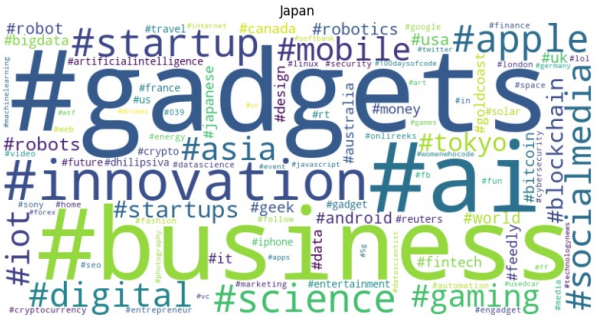


**Figure 6.** Top 100 Hashtags Japan.

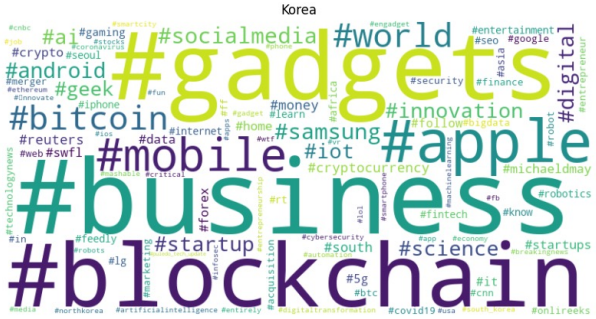


**Figure 7.** Top 100 Hashtags South Korea.

Analysing the dominant meta-frames by country provides a more nuanced picture, revealing notable differences in how each is portrayed—differences that align with some of the patterns observed in the hashtag analysis. At the same time, the meta-frame analysis confirms the presence of an overarching techno-capitalist master frame, as most meta-frames reflect business and economic themes. Table 4 presents an overview of the most and least distinct meta-frames per country. A chi-squared test was conducted to assess whether the observed differences are statistically significant. The results indicate a strong association between countries and meta-frames, $\chi^2(1, N_3 = 511{,}723) = 225{,}229.01$, $p < .001$. To see which meta-topics drive that association, Pearson residuals were calculated for every (country, meta) cell (appendix 3). Each residual indicates how much the observed count deviates from what is expected if tweets were distributed randomly across topics—so a large positive residual marks a topic as "most distinct" (overrepresented) for a country in the dataset, while a large negative residual marks it as "least distinct" (underrepresented). Investigating these residuals highlights the strongest and weakest associations in more detail.

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**Table 3.** Most and least distinct meta-frames per Asian country (based on top 250 emphasis frames, N3=511723).

| Country | Most distinct meta-frame | Least distinct meta-frame |
|---|---|---|
| China | *Cyberattacks*<br>*Geopolitics & Conflict*<br>*Chinese Tech Companies*<br>*Surveillance*<br>*Internet Censorship*<br>*Resource*<br>*AI Development & Competition*<br>*Environment*<br>*Health Tech*<br>*Big Tech & Social Media*<br>*Corona Pandemic*<br>*Space Exploration*<br>*Science*<br>*Transportation*<br>*Self-Driving Cars & Automobile Industry* | *Tech Jobs*<br>*Start-Ups*<br>*Smartphones & Gadgets*<br>*Tech Infrastructure*<br>*Tech Business & Industry*<br>*Natural Disasters*<br>*Sports*<br>*Energy*<br>*Music*<br>*Education*<br>*Blockchain & Crypto*<br>*Military Tech*<br>*Tech Trends & Innovation*<br>*Tech Governance* |
| India | *Tech Jobs*<br>*Smartphones & Gadgets*<br>*Tech Business & Industry*<br>*Big Tech & Social Media*<br>*Education*<br>*Start-Ups*<br>*Tech Infrastructure*<br>*Sports*<br>*Science* | *Cyberattacks, Geopolitics & Conflict*<br>*Chinese Tech Companies*<br>*Blockchain & Crypto*<br>*Transportation*<br>*Natural Disasters*<br>*Tech Trends & Innovation*<br>*Self-Driving Cars & Automobile Industry*<br>*AI Development & Competition*<br>*Surveillance*<br>*Music*<br>*Internet Censorship*<br>*Resources*<br>*Environment*<br>*Space Exploration*<br>*Military Tech*<br>*Corona Pandemic*<br>*Tech Governance*<br>*Energy*<br>*Health Tech* |
| Japan | *Natural Disasters*<br>*Self-Driving Cars & Automobile Industry*<br>*Transportation*<br>*Music*<br>*Start-Ups*<br>*Tech Trends & Innovation*<br>*Energy*<br>*Military Tech*<br>*Tech Infrastructure*<br>*Blockchain & Crypto*<br>*Sports, Tech Governance*<br>*Space Exploration*<br>*AI Development & Competition* | *Cyberattacks, Geopolitics & Conflict*<br>*Big Tech & Social Media*<br>*Tech Jobs*<br>*Chinese Tech Companies*<br>*Tech Business & Industry*<br>*Corona Pandemic*<br>*Health Tech*<br>*Smartphones & Gadgets*<br>*Science, Surveillance*<br>*Internet Censorship*<br>*Resources*<br>*Education*<br>*Environment* |
| South Korea | *Blockchain & Crypto*<br>*Corona Pandemic* | *Big Tech & Social Media*<br>*Smartphones & Gadgets* |

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| | | |
|---|---|---|
| | *Cyberattacks*<br>*Geopolitics & Conflict*<br>*Tech Infrastructure*<br>*Tech Trends & Innovation* | *Tech Jobs*<br>*Self-Driving Cars & Automobile Industry*<br>*Chinese Tech Companies*<br>*Start-Ups*<br>*Space Exploration*<br>*Energy*<br>*Transportation*<br>*Natural Disasters*<br>*Tech Governance*<br>*AI Development & Competition*<br>*Health Tech*<br>*Sports*<br>*Science*<br>*Surveillance*<br>*Internet Censorship*<br>*Resources*<br>*Environment*<br>*Education*<br>*Military Tech*<br>*Music*<br>*Tech Business & Industry* |

### *4.2 China: Competitor and threat in global tech*

Beginning with China, it stands out that the country is frequently discussed in relation to *Cyberattacks, Geopolitics & Conflict* (Figure 8). It is the most distinct meta-frame for China, compared to the other Asian countries (Table 4). On average, over 18% of all tweets fall into this meta-frame over the years, reaching even over 30% for 2019 and 2020. This likely coincided with discussions around cybersecurity concerns and the growing global influence of Chinese communication technology companies such as Huawei, which faced a ban in the USA in those years. This meta-frame includes emphasis frames relating to the geopolitical competition with the USA (e.g., Political Allegations and Tech Involvement with China; US-China Tech War), state-sponsored hacking and cyber espionage (e.g., China & Cyber Security: Hacking & Cyber Attacks), AI development (e.g., China & AI), drones, and other technologies for security and warfare (e.g., Chinese Drones & Surveillance). Concrete examples are news media headlines in tweets such as Computerworld: China rejects hacking 'insinuations' after spy ring revealed, Google begins to warn users if their accounts are targeted by "state-sponsored attacks", or China says U.S. hacking accusations lack technical proof.

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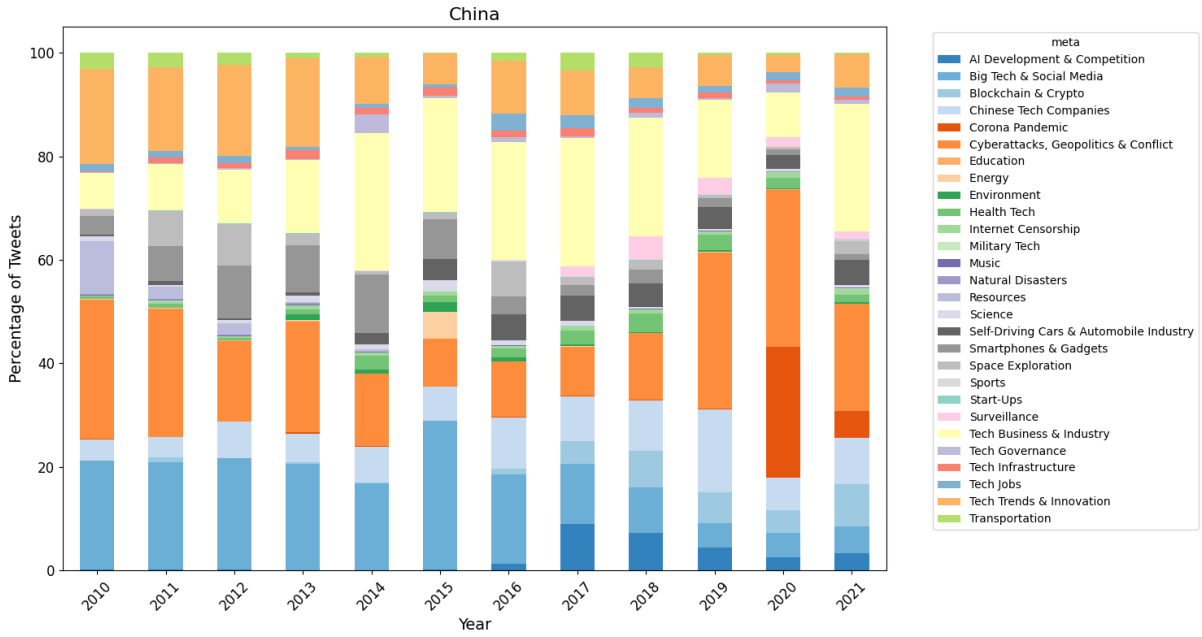


**Figure 8.** Meta-frames China (2010-2021).

Other tweets point to China as an ideological antagonist to the West, not only in technology related issues:

> We are at an inflection point as democratic values are attacked here & abroad. We have the capacity, ingenuity, & money to bolster our democracy, counter China's growing influence, & lead the world on justice tech that safeguard our ideals. The only question is: will we?

Taken together, China is often portrayed as a competitor or antagonist to other world powers in the tech domain, which is seen as a critical site in geopolitical competition. Relatedly, another distinct meta-frame is *AI Development & Competition*, peaking in 2017 and 2018; this primarily includes tweets about China's growing technological capabilities and its government's proclamation to achieve AI dominance.

Another meta-frame specific to China is Surveillance, which thematises the use of technology for collecting information about populations by monitoring them and invading their privacy. While it only accounts for 1.1% on average of all tweets over the years, that is still significantly more than for any of the other countries (e.g., for India that is merely 0.01%). An examples is:

> **China**'s Robot Police Use Facial Recognition to Catch Criminals #Geek #**Tech**

Furthermore, China is more likely to be connected to questions of governmental control over technology and especially the meta-frame *Internet Censorship* (0.68% on average over the years, peaking in 2017 and 2021; the issue is virtually absent for any of the other countries). Examples are:

> **China**'s **tech** giants bow to Beijing censorship demands

> NY Times **Tech**: **China**'s Censorship Machine Takes On the Internet

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Overall, these observations resonate with previous studies (Mahoney, 2023; Nguyen & Hekman, 2022) that find a risk-centric and negative political discourse about the country and its tech policies. If technology is not portrayed as tool of oppression in political contexts, then its potentials for resistance against authoritarianism are highlighted:

> #**Tech** - Meet The Censorship Activists Who Are Scaring **China**'s Government

> Academics Launch Fake Site to Get Inside **China** Censorship #**tech**

Another notable meta-frame centres on *Chinese Tech Companies*, such as Huawei. This includes specific emphasis frames about the growing influence of Chinese tech companies, new partnerships and initiatives, but also geopolitical issues:

> Chinese **tech** giant Huawei aids #Iran *http://t.co/Ozz3hzIE* via @WSJ #**China** #censorship #FreeWeb

> **China** Seeks Answers About NSA/Huawei Report *http://t.co/IGW0eqN7HI* #**tech** #news

Generally, the framing of China appears to oscillate between highlighting its advances across various tech domains and emphasising different geopolitical risks. Chinese government representatives try to emphasise the positive aspects of the country's technological achievements, as shown in (mostly reposted) tweets by the official spokesperson for the Chinese Foreign Ministry, such as Robot Designed in China Could Help Save Lives on Medical Frontline and similar posts especially during the Corona pandemic. Relatedly, state-affiliated news outlets frequently post about China's progress and the growing capacities of Chinese tech companies, while contributing to the media discourse about a global tech-centred rivalry with the USA:

> **China** just achieved a major quantum feat that may be a big step toward building an unhackable web #**tech**

> Meanwhile, **China** has identified the 23 trillion dollars to be made in green **tech** to combat climate change

Still, several of the most distinct meta-frames reflect a more negative portrayal of China as a tech nation, especially those with a (geo-)political angle. The observed digital orientalist framing practices are in line with previous studies that underscore how techno-scepticism and China-critical, possibly even anti-Chinese, sentiments intersect (Mayer 2019). Another notable -albeit unsurprising- meta-frame is *COVID-19*; China is considered the origin of the virus but also made frequent headlines for the use of technology in addressing the ensuing pandemic.

However, the larger part of tweets relates to business, economy, and innovation-centric emphasis frames. Examples of consistently prevalent meta-frames include *Tech Trends & Innovation* (10% on average over the years), *Tech Business & Industry* (17%), or *Big Tech & Social Media* (15%). Yet, rather interestingly, some related meta-frames reflecting techno-capitalist notions are the least distinct ones for China, such as *Tech Jobs* and *Start-Ups*. These appear more characteristic for the other countries.

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### *4.3 India: Source of labour and market for tech products*

For India, the Twitter discourse places noticeably different emphases on what "tech" means in relation to the country. Firstly, mostly negatively connotated or competition-centric meta-frames distinct for China-related tweets are less characteristic for India (Table 4; Figure 9). For example, the meta-frames *Cyberattacks, Geopolitics & Conflict*, *AI Development & Competition*, and *Surveillance* are much less pronounced for tech tweets mentioning India; they account on average for only ca. 3.2%, 0.9%, and merely 0.01% of all India tweets over the years, respectively. Generally, meta-frames that are the least distinct for China emerge as characteristic for tech-centric tweets featuring India. This includes *Tech Jobs, Start-Ups, Smartphones & Gadgets, Education,* and *Sports*.

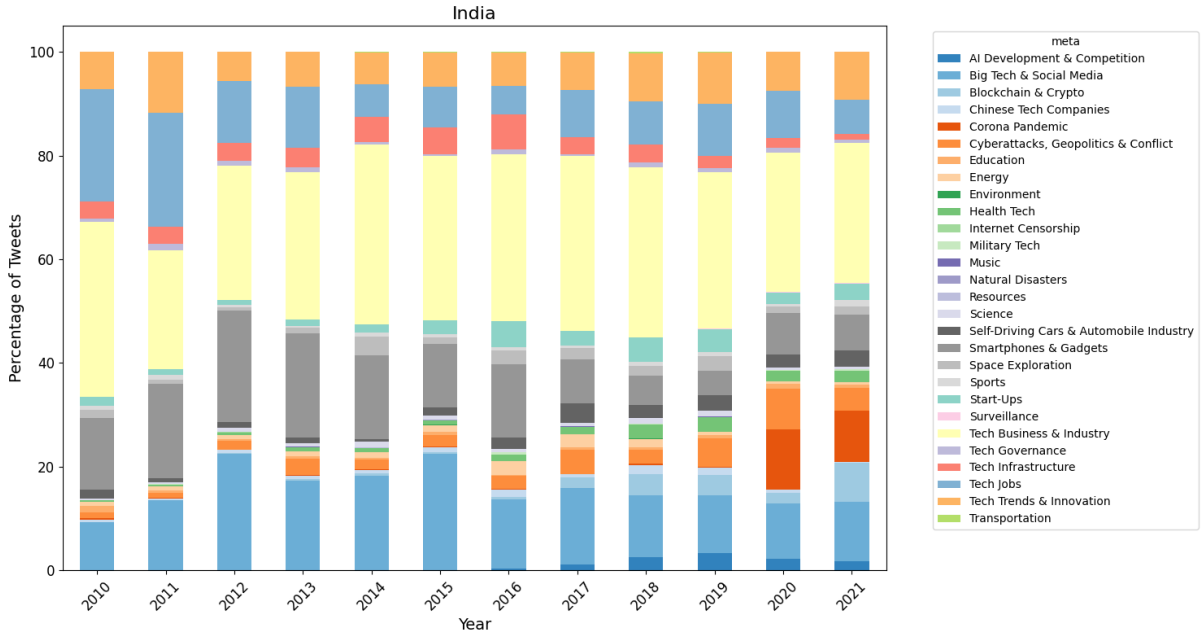


**Figure 9.** Meta-frames India (2010-2021).

*Tech Jobs* is the most distinct meta-frame for India, accounting for 10.8% on average of all tweets over time. For comparison, that is only 1.5% for China. Most related tweets advertise IT- and other tech-related vacancies, aiming for Indian labour force or focus on outsourcing. Examples are:

> BottomLine ©: **Tech** hiring? **India** outsourcers adding staff as U.S. demand grows

> Outsourcing and Offshoring #Outsourcing #Offshoring #Freelance #**India** #**Tech** #Software

However, this meta-frame includes more critical discussions of the outsourcing of "tech tasks" to India as well as incoming migration flows of Indian tech professionals to host countries such as the USA:

> I can't say this enough. This whole outsourcing of **tech** support to **India** is a travesty. #fale.

> Outsourcing to **India** goes beyond **tech** support: US law firms are outsourcing to India their legal writing

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> One thing 1st generation immigrant from **India** @KamalaHarris believes is in brining in more **tech** workers from India into the US ~ the fastest growing immigrant population - flooding west coast schools and filling US tech worker jobs

Parts of the *Tech Jobs* discourse include stereotypes and racist sentiments, sometimes delivered in a seemingly humorous manner:

> Had to call **tech** support for my comp. they sent me to **India** where no one understands what I'm saying an asked me to pay for their services

> Who decided **India** would be the home of all **tech** support call centers? They don't have computers in Canada?

> **India**, no matter how big your country is, to us all you ever will be is **tech** support

India is perceived as an important source of skilled labour. However, this perception is often accompanied by negative views regarding the quality of Indian tech services and fears in the Global North about losing tech jobs to cheaper alternatives. Unlike China, India is less frequently portrayed as a geopolitical threat. Instead, negative portrayals tend to focus on the implications of its growing population of skilled—and potentially more affordable—tech workers.

More positive framings emphasise the potential of India's vast human resources for the country's future in the global tech economy. Some narratives highlight a shift from India being merely a site for outsourced tech services to becoming a hub for a thriving start-up sector:

> **India**'s #digital #infrastructure has been a global case study for modernisation and has amazed large #**tech** corporations in pvt sectors across the globe

> **India**'s vibrant **tech** sector is set to empower a new industrial revolution for the country #DigitalTransformation #MakeInIndia

Similarly, the country is frequently presented as an important market for technology products, as captured in the meta-frame *Smartphones & Gadgets* (12.5% on average of all tweets between 2010 and 2021); this includes tweets about trending digital products and aspirations of tech companies to secure their market share among Indian consumers.

While technology is generally framed as an opportunity for growth in India-centric tech discourses — with the country often portrayed as capable of driving technological progress—these positive framings are contrasted by negative, and at times racist, sentiments, particularly targeting Indian tech labour. This reflects digital orientalist narratives that are somewhat specific to India, distinguishing it from China, where digital orientalism tends to emphasise geopolitical risks. This distinction does not imply that India is irrelevant to global tech politics or digital economic trends. Rather, its perceived role as a source of labour and low-cost services shapes a distinct, quasi-orientalist framing.

Again, it is important to note that most emphasis frames related to India carry a techno-capitalist dimension in the sociotechnical imaginaries they evoke—portraying emerging technologies as engines of economic growth and sources of financial prosperity.

### *4.4 Japan: An (overestimated?) tech culture closer to the West*

Japan-related tech tweets predominantly evoke emphasis frames that seem to portray the country in a mostly positive light. These often focus on technological domains that are considered characteristic of

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Japanese industry and consumer culture, such as robotics, automobiles, and video games. On the level of meta-frames, *Self-Driving Cars*, *Tech Infrastructure*, *Tech Trends & Innovation*, *Start-Ups*, *Music*, *Energy*, as well as *Blockchain & Crypto* are among the most distinct for Japan (Table 4; Figure 10).

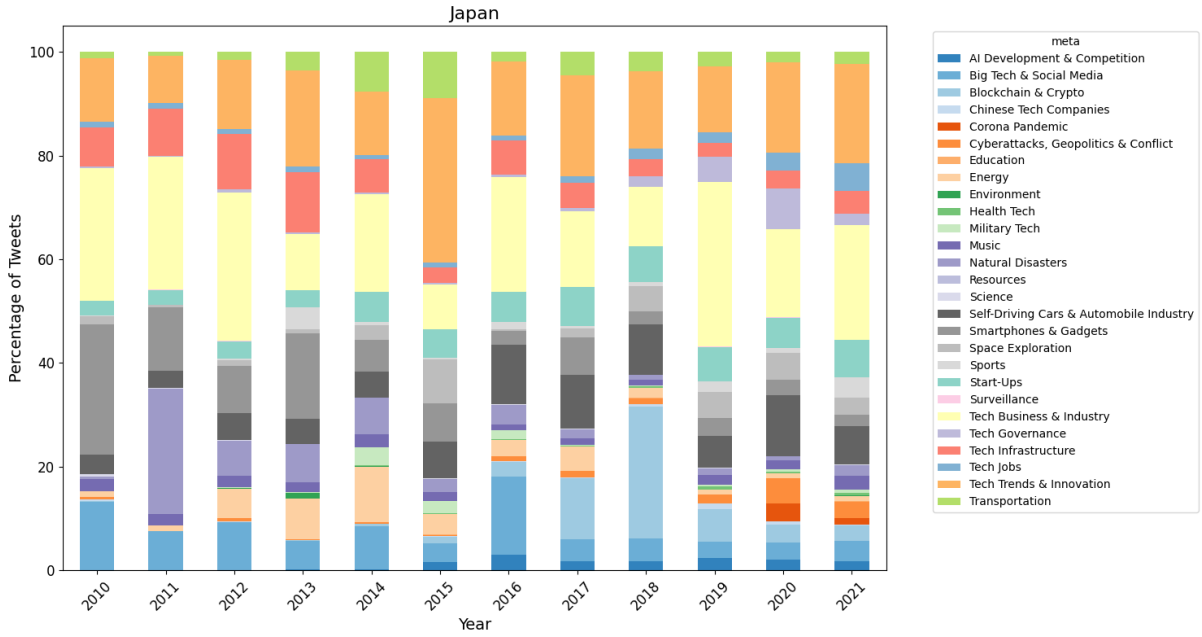


**Figure 10.** Meta-frames Japan (2010-2021).

The first emphasis frame primarily highlights how Japanese car companies are advancing the development of smart vehicles and how Japanese cities are upgrading infrastructure to accommodate self-driving cars. Averaging 7.1% over the years, this frame is more than twice as likely to be evoked in Japan-related tweets compared to those about any of the other countries. Examples include:

> Most shared: Driverless robot taxis to be tested in **Japan**, aim for 2020 Olympics #**tech**

> cnntech: The future is looking good for **Japan**'s auto industry #**tech**

Similarly, Japan is considered a leader in important *Tech Infrastructure*, such as satellites and clean energy that exports innovation to other countries (6.1% of all tweets on average):

> **Japan** pushes to build hi-**tech** power plants in Malaysia, Myanmar

> How **Japan** is reinventing the future of energy https://t.co/0VWz7rOIIb #Technology #**tech**

> Using Artificial Intelligence, **Japan** Just Launched A Rocket On The Cheap #**tech**

Notably, an inspection of relevant tweets reveals that Japan's technology exports are not portrayed as clashing with, for example, the geopolitical or economic interests of the USA. This sets Japan apart from China, whose digital diplomacy is often viewed critically or even with suspicion (Nguyen et al., 2024).

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Correspondingly, meta-frames related to geopolitical competition, surveillance, or tech labour are among the least distinct in tweets mentioning Japan (Table 4). One exception is the meta-frame *Military Technology*, which includes discussions of Japan's export of submarine technology as well as a leak involving sensitive information about such military assets. Similarly, references to weaponised drones and government policies aimed at promoting drone development touch on geopolitical themes. However, Japan is not portrayed as a competitor or threat to the global West—unsurprising given its long-standing political and economic integration with the USA and Europe. Notably, the meta-frame *Internet Censorship* is completely absent from Japan-centric tweets.

Another important and distinct meta-frame for Japan is *Trends & Innovation* (16.2% on average), which often relates to industrial robotics and various end-user-oriented technologies in sectors such as entertainment, healthcare, and education. Drones, video games, and automated toilets are frequently discussed in connection with Japan. Similarly, the meta-frame *Transportation*—which includes emphasis frames related to high-speed trains—is almost unique to Japan-related tweets (3.4%, followed only by China at 1.6%).

Some tweets point out that Japanese society and culture are generally seen as prone to innovation and the early adoption of novel technologies, often perceived as playing a pioneering role in global tech trends:

> **Japan**, you are the most high **tech** country out here. Do your thing 😭😭

> #**Japan**'s digital revolution is unique due to the constant fusion of tradition with modern day life #**tech**

> **Japan** got a lot of cool advanced **tech** shit

However, this very notion of a tech-savvy Japan is a point of contention for others, who argue that respective framings are either outdated or inaccurate:

> **Japan** used to reign in **tech**. What happened?

> Why is **Japan** perceived as an High **Tech** country by people never visit the Island? We who been there knows it is not!

These discussions suggest a form of "soft" digital orientalism, in which certain preconceptions—based on assumed levels of digitalisation and cultural affinity for technological development in Japan—oversimplify more nuanced empirical realities. Such views on Japanese digital culture likely stem from the country's historical positioning as a technology-driven economy in the post-war period and its economic rise during the 1980s and 1990s.

While Japan maintains its global relevance in several technology sub-sectors (e.g., robotics, satellites), other major technology trends are less frequently referenced in Japan-related tweets compared to, for example, those featuring China. The latter is twice as likely to be associated with the meta-frames *AI Development & Competition* (2.4% vs. 1.2% on average) and *Big Tech & Social Media* (15% vs. 6.8%). Still, most meta-frames emphasise Japan's perceived technological capabilities and its importance as a source of innovation—largely without a critical perspective on its geopolitical role. A sociotechnical imaginary centred on technological progress intersects with a possibly overstated affinity for, and degree of, digitalisation in Japan.

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### *4.5 South Korea: Innovation hub and partner of the West*

Like Japan, South Korea is considered politically and geopolitically aligned with the Global North, which clearly distinguishes it, especially from China. The most distinct meta-frames in tweets about technology and South Korea include *Blockchain & Crypto*, *Corona Pandemic*, *Cyberattacks*, *Geopolitics & Conflict*, *Tech Infrastructure*, and *Tech Trends & Innovation* (Table 4). The country is frequently associated with trending technologies, its role in developing consumer electronics, the use of technology in managing the COVID-19 pandemic, and tensions with neighbouring countries—most notably North Korea and Japan. Overall, a smaller number of the 28 identified meta-frames dominate tweets about South Korea compared to the other countries (Figure 11).

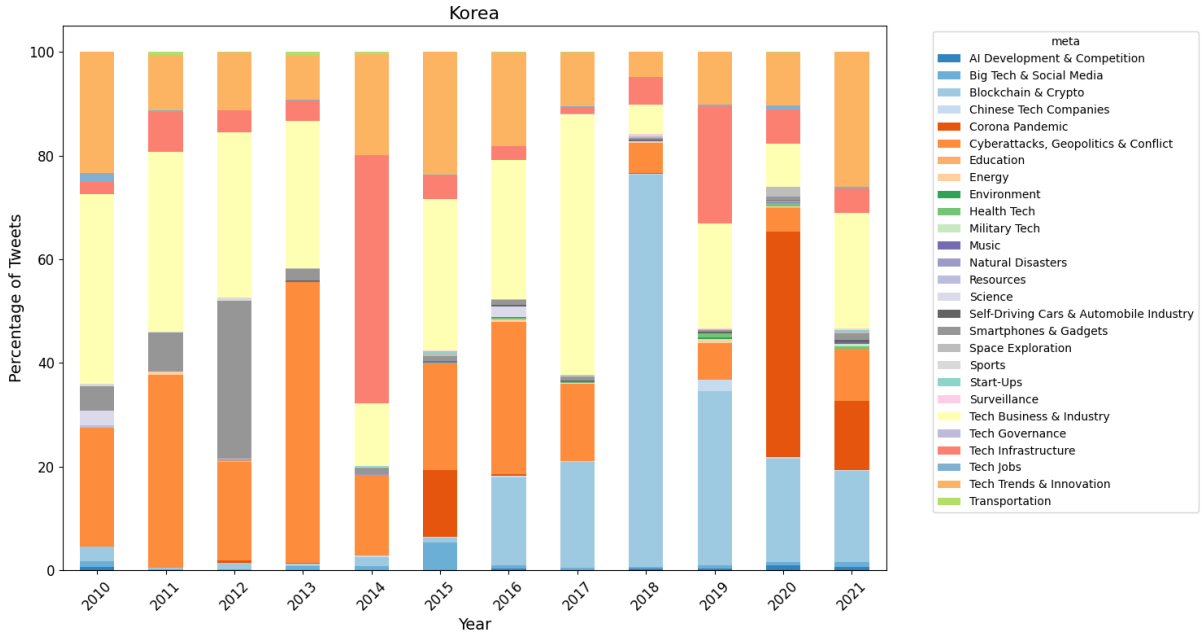


**Figure 11.** Meta-frames South Korea (2010-2021).

The meta-frame Blockchain & Crypto (15.9% on average over the years) covers discussions about how the technology is being introduced across various sectors in South Korea, as well as the government's role in both promoting and regulating its use:

> **South Korea** Brings #Blockchain to Healthcare, but That's Just the Start #**tech**

> **South Korea** Budgets $880 Million for **Tech** Including Blockchain /r/CryptoCurrency

> It's Official: **South Korea** Is Not Shutting Down Bitcoin Exchanges ⋆ **Tech** Talk

Blockchain technology became the subject of global hype beginning in 2017, prompting governments worldwide to explore its potential and economic relevance. This meta-frame highlights how novel technological trends are rapidly adopted by a South Korean government widely perceived as tech-friendly, and how the country positions itself as a nurturing environment for technology companies to drive innovation. The tech discourse surrounding South Korea evokes imaginaries of a nation not only capable of leading technological development and adoption, but also socially and culturally predisposed

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to embrace such trends with pragmatism. Overall, South Korea is portrayed as a technology hub and a focal point within the global tech economy:

> Why **South Korea** is a linchpin for all global **tech**

> **Tech**-savvy nation of **South Korea** has much to offer Western enterprises

Relatedly, South Korea is frequently presented as being at the forefront of developing and implementing key digital infrastructure—most notably widespread mobile networks such as 4G and 5G:

> **South Korea** hatches plans for 5G by 2020, which will let you download an 800MB film in one second #**tech**

> ***#tech*** *#news 'World's fastest' 4G data launched:* ***South Korea****'s biggest mobile operator begins offering what it...*

The role of the South Korean government is highlighted as a key factor in what is generally perceived as the country's successful digital transformation. Unlike Japan, the image of a tech-savvy South Korea is not visibly contested on Twitter. Critical viewpoints, where they appear, do not question the country's strong economic orientation toward digital technologies. Rather, they focus on how large tech conglomerates—led by powerful family-run groups known as *chaebol*—dominate the tech sector, with negative consequences for domestic industries due to monopolisation and corruption.

As with Japan, South Korea is not portrayed as a competitor or threat in these discussions—unlike China. Its political and economic alignment with the Global North likely influences how South Korea's technological engagement is framed, contributing to a more favourable depiction. This alignment may "shield" the country from the more negative, risk-focused portrayals typical of digital orientalism. The presence of the meta-frame *Cyberattacks, Geopolitics & Conflict* in the South Korea dataset is largely attributable to issue-specific emphasis frames, such as the role of technology in tensions with North Korea and North Korean cyberattacks on South Korean digital infrastructure. Additionally, trade disputes with Japan over technology supplies fall within this meta-frame. Taken together, the connection between the broader sociotechnical imaginary of technology and the national imaginary of South Korea shows notable commonalities with Japan. However, these are shaped by the specific characteristics of South Korea's domestic technology sector and its distinct geopolitical relationships. As with Japan, the meta-frame *Internet Censorship* did not emerge at all in the South Korea-related tweets.

## 5. Discussion

The present article aimed to address the research question: How do sociotechnical and national imaginaries intersect in social media discourses about Asian countries, and to what extent do these discourses display forms of digital orientalism? The findings of the comparative analysis reveal considerable overlap among the four countries with respect to a techno-capitalist master frame that predefines the focus of emphasis frames, shaping dominant tech narratives and, ultimately, influencing both sociotechnical and national imaginaries. At the same time, there are notable variations across the four countries, with distinct portrayals indicative of digital orientalism.

Concerning SQ1: *What are the dominant emphasis frames pertaining to tech that are associated with Asian countries in Anglophone social media discourses on Twitter?* Trending digital technologies are predominantly framed from an economic, business-centric perspective shaped by techno-capitalist

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ideology. Notable commonalities emerge across country-specific tech discourses, particularly an emphasis on business trends, opportunities for economic growth, start-up activity, and global influence in technology markets through innovation and the dissemination of products and services. All four countries are similarly contextualised in this regard. While research on sociotechnical imaginaries typically focuses on individual technologies (Jasanoff & Kim, 2009), adopting a bird's-eye view reveals striking similarities in how diverse tech trends are framed within social media discourse. Arguably, the techno-capitalist "master frame" to some extent predetermines how digital technologies are perceived from the outset, with relatively few substantive differences across ideologically and culturally diverse political systems. Even geopolitics-centric frames often centre on conflicts and tensions that are framed against a predominantly economic backdrop. However, there are important differences between Asian "tech nations" within the tech-capitalist master-frame based on historical and geopolitical grounds.

Hence, regarding SQ2: *What are the differences in the framing of Asian countries in the context of tech?* The findings suggest that differences in the framing of Asian countries depend on their perceived geopolitical alignment as well as their technological capabilities. While tech-related issues vary across countries, distinct emphases emerge at the level of meta-framing. China and technology are often discussed against the backdrop of geopolitical competition and conflict, primarily with the global West as an opponent. China is more frequently associated with risks related to technology use, such as hacking, espionage, and surveillance. This aligns with qualitative studies that have observed a similar negative framing in European and American political discourses (Meyer, 2019; Mahoney, 2023). Notably, China's technological capabilities are rarely questioned; instead, they are often portrayed as a potential threat. At the same time, China is framed as a tech innovator, a disseminator of trends, and a major production hub for technology products. In contrast, the meta-framing of India tends to emphasise its perceived role as a source of tech talent and a site for service outsourcing, as well as its dual position as a growing consumer market and a potential centre for innovation. While India is recognised as playing an important role in the global tech economy, it is less frequently positioned as a geopolitical antagonist to the Global North. This may reflect India's historical positioning as "non-aligned," although some smaller tech-related debates highlight frictions with China in this domain. Japan and South Korea are primarily portrayed as advanced, tech-savvy societies, cultures, and economies. The meta-framing is largely positive, yet also one-sided—potentially exaggerating the extent of tech adoption while downplaying ethical and societal challenges. This reflects both countries' close integration into the Western economic and security community, led by the USA, as well as long-standing national discourses that emphasise their affinity with technology—a theme present for several decades.

As such, framings reflective of digital orientalism clearly emerged from the analysis, illustrating the diverse ways in which reductive portrayals become embedded in discourses around technology and nation states. The perceived potentials of technologies—both beneficial and harmful—and countries' perceived capabilities (or lack thereof) to harness these potentials are intertwined in the portrayal of "tech nations." This underscores how the boundaries between sociotechnical imaginaries and national imaginaries are both fuzzy and porous: they often collapse, as characteristics of technologies become linked to the assumed political, social, and cultural dispositions of the countries in question. Simply put, the positive or negative aspects associated with technology trends (sociotechnical imaginaries) selectively shape the critical portrayal of a given country (national imaginary). When these portrayals are one-sided or biased, they may amount to a form of digital orientalism. However, this is not a one-way dynamic; perceptions of technology are also influenced by how a country is generally viewed to begin with. A case in point is the contrast between China, on the one hand, and Japan and South Korea, on the other. Similar technological trends and ambitions are interpreted in markedly different ways, depending on each country's geopolitical alignment. The same applies to India: it is neither regarded as a direct opponent of the USA and the Global North, nor as a primary driver of innovation. Instead, its image as a tech nation is shaped by its position as an emerging market with vast, yet not fully realised, potential. Importantly, how technologies are imagined and assessed is not limited to the technologies themselves; perceptions of

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technological systems can shape views of the associated social entities—and vice versa—both positively and negatively.

To sum up, social media platforms such as Twitter are integral components of contemporary digital public spheres, where tech nations are imagined and evaluated—often from a one-dimensional perspective. These framings are shaped by a complex interplay of sociotechnical and national imaginaries, which mutually influence one another. The resulting portrayals can manifest digital orientalism in various ways—including praise, criticism, or racism—through reductive and stereotypical representations.

## 6. Conclusion

The study offers empirical insights into a decade of social media discourse about four major Asian countries regarding the complex mutual influences of domestically nurtured tech nationalism and external digital orientalism. As such, it contributes to research on the discursive practices that shape imaginaries, perceptions, and evaluations about nation states and their intrinsic relationship with technologies.

There are several limitations to this study. First off, while large in volume, the data were retrieved via Twitter's now de-funct academic API. The sampling was thus depended on how the API selected tweets from the queried period. The present study can only offer an exploration, and future research should consider expanding the types of media texts for comparative analysis (e.g., news articles, other social media). The focus on English content is another crucial limitation. Hence, all findings must be taken with a grain of salt. Furthermore, the topic modelling approach and other text analytical methods each come with their own biases and limitations. Nevertheless, the study illustrates how computational methods provide a foundation for the critical exploration of discourse at scale and over extended time periods.

Future studies may seek to expand the use of computational methods for empirical analysis by incorporating sentiment analysis, more fine-grained frame analysis through word-level techniques such as word embeddings, and—perhaps most importantly—multilingual text analysis. It is also worthwhile to consider visual media analysis, as social media communication often combines text and imagery (e.g., in the form of memes). Follow-up studies could explore the potential of multimodal media text analysis. Additionally, qualitative methods such as critical discourse analysis may build on the findings of the present study to further examine manifestations of digital orientalism in technology discourses.

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# LGBTQ+ TikTok creators

## Strategic visibility negotiation in commercial and activist online spaces

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### Abstract

Online platforms have become fertile ground for the emergence of social media personas and trends, blurring the boundaries between personal, professional, and public life. The negotiation of identity and assumption of public roles have undergone significant transformations. This study explores the strategic visibility negotiation of LGBTQ+ content creators on TikTok, particularly within Hungary's increasingly restrictive socio-political landscape, where LGBTQ+ rights are under growing pressure. Drawing on a critical technocultural discourse analysis of 400 TikTok uploads by 4 prominent LGBTQ+ content creator, and 16 in-depth interviews with Hungarian LGBTQ+ youth, this research identifies four predominant roles fulfilled by these creators: Casual Creator, Influencer, Activist, and Influencer–Activist. Creators strategically engage with platform affordances to navigate audience, and market demands while maintaining a central narrative grounded in the lived LGBTQ+ experience. Hungarian LGBTQ+ creators, however, must carefully balance commercial and political roles within an increasingly hostile socio-political climate, often adopting subtle forms of activism and community-driven content to mitigate risks. By leveraging humour, cultural references, and coded messaging, they carve out spaces of resistance while meeting the expectations of their diverse audiences. The study underscores the nuanced negotiation of visibility undertaken by LGBTQ+ content creators, highlighting how they balance online identities to navigate the complex interplay between consumerist and political demands.

Keywords: LGBTQ+; social media; influencers; activism; visibility; platform affordances

### 1. Introduction

The "Get Ready With Me" TikTok starts with a mirror translation of the popular LGBTQ+ greeting to Hungarian, welcoming "ladies and gents, and non-binary friends." In this 66 seconds, Hungary's top TikTok influencer, WhisperTon, takes viewers through his hair dyeing process while staying true to his signature editing style and aesthetic (video 321). Restless and lively, he bounces around, delivering puns, and speaking rapidly, all expertly edited with dynamic cuts and humorous memes. WhisperTon candidly

discusses his romantic experiences, evoking a sense of intimacy akin to conversing with old friends, while also integrating the trending Hungarian pop music of the moment. He cleverly pokes fun at locally known right-wing conservative artist, Gabi Tóth, before playfully retracting, declaring himself her "biggest fan." Ultimately, his TikTok is a straightforward advertisement for hair care products, and serves as a good example, showcasing how LGBTQ+ content creators skilfully navigate complexities to gain visibility on the platform.

The socio-political context of this TikTok is crucial, as Hungary is an increasingly hostile environment for LGBTQ+ people. In recent years, the Hungarian government has passed several anti-LGBTQ+ legislations, including a 2021 law that bans the portrayal of homosexuality to minors in media, effectively censoring queer content. Public expressions of queer identity, such as Pride events, have also faced growing restrictions and state-led opposition. These conditions create a repressive atmosphere in which LGBTQ+ creators must navigate visibility with caution and creativity. Against this backdrop, TikTok becomes more than a platform for self-expression, it is a space of cultural and political resistance, where queer users assert their presence in defiance of systemic erasure.

In the contemporary digital landscape, online platforms have become fertile grounds for the emergence of social media personalities and trends. As "contexts collapse" (Davis & Jurgenson, 2014), platforms blur the traditional boundaries between personal, professional, and public spheres, enabling individuals to craft multifaceted online personas. As Marwick and boyd aptly put, "social media collapse diverse social contexts into one, making it difficult for people to engage in the complex negotiations needed to vary identity presentation, manage impressions, and save face" (2011, p. 123). In this digital context, the negotiation of identity and the assumption of public roles have undergone substantial transformations, giving rise to new challenges.

In influencer scholarship, the question of visibility becomes intertwined with that of authenticity. Online content creators must pair visibility with authenticity to foster trust and a dedicated community of followers (see for example, Cunningham & Craig, 2017; Duffy et al., 2022; Duffy & Hund, 2019; Marwick, 2015; Marwick & boyd, 2011). Online visibility and discourse surrounding LGBTQ+ community have experienced an upsurge (Abidin & Cover, 2018). However, concomitantly, they have been subjected to scrutiny and attacks from both political actors and the public (Duguay, 2023; Vivienne & Burgess, 2012). Being a highly visible LGBTQ+ figure in the online sphere can be seen as a political identity, whether explicitly manifested through online activism or implicitly suggested by being vocal about one's identity.

To examine this dynamic, a case study is offered of Hungarian LGBTQ+ TikTok creators. The case study draws on a combination of a critical technocultural discourse analysis (Brock, 2018) of 400 TikTok uploads by four prominent LGBTQ+ content creator, and 16 in-depth interviews with Hungarian LGBTQ+ youth. The study explores the various roles these content creators adopt to effectively manage their visibility while addressing the diverse expectations of their audiences, sponsors, and the platform itself, all while navigating the challenging political climate they face. The analysis proposes 4 roles that are fulfilled by the TikTokers: Casual Creator role, Influencer role, Activist role, and the Influencer–Activist role.

This study contributes to existing scholarship by examining how visibility on platforms like TikTok enables LGBTQ+ creators in Hungary to construct political identities in a restrictive political environment. By highlighting how creators embody the four roles, the analysis illustrates a fluid spectrum of identity performance where creators strategically blend personal expression, activism, and brand alignment to engage their audiences. Through an analysis of creators' use of platform affordances, content styles, and community-building tactics, this study shows how Hungarian LGBTQ+ creators navigate these roles to foster visibility and subtly engage in activism, positioning their everyday online presence as both a cultural and political statement.

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## 2. Literature review

### *2.1 Activism and social media*

Present-day political activism is deeply linked to "social media logic", encompassing the strategies, mechanisms, and economies inherent in online platforms (Dijck & Poell, 2013). This poses questions about how this logic influences the nature of political activism, how platform affordances and vernaculars are entangled with the meanings and symbols of political movements, and what might be the role of highly visible individuals who embody these on social media.

Historically, media technologies have held significant sway within social movements and activism (Barassi, 2018). The rise of the internet, however, has marked a transformative shift in how media activism is conceptualised, understood, and operationalised. Over the past decade, we have observed a noticeable shift in political approaches. There has been a move away from identity-driven politics towards a model that centres on visibility (Milan, 2015a).

This emergent politics of visibility prioritises the continuous public display of action over the consolidation of stable group identities. Social-media expressions turn each post into a material trace that is instantly observable and endlessly reproducible, making recognition through interactions a key reward structure. Social media visibility around a cause often substitutes for long-term organisational commitment, with presence in the feed carrying more weight than formal membership or sustained collective framing (Milan, 2015a).

Visibility, in this context, refers to the extent to which content, information, or individuals are seen or discovered online, a concept that has been extensively discussed in research on content creators (e.g., Abidin, 2016; Bishop, 2019; Cotter, 2019; Duffy, 2017). Duffy and Hund (2019) note, the notion of visibility is complex and deeply intertwined with political implications, especially when communication is mediated through various forms of media. While current technologies provide unprecedented visibility for previously unseen events, the nature of the internet makes it difficult to control the circulation of content. This has led to challenges for authorities, including governments, platforms or even brands, seeking to ensure that only specific images are shared with the public. As Thompson (2005) suggests, controlling content dissemination on the internet is a much harder task compared to traditional media, where institutions had greater control over what images were made available. Content creators who engage in activist messaging, therefore, must consider platform affordances, balance their role as creators, and cater to their audiences in order to maintain visibility (Abidin & Cover, 2018).

The role of identity in this context is increasingly strategic. Creators must perform different roles based on the demands of their platform and audience, creating a balancing act between commercial interests and activism. This dynamic is further complicated by the "visibility mandate" enforced by social media platforms (Duffy & Hund, 2019). As Banet-Weiser (2018) notes, social media platforms require creators not only to produce engaging content but also to maintain their visibility in order to reap both political and financial rewards. While visibility can amplify significant social issues, it can also lead to shallow, performative political messaging. Creators are often accused of prioritising personal visibility and financial gain over sustaining meaningful activism (Banet-Weiser, 2018). This pressure to conform to mainstream discourses risks diluting the political impact of creators' messages, as they may feel compelled to adapt to trends and marketable content at the expense of their activist aims.

The infrastructure of social media platforms plays a key role in shaping how meaning is made and how activism is communicated. Bucher (2012) argues that social media platforms are designed in such a way that they not only make content visible but also shape how it is understood. The algorithmic structure of Facebook, for example, reconfigures visibility as the platform prioritises content based on user engagement. As a result, users must engage with content through likes, comments, and shares in order to

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stay visible. The fear of becoming invisible drives users to participate, reinforcing the idea that visibility relies on constant engagement.

The role of highly visible content creators is indispensable in the context of activism, as Milan (2015a) suggests. Social media, with its focus on the individual rather than the collective, empowers singular actors over groups, fostering loose, affect-driven connections rather than consensus-based decision-making. Milan (2015b) also argues that the transformation brought about by social media in organised collective action is material. This transformation affects not only the platforms themselves, which are increasingly relied upon for communication and organising, but also the messages, emotions, and relationships that unfold on these platforms. Tufekci (2013) describes this process of networked microcelebrity activism as "politically motivated noninstitutional actors who use affordances of social media to present their political and personal selves in order to garner public attention for their causes, typically through a mix of testimony, advocacy, and citizen journalism" (p. 850). It is therefore essential to examine the political engagement of highly visible individuals on social media and its implications for activism.

For political movements that are underrepresented in mainstream media due to asymmetrical power structures, visibility is crucial. Brighenti (2010) introduces the "visibility as recognition" framework, which emphasises the importance of being seen for identity formation and societal acknowledgment. This concept plays a key role in identity politics and digital activism. For example, during the Arab Spring, online visibility was critical for recognition and influencing public discourse (Uldam, 2018). Today, for political movements, visibility is no longer just about exposure but about being recognised as a legitimate cause. While mass media previously determined the legitimacy of movements through attention, social media has shifted this dynamic by creating more participatory and distributed mechanisms for garnering public attention.

This evolution of visibility also ties into the expectation that the internet can empower civil society and foster grassroots political participation across borders. Social media platforms initially arose with the promise of egalitarian principles dominating content creation and distribution (Hutchinson, 2021). However, despite efforts to promote inclusivity, commercial entities and platform providers increasingly prioritise the visibility of their own content. This dynamic complicates the democratic ideal of social media as a space where all voices are heard. Activists must adapt to the vernaculars of social media and engage actively in content creation to ensure their digital activism remains visible in an overcrowded online environment.

### *2.2 Visibility-driven activism on TikTok*

Research into digital activism increasingly highlights how platforms like TikTok have changed the ways in which young people engage with and amplify social issues. TikTok, in particular, offers a unique blend of audiovisual features that allow users to communicate complex messages through creative, shareable formats. This blend feels accessible and engaging, especially among younger audiences. TikTok's editing tools, collaborative features like duets and stitches, and trend-based templates enable users to remix and personalise content, transforming activism into an interactive and participatory experience (Cervi et al., 2021, 2023; Cervi & Divon, 2023; Divon & Ebbrecht-Hartmann, 2022; Divon & Eriksson Krutrök, 2023, 2024; Primig et al., 2023; Zhao & Abidin, 2023). For instance, creators may use familiar formats such as makeup tutorials, challenges, and popular music tracks to weave personal stories or social critiques into their posts. This approach helps to make serious topics more engaging and impactful, appealing to a broad audience (Byron, 2024; Duguay, 2023). Through the use of visual markers like emojis, colour schemes, and fast-paced editing, they capture and hold the attention of viewers, particularly on TikTok's algorithmically curated "For You Page", which recommends content according to users' past interactions with videos. These approaches encourage engagement and increase creator's reach (Jaramillo-Dent, Alencar, et al., 2022; Jaramillo-Dent, Contreras-Pulido, et al., 2022).

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Creators' playful practices, such as lip-syncing, dancing, and makeup tutorials, serve to amplify their sociopolitical messages (Zhao & Abidin, 2023). These practices demonstrate how creators transform TikTok's platform dynamics into powerful tools for visibility-driven activism, challenging stereotypes and sparking conversations around pressing social and political issues. This approach underscores the power of TikTok as a medium for activism, where digital performances and creative content strategies enable everyday users to connect with others, share experiences, and raise awareness in ways that align with their personal identities and values.

In this environment, creators frequently use their bodies and personal expressions as tools to convey resilience, identity, and community values (Divon & Eriksson Krutrök, 2024). They engage their audiences not only through verbal or written messages but also through embodied performances that resonate emotionally and culturally. The concept of "playful activism" captures this dynamic, as Cervi and Divon (2023) explain. They describe how creators use game-like engagement to communicate resistance, even in moments of conflict, through meme-based challenges that construct shared political narratives. While ongoing discourse centres on the efficacy and sustainability of these mobilisations, the use of digital forms of civic participation is becoming increasingly pervasive across global contexts. However, visibility-driven activism is not without its tensions. Creators must reconcile their activist identities with the commercial demands of the influencer economy. A qualitative study on feminist online activists, for example, suggests that the involvement in online content creation often leads to a perceived dilution of one's activist identity, particularly when creators are viewed primarily as social media influencers (Scharff, 2023). Many creators face the challenge of balancing the need to produce engaging content for visibility with the desire to adhere to activist standards, often referred to as the "perfect standard" (Bobel, 2007). Consequently, online activists are often caught between the imperative to create consumer-oriented content that broadens their reach and the responsibility to remain true to their activist principles by using their platforms to advocate for social causes (Caldeira & Machado, 2022)

The structure of social media platforms, such as TikTok's collaborative tools like duets and stitches, shapes the way content is created and shared, influencing how activism manifests online (Zulli & Zulli, 2022). These tools enable users to directly respond to content or participate in widely recognised audiovisual trends, creating a networked community of engaged individuals. Furthermore, platforms such as TikTok encourage "templatability" (Abidin & Kaye, 2021) where users remix and repurpose content to convey their personal perspectives on broader social issues. Through these strategies, creators can make personal stories resonate with public discourse, thus transforming their microcelebrity presence into a form of activism. This is evident in the way creators emphasise immigrant perspectives, for example, transforming personal narratives into shared dialogues that elevate issues of identity, belonging, and rights (Jaramillo-Dent, Contreras-Pulido, et al., 2022).

The strategic use of hashtags, audio remixes, and visual storytelling allows creators to bypass traditional media gatekeepers and reach a wider audience. Their content makes marginalised communities more visible, reshaping cultural and political discussions in ways that are both intimate and accessible. These creators position themselves as modern-day advocates for social justice, using their digital influence to broaden the recognition and understanding of marginalised communities across a global platform. Expanding on this, Divon and Eriksson Krutrök (2023) introduce the concept of "war influencers" in Ukraine, illustrating how social media activists combine platform affordances with personal expressions of trauma. They distinguish between two types of influencers: celebrities who use their fame for activism and everyday users who gain visibility by sharing personal experiences of trauma (Divon & Eriksson Krutrök, 2025). This highlights how both public figures and ordinary individuals use social media to convey powerful, context-driven narratives.

In recent years, there has been a surge of interest in the convergence of digital activism and influencer culture. Murru, Pedroni, and Tosoni (2024) term this phenomenon "influ-activism," examining the dynamics of online activism through the lens of influencer culture. This concept explores the roles of "influ-activists" as communicators, the discourses they engage with, their audiences, and the ecosystems

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that amplify their influence. Similarly, Ruiz-Gomez and colleagues (2024) examine the social media practices of parents of children with Down syndrome, highlighting the tension between commodification and advocacy. These examples underscore the complexities and ethical considerations that arise when personal narratives become integral to public campaigns.

As visibility becomes increasingly important in digital activism, new challenges and tensions arise. Since content creation, identity, political engagement, and financial interests intersect, the boundaries between these roles blur, making it more difficult to categorise digital activists. Nonetheless, recognising and exploring this interplay remains crucial to understanding the evolving landscape of digital activism.

### *2.3 LGBTQ+ and minority branding activism*

Building on these discussions, LGBTQ+ activism scholarship reveals how social media has enabled LGBTQ+ individuals and communities to achieve unprecedented levels of visibility (Vivienne, 2016). LGBTQ+ communities were among the first to appropriate the Internet to experiment with identities and socialise outside of mainstream society (Myles et al., 2023). Digital spaces offer a global stage where LGBTQ+ voices can be amplified, leading to the emergence of highly visible LGBTQ+ people who play pivotal roles in advocating for LGBTQ+ rights. The authenticity and relatability of these online personas resonate with a diverse audience, transcending borders and forging connections among individuals who may otherwise have felt isolated or marginalised (Vivienne, 2016).

Through social media, these highly visible individuals use their platforms as powerful tools for advocacy, mobilising support, raising awareness, and effecting change in the face of LGBTQ+ inequality and discrimination. Their online presence often involves sharing personal stories, organising and participating in grassroots movements, and leveraging their digital reach to influence political agendas and legislation (Vivienne & Burgess, 2012). Social media's role in LGBTQ+ activism holds particular significance for minority youth by providing a supportive and inclusive online environment. Studies show that LGBTQ+ youth are 1.5 times more inclined to use social media for self-expression rather than mere entertainment compared to their heterosexual and gender-conforming peers, underscoring its importance within this demographic (Craig & McInroy, 2014; Charmaraman et al., 2021; Fox & Ralston, 2016).

However, as Raun and Christensen-Strynø (2022) point out in their study of feminist self-branding on Instagram, minority branding is "inscribed in self-commercialisation, both in the capitalisation of content and in the particular way [influencers] behave in front of the camera and address their audience to attract attention and increase their visibility" (p. 10). This observation invites reflection on Sarah Banet-Weiser's (2012) argument that in brand culture, marketers use brands as platforms for social activism while social movements, in turn, leverage brands to address specific political issues (p. 16). LGBTQ+ creators often use their content and branding to connect with audiences, while also leveraging their minority status and political causes for commercial gain, highlighting a complex interplay between political motives and commercial interests.

In addition, previous research from Hungary highlights how the scapegoating of LGBTQ+ communities has further complicated the relationship between activism and commodification (Szabó & Gáti, 2023). In the Western context, LGBTQ+ campaigns by companies are often critiqued as performative or commodified (Guidotto, 2006; Holmes, 2022), yet in Hungary, where LGBTQ+ communities face significant marginalisation, commercial entities sometimes serve as critical intermediaries. With government restrictions curtailing grassroots organisations and NGOs, corporations with the financial resources to fund public campaigns can offer essential visibility. Similarly, content creators in this environment must navigate these pressures, balancing commercial and activist roles as they perform different personas to meet the expectations of their audiences and respond to platform algorithms.

Ethical considerations arise around the intertwined dynamics of advocacy and commercial interests, especially when minority identity is used as a branding strategy. Research on LGBTQ+ content creators

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suggests that those who engage audiences through personal narratives and life experiences often succeed in fostering online communities and brand collaborations, which contribute significantly to LGBTQ+ community building and education (Abidin & Cover, 2018; Raun & Christensen-Strynø, 2022). Troye Sivan's YouTube career exemplifies this synergy: his content creation and brand partnerships enable him to have meaningful discussions about his personal identity and LGBTQ+ community issues that might otherwise be inaccessible to his audience (Abidin & Cover, 2018). A recent study focusing on non-binary individuals further highlights that the careful negotiation between branding and advocacy on social media can result in an authentic online identity, one that is positively perceived by users who seek affirmation and representation in digital spaces (Meston & Williams, 2025).

Digital storytelling also supports "everyday activism," which Vivienne (2011, 2016) defines as the sharing of personal stories in public spaces to challenge the status quo. While parallels exist between the ways people share their stories online and in daily life, digital tools remediate these narratives, leading to both unique opportunities and challenges such as reaching unknown audiences (Gray, 2009). Publicly embracing one's minority identity can be interpreted as a political act, especially in contexts where such identities are under scrutiny. As anti-LGBTQ+ sentiments continue to grow, simply being visible online as an LGBTQ+ individual can become a form of activism. This potential for outreach and community building through social media is particularly significant where LGBTQ+ issues face limited visibility or contentious public discourse.

TikTok has emerged as a nuanced space for LGBTQ+ expression, with both empowering and challenging dynamics for community building and activism. Research into TikTok's queer culture highlights its role in supporting mental health, community connectedness, and identity formation for LGBTQ+ youth (Byron, 2024). Through popular hashtags like #genderidentity and #lgbtmentalhealth, TikTok serves as a vital platform where LGBTQ+ users find comfort, solidarity, and educational resources, contributing to an inclusive community space (Paciente et al., 2024).

Despite these benefits, TikTok's algorithmic structures can create complex challenges for LGBTQ+ users. Studies reveal that TikTok's "For You Page" algorithm, while facilitating connections, can also suppress LGBTQ+ content through algorithmic and human moderation (Simpson & Semaan, 2021). This dual role of TikTok in affirming and simultaneously excluding LGBTQ+ identities requires users to adopt self-organised practices to resist moments of exclusion. Further, research by Simpson, Haaman, and Seeman (2022) describes how LGBTQ+ users "domesticate" TikTok, attempting to adapt its algorithmic outputs to align better with their personal values, which underscores the tensions inherent in relying on digital platforms for self-expression and community.

Finally, TikTok supports "queer worldmaking" (Otis & Dunn, 2021) through the sharing of personal narratives and LGBTQ+ joy, contributing to a form of LGBTQ+ activism that is less explicitly linked to political goals but is nonetheless significant. Vivienne (2016) emphasises the storytelling power of social media, where sharing LGBTQ+ joy and experiences creates solidarity and a sense of community. In a cultural landscape where minority identities are increasingly scrutinised, being visible on a platform like TikTok can be seen as a form of resistance and advocacy.

## 3. Methodology and materials

### *3.1 Context*

The context of this research is Hungary, where the LGBTQ+ community have faced widespread backlash from the government and the public in the last years (Béres-Deák, 2020; Szabó & Gáti, 2023). Within the framework of anti-gender movements, Hungary stands out as a prime illustration of "democratic backsliding" (Krizsan & Roggeband, 2018). Populism and the anti-gender movement has exerted a profound impact on the country's political landscape and public discourse (Kováts, 2020).

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While anti-gender movements are considered a global phenomenon, contextual differences are rather important. In the Hungarian case, unlike in many other countries, it is the government that initiated the movement (Kováts, 2018). The government fuels the anti-gender discourse through media campaigns that attack gender equality initiatives and in particularly the LGBTQ+ community. These government campaigns not just rhetorical but have also resulted in a number of policies that directly affect and limit LGBTQ+ people's rights (Political Capital, 2022). Of heightened importance here is the limitation of visibility of LGBTQ+ issues and people in public spaces and the media.

### *3.2 Research question*

Against the backdrop of the Hungarian anti-gender movement, this empirical study explores the political potential of social media content creators, mapping the complexity of visibility negotiation. The research questions are as follows: What strategies do Hungarian LGBTQ+ content creators employ to establish their presence on TikTok, and how do these strategies intersect with commercial and activist activities on the platform? How do these creators navigate visibility and negotiate their roles as influencers and activists within the TikTok ecosystem? Additionally, what are the perceptions and interpretations of young LGBTQ+ young TikTok users regarding the activism and influencer roles of LGBTQ+ TikTok creators?

To answer the research questions, a case study of Hungarian LGBTQ+ TikTok creators is offered. A critical technocultural discourse analysis (CTDA, Brock, 2018) was conducted based on audiovisual TikTok content, examining how elements work together, considering the platform vernacular, including prominent topics, effects, filters, and trending sounds. Additionally, interviews with LGBTQ+ TikTok users informed both the selection criterion for influencers in the study, as well as interpretation of the data.

### *3.3 Sampling and material: Qualitative interviews*

For this critical analysis, insights were derived from a series of interviews conducted prior to the current study, involving 16 Hungarian LGBTQ+ youth aged between 14 and 25 (see Appendix Table 1). These interviews were conducted between November 2022 and March 2023, as part of a research project focused on the role of social media affordances on the negotiation of LGBTQ+ identity. The primary objective of these interviews was to explore various aspects of the participants' experiences as young LGBTQ+ individuals both online and offline. Interview topics covered the use of online platforms, challenges and opportunities encountered in both digital and physical spaces considering the Hungarian political climate, the influence of media on self-perception, participation in LGBTQ+ communities, and future aspirations.

During the interviews the participants habitually reflected on the roles of influencers and online activists and offered their perspective on their visibility, inspiring the current study. The interviews were used as starting point to select relevant TikTok content creators for analysis. All content creators in this study have been spontaneously mentioned by interview participants. However, not all interview participants discussed all content creators that this case study examines, nor were the interview participants asked to reflect on the content creators that the current study examines. Rather, these interviews were used in the preparation and interpretation of the TikTok content analysis to offer a critical understating of what kind of visibility is achieved, as experienced by LGBTQ+ youth in Hungary. At times, the interview participants reflected directly about the content creators this study examines, while at other times they talked more generally about their opinion on LGBTQ+ influencers and online activists.

### *3.4 Sampling and material: TikTok content*

The material for CTDA comprises the most recent 100 TikTok upload of selected TikTok creators, providing a comprehensive understanding of the multifaceted nature of LGBTQ+ visibility and role

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construction on the platform. The TikTok data was captured on 26 November 2023, using 4Cat through Docker, and Zeeschuimer v1.4.0 on Firefox web browser (Peeters et al., 2023). An overview of the analysed TikTok content can be found in Table 2 of the Appendix.

Specific criteria were developed for the selection of TikTok creators. The creators included in the study are self-identified Hungarian LGBTQ+ individuals with high visibility on social media. This was assessed by focusing on those with paid advertorials and collaborations. At the same time, the creators selected also perform activist expressions through association with LGBTQ+ movements and campaigns.

Additionally, diverse perspectives encompassing different LGBTQ+ identities were focused on for selection. Generally, the Hungarian-speaking social media space is relatively small, and while LGBTQ+ activism on social media gained visibility, explicit LGBTQ+ content creators with wide reach and visibility are scarce. Even so, most of the popular LGBTQ+ content creators are young gay men. For the purpose of conducting a critical and comprehensive study, content creators who are diverse in their LGBTQ+ identity while still maintaining a substantial audience were chosen, rather than solely selecting the most popular ones.

#### *3.4.1 Selected content creators*

Following the established criteria for content creators, four individuals were chosen for inclusion in the study. The creators included in this study were prominent public figures at the time of the analysis, actively engaging across both social and traditional media platforms. Their visibility was underscored by their presence in magazines, public events, and television. Consequently, the study discloses the identities of these creators. TikTok usernames are used throughout the article, instead of their personal names to highlight that they are viewed here as professional content creators rather than their private selves. Additionally, recognising the fluidity of identity, it is important to highlight that the creators may not necessarily align with the social markers that they were inhabiting at the time of data collection. Consequently, the information provided in this article reflects the self-descriptions of the creators at the time of data collection and analysis.

The first TikTok account, ApaApu, is a gay couple who position activism as their primary online endeavour, emphasising their marriage and their family life.

The second content creator, FajtAlex, is a transman whose celebrity status is evident not only through his involvement in paid collaborations but also his participation in popular television shows.

The third account, LadySzomjas, is a bisexual woman with significant popularity, who advocates for LGBTQ+ visibility, while she is actively engaged in various commercial activates online.

Lastly, WhisperTon, the most prominent LGBTQ+ content creator at the time of the study, is a gay man with the largest following and engagement among the selected TikTok creators, participating in commercial activities as well as actively highlighting his LGBTQ+ identity.

### *3.5 Analysis*

This empirical study uses Critical Technocultural Discourse Analysis (CTDA), examining online discourse through users' perspectives (Brock, 2018). As emphasised by previous TikTok studies (Avdeeff, 2021; Lee & Lee, 2023), it is imperative to focus not only on TikTok content but also on the platform's role in content creation and sharing. CTDA offers a comprehensive framework, examining both user-generated content and how technology shapes identity (Brock, 2018). As such, it focuses on how TikTok's unique features influence storytelling among LGBTQ+ TikTok creators. The coding system, based on CTDA principles, encompasses discursive, material, and symbolic aspects of technology use. The codebook used in this study was initially based on previous TikTok research (Primig et al., 2023) and was subsequently developed further to specifically align with the Hungarian political context and the focus on LGBTQ+ content creators and online activism. Codes were refined and expanded

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during the analysis to better capture the nuances relevant to this study. The final codebook is detailed in Table 3 of the appendix.

The analysis of the dataset used both horizontal and vertical coding approaches to capture the nuanced roles creators assume in relation to their content. Horizontally, the analysis focused on identifying broader patterns, themes, and discourses spanning different data points. Vertically, each TikTok video was examined individually to understand its unique qualities, revealing how creators shift between roles while producing distinct types of content. This approach enabled an exploration of how creators perform various roles aligned with specific content types, highlighting that these roles are not mutually exclusive but instead reflect a fluid, gradual shift in identity and engagement styles.

The research intentionally avoided categorising content by type, as the primary research question centred on understanding what influencers do rather than analysing what content they produce. Emphasis was placed on the influencers' identity performance and how it relates to the content they create. Accordingly, particular attention was given to the use of TikTok specific vernaculars, such as skits, lip-syncing, stitching, and duets, to observe how these platform-specific features support the creators' evolving roles and the narratives they craft with their audiences.

## 4. Findings: Four roles of LGBTQ+ TikTok content creators

The analysis reveals that the content creators assume all these roles simultaneously, selectively highlighting certain aspects at different times and using specific platform affordances to engage with their audiences. These roles, along with the affordances used, are not mutually exclusive; rather, the creators strategically employ a broad repertoire to interact with their audiences in diverse ways. This approach demonstrates how creators leverage their online visibility to communicate a range of messages, including political, and commercial content, thereby engaging with their followers through layered, multifaceted identity performances.

### *4.1 Influencer role*

The deductively developed influencer role is oriented towards visibility through commercial engagement and self-branding. Content within this role is shaped by the logic of the platform economy: creators adopt current trends, refined editing practices, and familiar aesthetic conventions to enhance their marketability. LGBTQ+ identity may be present but is not foregrounded as political; rather, it is embedded within broader appeals to authenticity, relatability, and lifestyle branding. Commercial intent is typically explicit, with brand collaborations often central to content production.

### *4.2 Activist role*

The second deductively conceptualised role, the activist role, is centred on explicit political messaging, advocacy, and community education. Content in this category directly addresses issues relating to LGBTQ+ rights, identity, and lived experience. It avoids commercial indicators such as branding or sponsorship and instead focuses on communicative authenticity and collective visibility. Creators in this role frequently engage in educational or advisory formats, often using platform features such as comment replies or direct address to foster trust and solidarity.

### *4.3 Influencer–activist role*

The third, hybrid influencer–activist role emerged inductively during analysis and refers to content that deliberately combines commercial and political aims. In this category, creators integrate LGBTQ+ advocacy within monetised content, often through brand partnerships that align with inclusive values. Although the content carries a political message, it is carefully crafted and designed to maximise visibility, leveraging the creator's existing influencer status to support activist aims. What characterises

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this role is its deliberate integration of activism and branding, allowing each to enhance the other. In contrast to the purely activist role, the influencer–activist acknowledges and employs the commodification of identity as a strategic means of gaining attention and promoting advocacy.

### *4.4 Casual creator role*

Lastly, the casual creator role was inductively conceptualised and refers to content focused on everyday life and relatability. It includes posts such as vlogs, outfit videos, food tutorials, and humorous clips. While this content appears non-political and non-commercial at first glance, it plays a significant role in ambient identity work. By presenting queer life as ordinary and unremarkable, creators subtly challenge normative assumptions and contribute to soft forms of cultural advocacy. Although the content avoids explicit political messaging or monetisation, it often performs a form of affective labour that normalises LGBTQ+ presence within the cultural logic of the platform. This role is characterised by low-stakes, high-frequency posting that sustains audience engagement and leaves space for future political or commercial developments. It reflects a mode of participation in which the personal becomes quietly political and potentially marketable over time.

### *4.5 Contextualising the four roles in Hungary*

The four roles outlined in the typology were consistently identifiable across the TikTok content of all four creators analysed. As this study is based primarily on TikTok videos rather than interviews with the creators themselves, their voices are accessed through the audiovisual elements of their posts, this includes captions, spoken texts, hashtags, and editing choices, all of which function as expressions of identity and intent. To contextualise how this content is received and interpreted within the Hungarian socio-political landscape, quotes from the interviews with LGBTQ+ youth are incorporated throughout the analysis. These perspectives offer insight into the perceived meanings, limitations, and impact of the creators' content, thereby complementing the TikTok data.

Although each creator embodies the abovementioned four roles to varying extents, the way in which these roles are influenced by TikTok's specific affordances and vernaculars remains uniform, clearly indicating that the platform itself affects how content is presented. Each of the four creators maintains a unique voice and brand, not only aligning with the type of niche they predominantly occupy but also shaping the approach to their content creation. This consistent branding distinguishes them from other creators, helping in their presence within the saturated TikTok landscape and enhancing their visibility. At the same time, Hungarian LGBTQ+ TikTok creators face a unique challenge due to the 2021 'anti-paedophile law,' which restricts public discourse and media depictions of LGBTQ+ lives (Kovács, 2021). This legal backdrop influences the extent to which creators can engage in activism without facing potential backlash, leading to potential self-censorship and the use of covert signals of LGBTQ+ identity.

The casual content creator role was observed as a substantial part of all four creators' feed, which underscores the integral role such content plays in shaping their online presence. The creators used sustained storytelling, which is centred closely around their personal lives, deliberately choosing to highlight certain aspects that ties together all their content. For instance, ApaApu's online activity revolves around highlighting their life as a rainbow family. Essentially all content, whether branded, activist, or slice-of-life, is interconnected with this overarching theme. Although occasional TikToks may seem unrelated to their rainbow family narrative when encountered on the For You Page in isolation, a comprehensive examination of the creator's online presence shows a cohesive representation of their everyday life within the rainbow family context. Numerous of ApaApu's content explicitly depict their family life, showing their children with one of the parents in everyday settings, such as vacations (for example videos 12, 42, 54, 55). For example, in one of the TikToks we see one of the fathers playing with the children while their dog, Walter, is running around them (12), the overlay text reads

"Boring content / Just a happy family 🌈."

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To those unfamiliar with the context, this might simply appear as a heartwarming moment on the For You Page. The LGBTQ+ experience is marked with the emoji and further contextualised in the caption: "This was taken over the weekend, and I guess it doesn't mean much to most people, but to me, it means everything. ❤️🌈👨‍👨‍👦 #acsaladazcsalad [family is family] #nekedbelegyen [for you] #fyp #nekedbe [foryou] #lgbtq #rainbowfamily🏳️‍🌈".

Based on the audiovisual content alone, the unfamiliar audience would miss a significant contextual meaning behind such videos, that is to depict and show the family life, which is not dissimilar from that of heterosexual couples. But this all happens in a country where LGBTQ+ families are continuously attacked by the government.

Parallel to this, ApaApu produce content which shows similar audiovisual storytelling of everyday family life, but explicitly showcases them as a rainbow family, for example video 40 garnered some attention, showing their son pointing out each family members on photos, saying:

"Walter [their dog], dad, Andris [the son], daddy".

In their casual content creator role, the profile includes humorous TikToks of Walter edited to trending sounds (for example video 41,61). The presence of the dog functions as a cohesive element in their content, highlighting the pivotal role of the causal creator in establishing familiarity and intimacy with the audience.

LGBTQ+ creators navigate and challenge dominant societal discourses through creative storytelling and representation. LadySzomjas exemplifies this approach by crafting a consistent narrative centred on a fictional Hungarian-Latino family, inspired by her own Hungarian-Cuban heritage. Within these sketches, the bisexual identity of one character, presumably reflecting her personal experiences, is subtly depicted in a supportive environment. By maintaining this narrative over several years, she seamlessly integrates paid advertisements into her storytelling, showcasing her skill in blending commercial elements with her creative vision. Her content thoughtfully intertwines her queer and mixed Hungarian identities, using humour to challenge the dominant nationalist narrative that defines Hungarians as exclusively heterosexual and white.

LadySzomjas and WhisperTon published considerably more monetised content and embraced TikTok affordances and vernaculars to a higher level to adjust their content to platform specificities in comparison to ApaApu and FajtAlex. As the most popular TikTok creator, WhisperTon navigates the platform a distinct adherence to mainstream TikTok vernacular, marked by a profusion of paid advertisements. His profile generally focuses on make-up and fashion content, with additional vlog-style performances of travels and life events. His stylistic choices, akin to prominent global LGBTQ+ content creators, underscore a conscious alignment with broader trends in the TikTok community. WhisperTon consistently produces familiar content for his audience using vibrant colours, dynamic shots, deliberate cuts matched to background music, regardless of the subject matter. This illustrates how the creators attempt to seamlessly weave monetised content into their profiles through sustaining aesthetic choices and vernaculars, and continuous stories about their personal lives.

Monetised TikToks predominantly engaged with make-up companies, fashion brands, and workout-related activities. While some of these collaborations overtly incorporate LGBTQ+ identity into their branding strategies, the majority remain generalised, typically featuring product introductions in haul videos. For example, video 157 is a cinematic ad from FajtAlex, depicting him at a beach where he overcomes his fear of heights as we see him putting on perfume before making a job into deep water. The caption reads:

"#ad Pushing my limits is my essence. I know that growth comes with pain and stepping out of my comfort zone, and that fear is not a bad thing, but an emotion needed to activate my resources. Today, I've grown again. Thank you to @Prada for lending a helping hand in overcoming one of my biggest fears! #pradalunarossaocean #pradafragrances #openingnewhorizons 🚁"

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In this influencer role, the creator complete disconnects form his usual explicitly LGBTQ+ coded content. Inherently, such content raises questions in terms of its LGBTQ+ subtext, FajtAlex writing, "I know that growth comes with pain and stepping out of my comfort zone" gets a different layer of interpretation once the audience knows that he is a transman. The choice of implicit or explicit marking of identity holds significance, especially for commercial content. While not all content is expected to emphasise LGBTQ+ identity, the absence of such representation and the overwhelming presence of more generalised commercial content can have adverse effects on certain followers, as discussed in the interviews. Commenting on WhisperTon, Veronika said: "I actually don't like what he's doing because– that's what I hate about social media in general, –it's just about being perfect" (22 November 2022). When influencers show a life that is unattainable, it can considerably harm their perceived authenticity, which is crucial for their audience engagement. But the creators are aware of this; in a "Get Ready With Me" TikTok, WhisperTon even uses the story of the unattainable social media influencer as a hook for a skincare advertisement (video 389).

In contrast, ApaApu's TikTok account in the analysed period only includes one overt advertisement (video 7), while for example their Instagram profile featured more paid content. Recommendations for products and participation in corporate events are subtly embedded within the TikTok content (for example video 14, 38) without explicit markers of paid promotions. Despite the absence of explicit calls for consumer action, the account exhibits a keen awareness of its substantial following, leveraging their status to provide product recommendations and voice opinions. The creators continuously use a specific aesthetic visually, and an "inclusive we" verbally, to establish an intimate relationship with followers. Through this they signal that their audience is a part of their everyday lives and could achieve the lifestyle they have through buying the things they presumably use.

Activist content mainly featured direct influencer–follower interaction in forms of stitches and answers to comments. Explicit LGBTQ+ content predominantly featured educational and informational videos in ApaApu's and FajtAlex's case, with ApaApu's occasional call for mobilisation. Educational content stands out, as public information on LGBTQ+ identity is not widely discussed in Hungary, young people use social media to inform themselves, as also highlighted in the interviews. In other contexts, educational or advisory content may not be seen as political messaging. However, in the Hungarian political climate, such information is difficult to access, and even restricted, in public spaces, especially when directed towards younger audiences, such as in public schools. Consequently, LGBTQ+ non-governmental organisations and advocacy groups in Hungary have taken on an educational role, with content creators contributing through their online content, as observed in this analysis. While this content may lack overtly political messaging, it inherently connects these creators to activism.

While WhisperTon's and LadySzomjas' LGBTQ+ identity is visible, their advocacy remains implicit, with a notable absence of active political messaging on governmental matters, despite their attendance at LGBTQ+ events, such as Budapest Pride. Notably, WhisperTon maintains a conscious delineation of his platform as a safe space for self-expression, articulating gratitude for followers and familial support. He was also invited to a dinner prior to 2023 Budapest Pride at the US Ambassador Residency to discuss LGBTQ+ issues, and while he created several "Get Ready With Me" videos mentioning this, he never explicitly discussed the dinner, maintaining that his participation is fun and fashionable, but not political.

Findings derived from interviews conducted with LGBTQ+ youth revealed a prevailing normative expectation regarding the political role of influencers. In relation to the perceived role, Veronika described that she could not fully endorse Hungarian influencers: "It's great that they're so 'out and proud', but I'd like to see them give voice to more important things, because I don't think I've seen any of them campaigning for anything, maybe there was something with the rainbow families with LadySzomjas, but not much" (22 November, 2022).

Notably, the interview participants who are highly active on social media expressed the view that influencers bear a responsibility to convey information to their audience. They are viewed as pillars of the LGBTQ+ community, who can facilitate safe exploration of LGBTQ+ identity, while disseminating

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knowledge about sexuality, healthcare, and particularly mental health. In response to what influencers should use their platforms for, Erik stated: "I think it should be used to show the real thing, so to speak, and to come up with videos that can help people with the same LGBTQ+ identity who are in a bad state of mind" (2 November 2022). The interviewees offered criticism of the content observed on social media, asserting that Hungarian LGBTQ+ content creators appear inauthentic when compared to their Western counterparts. They contended that Hungarian influencers are excessively commercialised and sexualised, thereby falling short of meeting expectations: "Most people whom I come across on TikTok, are not the ones who should be representing gay people. They put up overly sexualised videos, and it seems that every second gay guy has a link to OnlyFans in his bio, they're just showing off their bodies and wearing tight boxers" (Noel, 15 December 2022). The content of WhisperTon and LadySzomjas content resonates with this to a certain degree, while they do not engage in online sex work, they strategically use the framing of their conventionally beautiful bodies as hooks for engagement, frequently posing and dancing in underwear or revealing clothing.

While all TikTokers explicitly and continuously emphasise the significance of LGBTQ+ mental well-being and the creation of safe spaces, they do not actively attempt, through their TikTok content or profiles, to provide mental health resources or reflect on the characteristics of safe spaces. Their declarations regarding the safety of their TikTok and fan communities lack elaboration on whether such safety is actualised through the monitoring of comment sections or the establishment of private groups, among other strategies. This is particularly puzzling, as these creators frequently discuss topics such as mental health and sexual health, aligning their content with activities often undertaken by NGOs and LGBTQ+ advocacy groups, yet they seem hesitant to fully disclose information or provide direct links to reliable (mental) healthcare resources.

For instance, FajtAlex's profile combines fashion and causal creator content with practical and mental health advice for trans individuals. He frequently talks about his work, opening a restaurant, in his casual content creator role, and in his influencer role he shares content about fashion and grooming. Importantly, FajtAlex makes use of TikTok platform features as he interacts frequently with his followers, answering questions about his identity. This continuous narration of his own experiences and the extensive use of TikTok affordances (e.g. stitching, replying to comments, green screen videos) permits him high visibility. In these answers he mostly talks about his own experience and provides detailed accounts of his own transitioning and mental health journey.

As demonstrated before, in commercialised TikTok content, creators persistently integrate TikTok-specific language and seamlessly incorporate it into their profiles and the platform as a whole. However, this level of integration is notably absent in content that foremost political. ApaApu, despite enjoying a substantial following across various platforms, appears to use TikTok with less intentionality. They do not exert similar efforts to produce activist-oriented content that uses TikTok vernacular to the same extent as, for example, WhisperTon does for brand collaborations. Consequently, the visibility of activist content is weaker. At the same time, such content seems more authentic and spontaneous, providing an unfiltered, candid look into the creators' life, which in turn may strengthen their roles.

Simultaneously, as identified and discussed by the interview participants, the highly visible commercial content produced is misaligned with articulated audience expectations. While a certain hybrid influencer–activist role is apparent, and the content creators leverage their platforms to generate narratives pertaining to LGBTQ+ identity, there is still a notable absence of explicit and continuous engagement in educating and/or mobilising audiences. Veronika articulated that: "It's really important that they're coming out and that they're getting visibility, that they're giving visibility to the community, but that there's also, for example, LadSzomjas who came to Budapest Pride and she was the host last year, which was really cool, but I think it's easy for these influencers to be LGBTQ+, or easier than, say, a gay guy from the countryside" (22 November, 2022). Despite using the TikTok affordances, particularly "stitching," and directly responding to comments that either pose genuine questions about LGBTQ+ identity or attack the creator for their LGBTQ+ identity, the influencers generally refrain from overtly

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expressing their political views. As they continuously engage in portraying LGBTQ+ identity as "fun", and seemingly disconnected of political realities, they fell short in addressing their diverse audiences.

Notably, they draw upon their personal lived experiences to accentuate specific aspects, particularly addressing medical inquiries related to transitioning, as exemplified by FajtAlex, and legal queries concerning adoption, as evidenced in the case of ApaApu. Such content is inspirational for young followers: "I am following this Hungarian gay influencer couple, who have now been able to adopt two children. I think this is a source of hope or at least show that having my own family would be possible in Hungary" (Levi, 14 March, 2023). While the creators talk freely about their own experiences, becoming the source of information for followers, this does not necessarily mean that they would actively share further resources or connections to professionals who would be able to further help with, legal, mental well-being, or medical questions on their TikTok profiles.

Zooming in on the Hungarian context, it is apparent that TikTok creators must navigate these different roles strategically to achieve desired visibility. Given the political constraints and limited market for Hungarian-speaking social media users, content creators need to strike a balance. They need to ensure that the content remains relatable to the majority market, without causing controversy for the brand or facing potential political consequences. At the same time, they also need to navigate demands of their LGBTQ+ followers to create space for visibility and advocacy.

## 5. Discussion

### *5.1 Navigating visibility in a hostile political climate*

The analysis of the four roles undertaken by LGBTQ+ TikTok creators highlights that the creators skilfully and strategically navigate visibility across influencer and activist online spaces. Diverse TikTok vernaculars are used for the specific roles, while the creators manage to maintain a central narrative of the self in their content to establish coherent online personas. This process is particularly crucial in Hungary, where the continuous anti-LGBTQ+ push by the government shapes creators' content strategies. The creators must carefully adapt to the legal and social environment, balancing personal expression with a need for caution.

The creators make use of trends (Zulli & Zulli, 2022), hashtags (Jacques et al., 2023), and audio memes (Abidin, 2020; Gleason et al., 2019) to expand their reach, which is in line with what has been established in previous research. However, in Hungary, these tools also serve a dual purpose of subtly navigating censorship while engaging with broader global queer movements. The TikTokers in this analysis creatively engage with different aspects of the platform to simultaneously reach wider audiences with single-video branding on the oversaturated For You Page (Abidin, 2020; Zulli & Zulli, 2022), while creating familiar content for their devoted fanbase. Often, particularly in their roles as influencers, creators' LGBTQ+ identities are either concealed or subtly referenced in the subtext. This is likely done to avoid the platform's marginalisation of LGBTQ+ creators while also navigating the socio-political landscape, especially regarding content through which they earn a living.

Through what Jaramillo and colleagues coined as "hashbaiting" (2022, p. 214), the creators intentionally take advantage of popular TikTok campaigns. Usually organised through hashtags, or alternatively "affective audio networks" (Primig et al., 2023, p. 6), the creators reach wide audiences through commonly recognisable formats, without sacrificing thematic coherence in their personal content. In Hungary's increasingly repressive climate, these tools allow for subtle advocacy, cleverly sidestepping any potential state censorship while leveraging TikTok's affordances for LGBTQ+ visibility. This highlights that creators have a deep understanding of the sociotechnical nature of TikTok algorithm and online visibility.

Furthermore, the creators' choice of specific vernacular is intentional. The creators show remarkable consistency in their use of recurring visual and verbal cues. Specifically, their video editing style is

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consistent, as seen with WhisperTon who uses a recognisable template with dynamic cuts, or the contrasting calm narrative style of FajtAlex. In a political environment where the expression of LGBTQ+ identity is fraught with risks, these subtle, yet purposeful choices allow the creators to signal their alignment with LGBTQ+ issues without openly confronting hostile societal forces. Embodied identity performance is also consistent, in terms of body language, such as in WhisperTon's signature bouncing movements; or clothing, such as the recurring use of customs that identifies each character is LadySzomjas' sketches. This use of recurring visual cues, help the creators to build a visual identity (Jaramillo-Dent, Contreras-Pulido, et al., 2022).

Beyond adeptly navigating TikTok's algorithm, the creators also skilfully adapt to global trends, weaving these into the local socio-political context. This ability to blend global and local trends enables them to connect with a wide-ranging audience, positioning them as active participants in the transnational online queer movement. Their "glocalised" content not only amplifies their visibility on the platform but also allows them to resonate with diverse communities both locally and internationally, reflecting the intersection of global and local queer cultures.

The creators consistently engage in the "perceived interconnectedness" of creator and follower, budling an intimate relationship that goes beyond parasociality (Abidin, 2015). As opposed to parasocial relations (Horton & Richard Wohl, 1956), "perceived interconnectedness is mediated via a more democratic and equalising infrastructure of social media platforms, which stimulate a flat organisation of actors where influencers and followers co-produce and shape the conversation" (Abidin, 2015, p. 11). In Hungary, where direct political engagement on LGBTQ+ issues can lead to negative repercussions, this type of connection is not just about influencer appeal, it becomes a subtle form of community-building in a repressive political context. The creators know that they must sustain a careful relationship with their followers to navigate the online space effectively without risking backlash. This is often performed using questions and hashtags in captions, inviting followers to participate in challenges and audio templates.

Lastly, the creators consistently use the inclusive 'we' to address the audience, emphasising the intimate and familial relationship that is built through the mediated performance. This relationship, while performing entertainment and education, also becomes a form of activism, one that operates within Hungary's harsh political environment while still communicating essential LGBTQ+ messages to a broader audience. This marks the creator's deep understanding of the multimodal elements to promote interactions with followers beyond views, and their knowledge of the challenges of algorithmic visibility on social media platform (Bishop, 2019).

### *5.2 The politics of platform branding and strategic identity work*

At the same time, the strategic use and concealment of LGBTQ+ identity reflects what Raun and Christensen-Strynø refers to as minority branding (2022), carving out space online to use minority identity markers to engage in commercial activities. In Hungary, where the legal landscape has become increasingly hostile toward visible LGBTQ+ rights advocacy, this form of strategic branding allows creators to work within a system that may view their identity as a liability.

Following the argumentation of Abidin (2020), Jaramillo and colleagues (2022) highlight that creators who build consistent profiles rather than primarily engaging in single video-based popularity tactics engage in less branded content. However, in the case of the four analysed TikTok creators here, it is apparent that consistent profile-based branding is part of the video-based branding, as creators such as WhiperTon and Lady Szomjas skilfully navigate single video-based promotion while building a consistent narrative on their profiles. Nevertheless, importantly, these two profiles also engage with less explicitly activist content compared to the other two analysed creator accounts, ApaApu and FajtAlex. In turn the content of ApaApu and FajtAlex was less commercialised and professionalised, but more political. These two accounts actively involve their audiences in political mobilisation, engaging their audiences in current political debates and informing them about the on-going LGBTQ+ issues in

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Hungary. They strategically mix such content with light-hearted and platform-friendly expressions, especially through their casual creator role, presumably to keep visibility and engagement with their established audiences and to not get shadowbanned (Rauchberg, 2022; Steen et al., 2023)

This dynamic highlights how the creators all add entertainment value and strategically maintain audience attention while creating educational content for their followers in different formats (Abidin & Cover, 2018). As explicitly activist self-expression necessitates deeper engagement from the audience with the political context, arguably this is challenging to achieve when the creators aim to reach a broad, generalised audience. As such, while there is clear profusion of activist and influencer roles in LGBTQ+ TikTok creators' content, it is also apparent that the creators are engaging with either influencer or activist niche and create content in adherence to the vernacular that is predominantly associated with that area.

However, it is also worth noting that creators may integrate paid advertisements into their content without clear disclosure, blending sponsored content with personal posts. This kind of hidden advertising is a grey area that often goes unnoticed by followers, as the creators use subtle cues to present the content as organic while it serves a commercial purpose. As pointed out in recent research, this is especially concerning when creators use their children for commercial activities (Divon et al., 2025). While this phenomenon was not observed in the context of this current study, it is important to acknowledge that such activity adds complexity to the typology of the four roles politically active social media creators perform.

The TikTokers negotiate a careful selection of brands and sponsors, as paid collaborations are not only a form of endorsement of a certain brand, but these also actively reinforce the existing brand of the self. Therefore, campaigns where the message centres around 'staying true to oneself' or 'stepping outside of the comfort zone' (as in the example of FajtAlex perfume ad, video 157) is desirable, as this message is compatible with LGBTQ+ identity, but broad enough that it can be marketable for broader audiences. However, this strategic use of minority identity underscores why those who predominantly identify as activist social media content creators, would align themselves with influencers cautiously (Scharff, 2023).

The LGBTQ+ messaging in the commercialised instances become shallow and almost apolitical, highlighting the LGBTQ+ experience as "fun", reflecting neoliberal feminist themes of self-actualisation, empowerment, and authenticity (Banet-Weiser et al., 2020; Caldeira & Machado, 2022), while placing the LGBTQ+ self in a context seemingly void of political realities. Influencers face significant pressure from their clients and sponsors, who are keen to embrace progressive values such as diversity and liberalism to reach a wider audience and increase profits. This often leads LGBTQ+ content creators to combine their sexual and gender identities with capitalist ideals such as independence and entrepreneurship. However, this fusion typically fails to challenge the dominance of heterosexual norms or address the emotional struggles experienced by LGBTQ+ individuals (Abidin & Cover, 2018; Lovelock, 2017).

At the same time, it might not be useful to condemn commercial influencer activities and label them as inadequate to activism. As Scharff points out, focusing on the "the differences between 'influencer' and 'activist', and the attribution of monetisation and commercial pursuit to influencers, underplays the ways in which market logics structure contemporary forms of activism that take place in the neoliberal digital economy" (2023, p. 2). As highlighted by research in the Hungarian context, given the increasingly hostile Hungarian political context, publicly embracing LGBTQ+ alliance can be regarded as an activist undertaking (Szabó & Gáti, 2023).

In a context where opportunities for LGBTQ+ individuals to express themselves and build community are increasingly limited, the presence of openly LGBTQ+ individuals among the most popular TikTok content creators, successfully amassing large followings while openly showing their LGBTQ+ identity, is noteworthy. This phenomenon should not be overlooked; rather, it should be recognised as an essential component of contemporary social media activism.

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## 6. Conclusion

This study offers a nuanced perspective on how LGBTQ+ content creators engage with self-promotion and activism. The evolution of platform culture has transformed the traditional boundaries of influencers and activists, blurring the lines between the consumerist and the political. As LGBTQ+ individuals embrace social media platforms for representation and advocacy, they forge new avenues for political engagement while grappling with the tensions inherent in self-presentation, visibility, and authenticity. Recognising the intricate interplay between influencer culture and LGBTQ+ activism is crucial for understanding the contemporary dynamics of digital society and the potential of social media platforms as catalysts for social change.

The analysis highlights four predominant roles that LGBTQ+ content creators perform on TikTok to navigate platform, audience, and market demands and achieve the desired visibility: casual content creator roles, influencer roles, activist roles, and influencer–activist roles. The creators strategically engage with TikTok's platform affordances and vernaculars to embrace each role while maintaining a central narrative based on the lived LGBTQ+ experience to create consistent profiles. While the sustained narrative allows them to seamlessly interweave commercial and political roles, the heightened visibility comes at the cost of navigating challenges. These individuals must cope with the demanding expectations of their diverse audience, negotiating a delicate equilibrium between personal authenticity, meeting the anticipations of their followers, and fulfilling commercial needs. This becomes especially pronounced in contexts where anti-gender sentiments have been on the rise, making the decision to openly embrace their LGBTQ+ identity a courageous undertaking fraught with potential risks. The research in Hungary assumes particular significance within this context, offering a unique opportunity to examine the strategies, resilience, and adaptability of LGBTQ+ online activists and influencers.

It is important to acknowledge the limitations of this study. This research is based on a small sample of four content creators, whose online work was observed and analysed within a specific time and space, resulting in limitations in terms of generalisability. However, the aim of this study is to provide an in-depth, exploratory analysis that highlights the complex dynamics of the roles LGBTQ+ content creators may perform on TikTok. As social media is often viewed as a globalised space where transnational LGBTQ+ activism rooted in content creation can flourish, it is crucial to recognise contextual differences. This study serves as a foundation for future research that could further investigate these dynamics, particularly by examining the relationship between creators, audiences, and platforms over time, as well as studying the local specificities of transnational LGBTQ+ activism through content creation. Hungary is often regarded as a "textbook example of democratic backsliding" (Enyedi, 2018, 2020), however, recent global political developments underscore the importance of examining regions where political tensions and anti-gender movements are actively promoted by the government. Analysing these contexts is crucial for critically understanding and effectively countering such narratives.

In conclusion, this study highlights the nuanced and multifaceted negotiation of visibility undertaken by LGBTQ+ content creators. The results underline that, rather than treating highly visible individuals as either activists or influencers, we should consider them as both, recognising the fluidity of their online identities as they navigate the intersection of consumerist and political demands.

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## Appendix

**Table 1.** Overview of interview participants

| | **Pseudonym** | **Pronoun** | **Gender** | **Sexuality** |
|---|---|---|---|---|
| **1** | Abel | he/him/his | cisman | gay |
| **2** | Ada | she/her/hers | ciswoman | lesbian |
| **3** | Alex | she/he/they | non-binary | lesbian |
| **4** | Anakin | he/him/his | transman | heterosexual |

 

| | | | | |
|---|---|---|---|---|
| **5** | Daniel | he/him/his | transman | heterosexual/biromantic |
| **6** | Don | he/him/his | transman | heterosexual |
| **7** | Emma | she/her/hers | ciswoman | LGBTQ+ |
| **8** | Erik | he/him/his | cisman | gay |
| **9** | Levi | they/them/theirs | cisman | bisexual |
| **10** | Linda | she/her/hers | ciswoman | questioning |
| **11** | Martin | he/him/his | cisman | gay |
| **12** | Max | they/them/theirs | non-binary | LGBTQ+ |
| **13** | Noel | he/him/his | cisman | asexual/homoromantic/aromantic |
| **14** | Nora | she/her/hers | questioning | lesbian/LGBTQ+ |
| **15** | Romeo | he/him/his | cisman | gay |
| **16** | Veronika | she/her/hers | ciswoman | bisexual |

**Table 2.** TikTok videos sampled for this study

| ID | Creator | Link |
|---|---|---|
| **1** | ApaApu | https://www.tiktok.com/@apaapu/video/7298800167610862880 |
| **2** | ApaApu | https://www.tiktok.com/@apaapu/video/7296188186282200353 |
| **3** | ApaApu | https://www.tiktok.com/@apaapu/video/7295716549724310816 |
| **4** | ApaApu | https://www.tiktok.com/@apaapu/video/7292432260085681440 |
| **5** | ApaApu | https://www.tiktok.com/@apaapu/video/7273382854657264929 |
| **6** | ApaApu | https://www.tiktok.com/@apaapu/video/7264114888442793248 |
| **7** | ApaApu | https://www.tiktok.com/@apaapu/video/7252966733315591450 |
| **8** | ApaApu | https://www.tiktok.com/@apaapu/video/7248490046540614938 |
| **9** | ApaApu | https://www.tiktok.com/@apaapu/video/7245898243463253275 |
| **10** | ApaApu | https://www.tiktok.com/@apaapu/video/7245308461616074011 |
| **11** | ApaApu | https://www.tiktok.com/@apaapu/video/7241262567488867611 |
| **12** | ApaApu | https://www.tiktok.com/@apaapu/video/7239294782957178139 |
| **13** | ApaApu | https://www.tiktok.com/@apaapu/video/7207498496314723590 |
| **14** | ApaApu | https://www.tiktok.com/@apaapu/video/7198603036808301829 |
| **15** | ApaApu | https://www.tiktok.com/@apaapu/video/7188562596155411718 |
| **16** | ApaApu | https://www.tiktok.com/@apaapu/video/7185135605976780038 |
| **17** | ApaApu | https://www.tiktok.com/@apaapu/video/7181449124619848965 |
| **18** | ApaApu | https://www.tiktok.com/@apaapu/video/7180825697928187141 |
| **19** | ApaApu | https://www.tiktok.com/@apaapu/video/7174453447893208326 |

| | | |
|---|---|---|
| **20** | ApaApu | https://www.tiktok.com/@apaapu/video/7174122145767902469 |
| **21** | ApaApu | https://www.tiktok.com/@apaapu/video/7136940214609530118 |
| **22** | ApaApu | https://www.tiktok.com/@apaapu/video/7132018149876190470 |
| **23** | ApaApu | https://www.tiktok.com/@apaapu/video/7081938514396450053 |
| **24** | ApaApu | https://www.tiktok.com/@apaapu/video/7074827910594530565 |
| **25** | ApaApu | https://www.tiktok.com/@apaapu/video/7047574961266904325 |
| **26** | ApaApu | https://www.tiktok.com/@apaapu/video/7047143479851502854 |
| **27** | ApaApu | https://www.tiktok.com/@apaapu/video/7045967333600283909 |
| **28** | ApaApu | https://www.tiktok.com/@apaapu/video/7044111748999204102 |
| **29** | ApaApu | https://www.tiktok.com/@apaapu/video/7041218787240185094 |
| **30** | ApaApu | https://www.tiktok.com/@apaapu/video/7040048969241677061 |
| **31** | ApaApu | https://www.tiktok.com/@apaapu/video/7039242458596642054 |
| **32** | ApaApu | https://www.tiktok.com/@apaapu/video/7032618889490091270 |
| **33** | ApaApu | https://www.tiktok.com/@apaapu/video/7028643354841779461 |
| **34** | ApaApu | https://www.tiktok.com/@apaapu/video/7028172438143831301 |
| **35** | ApaApu | https://www.tiktok.com/@apaapu/video/7027506868423642373 |
| **36** | ApaApu | https://www.tiktok.com/@apaapu/video/7026058594491698438 |
| **37** | ApaApu | https://www.tiktok.com/@apaapu/video/7025549727936630022 |
| **38** | ApaApu | https://www.tiktok.com/@apaapu/video/7021120231900777734 |
| **39** | ApaApu | https://www.tiktok.com/@apaapu/video/7019563787657170182 |
| **40** | ApaApu | https://www.tiktok.com/@apaapu/video/7016003852730158342 |
| **41** | ApaApu | https://www.tiktok.com/@apaapu/video/7014896378115673350 |
| **42** | ApaApu | https://www.tiktok.com/@apaapu/video/7013738677218086150 |
| **43** | ApaApu | https://www.tiktok.com/@apaapu/video/7011791842308017413 |
| **44** | ApaApu | https://www.tiktok.com/@apaapu/video/7009722813288336646 |
| **45** | ApaApu | https://www.tiktok.com/@apaapu/video/7007342446807928069 |
| **46** | ApaApu | https://www.tiktok.com/@apaapu/video/7006263430701206789 |
| **47** | ApaApu | https://www.tiktok.com/@apaapu/video/7001884317152562437 |
| **48** | ApaApu | https://www.tiktok.com/@apaapu/video/7000805474522238214 |
| **49** | ApaApu | https://www.tiktok.com/@apaapu/video/7000051678263217414 |
| **50** | ApaApu | https://www.tiktok.com/@apaapu/video/6998822944059215110 |
| **51** | ApaApu | https://www.tiktok.com/@apaapu/video/6998420176823667974 |
| **52** | ApaApu | https://www.tiktok.com/@apaapu/video/6997428427959569670 |
| **53** | ApaApu | https://www.tiktok.com/@apaapu/video/6997275159489023238 |

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| | | |
|---|---|---|
| **54** | ApaApu | https://www.tiktok.com/@apaapu/video/7013738677218086150 |
| **55** | ApaApu | https://www.tiktok.com/@apaapu/video/6984472670461005062 |
| **56** | ApaApu | https://www.tiktok.com/@apaapu/video/6982907197655174406 |
| **57** | ApaApu | https://www.tiktok.com/@apaapu/video/6978768203459693829 |
| **58** | ApaApu | https://www.tiktok.com/@apaapu/video/6974685552566193413 |
| **59** | ApaApu | https://www.tiktok.com/@apaapu/video/6974012343156067589 |
| **60** | ApaApu | https://www.tiktok.com/@apaapu/video/6973276962106264838 |
| **61** | ApaApu | https://www.tiktok.com/@apaapu/video/6972519956600704262 |
| **62** | ApaApu | https://www.tiktok.com/@apaapu/video/6971324979258363142 |
| **63** | ApaApu | https://www.tiktok.com/@apaapu/video/6970018432876154117 |
| **64** | ApaApu | https://www.tiktok.com/@apaapu/video/6967995764941393157 |
| **65** | ApaApu | https://www.tiktok.com/@apaapu/video/6966684290935557382 |
| **66** | ApaApu | https://www.tiktok.com/@apaapu/video/6962940410004032774 |
| **67** | ApaApu | https://www.tiktok.com/@apaapu/video/6962822913351290118 |
| **68** | ApaApu | https://www.tiktok.com/@apaapu/video/6957651773452520710 |
| **69** | ApaApu | https://www.tiktok.com/@apaapu/video/6953471371615735045 |
| **70** | ApaApu | https://www.tiktok.com/@apaapu/video/6952596013316082950 |
| **71** | ApaApu | https://www.tiktok.com/@apaapu/video/6952193261255527685 |
| **72** | ApaApu | https://www.tiktok.com/@apaapu/video/6951825527728655622 |
| **73** | ApaApu | https://www.tiktok.com/@apaapu/video/6946983959284796677 |
| **74** | ApaApu | https://www.tiktok.com/@apaapu/video/6946264740817603845 |
| **75** | ApaApu | https://www.tiktok.com/@apaapu/video/6945505110739012870 |
| **76** | ApaApu | https://www.tiktok.com/@apaapu/video/6944022861896060166 |
| **77** | ApaApu | https://www.tiktok.com/@apaapu/video/6942926318115753221 |
| **78** | ApaApu | https://www.tiktok.com/@apaapu/video/6939975235533950213 |
| **79** | ApaApu | https://www.tiktok.com/@apaapu/video/6939556262032002309 |
| **80** | ApaApu | https://www.tiktok.com/@apaapu/video/6934400001699368197 |
| **81** | ApaApu | https://www.tiktok.com/@apaapu/video/6933562632473431301 |
| **82** | ApaApu | https://www.tiktok.com/@apaapu/video/6931790532070952198 |
| **83** | ApaApu | https://www.tiktok.com/@apaapu/video/6931428939470621957 |
| **84** | ApaApu | https://www.tiktok.com/@apaapu/video/6930594899469356293 |
| **85** | ApaApu | https://www.tiktok.com/@apaapu/video/6928839522339900677 |
| **86** | ApaApu | https://www.tiktok.com/@apaapu/video/6928135389462940934 |
| **87** | ApaApu | https://www.tiktok.com/@apaapu/video/6923947118788873477 |

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| | | |
|---|---|---|
| **88** | ApaApu | https://www.tiktok.com/@apaapu/video/6915835044376448261 |
| **89** | ApaApu | https://www.tiktok.com/@apaapu/video/6913621297427762438 |
| **90** | ApaApu | https://www.tiktok.com/@apaapu/video/6911251234288700677 |
| **91** | ApaApu | https://www.tiktok.com/@apaapu/video/6910080334235208966 |
| **92** | ApaApu | https://www.tiktok.com/@apaapu/video/6908012300272241922 |
| **93** | ApaApu | https://www.tiktok.com/@apaapu/video/6907314841673846017 |
| **94** | ApaApu | https://www.tiktok.com/@apaapu/video/6905779378794384641 |
| **95** | ApaApu | https://www.tiktok.com/@apaapu/video/6905436226757709057 |
| **96** | ApaApu | https://www.tiktok.com/@apaapu/video/6905041036033150214 |
| **97** | ApaApu | https://www.tiktok.com/@apaapu/video/6904750659027864833 |
| **98** | ApaApu | https://www.tiktok.com/@apaapu/video/6901697763524840706 |
| **99** | ApaApu | https://www.tiktok.com/@apaapu/video/6900600492511055105 |
| **100** | ApaApu | https://www.tiktok.com/@apaapu/video/6898756469756267777 |
| **101** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7290969088556404001 |
| **102** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7290597434315558176 |
| **103** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7280868670245440800 |
| **104** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7274598055276596513 |
| **105** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7272709060057632033 |
| **106** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7272028845031689504 |
| **107** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7270877180500921633 |
| **108** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7269809163906141472 |
| **109** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7268990617093557536 |
| **110** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7268696039165644064 |
| **111** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7267917467664534816 |
| **112** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7267994822248549664 |
| **113** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7267981098867608865 |
| **114** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7264981208235396384 |
| **115** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7254601482736110874 |
| **116** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7244838260109856026 |
| **117** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7244532557574933786 |
| **118** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7238275673930878234 |
| **119** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7236813217924795674 |
| **120** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7235644810156166426 |
| **121** | FajtAlex | https://www.tiktok.com/@fajtalex/video/7228954476361665818 |

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| | | |
|---|---|---|
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**Table 2.** Codebook

| | Category | Explanation |
|---|---|---|
| Context | Platform | |
| | User Profile | What is the overall „look and feel" of the user's profile (user that posted the content)? Who is the user (what can we know about them by their profile)? |
| | User interaction | Is there any type of user interaction (e.g. call for action or response in comments?) |
| | Justification | Justification (How do people justify the making of this video? E.g., claiming to have been asked) |
| Narrative | Action in front of Camera | |
| | Where | Where does the scene take place? |
| | What | What happens in the scene? What is being shown (people, things, food) and in what state (in action, on images, dancing, just sitting and talking etc.)? |
| | LGBTQ+ Identity | Are there LGBTQ+ themes? (e.g. embodied, narrative, symbols, political, mention or depiction of LGBTQ+) What else is used to signify queerness (e.g. habits, objects, etc.) |
| | Actors | Who is being shown on screen? What do they look like (e.g. What social status/identity could be ascribed to the person on screen? Are they young/old, etc.)? |

| | | |
|---|---|---|
| | How | Body & Practices (Is the body used to construct queerness? What does their appearance and behaviour tell us about who they are? How do they behave (mimic, gestures)? What is the interaction between actors? |
| | Intentionality | Intent (is it a self-commodifying video? Is it activist? Does it combine the two? None of the above) |
| | Audience | Audience (Who is the imagined audience?) |
| Production | Camera Action<br>*Use these to make sense of the narrative categories above (platform specific)* | |
| | Crew | Who and how many people are visibly involved in the making of the content? Is the creator filming themselves or is there someone else involved? |
| | Angle | What camera angle(s) are used? |
| | Cuts | How was the video cut (long vs. short, fast cuts; length of video)? Is there anything interesting about the deliberate choice of the sequence of images (e.g. template/format)? |
| | Sound | What type of sound was used (speech and/or music; emotive effect of music; does sound fit the action on screen)? |
| | Sound Remix | Is the sound original sound produced by the user posting it? If not, in what context is the same sound used by others? |
| | Filters and Effects (trends) | What types of (visible) filters or special effects were used? Is the video a "trend" (sound and/or action reused from original user)? Note: For filters, look at meta data, if meta data do not state a filter but you feel like there is one, note that |
| | Footage Remix | Is the footage original content produced by the user that posted it? |

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# Wired for nature

## A mixed method study of environmentally conscious digital users' connections to nature in Australia and the United States

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### Abstract

In the digital age, technology increasingly shapes environmental engagement, transforming how individuals perceive the natural world. While digital tools support awareness of environmental issues such as climate change, pollution and deforestation, they also challenge the quality of nature experiences. This mixed-methods study investigates how environmentally conscious digital users conceptualise nature, interact with it, and balance screen time with nature time. Data collection involved an online survey of 220 Australian and American participants, and semi-structured interviews. Descriptive statistics and thematic analysis were used to examine participants' perceptions and practices regarding nature and digital technology. Findings show that digital technology is largely perceived as a mediator – not an obstacle – to nature connection. When used intentionally, especially alongside voluntary digital disconnection, it is seen as a neutral tool that can foster positive engagement with nature. Although participants strongly identified as part of nature, they maintained culturally embedded human-nature dualisms, particularly around human-made objects, including digital devices. The study also introduces the concept of digital solastalgia – the emotional distress experienced through witnessing environmental degradation online. Findings illustrate the complex ways individuals navigate their relationships with nature in the digital age, challenging binary framings of nature engagement as either online or offline, and suggesting a more hybrid understanding of human-nature-technology interactions.

Keywords: nature connection; digital media; environmental engagement; digital solastalgia; voluntary digital disconnection

### 1. Introduction

While digital technologies have been increasingly studied for their role in raising environmental awareness and promoting pro-environmental behaviours (PEBs), less attention has been given to the conceptual implications of interacting with nature through both digital and physical means. Research is lacking on the tensions people experience when navigating digital and natural spheres in everyday life.

This study aims to address this gap by asking: How do environmentally conscious digital users conceptualise and experience their connection to nature in a digital context? It investigates the extent to which digital engagement can support and/or hinder interactions with nature and associated behaviours.

Using a mixed-methods design, the research combines an online survey of 220 participants from Australia and the United States with semi-structured interviews. Descriptive statistics and thematic analysis were used to identify patterns and meanings in participants' accounts of their relations to nature and technology. This research is novel in that it centres on environmentally conscious digital users – a group that is underexplored yet highly relevant in the context of a media-saturated environmental crisis. Their experiences, including information sharing, digital activism, and practices of digital self-regulation, have implications for both environmental advocacy and digital sustainability. Understanding their experiences may provide insight into emerging strategies for balancing technology use with sustainable engagement to nature.

This article is structured as follows: Section 2 reviews the literature on human-nature (dis)connection, digital environmentalism, and voluntary digital disconnection. Section 3 details the explanatory sequential mixed methods design, including data collection (online survey and semi-structured interviews) and data analysis (descriptive statistics and thematic analysis). Section 4 presents the quantitative and qualitative findings obtained from descriptive statistics and thematic analysis. Section 5 discusses the theoretical and practical implications of the results for human-nature-technology relationships. And section 6 concludes with theoretical contributions, limitations, and directions for future research.

## 2. Literature review

### *2.1 Nature connection and human-nature dualism*

In an era of hyper-mediated environmental crisis – constructed and understood through digital media and technologies – supporting human-nature connection has never been more important. It is now accepted that human activities – greenhouse gas emissions, pollution, deforestation – have led to climate change and biodiversity loss (Shivanna, 2022). The environmental crisis is a crisis of human behaviour. Shifting towards sustainability requires a deeper understanding of the external and internal motivations that drive human behaviours towards nature (Wamsler et al., 2021). Nature connection, a key concept in environmental psychology referring to the subjective sense of oneness with nature that comes from the connection between an individual's self-concept and natural environments, has been studied for decades (Clayton et al., 2021). It encompasses cognitive, emotional, and behavioural dimensions (Cuadrado et al., 2022), and is consistently associated with PEBs, extending personal engagement with nature into broader social and ecological benefits (Guazzini et al., 2025). Research also suggests that digital nature exposure can positively impact nature connection, and subsequent PEBs, promoting conservation efforts in the digital age (Meng et al., 2023).

Yet, in apprehending human-nature relationships, the very notion of *nature* remains ambiguous, shaped by historical, cultural, and political forces. Some approaches to nature connection inadvertently reproduce Western dualisms of human separation and superiority that lie at the root of the ecological crisis (Christens et al., 2025). The human-nature dualism – rooted in colonial, religious, and capitalist narratives – persists through binaries such as wild/urban or real/virtual, and in the assumption that one can be "disconnected" from nature. Even integrated models like socio-ecosystems may reinforce this divide by traditionally framing humans and nature as two distinct systems – one controlling the other – rather than as mutually interdependent (Boulangeat et al., 2022). Postdigital theory also challenges fixed definitions of nature by examining how digital technologies shape perceptions, experiences, and representations of the natural world, blurring the line between digital and real, and influencing environmental awareness and behaviour (Reed, 2024). As digital nature experiences become increasingly part of daily life,

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particularly in urban contexts (Brambilla et al., 2022), reconnecting with nature demands a critical redefinition of nature itself – one that moves beyond dualisms and towards more relational, plural, and inclusive understandings (Alves & Vidal, 2024).

### *2.2 The role of digital technology in environmental activism*

Digital technology's role in environmental activism has undergone a marked transformation. Initially framed as a source of disconnection from nature (Michaelson et al., 2020), digital devices are now recognised as a complement to physical environmental experiences (Reese et al., 2022) and, increasingly, as a primary vector of initial exposure to the natural world, with the potential to foster interest and attitudes towards physical nature (Lam et al., 2025). Virtual technology and digital media – including social media, online platforms, and mobile applications – are increasingly recognised as effective tools supporting' environmental education and raising awareness of environmental issues such as climate change (Hajj-Hassan et al., 2024). They are now integral to contemporary environmental advocacy, enabling information dissemination, communities mobilisation, and influencing public opinion on climate-related issues. Digital environmental advocates leverage platform-specific content strategies – including educational reels, viral sustainability challenges, and behind the scenes looks at zero-waste living – to make environmental issues more accessible and actionable (Iqbal et al., 2025).

Digital platforms thus function not only as channels for dissemination but also as spaces for the symbolic and affective performance of ecological identities. On social media in particular, environmental engagement frequently takes the form of value-based expressions where activism is embedded in narratives of collective responsibility, intersectionality, and affective connection to the more-than-human world (Hannouch & Milstein, 2024). However, digital visibility is not without ambivalence. High-profile environmental figures, such as Greta Thunberg, exemplify how social media can simultaneously facilitate large-scale mobilisation and provoke ideological opposition, reinforcing the contested nature of online environmental discourse (Mede & Schroeder, 2024). Furthermore, research suggests that digital media's influence on PEBs does not operate through a linear knowledge-to-action mechanism. In the case of green consumption, for example, behaviour is more strongly associated with ethical values and environmental responsibility than with factual or product-specific knowledge (Nazish et al., 2024). Green product knowledge appears to exert a minimal mediating effect on consumer intentions.

### *2.3 Technostress, digital dependence, and voluntary digital disconnection*

While digital technology can facilitate nature connection and support environmental advocacy, its integration into environmentalism also raises concerns about its potential psychological impacts. Intensive digital device use has been linked to various psychological challenges, including technostress, problematic smartphone use, and internet addiction (Setia et al., 2025). These phenomena manifest through negative emotional and physiological responses such as anxiety, irritability, frustration, and fatigue. Driven in part by the "fear of missing out" (FOMO), these patterns contrast with the restorative effects associated with time in nature, reinforcing a perceived opposition between digital and nature-based experiences (Mercier et al., 2025). Digital tools can be double-edged swords in the context of environmental activism. Although they are instrumental in facilitating mobilisation, outreach, and environmental awareness, they also contribute to distraction, entertainment-driven engagement, and a disconnection from lived, place-based experience – all of which present significant challenges.

In response to the negative effects of excessive digital use, some individuals intentionally limit their device usage through voluntary digital disconnection. A recent, and still developing, line of research, voluntary digital disconnection is defined as "a deliberate form of non-use of devices, platforms, features, interactions and/or messages that varies in frequency and duration with the aim of restoring or improving one's perceived overuse, social interactions, psychological well-being, productivity, privacy and/or perceived usefulness" (Nassen et al., 2023, p. 1). This shift has prompted the rise of digital detox

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interventions, including productivity apps, smartphone wellbeing tools, social media features encouraging breaks, and nature-focused digital detox retreats (Mirbabaie et al., 2022). This trend also reflects broader neoliberal logics, as disconnection becomes commodified through disconnective media that promote self-optimisation and well-being while reinforcing normative ideals of productivity, balance, and efficient use of time (Bozan & Treré, 2024).

## 3. Methods

### *3.1 Design*

An explanatory sequential mixed methods design was chosen for this research. In the first phase, an online survey was realised to gather quantitative data and limited, supporting qualitative data. In the second phase, in-depth semi-structured interviews were conducted to provide additional qualitative data and elaborate on the quantitative findings. Data analysis included descriptive statistics and thematic analysis. This sequential approach enabled the quantitative data to identify broad patterns and relationships, while the qualitative data provided contextual understanding of these patterns. Data collection was conducted between February and October 2019 with the approval of James Cook University. Informed consent was obtained from all participants prior to the collection of survey data and the conduction of interviews.

### *3.2 Data collection*

#### *3.2.1 Participants*

Two hundred twenty participants (118 Americans and 102 Australians) were purposefully recruited through ecovillages, urban farms, environmental organisations, community gardens, zero waste initiatives, and university departments in Australia and the United States, as well as via snowball sampling from the principal investigator's personal networks. Australia and the United States were chosen as case studies because both countries combine digital connectivity with diverse natural environments and active environmental advocates, making them relevant benchmarks for the international literature. The inclusion criteria aimed to ensure participants had an interest in environmental activism and were digital users. The mean age of participants was 44.83 and 70% were female. On average, they used the internet 3.49 hours per day, and 70.1% had websites, blogs, and/or social media pages promoting environmental awareness. As the study targeted environmentally conscious digital users, self-selection was an intentional and appropriate aspect of the design, though it may introduce bias towards pro-environmental views and limit generalisability. Self-reported data also pose risks of social desirability and recall bias; these limitations are addressed in the conclusion. Participants were invited by email to complete the online survey and, through the survey, they were invited to a follow-up interview. Out of the 114 participants (58 Americans and 56 Australians) who initially agreed to be interviewed during the survey, 20 were selected for follow-up interviews based on their availability when contacted.

#### *3.2.2 Pilot study*

A pilot study using a convenience sample of 10 James Cook University undergraduates and postgraduates was conducted to test the survey on a small, representative sample, and to allow adjustments to be made before full-scale implementation, ensuring the reliability and validity of the survey instrument.

#### *3.2.3 Online survey*

An online questionnaire of 29 items (22 closed questions, 7 open-ended questions, and 9 comment boxes) was designed to explore participants' views on nature and digital technology. The survey addressed constructs such as nature connection, emotional responses to environmental degradation, and the perceived impact of digital technology on human-nature relationships, examined both conceptually and experientially. It was divided into three sections: (1) sociodemographic details including age, birthplace,

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gender, employment status, educational status, yearly income, and location (8 items), (2) views on nature including perceptions of wilderness, the psychological connection between humans and nature, perspectives on the inclusion of human-made objects in nature, and beliefs regarding human/nature dualism (12 items), and (3) views on digital technology including how participants engage with digital technology, their awareness of its potential impacts on wellbeing, and their perceptions of technology's role in facilitating or hindering their relationship with nature (6 items). The first and last two questions concerned consent, follow-up interviews, and incentives. Items were developed with reference to relevant theoretical frameworks as presented in the appendix – including solastalgia (Albrecht et al., 2007), nature connectedness (Mayer & Frantz, 2004), ecofeminism (Plumwood, 1993), digital detox (Syvertsen, 2020), etc. – but no standardised scales were used, in line with the exploratory nature of the study.

#### *3.2.4 Semi-structured interviews*

Semi-structured in-depth interviews were conducted to clarify and expand on the survey answers. The interview protocol included questions related to connection to nature, notions of home and wilderness, distress experienced when witnessing environmental degradation online, and the physical and psychological impact of online nature experiences and screen time. The interviews were realised in person, online via video calls, and through email. They were recorded and transcribed verbatim afterward when applicable.

### *3.3 Data validation*

Although no standardised psychometric scales were used, survey instrument validity was addressed through consistency with established theoretical frameworks (see appendix) and refinement via a pilot study, which allowed review of internal coherence. Due to the exploratory nature of the survey and the use of adapted or single-item measures, reliability testing (e.g., Cronbach's alpha) and formal psychometric analyses such as discriminant validity were not applicable. Qualitative validity was ensured through triangulation across survey data, open-ended responses, and semi-structured interviews, strengthening interpretative validity. Qualitative data were analysed systematically using a hybrid inductive-deductive thematic analysis approach, with transparent coding procedures conducted in NVivo to provide an audit trail. The explanatory sequential mixed methods design strengthened overall construct and interpretive validity.

### *3.4 Data analysis*

Quantitative and qualitative data were analysed using distinct but complementary procedures, with the quantitative data analysed first to identify key patterns and inform the development and focus of the subsequent qualitative analysis.

#### *3.4.1 Quantitative strand*

Descriptive statistics were used to analyse the 22 closed-ended survey questions, including Likert-scale, binary, and multiple-choice items. Percentages were calculated using Microsoft Excel to identify key trends and summarise response distributions. These results informed the design of the interview guide and helped identify themes for deeper qualitative investigation.

#### *3.4.2 Qualitative strand*

Qualitative data were derived from two sources: 1) 7 open-ended survey questions and 9 comment boxes distributed throughout the questionnaire, and 2) semi-structured interviews conducted with survey participants who volunteered for follow-up. Thematic analysis (Braun & Clarke, 2006) was applied to the combined qualitative dataset using a hybrid inductive and deductive approach. It provided a structured framework to identify and organise patterns of meaning (themes) across six phases: 1) familiarising with the data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) refining and naming

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themes, and 6) writing the report. The qualitative dataset was managed electronically using NVivo (Version 12).

## 4. Results

### *4.1 Quantitative analysis*

The quantitative results are presented below using descriptive statistics, primarily through graphs displaying percentages. A total of 220 questionnaires were initiated, with 160 being fully completed. Consequently, 60 questionnaires were excluded as they were either entirely blank or only had the demographic section filled out.

The three graphs below show that participants were daily digital users. The majority spent 2 to 5 hours on the internet per day, with 39.69% selecting this option. Only a few participants (5.04%) reported spending more than 8 hours online daily. Additionally, 53.37% of participants indicated that they checked their emails every day. Social media was also frequently accessed, with "often" being the most selected response (30.98%), followed closely by "sometimes" (30.92%). Notably, 16.59% of participants reported never using social media.

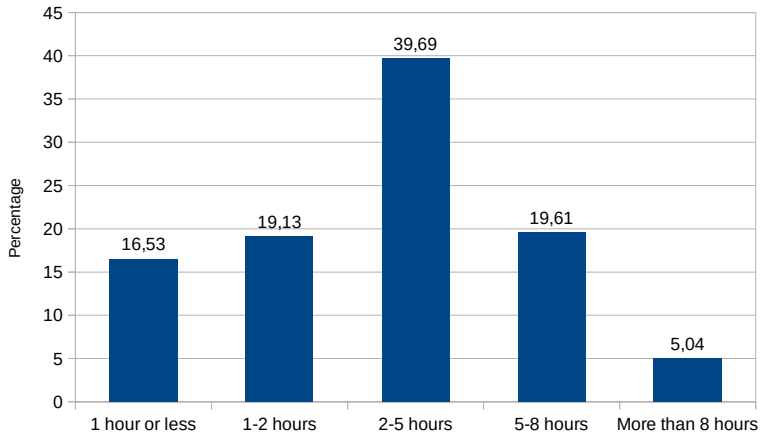


**Figure 1.** In a typical day how much time do you spend using the internet?

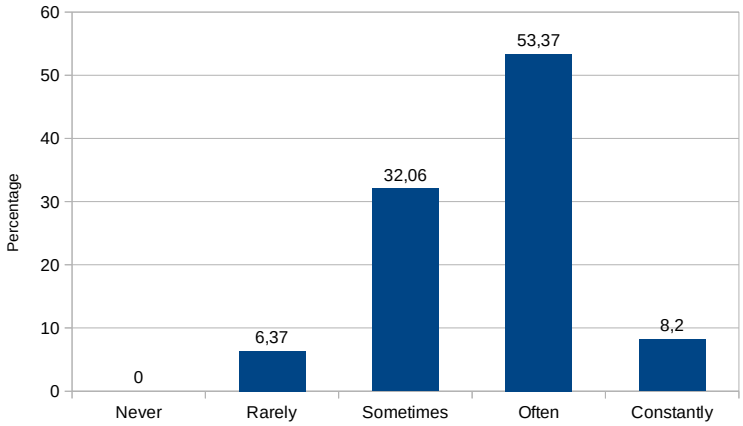


**Figure 2.** In a typical day how often do you check your emails?

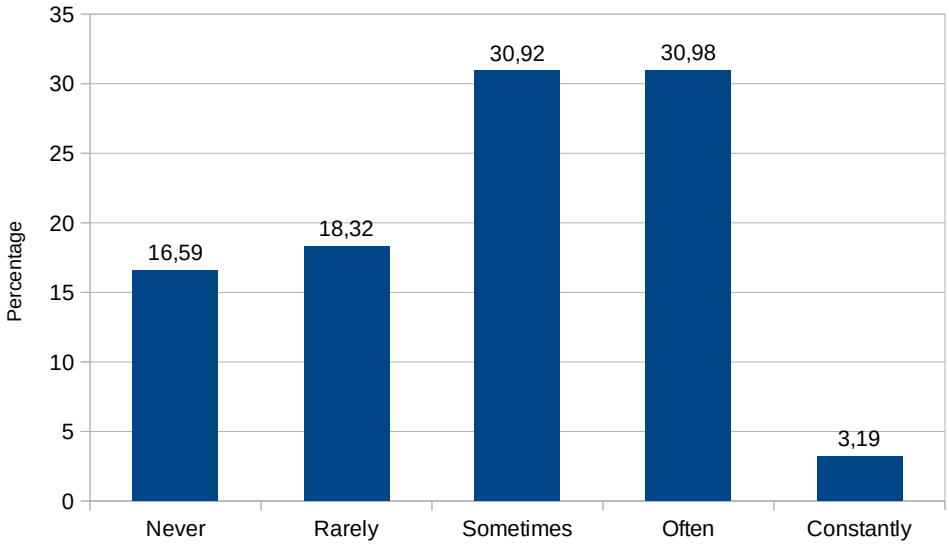


**Figure 3.** In a typical day how often do you check social media?

On average, most participants (54.52%) reported not experiencing feelings of powerlessness due to the increasing prevalence of digital technology in everyday life.

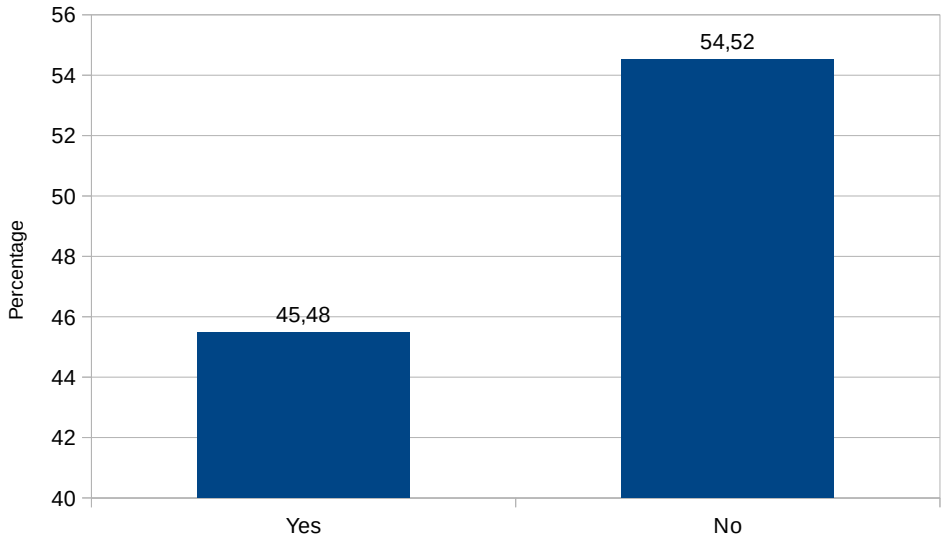


**Figure 4.** Do you experience feelings of powerlessness due to increasing prevalence of digital technology in everyday life?

As Figure 5 demonstrates, participants also reported periodically unplugging and intentionally engaging in digital detox, with 52.25% selecting this as the most frequent response.

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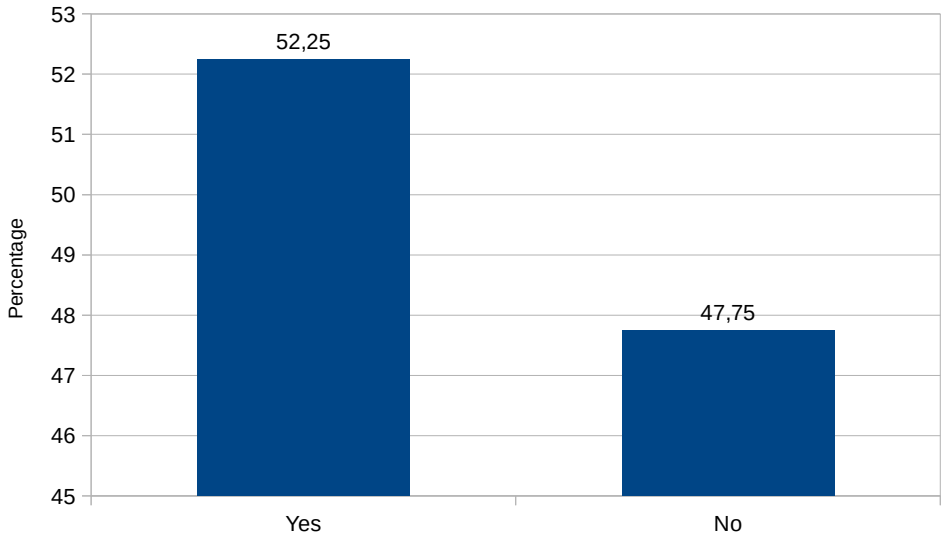


**Figure 5.** Do you periodically unplug or deliberately take a digital detox?

Figure 6 shows that most participants (54.23%) reported that digital technology neither helped nor hindered their relationship with nature. Interestingly, 33.46% indicated that it had positively influenced their relationship with nature, while the smallest group, 12.31%, mentioned that it had a detrimental effect.

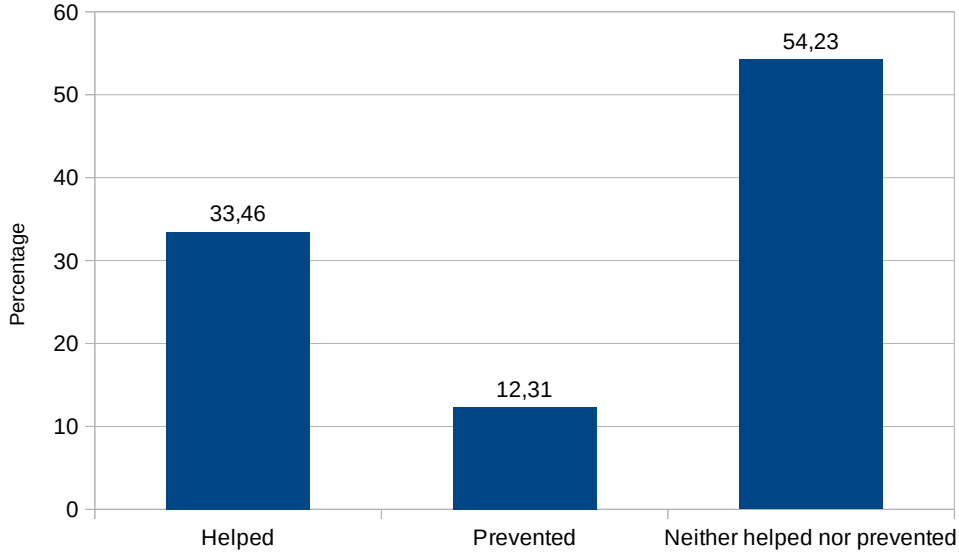


**Figure 6.** Has digital technology helped you to or prevented you from having a deeper relationship with nature?

A majority of participants (84.74%) indicated that their upbringing nurtured their relationship with nature, suggesting that their childhood experiences fostered a lasting connection to the natural world that persisted into adulthood.

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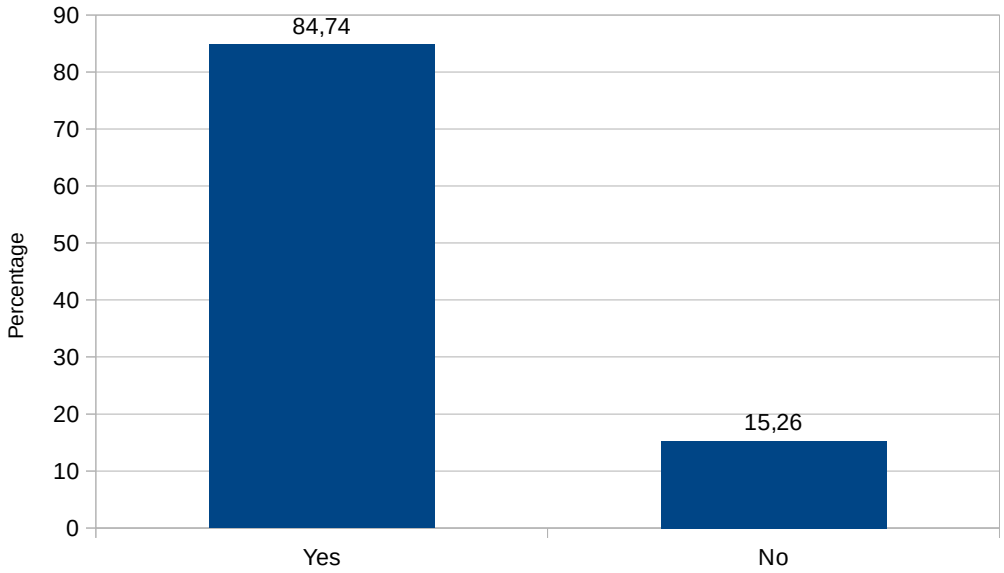


**Figure 7.** Has your upbringing helped you to nurture a relationship with nature?

Regarding their emotional engagement with nature, a vast majority of participants reported experiencing solastalgia (i.e. the distress caused by environmental change and a yearning for nature). For the 4.46% of participants who did not report experiencing solastalgia, the remaining 95.54% indicated having experienced it to varying degrees, from “a little” to “a great deal”. The most common response was “a great deal”, reported by 30.29% of participants.

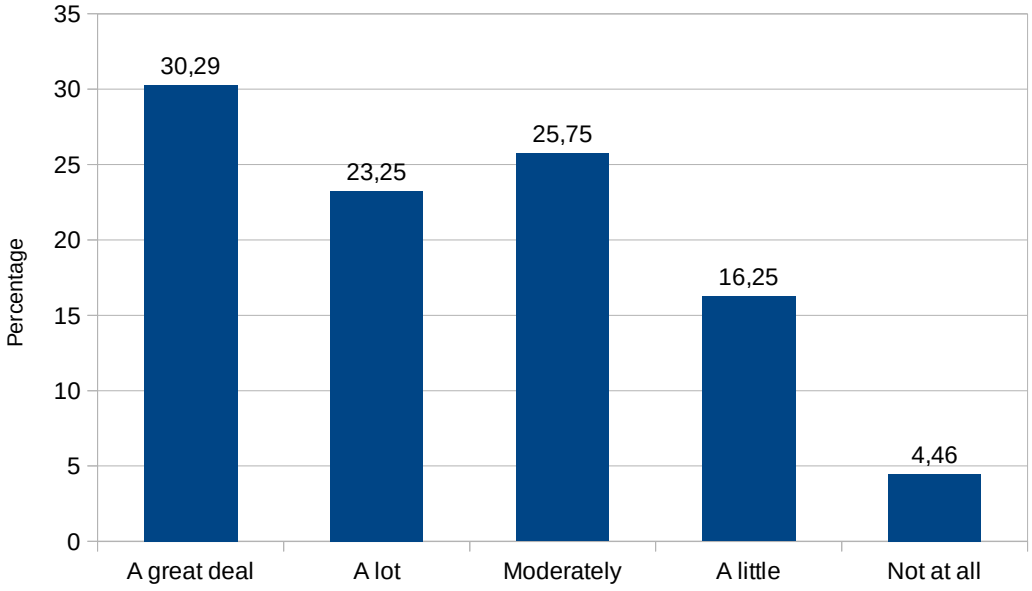


**Figure 8.** Have you ever experienced solastalgia?

The graph shows that most participants identified themselves as part of nature. Specifically, 84.66% reported feeling connected to nature, with responses ranging from “slightly” to “completely part of nature”. In contrast, only 15.34% viewed themselves as separate from nature. The most frequently selected response was “mostly part of nature”, chosen by 37.47% of participants.

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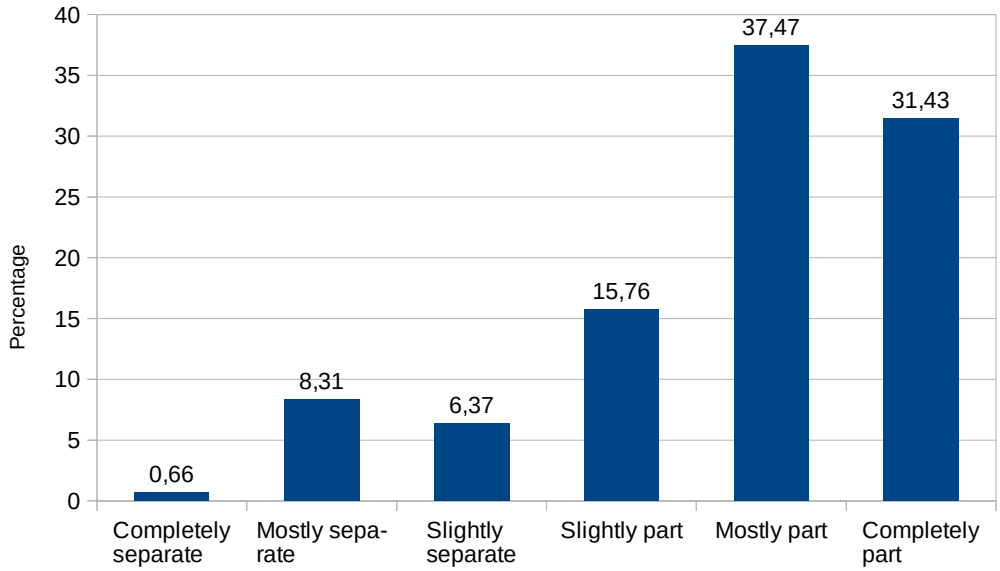


**Figure 9.** Do you see yourself as separate from or part of nature?

Human/nature dualism, a prevalent concept in Western society, posits that humans and nature are separate and distinct. However, most participants (64.46%) disagreed with this view and did not believe there was any truth to the concept.

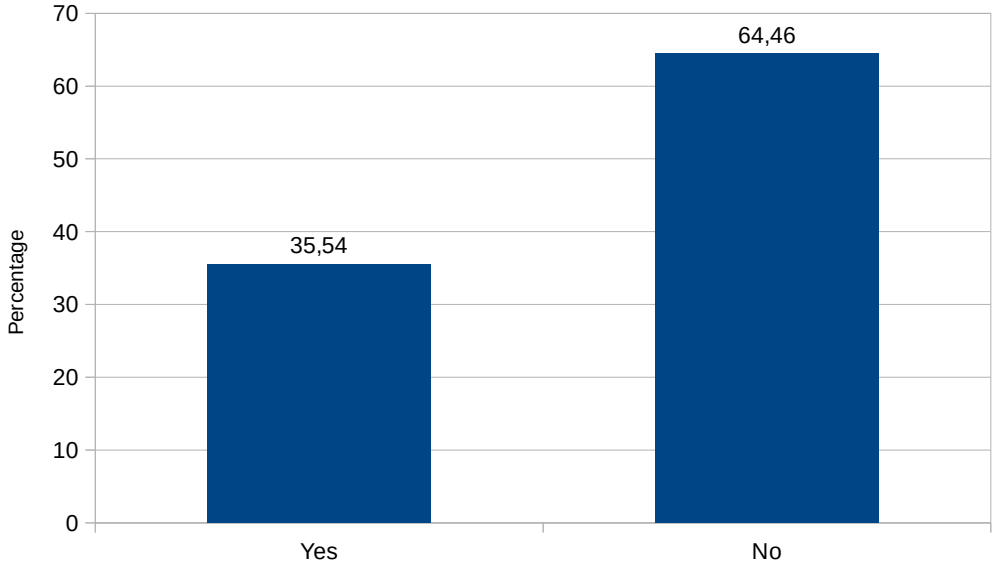


**Figure 10.** Do you think there is any truth to the concept of human/nature dualism?

According to the American Wilderness Act of 1964, wilderness is defined as “an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain”. Most participants (66.36%) supported this definition, including those who answered, “Strongly agree” or “Agree”. The most frequently chosen response was “Agree,” selected by 45.74% of participants. In contrast, “Strongly disagree” was the least common response, chosen by only 4.36% of participants.

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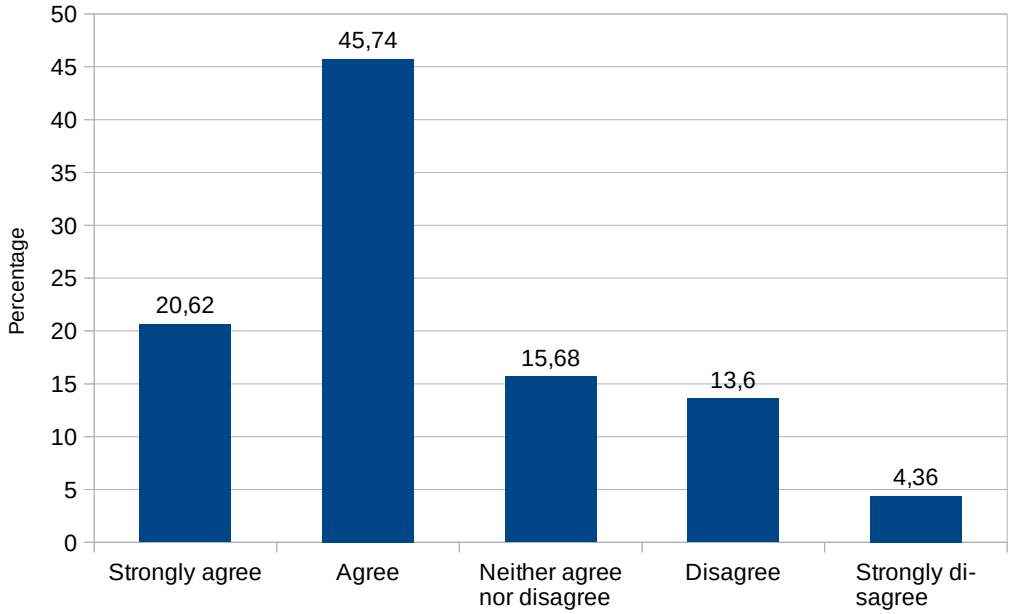


**Figure 11.** Do you agree or do you disagree with the definition of wilderness proposed by the American Wilderness Act?

Figure 12 shows that a majority of participants (78.75%) did not consider modern human objects, such as plastic, cars, smartphones, etc., to be part of nature.

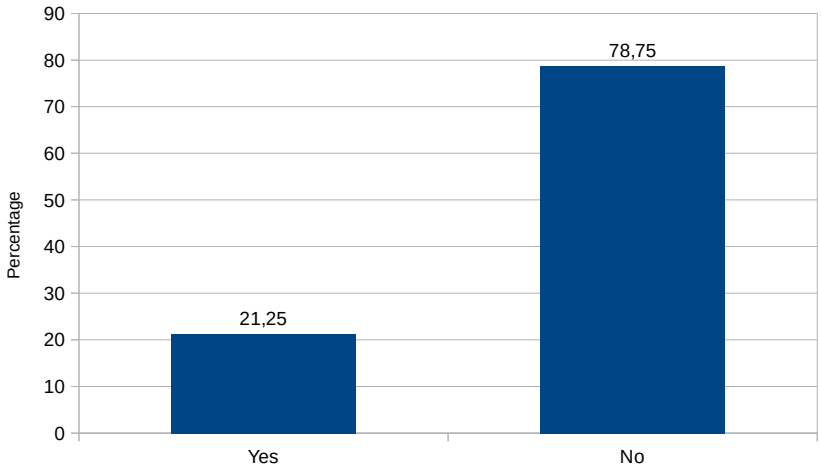


**Figure 12.** Do you consider humans' modern creations as being part of nature?

### *4.2 Qualitative analysis*

A thematic analysis was conducted using a hybrid inductive and deductive approach and resulted in the identification of overarching themes. Six major themes were extracted from the combined survey and interview data, namely Connection to nature, Human-nature dichotomy, Environmental education, Ecological emotions, Digital limitations to nature engagement, and Voluntary digital disconnection.

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#### *4.2.1 Connection to nature*

This theme explores how participants define their relationship with the environment, highlighting their sense of connection, responsibility, and identity derived from interactions with nature. Many participants viewed themselves as an integral part of nature, as Participant 98 expressed: "We are all nature. Nature is everything on this planet". Others questioned the notion of separation from nature, with Participant 21 noting, "I find myself wondering how people are able to even for moment consider themselves being not a part of nature: like, you are currently converting a sandwich, which is made of other species, into your body!" Some participants also considered human objects as part of nature. As Participant 13 explained, "A beaver dam is part of nature. It's the beaver's habitat. Cities are human habitat. Humans are part of nature. Thus, cities are also nature". While some acknowledged that human actions, even destructive ones, are natural, they also recognised the complexity of this viewpoint. Participant 45 reflected, "I think that all human actions are natural, but not that acting 'naturally' is necessarily just. Nature is not necessarily just or sustainable, especially if we (as I do) consider the human species to be part of the greater system of nature. No part of nature, human or otherwise, acts to preserve its own environment or the ecological stability of the world. Nature is not inherently permanent or self-sustaining". Participants referred to their connection to nature as multidimensional, involving cognitive, emotional, and behavioural aspects. However, many experienced internal conflicts between their intellectual understanding and emotional responses. As Participant 7 expressed, "My intellectual attempt to see myself and human creations as part of nature is in direct conflict with my feelings and beliefs that modern creations and human culture are responsible for a lot of the environmental degradation currently happening".

#### *4.2.2 Human-nature dichotomy*

This theme explores the perceived separation between humans and nature, where participants often viewed nature as an external entity distinct from human life and society. This perception does not contradict the theme of Connection to Nature but rather complements it, illustrating the complexities in participants' conceptualisation of nature. Participants defined nature as "the world around us" (Participant 70), "that which exists outside of human activity" (Participant 65), "the part of the world that humans didn't make up themselves" (Participant 39), or "a place that humans haven't fucked up" (Participant 123). They shared an idealised view of pristine, untouched nature, depicting wilderness as distinct from human civilisation – a "green refuge, providing peace and tranquility from urban life" (Participant 7). Nature was perceived as more or less natural depending on "the levels of human impact and population" (Participant 72), and human presence was seen as inversely proportional to natural presence. Participant 159 elaborated on this idea: "I personally have a scale where I acknowledge things have varying degrees of human influence. For example, a garden is made up of 'natural plants' but the distribution of those plants is designed by humans, so a garden is 'somewhat natural'. The wilderness is not designed by humans and is an assortment of naturally distributed plants, so it is 'mostly natural'". Participants also viewed modern lifestyles as detrimental to the environment, or "ecocidal", as Participant 103 noted. Participant 113 argued that "Anything that negatively impacts the natural balance of our environment on a large scale is not part of nature", meaning modern human societies.

#### *4.2.3 Environmental education*

Participants emphasised that environmental education played a role in developing their connection to nature. This education extended beyond formal settings, and was influenced by family, time spent in nature, media, and school. Nature exposure during childhood was particularly important in fostering a deep connection to the natural world in adulthood. Participant 103 recalled, "I grew up in a city and my mother introduced me to planting flowers and naming flowers when I was a young girl and I loved it. She told me I had a 'green thumb' when I said I liked the feeling of dirt on my hands. That small encouragement flourished into a love of gardening". Similarly, Participant 82 shared, "Growing up, I had

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opportunities to spend a fair amount of time in natural surroundings... I felt that nature was somewhere I could feel free and somewhere where I belonged". Participants also acknowledged the role of academic education and environment-related courses to promote environmental awareness. Traditional and digital media, including documentaries, films, and books, also influenced their education, often inspiring lifestyle changes. Specifically, the internet emerged as a modern tool, providing access to information and like-minded people that reinforced pro-environmental values. Participant 67 noted, "My recent, most radical sense of deep connection has been made possible through the internet – especially being able to find, read and hear people like Tim Morton, Val Plumwood, and others. These connections, I feel, have given me more access to connection with the landscapes and other species around me". Online activities were also praised for inspiring intention to engage with physical nature, with Participant 19 stating, "Social media helps me connect with others who are out in nature, sharing their experiences. This inspires and motivates me to get out there".

#### *4.2.4 Ecological emotions*

Participants often expressed emotions like guilt, anger, sadness, and anxiety, reinterpreted in the ecological crisis as eco-guilt, eco-grief, and solastalgia. Demonstrating the intensity of eco-guilt, Participant 151 described their view of humanity's environmental impact: "I despair that human beings are the most destructive, selfish, greedy species on Earth... When I'm feeling at my worst, I feel that we, humans, are a disease for the planet". Eco-grief, a response to environmental loss, and solastalgia, the distress caused by environmental change, were also common. Participants felt profound sadness and anxiety over ecological destruction, often sensing a personal loss. Participant 33 reflected, "I was in high school when I first had this feeling. I looked out the window and saw parking lots and ugly brick buildings. I wrote a poem about it. I just think it's so sad the way humans alter something so beautiful [as nature] and make it permanently bleak". This emotional turmoil was frequently accompanied by a deep longing for nature, a key aspect of solastalgia. Spending time indoors or in urban areas intensified these feelings, with participants reporting "a feeling similar to claustrophobia" (Participant 117), "a type of gagging reaction of the body" (Participant 93), or, as Participant 81 explained after spending prolonged time inside, "I found myself almost hurting to go outside and get away".

#### *4.2.5 Digital limitations to nature engagement*

Participants acknowledged that digital technology could limit their experience of nature. They criticised digital technology for being addictive, leading to increased indoor activity and reducing time spent outdoors. As Participant 110 explained, "Use of digital technology is very attractive in that it takes little effort, and it gives constant rewards for usage. It is so attractive that I spend a lot of time using it rather than doing things I used to do such as take nature walks". While some recognised the benefits of indirect digital interactions with nature, they generally found these experiences to be inferior to direct interactions. As Participant 149 explained, "I actually haven't watched a whole lot of environment-based things online. Most of what is experienced through the computer is fake". Participants described digital nature experiences as lacking and leading to a mind-body disconnect because digital technology does not provide a full sensory, physical experience, and is mostly cognitive: "Experiencing nature through the screen does not make me feel physically good, but it does have a positive mental effect for the time you are watching it" (Participant 120). They also agreed that constant connectivity resulted in exposure to distressing environmental news and digital solastalgia (i.e. the distress felt when experiencing environmental damage online). Participant 17 illustrated this: "I experience digital solastalgia almost on a daily basis when reading the news [with] global examples such as climate change. In comparison, I feel solastalgia far less often.... I feel that digital solastalgia is more distressing as I am more distant from the source and feel powerless to take action". Likewise, Participant 53 shared: "I more often, and at a more terrible scale, encounter global ecological disaster online than in my own community". This led some to consciously

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limit their time on certain platforms, such as social media, to mitigate the impact. Participant 101 noted, "I have to limit my time on Twitter because of it".

#### *4.2.6 Voluntary digital disconnection*

This theme refers to participants' conscious engagement with digital technology. It captures their awareness of how digital tools impact their lives, the intentional choices they make regarding technology use, and their strategies for maintaining a balanced digital/nature time. Participants reported using the internet moderately and primarily for valued activities, balancing their digital consumption with social time, nature time, and knowledge expansion. Participant 19 noted, "I have consciously thought about what types of digital media I consume and made changes to my habits". Many participants describe maintaining control over their technology use, deliberately engaging in digital disconnection. Participant 86 explained, "I check my emails almost exactly once per day, but sometimes I skip a day... I stop using technology after dark and instead turn to drawing or reading paper books". Another shared not really having a routine but "… my brain tires of a computer quickly and I feel compelled to take breaks to exercise, read, play guitar, cook, or engage in something non-screen-related" (Participant 21). Similarly, Participant 50 stated, "I have control over the impact of digital technology in my life and can say no and walk away when I feel the need". Balancing screen time with nature time is also common. As Participant 8 shared, "I make sure to sit silently in a garden or forest for at least one hour a day". Others saw nature as a way to recover from online activities: "Often, if I've had to be in front of a screen for an excessive amount of time, I have a great desire to just go out and lie on the grass and look up at the branches of the nearest tree. Then I feel better" (Participant 32).

## 5. Discussion

The findings of this study show that digital technology primarily supports nature connection. More specifically, it is a neutral tool for positive change when used with intention. Participants described digital tools as facilitators of environmental learning and activism, community engagement, and nature exposure. They recognised the educational and social benefits afforded by the internet, including access to information and inspiration for nature-based practices. This corroborates existing research which shows that digital nature can support pro-environmental attitudes and intentions to engage with physical nature, particularly among younger individuals and urban populations (Sultana & Hawken, 2023). While 33.46% of participants perceived technology as a positive tool and 54.23% reported a neutral impact, only a small proportion (12.31%) felt that it hindered their relationship with nature. These results were further clarified in the qualitative analysis, which showed that digital technology can enhance nature connection when used with intentionality – that is, through participants' deliberate efforts to manage their digital engagement in line with personal values and well-being. As participant 10 observed: "I pick and choose how I use technology, and how much I let it intrude".

In response to concerns about overuse, many adopted disconnective practices such as digital detoxes, silent mode, screen time monitoring, and everyday limits like avoiding screens after 7 p.m. or refraining from phone use during meals. Participants reported lower-than-average daily internet use (2-5 hours),1 and their motivations for disconnection included psychological health and the desire to prioritise offline activities – particularly nature-based activities such as gardening, hiking, camping, and surfing. This aligns with research showing that voluntary disconnection is a response to pervasive connectivity and that individuals increasingly manage digital use by selectively moderating perceived detrimental aspects (Nassen et al., 2023; Radtke et al., 2022). Such practices are also reflective of a broader orientation toward digital wellbeing, often closely intertwined with acts of disconnection (Vanden Abeele & Nguyen, 2022). In this study, 52.25% of participants reported intentionally limiting digital use, while a comparable proportion (54.52%) indicated they did not feel overwhelmed by digital technologies – suggesting a degree of success in maintaining boundaries.

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However, such accounts require contextualisation. While participants reported autonomous strategies to limit digital consumption and support nature engagement, these behaviours are embedded in broader structural and systemic conditions. Urbanisation, socioeconomic disparities, and restricted access to natural environments can significantly constrain opportunities for nature interaction, regardless of individual intent (Colley et al., 2022). Moreover, the capacity to enact intentional disconnection is unequally distributed, as digital access and literacy remain shaped by sociodemographic inequalities that limit how marginalised groups can engage in empowering digital practices (Ragnedda et al., 2022). These dynamics are consistent with research in environmental justice and political ecology, which emphasise how digital mediations of human-nonhuman relations are shaped by material infrastructures and conditioned by broader structural inequities (Turnbull et al., 2022). As Sultana (2022) argues, the coloniality of climate change shapes people's lived experiences through global racial capitalism and historical dispossessions, underscoring how opportunities for environmental engagement are unevenly distributed. Digital engagement with nature should therefore be understood not solely as expressions of personal preference, but as practices influenced by complex social, economic, and political forces.

At the same time, participants demonstrated awareness of not just how much time they spent online, but also what kinds of digital content they engaged with. This included making conscious choices about social media use and the types of news they consumed, particularly in relation to environmental issues. Several participants expressed concern about the emotional toll of repeated exposure to distressing environmental news – an increasingly documented phenomenon (Pearson, 2024). Given that approximately 80% of international media coverage on climate change has been classified as negative (Vattenfall, 2020), such responses are not unexpected. For many, limiting digital engagement – particularly with climate-related content – served as a protective strategy, though somewhat ineffective (Chapman & Peters, 2024). As participant 90 explained, the environmental crisis "can be beamed into your world every day, multiple times a day, along with the human distress it causes". These emotional responses reveal not only the psychological cost of digital exposure to the environmental crisis but also point to the emergence of new emotional states unique to the digital sphere.

In this respect, a particularly novel finding of this study is the construct of digital solastalgia – the emotional distress experienced through witnessing environmental degradation online (Martin, 2024). This concept extends Albrecht's (2019) notion of solastalgia to cyberspace and digital nature experiences, capturing a new dimension of environmental distress linked to global, remote environments. The emotional dimensions of solastalgia and digital solastalgia were portrayed by participant 101 as notably different: "I experience digital solastalgia all the time – I have to limit my time on Twitter because of it. The digital solastalgia is ore of grim all-encompassing doom feeling, while the local solastalgia is more of a powerless franticness – like I can't stop all the lawnmowers and building construction, but it drives me out of my brain to have to see and hear it". These findings show how participants manage digital solastalgia through selective avoidance of environmental news and social media. This coping strategy, while protective, also exposes the emotional limits of digital environmentalism in sustaining education, mobilisation, and engagement – revealing its potential to contribute to eco-paralysis (Innocenti et al., 2023) and raising broader concerns about its overall effectiveness.

The persistence of a culturally embedded human-nature dualism, even among environmentally conscious individuals, further nuances these findings, reflecting enduring Western conceptualisations that separate humans and nature. While 84.66% of participants saw themselves as part of nature, 66.36% defined wilderness as devoid of human presence, and 78.75% perceived human-made creations as separate from nature. This dissonance suggests that deeply rooted social and cultural norms continue to shape conceptualisations of nature, reinforcing a dualistic perspective. This confirms but also extends prior literature on nature connection by emphasising the simultaneous presence of inclusionary and exclusionary understandings of nature among the same individuals (Hastings & Sæther, 2024). Specifically, human-nature separation was apparent in the participants' conceptualisation of human-made objects. Items such as clothing, cars, and digital devices have traditionally been considered symbols of

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urbanisation and industrialisation, often perceived as artificial and distancing humans from the natural world. However, recent research aimed at reconciling nature and culture shows that conscious interactions with everyday objects – including digital devices – involving care and learning were significantly associated with nature connectedness, PEBs, and life satisfaction (Kamide & Arai, 2024). Interactions with domestic artefacts are not isolated experiences but are related to broader awareness of and behaviour toward the natural world, with the home acting as the first 'environment'.

The study's findings raise ongoing debates and questions concerning the depth and impact of digital environmentalism. Digital platforms should ideally be used as a mutually reinforcing process between online and offline activism (Vancsó & Kovács-Magosi, 2024). Scholars debate whether digital environmentalism drives meaningful behavioural change or primarily encourages low-effort, passive participation (e.g., slacktivism, clicktivism) that may not translate into sustained offline activism or policy influence (Saikia & Hazarika, 2024). Additionally, digital activism is vulnerable to misinformation, emphasising the imperative to uphold accuracy and credibility. Research shows that the framing of environmental issues – particularly through affective components, whether positive or fear-based – is strongly linked to public engagement, as reflected in metrics such as likes, shares, and comments (Hart et al., 2024). Emotional resonance often outweighs factual content in driving digital interaction with environmental topics. Another question is the considerable ecological footprint of digital consumption, which can paradoxically undermine the very goals of environmental advocacy (Istrate et al., 2024).

## 6. Conclusion

### *6.1 Theoretical implications*

This study contributes to the literature by offering several theoretical insights. First, it reconceptualises digital devices as potential mediators – rather than obstacles – of human-nature relationships. Second, it identifies voluntary digital disconnection as a nature-connecting strategy used by environmentally conscious individuals to cultivate presence and sensory immersion in natural environments. Third, the study introduces the notion of digital solastalgia to describe the emotional distress triggered not by physical environmental degradation, but by digital representations of environmental damage. Fourth, it acknowledges the persistence of a human-nature dualism, even among environmentally conscious individuals, revealing the cultural depth of nature separation in contemporary digital societies. Collectively, these findings challenge binary framings of nature engagement as either online or offline, suggesting instead a more fluid and hybridised understanding of nature experiences in the digital age.

### *6.2 Practical contributions*

This study offers actionable insights for environmental educators, communicators, mental health practitioners, and digital designers. By recognising the emotional and identity-based dimensions of digital engagement with nature, it advocates for hybrid interventions that integrate digital and embodied experiences – such as apps promoting sensory immersion or storytelling platforms that encourage outdoor activity. The concept of digital solastalgia provides a novel framework for addressing affective responses to virtual ecological degradation, with applications in ecotherapy and climate psychology. Finally, understanding voluntary disconnection as a regenerative practice invites more nuanced strategies for digital wellbeing – shifting from abstinence models to intentional, cyclical disconnection. These findings inform the development of digital tools and practices to support environmental awareness, and connection.

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### *6.3 Limitations and future research*

Nonetheless, the study is circumscribed by notable limitations. The participant pool predominantly comprised individuals who self-identified as environmentally conscious, generating an inherent selection bias that privileges pro-environmental narratives and practices. Consequently, voices characterised by scepticism, alienation, or indifference toward environmental issues remain marginal or absent, constraining the generalisability of the findings. Moreover, the reliance on self-reported data introduces the possibility of performative responses shaped by social desirability, notwithstanding measures to preserve anonymity. This study did not engage with Indigenous worldviews, which constitutes a significant epistemological and ethical limitation. Indigenous ontologies in both Australian and North American contexts frequently resist nature-culture dichotomies, offering holistic understandings of place, kinship, and more-than-human relations that were largely absent from participant narratives. Future research should aim to focus on Indigenous communities to examine how digital technology intersect with land-based knowledge systems and collective environmental responsibilities. Future research should also aim to investigate individuals with low nature affinity, or who use technology as their primary means of engaging with the world. Such perspectives would contribute to a more nuanced understanding of the plural and sometimes contradictory ways in which human-nature-technology connections are experienced.

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## Appendix

**Table 1.** Survey questions, constructs, and theoretical bases

| Construct | Survey question | Response format | Theoretical basis |
|---|---|---|---|
| Wilderness | According to the American Wilderness Act of 1964, wilderness is defined as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Do you agree or do you disagree with this definition? | 5-point Likert + comment | American Wilderness Act (1964) |
| Nature | Can you give your own definition of "nature"? | Open-ended | Author-designed |
| Childhood nature experience | Has your upbringing helped you to nurture a relationship with nature? | Yes/No + comment | Rosa et al. (2018) |

| | | | |
|---|---|---|---|
| Solastalgia | Solastalgia describes the distress people experience when a home and its landscapes are negatively impacted (by urban transformation, pollution, road works, tree cutting, etc.). It also describes a yearning for nature, common to Western societies, as screen time is winning over green time. Have you ever experienced solastalgia? | 5-point Likert + open comment | Albrecht et al. (2007) |
| Nature connection | Do you see yourself as being separate from nature or as being part of nature? | 6-point Likert | Mayer & Frantz (2004) |
| Human-nature dualism | Do you consider humans' modern creations (e.g. plastic, electricity, cars, smartphones, etc.) as being part of nature? | Yes/no + comment | Author-designed |
| Nature | How do you distinguish between nature, wilderness, and the bush? | Open-ended | Author-designed |
| Ecofeminism | Ecofeminism is a movement that sees parallels between the oppression of nature and the oppression of women. These parallels include, but are not limited to, seeing women and nature as property, and acknowledging that men dominate women, and humans dominate nature. Do you see yourself as an ecofeminist? | Yes/no | Plumwood (1993) |
| Self-identification | Do you consider yourself… (activist, ecologist, etc.)? | Multiple choice | Author-designed |
| Human-nature dualism | The human/nature dualism is a prevalent concept in Western society that describes human and nature as being separate and distinct. For instance, we often believe that city and nature are opposite, or that humans are superior to plants. Do you think there is any truth to the concept of human/nature dualism? | Yes/no + comment | Descola (2013) |

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|---|---|---|---|
| Digital disconnection | Do you periodically unplug and deliberately take a digital detox (for example, no digital technology after 7pm, no connection at all on Sundays, etc.)? | Yes/no + comment | Thomas et al. (2016) |
| Digital overwhelm | Do you experience feelings of powerlessness due to the increasing prevalence of digital technology in everyday life? | Yes/no | Author-designed |
| Digital nature connection | Many researchers think that technology is changing our relationship with nature. In your experience, has digital technology helped you to have a deeper relationship with nature, or has it prevented you from having a deeper relationship with nature? | Multiple choice + comment | Author-designed |

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