

From AI imaginaries to AI literacy Artificial intelligence technologies in the everyday lives of migrants in Germany

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Abstract

Based on the results of a qualitative study on how migrants experience technologies of automation in everyday life, the article describes users' imaginaries of artificial intelligence as the overall technology behind different digital media applications. This encompasses the subjective idea of users about what AI technology is, what it can do, and what it should do. All respondents share a general understanding of AI as a feeling and awareness that the technology has its own logic of some kind, as articulated in recommendation algorithms on TikTok, YouTube or Netflix, language correction on WhatsApp or email programs, translation apps, but also in voice assistants like Amazon Alexa or Siri. By analytically linking the two concepts of AI imaginaries and AI literacy, a perspective is developed that focuses on culturally-shaped ideas about technology and the subjectively perceived agency is thus analyzed in the context of the technologies of automation.

Keywords

AI imaginaries, folk theories, AI literacy, algorithmic literacy

Introduction

The increased importance of opaque, algorithmically-driven digital media and social media platforms (e.g., Facebook, YouTube, TikTok) in everyday life requires ordinary users to speculate as to how platforms and artificial intelligence (AI) technologies work in order to decide how to behave to achieve their daily goals. The spread of generative AI technologies such as ChatGPT or Midjourney reinforces this need more than ever. This speculation takes the form of folk theorization and results in social imaginaries (Latré, 2018; DeVito, 2021). It is the collective effort to co-learn about and affect, for example, the notorious recommendation algorithm of social media platforms (Burgess et al., 2022). In this context, we explore how people who are already disadvantaged in society and often not considered in the development of AI, such as migrants, perceive and experience AI technologies in communication processes. Research on practices and coping strategies in dealing with algorithms and AI has revealed that users develop resignation, apathy, a sense of algorithmic irritation and algorithmic disillusionment (Ytre-Arne & Moe, 2021; Büchi et al., 2023). At the same time, Gruber and Hargittai (2023) show that people nevertheless develop strategies to make algorithms useful for digital participation. By competent appropriation of AI and algorithmic systems, existing digital inequalities can be reduced, they argue. All in all, in our paper we explore how migrants in Germany imagine AI and the extent to which this imagination contributes to a self-determined, competent experience of AI technology. We therefore want to figure out how they evaluate their impact in the context of these technologies and the extent to which practices of dealing with AI are empowering. First, we introduce the concept of AI imaginaries and AI literacy. Then, we describe our data and show the results of our qualitative study on migrants as users of AI technologies in Germany. The paper ends with a conclusion about the role of AI literacy for a sovereign life with AI.

AI imaginaries

People develop subjective theories to explain aspects of life that are complex in structure – be they technical or otherwise. Technological imaginaries (Bucher, 2017) represent a subjective idea, for example, of what AI technology is, what it can do, and what it should do. These imaginaries serve as a symbolic resource for practices of using and experiencing AI technologies; they contain strategies of action and thus include general solutions for dealing with technology, something which can be valid and exemplary in various everyday situations (Siles et al., 2020; Ytre-Arne & Moe, 2021). Subjective everyday life theories build on people's perceptions and everyday knowledge about, attitudes toward, and emotional and affective evaluations of AI. Furthermore, the value of AI imaginaries does not lie just in guiding behavior but also in making sense of experiences of the technology (Guzman & Lewis, 2020, p. 77; Ytre-Arne & Moe, 2021, p. 811). These imaginaries emerge in a relational process: They are developed, adapted, and changed through the experience of using AI

technologies. The approach of looking at the “folk theorization” (DeVito, 2021, pp. 3-4) of AI technology is useful because it puts the focus on subjective experiences, knowledge, practices, and competencies that are constantly in flux, and it also considers that knowledge appropriation about technologies is a long-lasting process that builds on different sources. Besides, users are exposed to AI imaginaries that are articulated and enacted by corporate actors, civil society or research communities (Bareis & Katzenbach, 2021).

We propose analyzing people’s personal AI narratives about automation technologies, mostly referred to as AI, to explore what subjective everyday life theories migrants develop about AI and what these theories reveal about digital literacy and complex experiences of AI. The notion of AI imaginaries focuses on the feelings, moods, and sensations that users experience while using AI technologies, promoting a reflexive approach toward AI. It gives us the point of access for understanding how and when AI technologies matter for them, explaining how AI imaginaries help migrants to experience AI in a self-determined way and use AI to their own benefits (Bucher, 2018; Sūna, 2023). Ordinary users engage in social learning as they attempt to understand, negotiate, and manipulate these technologies, collectively building AI imaginaries (Bucher, 2017).

AI literacy

While most media literacy studies focus solely on algorithmic systems, we adopt the term communicative AI, as suggested by Guzman and Lewis (2020). In this paper because we are interested in user perceptions and interactions with a wide array of automation technologies of everyday relevance, such as recommendation algorithms on social media, voice assistants like Alexa or Siri, prediction tools like language correction and neural machine translation tools like Google Translate. As the rise of generative AI shows, besides rule-based algorithms, which have been the focus of recent critical algorithm studies, other AI technologies are also becoming important for ordinary users. Consequently, AI “refers broadly to computational systems that involve algorithms, machine learning models, natural language processing, and other techniques that operate on behalf of an individual to improve communication outcome” (Hancock et al., 2020, p. 90). Further, from a communication research perspective, AI can be defined as the “capability of non-human machines or artificial entities to perform, task solve, communicate, interact, and act logically as it occurs with biological humans” (Gil De Zúñiga et al., 2024, p. 318). Throughout this study, we use the terms communicative AI and AI technologies interchangeably, both referring to the communicative nature of these technologies (Hepp et al. 2023).

Against this background, it becomes necessary to develop methodological approaches to understand how people deal with AI technology. For this reason, we extend the concepts of algorithm imaginaries and algorithm literacy to the wider context of communicative AI technology. With Guzman and Lewis (2020), we assume that communicative AI

changes social interactions and we therefore stress that AI is a technology that humans can use to extend and functionally replace cognitive processes and behavior (especially in the areas of perception, natural language processing, reasoning, learning guidance, and anticipation). The use of communicative AI thus changes the relationship between humans and technologies and raises fundamental questions about human agency. This concerns the level of individual practices, and it also has a societal dimension (Sūna & Hoffmann, 2021). Consequently, we are less interested in the technological knowledge and “objective” definitions of AI by the users and concentrate on how people think about and interpret these devices and applications of technologies of automation, and how such technologies are becoming part of how people understand themselves, each other, and their world (Guzman, 2023). Accordingly, the focus lies on the social embeddedness of AI technologies. While users might not be able to see algorithms and AI or understand them on a technical level, they nonetheless sense and feel their consequences. It is upon this felt presence of AI that an AI imaginary develops. This imaginary shapes the modality of future interactions and experiences users have with a technology (Schellewald, 2022, p. 2). We therefore focus on the cultural meanings and resources that users attach to the notion of AI (Glatt, 2022; Das, 2023a). Seaver (2017, p. 5) argues for an understanding of AI technologies not as singular technical objects that enter into particular cultural interactions but rather as unstable objects, culturally enacted by the practices people use to engage with them. These everyday engagements and practices with AI technologies are what we are interested in in our study. We ask how migrants feel and evaluate their impact and agency in the context of the complex technology that AI is. This opacity of AI technologies has encouraged new strategies for lay learning about digital media different from the digital expertise for the purposes of industry (Burgess et al., 2022, p. 89). Consequently, we focus on how AI imaginaries that users develop while experiencing AI technologies contribute to AI literacy. We therefore define AI literacy as follows: being aware of the use of AI technologies in online applications, platforms, and services; knowing roughly how AI technologies work; being able to critically evaluate algorithmic decision-making or outputs from generative AI applications; and having the skills to cope with or influence algorithmic and AI operations (see Dogruel et al., 2021). The combination of these cognitive and behavioral dimensions thus allows users to understand, evaluate, and cope with AI technologies in a self-determined way. Critical-reflexive skills include affective skills of being able to evaluate and react on an affective level to AI technologies. Users are facing societal competence requirements that become visible in everyday life when digital challenges in different areas of life (e.g., in school, work and leisure) must be solved (Digitales Deutschland, 2021). AI literacy also consists of the skills and the ability to envision and critically evaluate the consequences the underlying algorithmic processes have for everyday experience of AI technologies in order to recognize possible unequal treatment by these technologies (Gruber & Hargittai, 2023, pp. 2-3).

With a technology as complex as AI, where experts are already unable to fully comprehend all functions, we cannot – and nor should we – expect the public at large to have specific technical knowledge about it. As the studies on folk theories have shown, people nevertheless acquire everyday knowledge about the technology, which shapes their imaginaries about AI and how they deal with the technology. This knowledge may be based on computer science competences, although this is rarely the case (Burgess et al., 2022). We thus consider it unreasonable to measure AI-related literacy, which is methodologically challenging, especially for such an abstract cross-sectional technology as communicative AI. The analytical framework we have developed therefore describes the cognitive, affective and practice dimensions of imaginaries about AI and thus allows us to approach different competencies. The focus lies on perceived user agency while experiencing communicative AI technologies. As the studies by Swart (2021) and Das (2023b) have shown, this can be a fruitful approach to bring these two concepts together.

The following Table 1 shows how the theoretical concepts of AI imaginaries and AI literacy can be thought of together. Each row describes similar dimensions of both concepts resulting in the cognitive, the affective and the practice dimensions.

Dimension	AI imaginaries	AI literacy
Cognitive dimension	Subjective assumptions of what artificial intelligence is, what artificial intelligence can do and what artificial intelligence should do	Being aware of the use of technologies of automation in online applications, platforms, and services, knowing roughly how AI technologies work
Affective dimension	Subjective assumptions of what AI is like	Being able to critically and affectively evaluate algorithmic decision-making and AI outputs
Practice dimension	Subjective assumptions of what one is able to do with AI	Having the skills to cope with or influence algorithmic and AI operations

Table 1. Interrelation of AI imaginaries and AI literacy

Authors' compilation, based on Bucher, 2018; DeVito, 2021; Dogruel et al., 2021; Oeldorf-Hirsch & Neubaum, 2023; Swart, 2021; Sūna, 2023.

By combining these two analytical concepts of AI imaginaries and AI literacies on the cognitive, affective and practice level, the following sections discuss how migrants imagine AI in their everyday engagement with communicative AI technologies, how it contributes to their AI literacies, and how they evaluate the impact of AI for their self-determined life with AI technologies.

Methods and data

Five group discussions were conducted to uncover migrants' experiences of communicative AI in everyday life (Hargittai et al., 2020, p. 771). Siles et al. (2020, p. 4) have argued

that group discussions are “ideal for exploring the social nature of folk theories, that is, how they form as people share them with others”. The group discussion method was combined with the method of rich pictures (Bell & Morse, 2013), which involves drawings made by individuals about the role of AI technology in everyday life. This helps to understand the unstated and self-evident nature of users’ experiences of AI technologies. The group discussions took place in Berlin (three groups) and in the western part of Germany (two groups) and were held in German. The sample consisted of 25 migrants, covering first, second and third generations from countries such as Turkey, Syria, Lebanon, Poland, Sudan, Kyrgyzstan, and Jordan. They were between 18 and 56 years old; 12 of them were men and 13 were women (see Table 2). The sample consisted of individuals with different educational levels, from secondary school and vocational level to university degree. Most of the participants did not know each other before the discussion. As a qualitative sample, it must be seen as generic. We are aware that migrants in Germany are a very heterogeneous group; nevertheless, the sample represents the ethnicities most common in Germany (Statistisches Bundesamt, 2023).

Age	Gender	Occupation	Ethnicity	Migration generation	Education	Daily use of:
18	F	High school student	Lebanon	2	Secondary school student	Search engine, social media, messenger services
18	M	High school student	Angola	2	High school student	Search engine, social media, messenger services, navigation systems
18	M	Unemployed, seeking a trainee position	Syria	2	Secondary school diploma	Search engine, social media, messenger services
18	M	Mechatronic technician	Poland	2	Vocational level	Search engine, messenger services navigation systems
21	F	University student	Turkey	2	High school diploma	Search engine, social media, messenger services, streaming, online shopping, online banking
21	F	University student	Kyrgyzstan	1.5	High school diploma	Search engine, social media, messenger services, online banking
22	F	Nurse	Lebanon	2	Vocational level	Search engine, social media, messenger services, streaming, navigation systems, online banking
22	M	Training as a surgical assistant	Turkey	3	High school diploma	Search engine, social media, messenger services, health monitoring devices, online banking

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23	F	University student	Turkey	2	High school diploma	Search engine, social media, messenger services, streaming
23	M	Mechatronic technician	Turkey	3	High school diploma, vocational level	Search engine, social media, messenger services, online banking, streaming
24	F	Office manager	Jordan	2	Vocational level	Search engine, social media, messenger services, streaming, health monitoring devices, smart speaker/language assistants, navigation systems, online banking
24	M	University student	Turkey	2	High school diploma	Search engine, social media, messenger services, streaming
24	M	University student	Turkey / Italy	2	High school diploma	Search engine, social media, messenger services
24	M	Training as a plant mechanic for heating and sanitation	Turkey	2	Student on a vocational level	Search engine, social media, messenger services, online banking
28	M	University student	Syria	1	High school diploma	Search engine, social media, messenger services, streaming, online shopping, navigation systems, online banking
30	F	Nursing assistant	Arabic-speaking grandparents	3	Secondary school	Search engine, messenger services, online banking
33	F	University student	Turkey	2	High school diploma	Search engine, social media, messenger services, streaming, online shopping, health monitoring devices, smart speaker/language assistants, navigation systems, online banking
37	F	Human resources planner	Sudan	2	High school diploma	Search engine, social media, messenger services
38	F	Social worker	Poland	1	Vocational level as teacher	Search engine, messenger services

Age	Gender	Occupation	Ethnicity	Migration generation	Education	Daily use of:
42	F	Housewife	Turkey	1	High school diploma	Search engine, social media, messenger services, streaming, health monitoring devices, navigation systems
43	M	Specialist for construction finance	Croatia	2	University degree in environmental technology	Search engine, messenger services, streaming, online banking
45	M	Ticket inspector	Arabic-speaking parents	2	Vocational level as warehouse specialist	Messenger services, smart speaker/ language assistants
46	F	Geriatric nurse	Lebanon	2	Secondary school	Search engine, social media, messenger services, streaming
50	F	Bakery assistant	Syria	1	Secondary school	Search engine, social media, messenger services, smart speaker/ language assistants
56	F	Nurse	Lebanon	2	Vocational level	Social media, messenger services, streaming, navigation systems, online banking

Table 2. Participant profiles and use of digital technology applications

The discussions were conducted in November 2022 and January 2023, shortly after ChatGPT and other technologies of generative AI were introduced to a wider public. All group discussions started with a common task on the personal smartphone. The theoretical point of reference was the controversial theory (Bruns, 2019) of the filter bubble by Pariser (2011), according to which individuals encounter information in social media that is algorithmically adapted to their previous use of these media outlets. This widespread theory seemed to be a good starting point to provoke a participant-centered discussion on the role of technologies behind everyday media use. Consequently, without the researchers naming the term “filter bubble”, all participants were asked to search for “going out in Berlin” or “climate crisis” in their usual search engine on their smartphones. The filter bubble hypothesis was not confirmed, as most of the hits in the search in each focus group were similar. This comparison and the conclusion that the results overlapped served as an impulse for a discussion about the technologies behind digital media.

The study was designed to allow respondents to talk about their perceptions and opinions of AI technologies without the technology being named by the researchers as other researchers have done (Swart, 2021; Das, 2023a). The initial intention was thus to see how respondents imagine the technologies behind digital media, for example, in search engines, in social media and in smart speakers, work (Guzman, 2023). How do

they experience and explain, for example, the processes called algorithmic curation? We asked the participants to envision consequences of AI in their everyday life and normatively consider them. To envision consequences means that respondents must consider whether algorithms and AI technologies do something, and what this might be (Ytre-Arne & Moe, 2021, p. 812). By applying this approach, the respondents were able to freely express their associations with AI technology. Hence, during the discussions, terms such as AI and algorithms were repeatedly mentioned by the respondents. In discussions held in January 2023, participants also discussed the issue of ChatGPT. Each discussion ended with a creative task of drawing a picture of how respondents imagine and experience AI technologies in their everyday life (Bell & Morse, 2013). The drawings were explained by the respondents afterwards. They were also asked to complete a short questionnaire on the intensity of use of relevant services and digital devices (see Table 2). This showed a variety of user patterns in the sample: from users who use different applications on a daily basis to daily users of only a few applications.

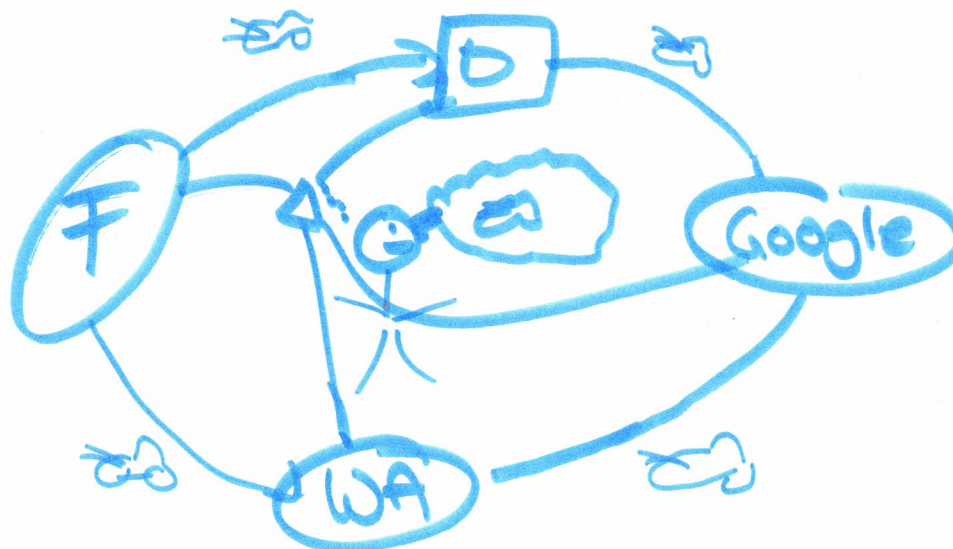
Qualitative thematic analysis was applied to analyze the imaginaries about AI (Strauss & Corbin, 1990). The discussions were completely transcribed and analyzed using MaxQDA software as well as inductive paper and pen coding, grouping the results around the thematic clusters of the cognitive, affective and practice dimensions of experiencing communicative AI.

Results

Cognitive dimension of AI imaginaries

First, we look at respondents' imaginations about what AI technologies are able to do and what they are already doing. All interviewees had a common understanding of AI as a feeling and awareness that the technology has some kind of own logic that is articulated in recommendation algorithms on TikTok, YouTube or Netflix, language correction on WhatsApp or email programs, translation apps, but also in Alexa or Siri voice assistants and in cleaning robots. The following general idea of how AI technologies are involved in Internet searches or social media, in particular, was described in the discussions: AI technologies connect user data from different applications. Media content such as advertising, newsfeed content or search results is played out in line with user data that is connected and evaluated across different platforms. DeVito et al. (2017) describe such explanations as operational theories. The respondents assume that there is a causal relationship between the user data and the new content played out. The following drawing by the 24-year-old office manager with Jordanian heritage describes how social media applications like Facebook, Instagram, Google and WhatsApp are related and connected and how they circulate information about her preferences for shoes (see Figure 1). This overall folk theory is specified in different variations, most of them common assumptions,

as studies by DeVito et al. (2017), Eslami et al. (2016), Dogruel et al. (2021) and others show.



*Figure 1. The connectedness of Internet applications and user practices
Drawing by the 24-year-old female office manager with Jordanian heritage.*

Some respondents argue that there is a kind of feedback loop in which user data are fed in and the displayed content is adjusted to these data (Rader & Gray, 2015). What other scholars refer to as popularity theory is also cited as an explanation of how algorithmic recommendations work. According to this, the most popular content is displayed in the search results or in the social media feed (see Eslami et al., 2016; Dogruel et al., 2021). The personal engagement theory is further used to explain how social media feeds work (a common example quote is: “what I mark with like comes to me”). Accordingly, similar content to the content that was previously used or clicked on is displayed (Eslami et al., 2016; Dogruel et al., 2021; Karizat et al., 2021). As Eslami et al. and Dogruel et al. point out, these are common subjective everyday theories in the field of algorithmic recommendations and they are also shared by the migrants we interviewed.

However, the specific description of the possible functions of AI technologies differs greatly among the respondents, especially in the context of privacy and surveillance issues. For example, some believe that their smartphones are illegally monitoring users in order to collect more personal data about them. Terms such as ‘surveillance’ are used by the respondents. Some interviewees report that they have people in their environment who are afraid of politically motivated spying on their digital devices such as their smartphone or PC. Furthermore, some respondents believe that the algorithmic connection of their user data creates specific user profiles, which in turn are used for the personalized

output of content. These profiles also cover their cultural and geographical characteristics, according to the individuals. However, whether cultural belonging is of significant importance for these user profiles is not clearly assessed.

The imagination about how AI technologies work shapes the subjective idea that, behind both the social media channels and digital media overall, there are tech companies that are interested in profit. Respondents believe that companies are reselling their data in order to increase their profit. These different subjective theories about the functionalities of AI are applied to different media outlets and overlap. For example, popularity theory is applied to information searches while the subjective theory of personal engagement is seen as crucial for the recommendations on the 'For you' page on TikTok or YouTube.

Affective dimension of AI imaginaries

The respondents describe a felt presence of AI technologies that have their own kind of logic. They discuss different subjective explanations about this, as shown in the previous section. To explore perceptions of the impact of algorithmic bias and inequality, we ask what aspects of everyday experiences of AI technologies people are concerned with or find disturbing, irritating, or useful (Ytre-Arne & Moe, 2021, p. 820). In the following section, we show how the specific feelings and emotions that migrants experience when using AI technologies shape the framing and evaluation of their user experience. This relates also to the evaluation of communicative AI as something useful, as a personal or societal opportunity or as a threat and hazard. It becomes clear that the evaluation of the technology depends strongly on the context and the field of use and can thus vary from positive to negative assessments.

Overall, most respondents perceive AI technologies as useful and supportive. They describe the algorithmic recommendation systems and the customization to specific user profiles as enriching and helpful. Mostly they do not perceive AI technology as unfair and do not reflect on the fact that they are often reduced to their cultural origin and sorted into binary categories of migrants – non-migrants, man – woman, etc. The 24-year-old male business administration student with Turkish parents rates algorithmic recommendations based on user data on YouTube and Netflix as follows:

Actually, broadly speaking, it fits. I'm not a fan of leaving my tracks anywhere. So, it's bad enough that YouTube knows what videos I want to watch. But that's just the way it is. But at the end of the day, I'm also thankful that there aren't videos like, I don't know, how to get on a horse or things like that that I'm just not interested in. That's at least already a point that can't be annoying. (authors' translation from German)

Our respondents saw the value in, and express satisfaction with, personalized content possibly because, as migrants who experience social exclusion, they feel understood by the algorithmic recommendation technologies. This allows the migrant respondents to

live and affirm their diverse cultural identities as they gain access not only to specific media content but also to everyday culture, such as cooking videos of culturally-relevant dishes or popular TV shows. Furthermore, AI technologies based on speech recognition simplify access to and participation in social affairs by enabling users to have possible errors in their written German language corrected, create texts from spoken language, and gain faster satisfactory results in online searches. Respondents whose German language skills are rather poor particularly find the technology enriching in their everyday life. As the 46-year-old geriatric nurse with parents from the Lebanon describes it:

I think that's beneficial, because if you're not so good at spelling and so, if you're not so good, then you go to Google and or just on the PC. It is already underlined with a red line and then you can correct it. I find that, so that really has advantages. (authors' translation from German)

Respondents describe algorithmic curation as a useful guide (Swart, 2021, p. 6) when they discover new content through the algorithmic recommendations that seem interesting to them and which they would not have discovered by themselves. In addition, support from AI technologies in everyday life, such as switching lights or music on and off with the help of e.g. Amazon Alexa, is seen as useful and supportive for the respondents. Furthermore, navigation systems like Google Maps are also often used for orientation in their surroundings, something which is again perceived as reassuring and helpful.

Regarding the power of tech companies in everyday life, respondents are ambivalent. Some fear that personal data will be passed on to third parties. However, many respondents emphasize that they are aware that tech companies make money from their data. They explain this by recognizing that companies need funding for their Internet services. They are therefore willing to pay with their personal data for the use of these Internet services. At this point, digital resignation becomes evident – as we will show later. Some, however, question the power structures and reject companies profiting from users' data, describing AI technology as powerful and exploitative. They fear a stronger concentration of power in the hands of these companies in the future, as this drawing by the 28-year-old male Syrian university student illustrates (see Figure 2) – users are in the grip of different social media companies such as Facebook, Instagram und TikTok.

Besides showing ambivalent feelings about AI, respondents rate AI technologies as annoying and irritating. Bucher's (2017) and Ytre-Arne's et al. (2021) research indicates that negative or unexpected experiences that result from algorithms, e.g., being unwillingly reminded of personal tragedies or being misclassified as belonging to a particular social group, make users aware of algorithmic decision-making in their social network ecosystem, eliciting negative affects toward, for example, the Facebook algorithm. Examples of experiences from our study show that AI technologies would automatically correct foreign-sounding names or single words that the technology does not recognize; this experience was described by migrant respondents as annoying and disturbing. It happens

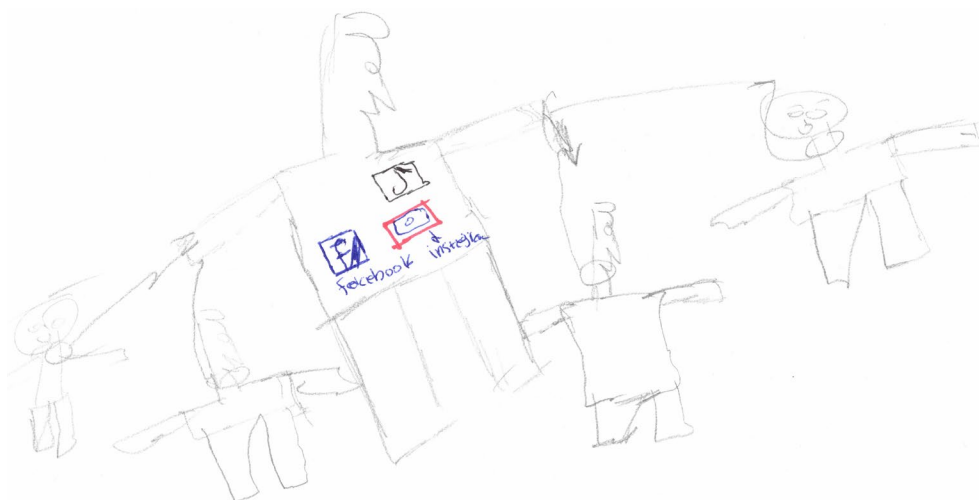


Figure 2. AI as powerful and exploitive

Drawing by the 28-year-old male Syrian university student.

repeatedly in messenger tools or in entry fields on websites. For example, the 38-year-old respondent of Polish origin feels patronized by her smartphone when it repeatedly corrects words incorrectly. Similarly, users find it annoying when algorithmic recommendations do not correspond to the interests of the user. As the example of the 24-year-old male student with Turkish parents shows:

And if there's something that bothers me, it's this. There are matches on Netflix and you have 99% for the movie or 90% for the TV show. There's a movie that shows up after ten minutes of searching with a 60% match. But actually, I like it a lot, it's a bit annoying. (authors' translation from German)

Other examples are given about falsely displayed advertisements or YouTube content that does not correspond to users' interests. An example from the 33-year-old female student with Turkish parents shows that the recommendation algorithm of a dating app tries to offer matches according to ethnicity. However, the respondent does not want to be matched with partners from her cultural group, and thus finds this cultural attribution annoying. At this point, the irritation and a feeling of unequal treatment by the algorithmic assignment become clear.

At the same time, dealing with AI technology triggers feelings of anxiety among respondents. These are moments of awkward surprise prompted by unexpected interaction or activity of AI technologies. For example, some respondents report experiences whereby voice assistants such as Amazon Alexa have switched on without being asked (without activating the trigger word). Furthermore, respondents feel anxious in situa-

tions when they have the feeling that they are being spied on by their digital device. These are often situations in which products are suggested without having been searched for previously, but which have been talked about offline in the vicinity of the device. Many respondents describe such experiences as “creepy”, “shocking”, or “terrible”. This quote from the 21-year-old female student with Turkish parents describes an experience other respondents have had as well:

If the cell phone is not on or just lying next to you and, some topic, any topic comes up in the conversation, then it happens ... I think it's also happened to everyone when you Google something and then, at the bottom of the display, advertising appears that just directly matches the topic [of the search]. Then you also get a little scared that this is just like that, even without having Googled it, just because you have talked about it, that this is displayed, then you think to yourself so – okay, they may have been listening. (authors' translation from German)

Some respondents report fear of fraud on the Internet. They have either already experienced fraud themselves or have heard about it from acquaintances or in the media. These feelings of fear shape the way they use digital media as well as their attitude toward AI technologies. In some cases, they see opportunities for fraud where it is fairly rare, like online banking on a digital device. Other respondents tried to put this fear into perspective by talking about their positive experience of using the banking app. Fears of a dystopian future with AI were also expressed by some participants. In this context, the fear of AI taking over was discussed in a manner inspired by science fiction narratives. Some examples were cited in which dependence on digital technologies was already very strong, for example, when administrative decisions were to be made by AI technologies. This triggered feelings of fear and concern among some respondents.

Overall, we can confirm the results of other studies that have shown that people do seldom perceive the proven unequal treatment by AI technologies. For example, like Swart (2021), we also found that some respondents do not perceive simplistic classification by algorithms as discriminatory; in fact, they often see it as helpful and tending to be positive. In some situations, however, it is perceived as annoying and disruptive.

Practice dimension of AI imaginaries

In the context of digital sovereignty, we particularly want to highlight that subjective technological imaginaries describe people's productive interactions with communicative AI (Bucher, 2017, p. 41; Bishop, 2019, p. 2592). Even though users' agency around AI technologies is substantially limited by platform structures, they nevertheless develop different coping strategies (Swart, 2021). Das concludes that “although it may appear that users lose agency once they are entangled in algorithmic interfaces, there are myriad opportunities for active involvement, both working within and against algorithms” (Das, 2023b, p. 3). On the one hand, people try to change the AI technology, adapt to it, and make it

useful to themselves. On the other hand, we can observe digital resignation and apathy as the respondents do not see possibilities for agency in the context of algorithmic and AI-driven media.

The awareness of the power structures of tech companies makes respondents angry, sad, and resigned. They see their subjective capacity to act as limited. For example, they confirm the overall consensus about the dangers of publishing personal data on the Internet and also the importance of data protection, but they report little to no activity in this context. They only have a vague idea of how they could protect their own data. Moreover, even if they have the knowledge of how to do this, they do not take any action. They repeatedly rate interaction with AI technology as annoying and disruptive; nevertheless, some respondents react with resignation and do little about inappropriate content that is displayed, preferring to scroll over the unsuitable content, as the quote from the 24-year-old male vocational student shows:

On Instagram sometimes you really just scroll a few videos further and then comes the same again, then the same again, then the same again. Yeah, it's annoying sometimes. But as long as I then see what I really want to see, I'm fine with that. (authors' translation from German)

Swart (2021) observed similar practices of resignation and pragmatism regarding algorithmic newsfeeds whereby users scroll over the content they do not like rather than try to influence the algorithmic recommendation system.

Similarly, respondents report resignation when they have the feeling that they are being listened in on by their smartphone. Often no active action is taken in this context. Many respondents accept it because they see no option to limit their own smartphone use and they describe it as an essential part of contemporary life. Das calls it "transactional sense-making of algorithmic interfaces" and describes the situation where respondents see that there are certain privileges one must give up in return for the advantages and benefits that these interfaces apparently bring, as a transaction (Das, 2023b, p. 10).

Several respondents express a feeling of guilt for not taking any action in order to adjust data protection settings. The 30-year-old nursery assistant, for example, says she uses the same password everywhere because the requirement for new passwords would otherwise overwhelm her. Similar affective struggles are expressed by other respondents, with the 23-year-old female student with Turkish parents saying that it is exhausting to change one's data practices. A common pragmatic practice is to consent to cookie settings without reading them, thus creating the feeling that one has 'accidentally' consented to the use of personal data. In doing so, they express a feeling of discomfort about their passivity in this area. This reveals aspects of the feeling of a loss of agency and represents the "privacy paradox" where, although users say they care about data privacy, they often behave in ways that contradict those claims (Draper & Turow, 2019, p. 1825).

Digital resignation goes hand in hand with algorithmic and AI disillusionment. In part, this can also be explained by the rather limited possibilities of influencing AI technologies (Gruber & Hargittai, 2023). Another explanation could also be related to the rather low feeling of self-efficacy that some respondents claim. At the same time, migrants report “small” everyday practices of dealing with AI that enable them to have a feeling of agency. These practices are often triggered by moments of digital irritation, as previously shown. Consequently, unexpected awareness not only enhances everyday knowledge about how AI works but it encourages creative practices of engagement (Ytre-Arne & Moe, 2021, p. 809). This can be particularly important for rising self-efficacy in the face of unequal treatment by AI technologies. Other studies reveal that those who are resigned often do still engage in privacy guarding behaviors but do not always feel those efforts are successful. Nevertheless, they would engage with these questions again and again as we also see in our study (Draper & Turow, 2019, p. 1826).

The moments of irritation with AI technologies described earlier, such as the unexpected self-activation of Amazon Alexa, have resulted in different coping practices. Either the device is switched off or its functionality restricted. This should prevent possible irritations in the future. For example, the 50-year-old female Syrian bakery assistant only uses online shopping sites that she knows and trusts. If she is unsure about the trustworthiness of the site, she avoids it. Here, imagination about the Internet as a space of deception plays a significant role in dealing with and using AI technologies. Users who feel fear of digital fraud limit their practices, for example, by not using specific websites or avoiding specific digital payment methods.

When it comes to data privacy, however, some respondents make the effort to turn knowledge of the possibilities into active action. For example, the 37-year-old human resources planner with parents from Sudan has adjusted his privacy settings on Facebook and set up spam filters. This is what several respondents reported. The 21-year-old university student uses the incognito mode on his Internet browser when comparing hotel prices. The 21-year-old female student with parents from Kyrgyzstan decides actively and deliberately which apps are allowed to access her data and which are not. Other respondents make use of the social media platforms’ functions that enable the adjustment of interests and also the declaration of undesirable content.

Gaming the algorithm (Cotter, 2019) is another creative practice in dealing with AI technologies that we find in our sample group. It helps users to persuade the algorithmic systems to produce a result that corresponds to their interests and wishes. Typical practices include: intentionally clicking on TikTok videos that one likes in the hope that more fascinating videos will be displayed; using specific hashtags in order to get more attention for one’s own post; or avoiding interaction with social media content that one does not like. The following drawing by the 21-year-old female student shows how she is trying to influence the algorithm of the social media platform Instagram. She actively uses the like and save buttons in order to get more similar content (see Figure 3). AI imaginaries may

also support algorithmic resistance. For example, folk theories about AI can influence users' actions through online hashtag campaigns to expose and resist possible platform changes (Karizat et al., 2021, p. 6).

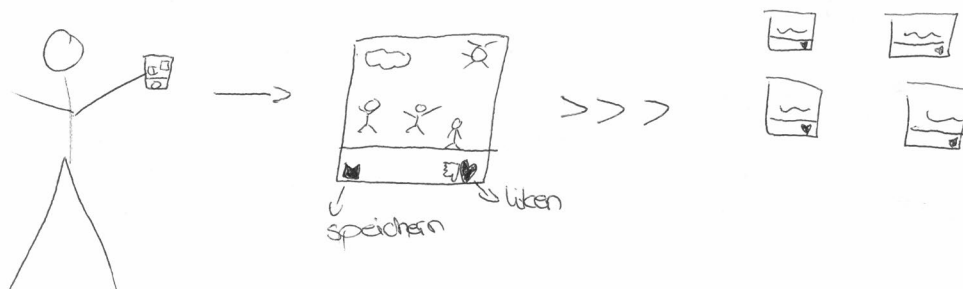


Figure 3. "What I like comes to me"

Drawing by the 21-year-old female university student with Turkish heritage. Note: "speichern" in German means "save" and "liken" means "like".

Several interviewees report experiences of success with these practices, and thus feel a relatively high subjective agency in dealing with content from the AI technologies. The 24-year-old male student with Turkish parents, for example, is satisfied with how his YouTube Shorts feed plays out content after his targeted interaction. This shows the opportunity to actively incorporate one's own cultural plurality into the adaptation of social media content. The migrants interviewed often do this unintentionally as this practice reflects their interests. This reveals that users can strategically influence algorithms to their benefit based on their individual perceptions of the technology. Similarly, they can attempt to avoid potential harm (Gruber & Hargittai, 2023, p. 3).

Overall, it becomes clear that the way AI technologies are dealt with depends on the situation and varies from digital resignation to avoidance and creative dealing with AI technologies. Few respondents reported moments of unequal treatment by AI technologies. However, awareness and knowledge of how much AI technologies can and do discriminate were rather low and consequently no action was taken to avoid such unequal treatment.

4.4 Discussion

To determine the subjective perspectives of users imagining and experiencing communicative AI, our study shows a basic awareness of the presence of AI technologies with their own logic in social media platforms, online services, and apps. However, their everyday knowledge of the functionalities and consequences of AI technologies varies greatly from case to case. Users experience in their everyday life societal expectations of possessing knowledge about the benefits and limits of the technology. In addition, we argue, aware-

ness of the role of user data in AI-based technologies is necessary – especially regarding the issue of cultural attribution by AI technologies.

Concerning the affective and critical-reflexive evaluation and questioning of one's own experience of AI technologies in everyday life, we have been able to identify some initial points. Migrants evaluate the role and impact of AI technologies on media use on various levels – they perceive algorithmic recommendations and other AI technologies as beneficial but also as disturbing in relation to their own agency. AI technologies trigger emotions like fear, annoyance, and powerlessness and, consequently, respondents feel irritated and treated unequally by AI. This reveals the need for a critical, reflexive assessment and basic knowledge of the operating principles of science and technology. In this context, Long and Magerko (2020) call for "science literacy" to help users evaluate their AI-related fear with science-based arguments and to develop coping strategies based on data literacy. Data literacy can also be useful to understand the powerful and exploitative character of communicative AI. This encompasses overall knowledge and skills in data protection and sharing personal data as well as a critical evaluation of potential dangers.

Finally, the practice dimension becomes clear in the ability to deal with the impact of AI technologies, to engage and cope with and influence these technologies in a self-determined way. Siles et al. (2023, p. 5) stress that "even if people don't necessarily understand algorithmic 'black boxes', they still enact their agency as they live with these technologies." Most of our respondents do not question their agency in the context of AI as they are satisfied with their experience of AI technologies. In situations where they feel irritated while encountering AI, some of them feel rather limited agency, but some seek opportunities to actively change the situation. For example, they see the need for active involvement in the protection of one's own data and use creative practices such as gaming the algorithm to achieve their goals.

These coping strategies rely on different imaginaries about the functionalities of AI technologies. Karizat et al. (2021, p. 16) show in their study how users develop individual and collective strategies for resisting the suppression of certain social identities (for example, based on race and ethnicity). This led them to change their behavior, aiming to change the way the algorithm dealt with these identities. Our study revealed rather small acts of experiencing and resisting unequal treatment by AI technologies, describing the experience of AI as disruptive, uncomfortable or, at least, irritating. Examples included algorithmic classification based on cultural affiliation, something which was not always wanted by users; being assigned to a majority language system (words and names are adjusted), and leveling and standardization based on criteria determined by AI. Similar to Swart (2021, p. 8), respondents were reasonably content with how recommender algorithms classified them, and although algorithms' occasional oversimplifications of their interests invoked irritation, only a few of the respondents had experienced user profiling effects that were explicitly discriminating. Swart supposes that users who do experience such harmful, offensive consequences are more likely to engage with algorithms to

actively resist their decisions. A rather small group of our respondents felt the motivation and the ability to change AI technology in the context of unequal treatment. We conclude here with Ytre-Arne and Moe (2021, p. 820):

Coupled with some overall knowledge of what algorithms do and fail to do, this points to potentials for critical user engagement with algorithmic media. There appears to be a realm for user agency in criticizing algorithms, actively noticing their imperfections, rather than accepting them as seamlessly integrated into media experiences.

Other respondents take no action, presumably prevented by digital resignation, pragmatism and a limited everyday knowledge and ability to change AI technology. Although we also showed real-life examples of possible areas of algorithmic discrimination as an impulse for discussion, only few people were able to identify with them. Reasons for this may include a lack of comparison during the everyday use of AI technologies highlighting unequal treatment; rare thematization in public discourse about the discriminatory potential of AI technologies (for example, online profiling and targeting in public administration, in the private sector or on online platforms), as well as rare thematization of possible disadvantages of the technology.

Conclusion

Our starting point was to ask how migrants in Germany see and evaluate their impact in the context of communicative AI technologies and the extent to which practices of dealing with AI are empowering. These questions rely on the overall requirement for society to deal with AI technologies in a competent and self-determined way. Gruber and Hargittai (2023, p. 3) stress the need to pay more attention to specific strategies that allow people to use algorithms and AI technologies to their own benefit. Digital empowerment describes a sense of enablement: “Enabling people to do what is important to them, and enabling people to grow as competent subjects who have control over their lives and surroundings” (Mäkinen, 2006, p. 381). Our data shows AI as an empowering force and, at the same time, as a force that provokes feelings of resignation and powerlessness. Likewise, Bucher (2018) and Dogruel et al. (2022) show that AI technology has been found to be both enhancing and undermining of users’ agency. AI technologies empower users by serving as a translator, navigator, enabler, and selector of cultural, informational, and entertaining content.

Simultaneously, AI technologies lead to digital resignation and subjective powerlessness when users feel they are being listened in on, patronized and manipulated by the technology. We argue that the feeling of empowerment provided by AI is related to media literacy. Digital empowerment can be achieved by appropriation of the basic prerequisites: awareness, motivation, technical access, skills, and coping strategies (Mäkinen, 2006; Lutz, 2019). The study shows the ambivalence of the experience with AI: people are

irritated with and critical of AI technologies in their everyday life but still consider these technologies inescapable (Ytre-Arne & Moe, 2021, p. 821). Here, the practice dimension of media literacy becomes important as it enables users to gain some felt agency. The ability to critically evaluate and adjust everyday practices also becomes important here.

All in all, everyday interactions with AI are about balancing digital resignation and coping strategies to be able to experience a sovereign life with AI. Migrants perceive AI as useful but also problematic. The evaluation of the social impact of AI was also controversial in the discussions, with a much stronger assessment being made on an individual level. The advantages for medicine or state security were discussed in the context of individual freedom and security and classified as ambivalent. For a sovereign life with communicative AI, the possible advantages should be made known, and awareness should be raised about the possible disadvantages, such as the assignment to stereotypical groups or data privacy aspects.

We conclude that the described AI imaginaries may also be observable among non-migrant users. At the same time, we were able to identify several accounts of a feeling of unequal treatment based on ethnic attribution by AI technology that were characterized as disruptive, uncomfortable or, at least, irritating. In this context, we suggest focusing on an affective dimension of media and AI literacy in further research as emotions are shaping the evaluation of the technology and further experiences with it (Oeldorf-Hirsch & Neubaum, 2023).

Methodologically, our study shows the advantage of a user-centric perspective that focuses not only on one area of life or one digital media function like an Instagram feed. We were able to identify that the assessment of risks and benefits varies depending on the area of use and that communicative AI is not generally assessed as problematic or useful. The developed AI imaginaries can help users to experience possible new AI technologies in the future in a self-determined way. Furthermore, we see the aspect of discussing such an abstract phenomenon as AI technology as something that is methodologically challenging. As Swart (2021, p. 8) points out, most of the respondents are not automatically equipped with the vocabulary to articulate their knowledge of technologies of automation. In particular, and in contrast to other studies, some of our respondents had a rather low education level (Gruber & Hargittai, 2023). However, the AI imaginaries approach is helpful here, as users' sense-making of algorithms and AI technologies appears as an interpretative process rather than a question of mere technical understanding (Ytre-Arne & Moe, 2021, p. 810). People use buzzwords such as "cookies" to describe how AI technologies work. Even if they do not have explicit knowledge of the technology, these buzzwords allow them to describe their everyday experiences of communicative AI. The different types of knowing and experiencing communication with AI technologies manifest themselves in the very articulation of such knowledge, in how we talk about experiencing AI technologies (Guzman, 2023). Our study shows that AI imaginaries serve as sense-making of experiences, generating inference and steering learning about differ-

ent communicative AI. Media literacy scholars should focus further on the societal and individual impact of communicative AI.

The study illustrates that general knowledge is often not sufficient to evaluate AI technologies critically and to meet users' preferences and needs in the context of AI. However, for sovereign life with communicative AI, it is significant to appropriate cognitive as well as critical-reflective skills, especially for those respondents who tend to be rather satisfied and uncritical when using AI technologies. Cotter and Reisdorf (2020, pp. 748-749) emphasize the possible threat in this context, "Disparities in algorithmic knowledge create classes of users with the skills to question and critique algorithmic representations of reality and classes more likely to unwittingly internalize the normative discourses inscribed in algorithmic outputs (e.g., search results)." In addition, without critical evaluation, there is a possibility that people will adapt biases inscribed in the design of algorithms mediating information in social media and legacy media. People who have particularly experienced disadvantage in the past or who are at high risk of exclusion like migrants should critically question and reflect on this. For a self-determined life with AI technologies, individuals must thus have a bundle of skills: they must not only be aware that AI technologies are part of online applications, platforms, and services, but also know roughly how these technologies work, evaluate what implications (including affective ones) these technologies may have for them, and what possibilities there are to change and adapt these technologies to their own everyday goals.

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