

Humans vs. AI: The Role of Trust, Political Attitudes, and Individual Characteristics on Perceptions about Automated Decision Making Across Europe

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Automated decision making (ADM) is increasingly prominent in our experiences with communication technologies and more broadly in our society. Understanding what drives individual perceptions of AI is crucial. This study presents the results of a survey across 10 European countries ($N = 6,643$), confirming *trust* and *political attitudes* as general drivers of perceptions of AI, especially in the media sector. Individuals who score higher on institutional trust are more *positive* about AI for news recommendations and user and content moderation. Conversely, individuals with higher media trust are more *negative* about AI for news (creation or recommendation). Those leaning toward the right-wing political orientation are more positive about AI for news, whereas those more distant from the political center are more negative about AI—for media-specific tasks and for society more broadly. Sociodemographics, the need for cognition, privacy concerns, and online self-efficacy are also relevant in these evaluations.

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Artificial intelligence (AI) is ever more prominent in our experiences with communication technologies, with scholars proposing that AI “has become an integral part of mediated communication” (Sundar, 2020, p. 5). AI is especially relevant in the media sector, where “automated decision making and content generation technologies are increasingly prevalent” (Pierson et al., 2023, p. 5). Understanding how individuals perceive automated decisions in their communication environment becomes crucial, given how these perceptions influence individual evaluations and acceptance of automated decisions (Gruber, Hargittai, Karaoglu, & Brombach, 2021; Hoff & Bashir, 2015; Lee, 2018).

In this article, we investigate perceptions of AI adoption in a communication environment. Because of the prevalence of automation and its potential to shape public debate, we focus on two contexts: news and social media platforms. Within the news context, we are continuously exposed to automated news recommendations, and news stories generated automatically begin to reach individuals (Caswell & Dörr, 2018; Montal & Reich, 2017; Thurman, Dörr, & Kunert, 2017). On social media, the governance of what is allowed or prohibited in terms of user and content activity—that is, user and content moderation—is often described as automated and driven by AI or algorithms (Gillespie, 2020; Gorwa, Binns, & Katzenbach, 2020). This increasing automation has led scholars to question the implications of AI adoption for the “sustainable future of the media as an institution” (Helberger, 2019, p. 997) when considering news recommenders and democracy (Helbing et al., 2019). Given this broader concern, we go a step further and investigate how individuals perceive the adoption of AI in society.

Earlier research has brought forward the notion of *algorithmic appreciation*—that is, a general preference for automated decisions (Logg, Minson, & Moore, 2018). This preference depends on the type of decision or activity (e.g., Araujo et al., 2020; Lee, 2018; Thurman et al., 2018). It can also turn into *aversion* if expectations are frustrated (e.g., Dietvorst et al., 2015). This context dependence is also seen in research on *news creation*, which shows mixed findings. Some studies indicate little if any differences in perceptions between machine- and journalist-written news (e.g., readability and quality; Haim & Graefe, 2017; trustworthiness or expertise; Van der Kaa & Kraemer, 2014; credibility; Tandoc et al., 2020; Wölker & Powell, 2018). Other studies, however, report higher scores for (human) journalists when they are attributed as the source (credibility, readability, and expertise; Graefe et al., 2018; credibility; Waddell, 2018). In addition, recent experimental findings highlight that, in general, humans are perceived as more just than AI for content creation and moderation—though not recommended (Wojcieszak et al., 2021).

This emerging stream of research makes several contributions to our knowledge of how individuals perceive AI in *general* and within the *media* context. Yet, it leaves three important gaps that we aim to address in this study. First, perceptions about the adoption of AI in society or in the media may arguably be influenced by how one *relates* to society or to the media in the first place. Those who are more negative or less trusting of the media as an institution might have different views about its automation than those who are not. We therefore investigate the role of *trust* as an indicator of how individuals relate to complex systems and institutions (Luhmann, 2017).

Second, the studies in this research stream often adopt experimental designs. While experimental designs help to investigate the underlying processes influencing perceptions or detect general preferences, they tend not to investigate the role of *systematic differences* between individuals. We therefore use a survey to explore the role of individual characteristics, extending earlier work on AI perceptions (e.g., Araujo et al., 2020) and within news (Thurman et al., 2018). For this, we focus on the role of *sociodemographics*, *privacy orientation*, and the *need for cognition*, as outlined in the next section.

Finally, with few exceptions (e.g., Thurman et al., 2018; Wojcieszak et al., 2021; Wölker & Powell, 2018), the current body of research tends to be country-specific. However, there are several country differences in how automation is implemented in the media and in a variety of societal processes, including healthcare, welfare, and policing (for an overview in the European Union, see AlgorithmWatch, 2019). This study, therefore, contributes to this body of knowledge with unique survey data from 10 European countries ($N = 6,643$) and aims to establish the generalizability of these findings beyond national boundaries.

Perceptions About AI: The Role of Individual Characteristics

The concepts of AI, algorithms, and automation have become an integral part of academic discussions about the state of journalism (Bucher, 2017; Diakopoulos, 2019; Thurman, Lewis, & Kunert, 2019) and of media and communication more broadly (Bucher, 2018; Guzman & Lewis, 2019; Sundar, 2020). While each of these concepts has its own specific meaning, we note—in line with other scholars (Wang, 2019; Wojcieszak et al., 2021)—the ambiguity of these terms, both in research and especially in popular discourse. As our focus is on how *individuals* perceive automated decision making (ADM) in the media sector and in societal processes more broadly, we adopt the term *AI* as a general descriptor, considering how it is increasingly used in the news media (Fast & Horvitz, 2017) and has captured the public imagination (Elish & Boyd, 2018). Methodologically, this choice also follows earlier research (e.g., Araujo et al., 2020; Wojcieszak et al., 2021), acknowledging how AI as a term has growing media attention.

Research on perceptions about AI has drawn from the belief in the *machine heuristic* (Sundar, 2008; Sundar & Kim, 2019) and/or the notion of *algorithmic appreciation* (Logg et al., 2018), broadly defined as a tendency to expect machines to be less biased and more objective than humans. Empirical evidence for this tendency is mixed, as illustrated by research comparing humans and AI for media-related tasks: some studies point to little perceived differences between humans and AI (Araujo et al., 2020; Haim & Graefe, 2017; Van der Kaa & Krahmer, 2014; Wölker & Powell, 2018), whereas others find a clearer preference for humans (Graefe et al., 2018; Waddell, 2018; Wojcieszak et al., 2021). Moreover, considering societal scandals involving AI,² it becomes even more important to understand how prevalent this tendency is.

Ultimately, given the embedding of AI in social processes and in public discourse, we argue that one's attitude toward AI may depend on the context in which it is used—that is, the decision, sector, and context of the individual that is using, being exposed to, or subjected to ADM (for an overview, see Glikson

² For example, the UK grading scandal, the childcare benefits scandal in the Netherlands, issues with bias in image recognition, etc.

& Woolley, 2020; Hoff & Bashir, 2015). As such, understanding how individuals systematically differ in their perceptions of automation is important, as it can inform decisions about technology development or design, regulation, and even public education campaigns (Thurman et al., 2018). In what follows, we review how these individual factors may influence perceptions of ADM by AI.

The Role of Political Attitudes

Citizens concerned about the state of democracy and the political system may hold a higher regard for AI compared with current human experts. Research has shown that individuals who doubt the independence of the media and journalism from the government tend to appreciate AI as a replacement for editorial news selection (Thurman et al., 2018, 2019). There might be two reasons for this preference. First, assumptions that AI might be less biased or subject to manipulation than humans (as seen in Helberger, Araujo, & de Vreese, 2020) could create expectations that AI might be a more neutral arbiter. Second, while in practice censorship affects information curated by AI, the perception that U.S.-based digital platforms are independent of censorship by national governments persists (Bodrunova, Litvinenko, & Nigmatullina, 2020), and these platforms are often associated with the usage of AI.

Most member states in the EU score high on press freedom indices (Reporters Without Borders, 2021), and censorship is typically not experienced or criticized by mainstream media. Groups distant from the political center who feel underrepresented in the public debate and hold low levels of institutional trust, however, have a more negative view. They often see legacy media institutions as being in cahoots with the government and trying to keep their perspectives away from the public agenda (Barkun, 2015). Evidence for this is often seen for right-wing populist groups (Bhat & Chadha, 2020; Ross & Rivers, 2018). Moreover, most politically partisan groups tend to believe that the media covers their views unfairly (Newman et al., 2021, p. 34). Therefore, decisions by AI may be perceived as an alternative to circumventing mainstream media. For example, automated news recommendations based on the activity of other users or individual profiling might be seen as a replacement for the editorial filter of mainstream journalists, helping to disseminate alternative content. We thus expect that citizens who (1) are distant from the political center and (2) identify with the political right might prefer an automatic selection or creation of news over decisions by editorial boards. They may also prefer ADM for content and user moderation instead of other mainstream processes. We propose:

H1a: Individuals with more extreme political positions will have more positive opinions about AI usage in the media sector than those holding more centrist positions.

H1b: Individuals with right-wing orientations will be more positive about ADM by AI in the media sector than those with left-wing orientations.

As research on how political attitudes may be related to general perceptions of ADM is still scarce, we ask:

RQ1: To what extent are political attitudes related to attitudes toward ADM by AI in general?

The Role of Trust

Trust is a trustor's subjective evaluation of the probability that the trustee (e.g., a person) will act in a certain expected way (Baier, 1986; Coleman, 1990). In highly complex contemporary societies, trust "becomes an indispensable strategy to deal with the opaqueness of our social environment" (Sztompka, 1999, p. 13), as it reduces complexity (Luhmann, 2017) and can also be attributed to abstract systems (Giddens, 2020). One complicating factor is that trust in technical systems does not follow the same patterns as interpersonal trust (Hoff & Bashir, 2015), and our ability to assess the trustworthiness of technical systems in contemporary societies has been questioned (Bodó, 2020). Given this opacity, we assume that trust in other systems—such as institutions and the media—may at least partly influence perceptions about ADM.

Institutional trust (often referred to as political trust) reflects both aspects of diffuse support for the political system and aspects of more specific support for incumbents (Hetherington, 1998). It is related to important outcomes, such as compliance (Oksanen et al., 2020), cooperative attitudes (Marien & Werner, 2019), and participation (Levi & Stoker, 2000). This could be related to attitudes toward ADM through different mechanisms. On the one hand, those who trust political institutions (e.g., the parliament) or current decision-making processes might be more skeptical of automating them. On the other hand, those who trust the institutions overseeing ADM might *also* be more inclined to support ADM, considering that technological trust is at least partly derived from trust in those who designed the system (Sztompka, 1999), and be less worried about the processes being abused (Levi & Stoker, 2000; Marien & Werner, 2019; Oksanen et al., 2020). We ask:

RQ2: To what extent is institutional trust related to attitudes toward ADM by AI in general (RQ2a) and in the media sector (RQ2b)?

Trust in the media is closely related to the credibility of the information that the media provides (e.g., Tsfaty & Cappella, 2003). Kohring and Matthes (2007) conceptualize media trust as a multidimensional construct consisting of evaluations of the media's performance at selecting topics and facts, the quality of journalistic assessment, and the accuracy of depictions. This points to the strong role of journalistic performance in media trust; that is, those that have high levels of media trust would also have a positive view of how journalists select and assess news topics. This could mean that those with high media trust would be less trustful toward AI taking over parts of the news production process, such as news recommendation or automated journalism. Previous research (Fletcher & Park, 2017) also shows that those with low levels of media trust tends to prefer nonmainstream sources of news, especially digital sources. This provides further indication that those with low levels of media trust may be more likely to seek out alternative forms of news—potentially including those produced and selected by AI. In-line with this, we propose the following:

H2: Individuals with higher levels of media trust will hold more negative perceptions about ADM by AI in the media.

Sociodemographic Factors

Earlier research on perceptions about AI in general (Araujo et al., 2020; Smith, 2018) and within the news sector (Thurman et al., 2018) show a negative impact of age, with older individuals being more concerned

and less positive about the automation of social processes in general, or the replacement of human experts. This might be related, we speculate, to a higher degree of comfort with technology by younger cohorts (in-line with the digital divide literature; van Deursen & van Dijk, 2011, 2019), and/or a higher attachment to more traditional ways of decision making by human experts, such as journalists. We propose:

H3: Age is negatively related to attitudes toward ADM by AI in general (H3a), and in the media sector (H3b).

Moreover, those with greater access to resources (van Deursen & van Dijk, 2011, 2019) tend to be better positioned to adopt new technology (see also Hong, 2022) and therefore have more positive attitudes. Given their higher socioeconomic status, they are more likely to live in a technology-rich environment, have firsthand experience with its benefits (Park & Yoon, 2005), and be more positive about technology. Members of vulnerable groups in society, however, have different experiences with automation. They are often more dependent on decisions from social instances (e.g., for welfare benefits) and experience firsthand negative consequences when these decisions are automated, with automation often resulting in increased scrutiny, opacity, or lower assistance (for details, see Eubanks, 2018). As such, we expect *income* to be related to more positive perceptions of AI. Along the same lines, we expect higher levels of education to be related to more positive perceptions—as shown in earlier research (e.g., Araujo et al., 2020; Logg, 2017; Thurman et al., 2018). We propose:

H4: Income is positively related to attitudes toward ADM by AI in general (H4a), and in the media sector (H4b).

H5: Education is positively related to attitudes toward ADM by AI in general (H5a), and in the media sector (H5b).

Privacy Orientation

Following research on general perceptions about AI (Araujo et al., 2020) and news recommendations (Monzer, Moeller, Helberger, & Eskens, 2020; Thurman et al., 2018), we expect privacy concerns to be a relevant factor. Privacy concerns hinder the adoption of new communication technology (André et al., 2019; Guo, Zhang, & Sun, 2016; Xu & Gupta, 2009) and influence perceptions about automation negatively (Araujo et al., 2020; Thurman et al., 2018). This influence may be because of the often-justified assumption that AI uses extensive levels of personal data. As such, we expect *privacy concerns* to be negatively related to perceptions about AI, while one's assumptions about one's ability to protect one's privacy—that is, perceived *online self-efficacy* (Araujo et al., 2020; Boerman, Kruijemeier, & Zuiderveen Borgesius, 2018)—are positively related to these perceptions. This leads to the following hypotheses:

H6: Online privacy concerns are negatively related to attitudes toward ADM by AI in general (H6a), and in the media sector (H6b).

H7: Online (privacy protection) self-efficacy levels are positively related to attitudes toward ADM by AI in general (H7a), and in the media sector (H7b).

Need for Cognition

Finally, attitudes toward ADM may be determined not only by socioeconomic standing or privacy orientation but also by more fundamental (personality) traits. This is suggested by earlier work on perceptions about automation (for an overview, see Hoff & Bashir, 2015). While several personality characteristics may be relevant, we focus on the role of the *need for cognition* (NFC) for two reasons. First, individuals with high levels of this trait tend to actively seek and reflect on information to make sense of their world, whereas those with lower levels tend to rely more on others and on cognitive heuristics (Cacioppo, Petty, Feinstein, & Jarvis, 1996). As such, one may expect NFC to be related to how individuals perceive automation—that is, when decisions are made on their behalf. Second, given earlier research showing NFC to be a relevant link between mainstream media skepticism and news exposure (Tsfati & Cappella, 2003), it may also be related to how individuals perceive the ADM in the media sector: Individuals scoring high in NFC may see it as a threat or as an advantage. A threat if they consider that AI would reduce their agency in choosing the information they consume by presenting a preprocessed, filtered version of the news. As an advantage, if they consider that AI may augment their ability to access information, or if they may feel more cognitively prepared to evaluate automated decisions. We therefore ask:

RQ3: To what extent is need for cognition related to attitudes toward ADM by AI in general (RQ3a), and in the media sector (RQ3b)?

Methods

This study uses Euroinion data collected around the European Parliament 2019 elections across 10 countries (Goldberg et al., 2021). Surveys were conducted by *Kantar* with the respective country samples drawn from databases belonging to Kantar or partner panels (Taylor Nelson Sofres Nipo, Lightspeed). All databases were actively managed panels to ensure effectiveness and usability. For example, recruitment to the databases occurred via multiple strategies, including online and offline methods. Light quotas were enforced to ensure representative samples according to age, gender, region, and education (checked against National Statistics Bureaus or Governmental sources). The data collection followed panel logic with three to seven waves per country. The key variables for this study, that is, perceptions toward AI, were asked in the final wave running from July 1 to 12, 2019. Other variables were asked in this or in previous waves, reducing potential endogeneity problems. The numbers of respondents in the final wave per country are as follows: $N_{CZ} = 733$, $N_{DE} = 518$, $N_{DK} = 563$, $N_{ES} = 557$, $N_{FR} = 776$, $N_{GR} = 494$, $N_{HU} = 588$, $N_{NL} = 1067$, $N_{PL} = 857$, $N_{SE} = 497$.³

³ The aim of the data collection was to have around 500 respondents in the final wave per country. As soon as these numbers were reached in each country (after 12 days), data collection was stopped in all countries. Because of this forced ending of the fieldwork, we refrain from reporting retention rates from earlier waves as this information could be misleading.

Country Sample

The 10 countries—Czech Republic (CZ), Denmark (DK), France (FR), Germany (DE), Greece (GR), Hungary (HU), Netherlands (NL), Poland (PL), Spain (ES), and Sweden (SE)—were originally selected to represent the variety of all 27 EU member states. This sample includes smaller and larger member states, geographically spread across Europe and composed of founding EU members and countries from later enlargement rounds. The sample covers a subset of countries from the Mediterranean or Polarized Pluralist Model and the North & Central Europe or Democratic Corporatist Model, based on the different media systems conceptualized by Hallin and Mancini (2004). Furthermore, as per the conceptualization of Esser and Hanitzsch (2013), the set includes different media/political systems, allowing us to assess the generalizability of the findings across countries. Importantly, we do not aim to examine country-specific explanations as it would require a larger N to run the required statistical models (see analytical strategy, below).

Measures

General Perceptions About ADM by AI

In the first section of the questionnaire related to AI, the participants read a statement explaining the concept of ADM using AI. They then provided their evaluations of its potential usefulness, fairness, risk, objectivity, and manipulation. *Usefulness* was evaluated using three items selected and adapted from previous studies on technology adoption (Davis, 1989; Nysveen, 2005) and ADM perceptions (Araujo et al., 2020). *Fairness* was measured with a single item, in-line with earlier research (Araujo et al., 2020; Lee, 2018). *Risk* was evaluated with five items adapted from Cox and Cox (2001), which is also in-line with earlier research on ADM (Araujo et al., 2020). *Objectivity* was measured with two items, given earlier findings pointing to perceptions of ADM as objective (Helberger et al., 2020) and *machine heuristic* (Sundar, 2020; Sundar & Kim, 2019). *Manipulation* was measured with a single item, as it has emerged as a concern by individuals for news recommenders (Monzer et al., 2020). Specific statements and measures can be found in the supplementary online material.⁴ All items were measured on a seven-point scale (1: *Fully Disagree*, 7: *Fully Agree*, with the midpoint of the scale indicating 4: *Neither agree nor disagree*).

Humans Versus AI in the Media Context

Participants were asked to evaluate the potential accuracy of human professionals (e.g., journalist, editor, moderator) and AI in common tasks within the media context⁵ in bipolar questions along a seven-point scale (1: *Human professional*, 7: *AI*, and the midpoint being labelled as 4: *No difference*). The tasks were (1) news recommendations (*Recommending news*), (2) news creation (*Creating news articles*), (3) content moderation (*Deleting a social media post because it contains false*

⁴ <https://osf.io/5sdb6/>

⁵ The question read as follows: When you think about the following tasks, who would take a more accurate decision: A human professional (e.g., journalist, editor, moderator), or an AI?

information), and (4) user moderation (*Banning a user from a social media platform because he/she posts false information too often*).

Independent Variables

Sociodemographics

Age, measured in years, the respondents' own perceptions of household *income* (1: poor household, and 7: rich household), and *education* were used to assess the influence of sociodemographics. Education was measured with each country's local degree levels and recoded according to the International Standards Classification of Education (ISCED) (in seven levels). All analyses controlled for gender (female = 1).

Attitudes Toward Politics and Media

Political self-placement was measured on an 11-point scale (0: Left, 10: Right, recoded to -5: Left, +5 Right). The variable *Political self-placement (squared)* was calculated with the squared term of self-placement to assess distance from the political center.⁶ *Media trust* was measured with five items developed by the Reuters Institute (Newman, Fletcher, Levy, & Nielsen, 2016) along a 7-point scale (1: *Fully Disagree*, 7: *Fully Agree*, with the midpoint of the scale indicating 4: *Neither agree nor disagree*). Items included, for example, "I think you can trust the news most of the time." *Institutional trust* was measured with six items adapted from the European Social Survey along a 7-point scale. Items included, for example, "I trust the parliament."

Privacy Orientation and Personality

Online (privacy protection) self-efficacy was measured with three items in-line with earlier research (Boerman et al., 2018). *Privacy concerns* were measured with five items (based on Baek & Morimoto, 2012; Bol et al., 2018). *Need for cognition* was measured with four items in-line with earlier research (Matthes, 2006). All questions were measured on a 7-point scale (1: *Fully Disagree*, 7: *Fully Agree*, with the midpoint of the scale indicating 4: *Neither agree nor disagree*).

All multi-item measures had acceptable levels of reliability. See Table 1 for descriptive statistics.

⁶ This approach, which provides more weight to distance from the center of the scale, was selected as the hypothesis focuses on alienation from the political mainstream.

Table 1. Descriptive Statistics and Reliability (n = 6,643).

	Mean	St. Dev.	Cronbach α^7
<i>Political attitudes and trust</i>			
Media Trust	3.70	1.38	0.93
Institutional Trust	3.49	1.39	0.92
Political Self-Placement	0.11	2.44	
<i>Sociodemographics</i>			
Age	48.9	14.7	
Gender	0.48	0.5	
Education	4.38	1.82	
Income	3.92	1.2	
<i>Privacy orientation</i>			
Privacy Concerns	5.11	1.31	0.91
Online (Privacy Protection) Self-Efficacy	3.68	1.34	0.86
<i>Personality</i>			
Need for cognition	4.55	1.1	0.75
<i>General perceptions about AI</i>			
Usefulness	4.07	1.25	0.83
Risk	4.76	1.12	0.86
Fairness	3.75	1.46	
Objective, equal treatment	3.81	1.33	0.75
Manipulation	4.80	1.41	
<i>Human vs. AI (preference for AI)</i>			
News Recommendations	3.50	1.72	
News Creation	3.18	1.69	
Content Moderation	4.06	1.89	
User Moderation	4.15	1.91	

Analytical Strategy

In-line with earlier research (e.g., Marquart et al., 2020), and to accommodate the multilevel data structure (e.g., Nezlek, 2008), we adopt multilevel modelling with respondents nested in countries and run random intercept models (see also Gelman & Hill, 2007). This controls for potential country-level differences in perceptions about AI stemming from countries' different national histories, institutional orders, or their respective political and media systems. The number of countries may be considered relatively small for multilevel modelling, which prevents a more detailed modeling of macrolevel effects. However, the large

⁷ Reliability scores per country can be found in the online supplementary material (see main analysis) at: <https://osf.io/5sdb6/>

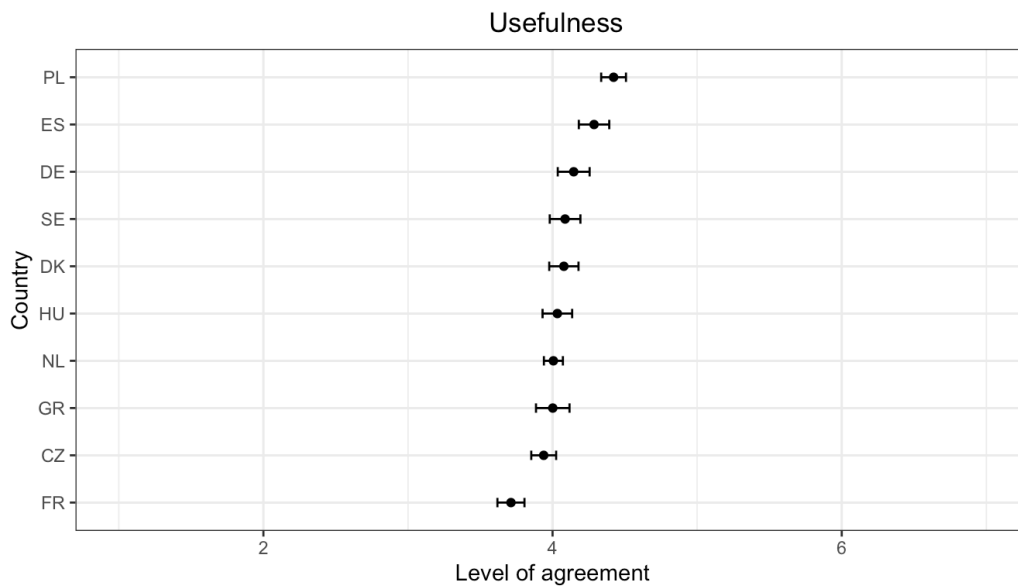
sample size in each country is deemed adequate to provide reliable estimates for individual-level variables (Stegmueller, 2013).

Results

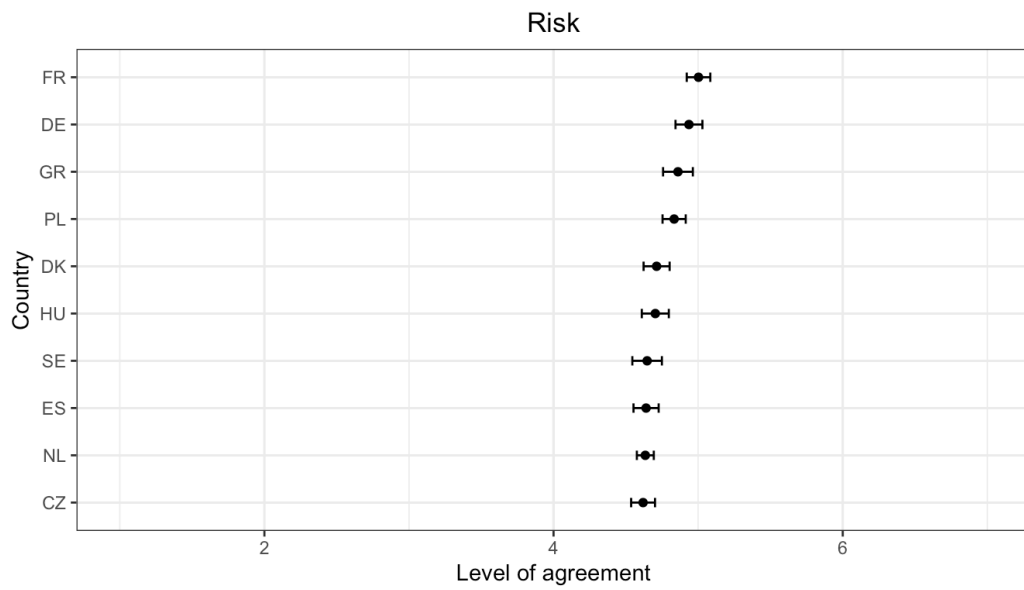
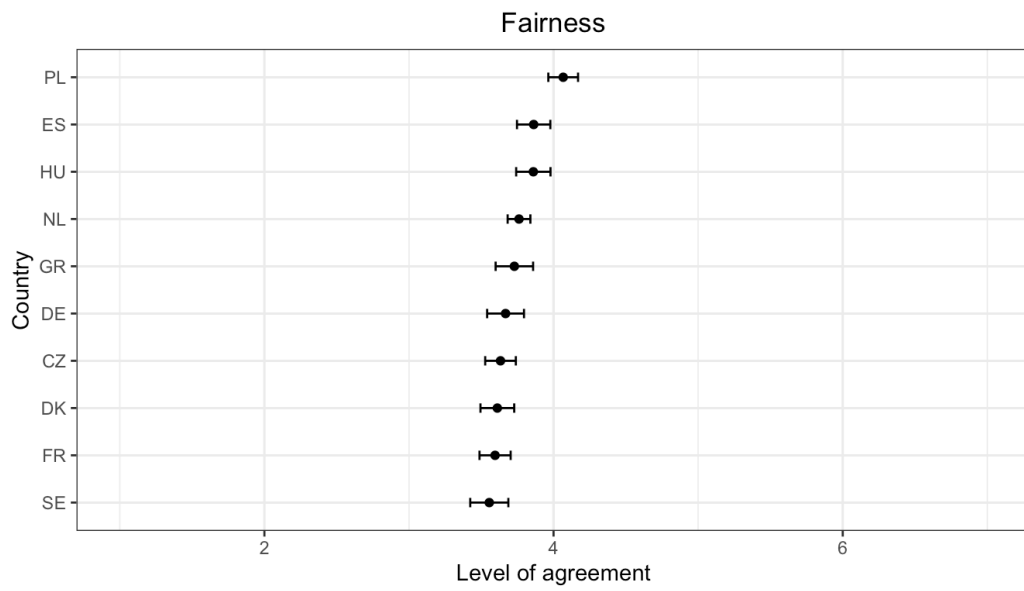
General Perceptions AI

Country Overview

As seen in Figure 1, individuals are, in general, more cautious about the positive potential of AI at a societal level—with usefulness, fairness, and objectivity close to or below the midpoint of the scale. Poland consistently scores higher than most countries in all three aspects, and France is among the lowest. This general caution is also seen in how concerns about ADM—i.e., risk and potential for manipulation—score consistently above the midpoint for all countries, with Germany and France being among the most negative. Differences between countries—even if in some cases significant—were often minimal.⁸



⁸ Statistical differences are reported in the online supplementary material (see country comparisons) at <https://osf.io/5sdb6/>.



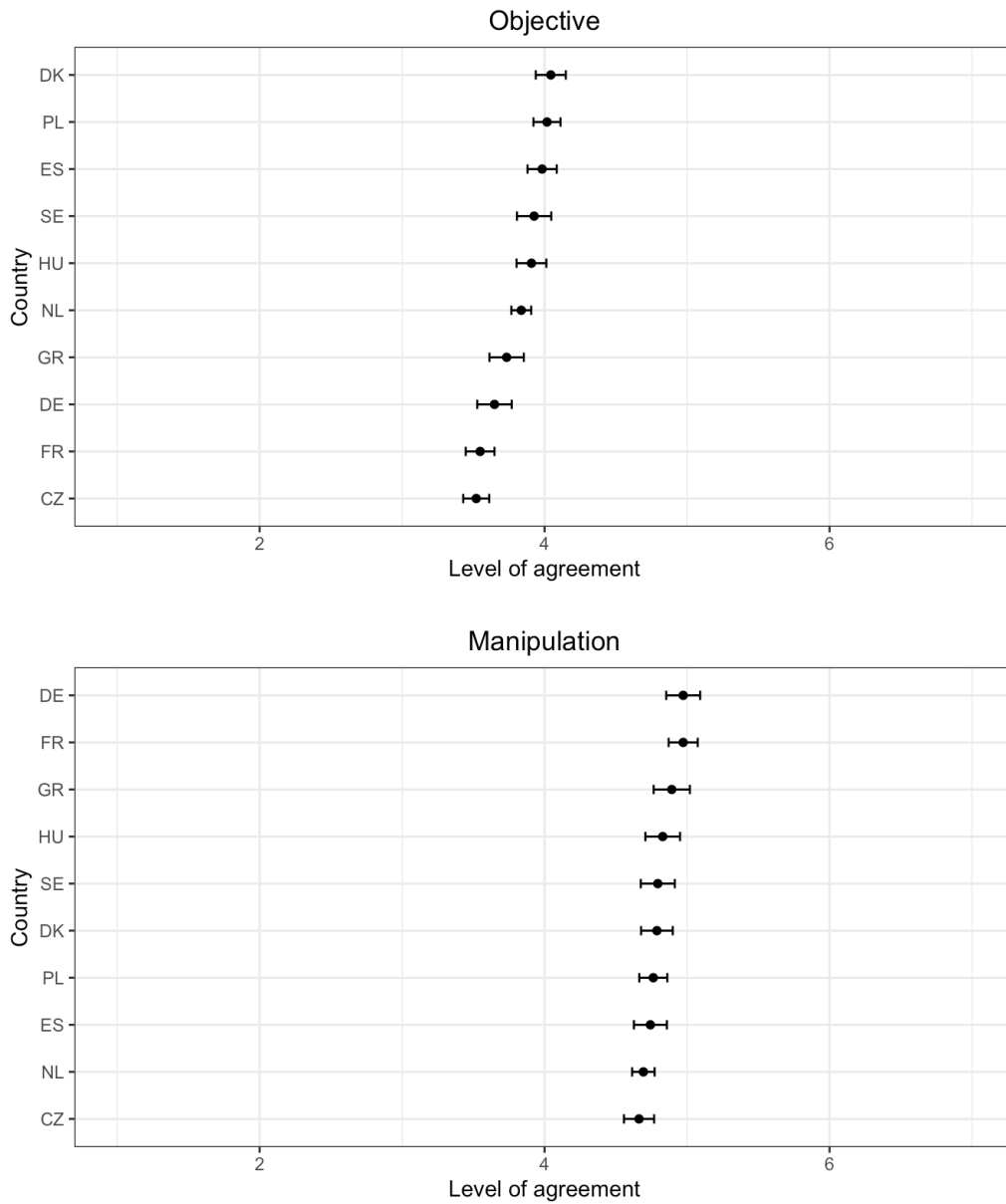


Figure 1. General perceptions about AI per country.

Hypothesis Testing

Answering RQ1a, the results (see Table 2) indicate that political attitudes influence general perceptions of the adoption of AI in societal processes in a nuanced way. Self-placement along the traditional *left-right political orientation* is only associated with concerns about AI leading to manipulation, with right-wing supporters

being more concerned. When considering *distance from the political center*, the more distant one is from the center, the more one tends to be more critical about AI. Perceptions of fairness and objectivity (but not usefulness) were negatively related to political self-placement squared, whereas perceptions of risk and manipulation were higher. For RQ2a, the results show higher levels of *institutional trust* related to more positive attitudes—usefulness, fairness, and objectivity—and lower perceptions of risk or manipulation.

Table 2. General Perceptions About AI (n = 6,643).

	Dependent variable:				
	Usefulness	Fairness	Risk ²	Objective	Manipulation
	(1)	(2)	(3)	(4)	(5)
Institutional Trust ¹	0.160*** (0.012)	0.147*** (0.014)	-0.062*** (0.010)	0.145*** (0.012)	-0.082*** (0.013)
Political Self-Placement (right)	-0.007 (0.006)	0.0001 (0.007)	0.010 (0.005)	0.002 (0.007)	0.015* (0.007)
Political Self-Placement (squared)	-0.004 (0.002)	-0.006** (0.002)	0.009*** (0.002)	-0.006** (0.002)	0.011*** (0.002)
Age	-0.005*** (0.001)	-0.004** (0.001)	0.001 (0.001)	-0.006*** (0.001)	0.003* (0.001)
Female	-0.067* (0.029)	0.004 (0.035)	0.051* (0.026)	-0.019 (0.031)	-0.002 (0.033)
Income	0.078*** (0.013)	0.085*** (0.016)	-0.052*** (0.012)	0.056*** (0.014)	-0.039** (0.015)
Education	0.001 (0.009)	-0.014 (0.010)	0.013 (0.008)	-0.022* (0.009)	0.008 (0.010)
Need for Cognition	0.112*** (0.014)	0.069*** (0.017)	0.025* (0.012)	0.075*** (0.015)	0.010 (0.016)
Privacy Concerns	-0.060*** (0.012)	-0.103*** (0.014)	0.286*** (0.010)	-0.071*** (0.013)	0.333*** (0.013)
Online Self-Efficacy	0.108*** (0.011)	0.142*** (0.014)	-0.004 (0.010)	0.131*** (0.012)	0.024 (0.013)
Constant	2.914*** (0.134)	2.857*** (0.159)	3.440*** (0.113)	3.050*** (0.144)	3.170*** (0.141)
Observations	6,643	6,643	6,643	6,643	6,643
Log Likelihood	-10,562.000	-11,677.000	-9,667.000	-11,032.000	-11,328.000
Akaike Inf. Crit.	21,151.000	23,380.000	19,360.000	22,089.000	22,683.000
Bayesian Inf. Crit.	21,239.000	23,469.000	19,449.000	22,178.000	22,771.000

Notes. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

¹ We ran an additional model with media trust also included as an independent variable as a robustness check. The results for institutional trust stayed the same.

² We also ran additional analyses for risk with different operationalizations. Details can be found in https://osf.io/5sdb6/?view_only=8ad5e13832de4feea28fdbb1c1760e2c (see risk scale).

For sociodemographics, in-line with H3a, *age* was related to negative attitudes: The older the respondent, the more negative their perceptions of usefulness, fairness, or objectivity of AI, and the higher their concerns about manipulation (but not risk). In-line with H4a, *income* was related to more positive attitudes across all dimensions. Unlike predicted by H5a, *education* was not associated with most attitudes toward AI; in the only instance where an association was found, it was contrary to hypothesized: The higher the education level, the more critical one was about AI's objectivity.

In-line with H6a, *privacy concerns* were associated with negative attitudes across all dimensions measured. In-line with H7a, *online (privacy protection) self-efficacy* was associated with more positive attitudes toward usefulness, fairness, and objectivity. Answering RQ3a, *need for cognition* was associated, yet a mixed picture emerged: those with higher levels of this trait were both more positive about AI—considering it more useful, fair, and objective—and more negative—considering it riskier.

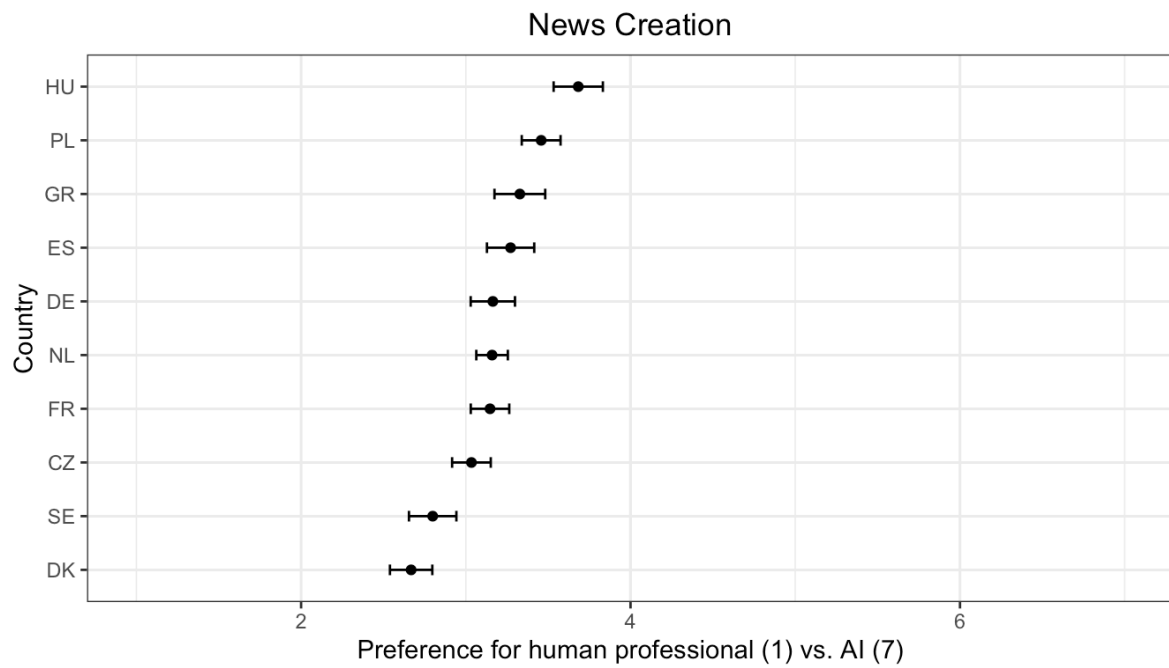
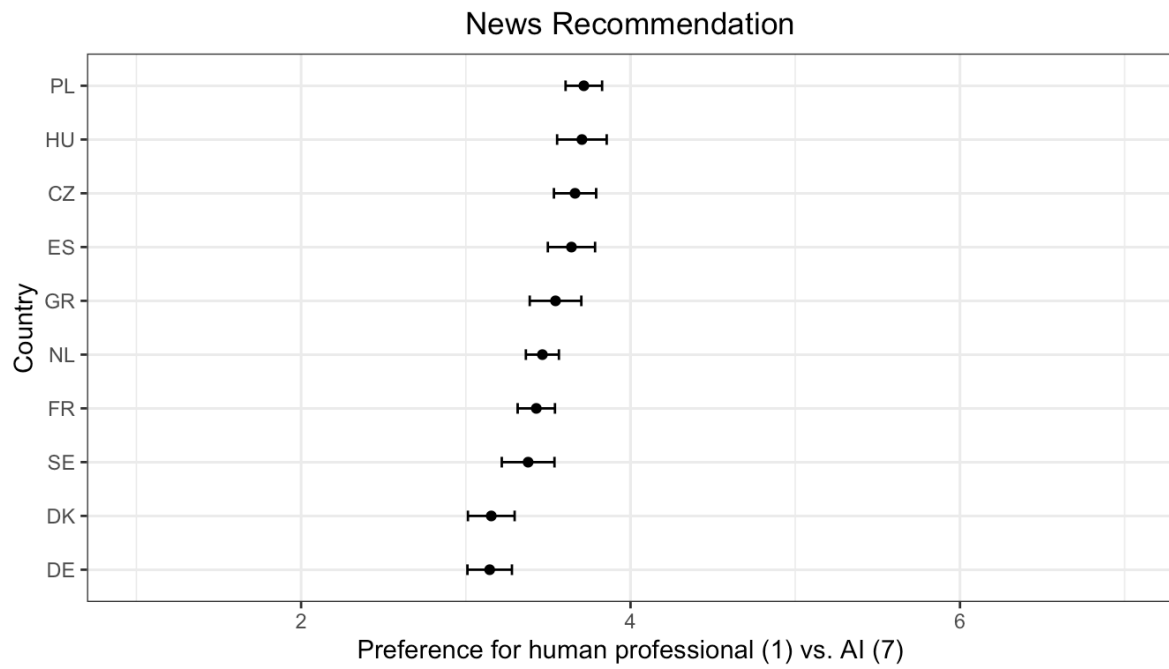
Humans Versus AI in the Media Context

Country Overview

As seen in Figure 2, individuals demonstrated a stronger preference for humans in news-related tasks—scoring consistently below the midpoint for news creation and recommendation—than for user and content moderation tasks within platforms, which often scored above the midpoint of the scale. Individuals, especially in Denmark and Sweden, showed a stronger preference for humans (versus AI) for news creation, although Hungary and, to an extent, Poland leaned slightly more toward AI than most other countries. For recommendations, most countries scored similarly, although Germany and Denmark stood out by having a stronger preference for humans.

For moderation tasks, most countries scored at similar levels, although some differences could be seen between a group composed of the Czech Republic, Germany, and Denmark having an even stronger preference for humans than Spain, Greece, and partly Sweden, with scores leaning toward stronger preference for AI. These differences between countries were often minimal.⁹

⁹ Statistical differences are reported in the online supplementary material (see country comparisons) at <https://osf.io/5sdb6/>.



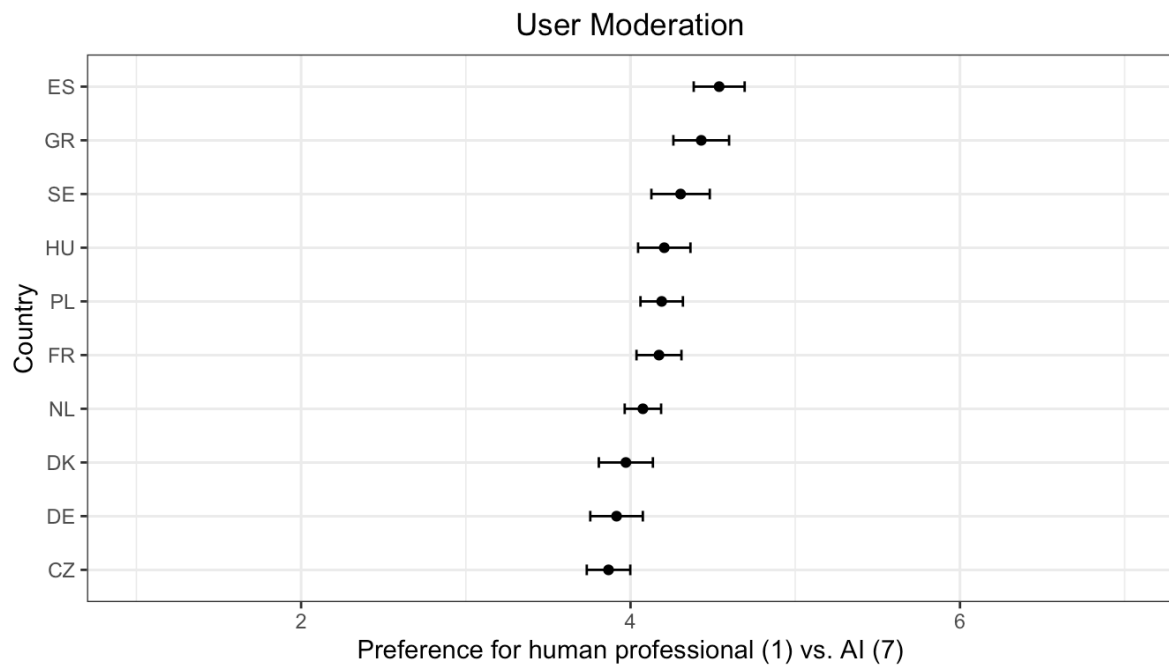
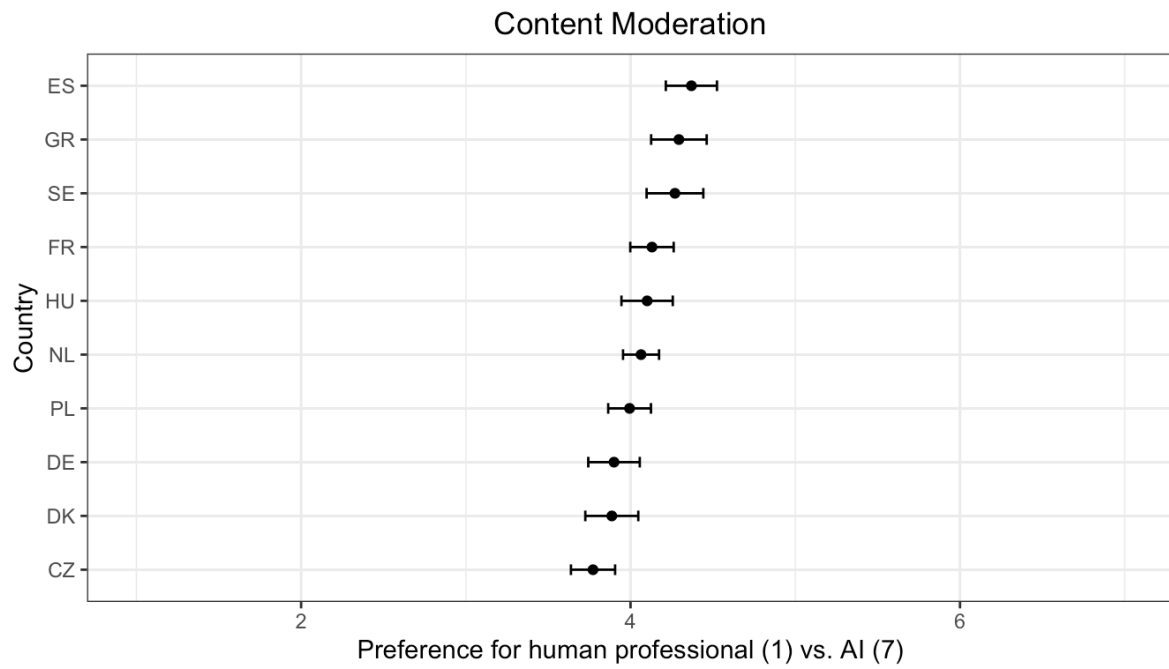


Figure 2. Preference for AI versus humans.

Hypothesis Testing

Contrary to H1a, the results (see Table 3) show that *distance from the political center* was negatively related to preference for AI (versus humans) for news recommendation, news creation, content moderation, and user moderation. Partly in-line with H1b, those more to the right along the traditional *left-right political orientation* indicated a higher preference for AI (versus journalists) for news tasks (recommendations and creation) but not for moderation tasks (content or user). Answering RQ2, the results indicate that higher levels of *institutional trust* are related to a higher preference for AI for news recommendations and moderation tasks, but not news creation. Partly in-line with H2, higher levels of *media trust* were associated with lower levels of preference for AI in news tasks (creation and recommendation), but not with moderation tasks.

Table 3. Preference for AI Versus Humans (per Task).

	<i>Dependent variable:</i>			
	News Recommendation	News Creation	Content Moderation	User Moderation
	(1)	(2)	(3)	(4)
Media Trust	-0.067*** (0.019)	-0.082*** (0.019)	-0.011 (0.021)	-0.002 (0.021)
Institutional Trust	0.059** (0.019)	0.014 (0.019)	0.082*** (0.021)	0.109*** (0.022)
Political Self-Placement (right)	0.039*** (0.009)	0.053*** (0.008)	0.004 (0.010)	0.017 (0.010)
Political Self-Placement (squared)	-0.008** (0.003)	-0.012*** (0.003)	-0.012*** (0.003)	-0.011*** (0.003)
Age	-0.015*** (0.001)	-0.006*** (0.001)	-0.002 (0.002)	-0.002 (0.002)
Female	-0.121** (0.042)	-0.089* (0.041)	0.080 (0.047)	0.022 (0.047)
Income	0.029 (0.019)	0.004 (0.019)	0.080*** (0.021)	0.083*** (0.021)
Education	0.007 (0.013)	-0.033** (0.012)	0.016 (0.014)	0.041** (0.014)
Need for Cognition	0.019 (0.020)	0.010 (0.020)	0.030 (0.023)	0.052* (0.023)
Privacy Concerns	-0.066*** (0.017)	-0.086*** (0.017)	-0.008 (0.019)	0.010 (0.019)
Online Self-Efficacy	0.069*** (0.016)	0.118*** (0.016)	0.033 (0.018)	0.011 (0.018)
Constant	4.220*** (0.185)	3.930*** (0.194)	3.360*** (0.207)	3.101*** (0.211)

Observations	6,643	6,643	6,643	6,643
Log Likelihood	-12,914.000	-12,765.000	-13,637.000	-13,692.000
Akaike Inf. Crit.	25,855.000	25,559.000	27,301.000	27,411.000
Bayesian Inf. Crit.	25,951.000	25,654.000	27,396.000	27,506.000

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

For sociodemographics, partly in-line with H3b, *age* was related to lower levels of preference for AI in news tasks but not for moderation tasks. Also, partly in-line with H4b, *income* was related to a higher preference for AI in moderation tasks, yet not for news. *Education* was associated with a higher preference for AI in user moderation tasks—in-line with H5b—yet a lower preference for AI in news creation, unlike hypothesized. No relationship was found between education and news recommendations or content moderation.

Partly in-line with H6b, *privacy concerns* were associated with a lower preference toward AI for the news tasks, yet not for the moderation tasks. The same pattern was found for *online (privacy protection) self-efficacy*, which, in-line with H7b, was associated with a higher preference for AI in news tasks, but not moderation tasks. Finally, answering RQ3b, *need for cognition* was only associated with a higher preference for AI in user moderation tasks; with all other tasks, there was no significant relationship.

Discussion

Understanding user perceptions of AI is essential in shaping how this technology is adopted and implemented, especially in a sector central to democracy as the media (Thurman et al., 2019). This study draws on results from a survey across 10 European countries to provide key findings on how individuals systematically differ in their attitudes toward AI.

The first finding is the importance of trust. Individuals with higher levels of institutional trust were more positive toward AI at the societal level and most tasks in the media sector. This suggests that trusting the institutional context may reduce concerns about AI, possibly because of individuals assuming the existence of effective laws and supervisory authorities. Conversely, higher media trust was associated with more negative views about AI in editorial tasks, with those positive about the media being less likely to see its automation as a positive development. In both cases, the impact of (media and institutional) trust highlights how attitudes toward AI cannot be seen as a stand-alone phenomenon but are intertwined with how the individual sees society more broadly. This indicates that perceptions of systemic and institutional factors might be as important as other individual factors at this stage of AI adoption. It also highlights the need for future research to account for media and institutional trust when investigating how one relates to or uses AI in our communication environment.

A second finding is the role of political attitudes. Stronger right-wing self-placement was associated with higher levels of concern about AI's potential for manipulation at the societal level. This might be partly explained by technological innovation challenging current societal practices or norms and raising concerns among those who mainly identify with the cultural aspects of the right ideology (Wasilewski, 2020). This concern about AI is, however, not seen for editorial tasks: stronger right-wing

self-placement was associated with a higher preference for AI over journalists for news recommendations and creation. Interestingly, however, the same association was not found for user or content moderation. The preference among right-wing-oriented individuals for replacing journalists for news activities but not for content moderation might be associated, we speculate, with different views about what is being automated, with news being more politically divisive, whereas social media platforms may either be seen as more neutral (or less partisan) spaces or triggering the same type of reaction among right- and left-wing oriented individuals. More research is needed to unravel the specifics of this relationship. Moreover, distance from the political center emerged as an important factor associated with more negative views about AI at a societal level and, unlike hypothesized, in the media sector. This is in-line with research on automated journalism and selective exposure showing that partisanship did not lead to differences in selective exposure when comparing automated and human journalism, except for one right-wing issue (gun freedom; Jia & Johnson, 2021). It also partly indicates that those closer to the mainstream are more positive toward technological change.

This is reinforced by a third finding: the role of socioeconomic standing. Our results partially support the notion that those with greater access to resources are more optimistic about automation, with income being a predictor of more positive attitudes about AI at the societal level as well as user and content moderation. This also reinforces earlier associations between the negative consequences of automation and inequality (e.g., Eubanks, 2018). Education, however, was mostly not associated with attitudes toward AI, while earlier findings suggesting that those who are older may be more negative toward new technology were confirmed.

A fourth finding is the positive association between NFC and attitudes about AI at the societal level, implying a relationship between a tendency toward cognitive processing and beliefs that automation may be beneficial. These results also indicate the need to investigate how personality traits influence perceptions of ADM. While we have focused on NFC, given its relationship with information processing and media skepticism, future studies can expand this and explore a broader set of characteristics, as recommended earlier (Hoff & Bashir, 2015).

A fifth finding is the importance of privacy orientation. Privacy concerns were associated with negative attitudes toward AI adoption at a societal level. These negative attitudes were counterbalanced by a positive view of those who believed more strongly in their own efficacy in protecting their privacy online. Interestingly, this was seen only for news creation or recommendation, but not for user or content moderation in social media. As news creation does not tend to use personal data, and social media tasks arguably do, this may point to a lack of understanding of some of these techniques, which should be disentangled by future research.

Finally, given our research design, we can only speculate about how country-level factors, such as technology adoption by citizens, institutions, or even the media, differences in journalistic traditions or media systems, or even local media coverage about AI, may explain perceptions about ADM by AI. However, we note that the differences found between country samples were often minimal and without a consistent pattern. This suggests that earlier findings about AI perceptions are also seen in multicountry samples within

the EU and reinforces calls for more comparative research that considers *both* individual characteristics *and* the societal context.

While this study makes several contributions, some limitations need to be considered. First, AI is a broad socio-technical concept (Elish & Boyd, 2018); thus, participants may have held a wide range of ideas when answering the questionnaire. As AI becomes more prevalent in our daily lives, it is crucial that future research continue to study this phenomenon, assessing how previous experiences and knowledge influence perceptions and usage. Second, our study is cross-sectional in nature, based on individual ratings of *descriptions* of AI in different contexts, rather than individuals *experiencing* its effects. Third, as outlined above, our research design is limited in its ability to model macrolevel (country) effects.

These limitations notwithstanding, this study provides a new level of nuance on how individual factors influence perceptions about ADM by AI within the media sector and for society more broadly. Individual expectations, attitudes, and behavior help determine *whether* AI will be used by individuals and *how* this new level of nuance contributes to the body of knowledge on perceptions about ADM and to discussions on the regulation and the potential new (systemic) risks posed by AI adoption. This is especially pressing for the media sector—where AI increasingly challenges the power dynamics between journalism, social media, and technology companies (Nielsen & Ganter, 2022)—and for broader discussions about the role of AI in democratic processes and society at large.

References

- AlgorithmWatch. (2019). *Automating society: Taking stock of automated decision-making in the EU*. AlgorithmWatch. Retrieved from https://algorithmwatch.org/wp-content/uploads/2019/01/Automating_Society_Report_2019.pdf
- André, E., Bayer, S., Benke, I., Benlian, A., Gimpel, H., Hinz, O., . . . Weber, K. (2019). *Humane anthropomorphic agents: The quest for the outcome measure*. *Proceedings of the Pre-ICIS Workshop "Values and Ethics in the Digital Age,"* 12(4), 1–16. Retrieved from <https://www.fim-rc.de/Paperbibliothek/Veroeffentlicht/1054/wi-1054.pdf>
- Araujo, T., Helberger, N., Kruijemeier, S., & de Vreese, C. H. (2020). In AI we trust? Perceptions about automated decision-making by artificial intelligence. *AI & SOCIETY*, 35, 611–623. doi:10.1007/s00146-019-00931-w
- Ariely, G. (2015). Does commercialized political coverage undermine political trust?: Evidence across European countries. *Journal of Broadcasting & Electronic Media*, 59(3), 438–455. doi:10.1080/08838151.2015.1055000
- Baek, T. H., & Morimoto, M. (2012). Stay away from me. *Journal of Advertising*, 41(1), 59–76. doi:10.2753/JOA0091-3367410105

- Baier, A. (1986). Trust and antitrust. *Ethics*, 96(2), 231–260. doi:10.1086/292745
- Barkun, M. (2015). Conspiracy theories as stigmatized knowledge. *Diogenes*, 62(3–4), 114–120. doi:10.1177/0392192116669288
- Bhat, P., & Chadha, K. (2020). Anti-media populism: Expressions of media distrust by right-wing media in India. *Journal of International and Intercultural Communication*, 13(2), 166–182. doi:10.1080/17513057.2020.1739320
- Bodó, B. (2020). Mediated trust: A theoretical framework to address the trustworthiness of technological trust mediators. *New Media & Society*, 23(9), 2668–2690. doi:10.1177/1461444820939922
- Bodó, B., Helberger, N., Eskens, S., & Möller, J. (2019). Interested in diversity. *Digital Journalism*, 7(2), 206–229. doi:10.1080/21670811.2018.1521292
- Bodrunova, S. S., Litvinenko, A., & Nigmatullina, K. (2020). Who is the censor? Self-censorship of Russian journalists in professional routines and social networking. *Journalism*, 22(12), 2919–2937. doi:10.1177/1464884920941965
- Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2018). Exploring motivations for online privacy protection behavior: Insights from panel data. *Communication Research*, 48(7), 953–977. doi:10.1177/0093650218800915
- Bol, N., Dienlin, T., Kruikemeier, S., Sax, M., Boerman, S. C., Strycharz, J., . . . de Vreese, C. H. (2018). Understanding the effects of personalization as a privacy calculus: Analyzing self-disclosure across health, news, and commerce contexts. *Journal of Computer-Mediated Communication*, 23(6), 370–388. doi:10.1093/jcmc/zmy020
- Bucher, T. (2017). 'Machines don't have instincts': Articulating the computational in journalism. *New Media & Society*, 19(6), 918–933. doi:10.1177/1461444815624182
- Bucher, T. (2018). *If... then: Algorithmic power and politics*. New York, NY: Oxford University Press.
- Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119(2), 197–253. doi:10.1037/0033-2909.119.2.197
- Caswell, D., & Dörr, K. (2018). Automated journalism 2.0: Event-driven narratives. *Journalism Practice*, 12(4), 477–496. doi:10.1080/17512786.2017.1320773
- Coleman, J. S. (1990). *Foundations of social theory*. Cambridge, MA: Harvard University Press.

- Cox, D., & Cox, A. D. (2001). Communicating the consequences of early detection: The role of evidence and framing. *Journal of Marketing*, 65(3), 91–103. doi:10.1509/jmkg.65.3.91.18336
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. doi:10.2307/249008
- Diakopoulos, N. (2019). Towards a design orientation on algorithms and automation in news production. *Digital Journalism*, 7(8), 1180–1184. doi:10.1080/21670811.2019.1682938
- Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*, 144(1), 114–126. doi:10.1037/xge0000033
- Elish, M. C., & Boyd, d. (2018). Situating methods in the magic of big data and AI. *Communication Monographs*, 85(1), 57–80. doi:10.1080/03637751.2017.1375130
- Esser, F., & Hanitzsch, T. (2013). *The handbook of comparative communication research*. New York, NY: Routledge.
- Eubanks, V. (2018). *Automating inequality: How high-tech tools profile, police, and punish the poor*. New York, NY: St. Martin's Press.
- Fast, E., & Horvitz, E. (2017). Long-Term trends in the public perception of artificial intelligence. *Proceedings of the AAAI Conference on Artificial Intelligence*, 31(1), 963–969. doi:10.1609/aaai.v31i1.10635
- Fletcher, R., & Park, S. (2017). The impact of trust in the news media on online news consumption and participation. *Digital Journalism*, 5(10), 1281–1299. doi:10.1080/21670811.2017.1279979
- Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. New York, NY: Cambridge University Press.
- Giddens, A. (2020). *The consequences of modernity*. Cambridge, UK: Polity Press.
- Gillespie, T. (2020). Content moderation, AI, and the question of scale. *Big Data & Society*, 7(2), 1–5. doi:10.1177/2053951720943234
- Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*, 14(2), 627–660. doi:10.5465/annals.2018.0057
- Goldberg, A. C., van Elsas, E. J., Brosius, A., Marquart, F., Brosius, A., Boer, D. C., & De Vreese, C. H. (2021). *Europinions: Public opinion survey* (Version 1.0.0) [Data file]. Cologne, Denmark: GESIS Data Archive. doi:10.4232/1.13795

- Gorwa, R., Binns, R., & Katzenbach, C. (2020). Algorithmic content moderation: Technical and political challenges in the automation of platform governance. *Big Data & Society*. London, UK: Sage UK. doi:10.1177/2053951719897945
- Graefe, A., Haim, M., Haarmann, B., & Brosius, H.-B. (2018). Readers' perception of computer-generated news: Credibility, expertise, and readability. *Journalism*, 19(5), 595–610. doi:10.1177/1464884916641269
- Gruber, J., Hargittai, E., Karaoglu, G., & Brombach, L. (2021). Algorithm awareness as an important internet skill: The case of voice assistants. *International Journal of Communication*, 15, 1770–1788.
- Guo, X., Zhang, X., & Sun, Y. (2016). The privacy–personalization paradox in mHealth services acceptance of different age groups. *Electronic Commerce Research and Applications*, 16, 55–65. doi:10.1016/j.elerap.2015.11.001
- Guzman, A. L., & Lewis, S. C. (2019). Artificial intelligence and communication: A Human–Machine Communication research agenda. *New Media & Society*, 22(1), 70–86. doi:10.1177/1461444819858691
- Haim, M., & Graefe, A. (2017). Automated news. *Digital Journalism*, 5(8), 1044–1059. doi:10.1080/21670811.2017.1345643
- Hallin, D. C., & Mancini, P. (2004). *Comparing media systems: Three models of media and politics*. New York, NY: Cambridge University Press.
- Helberger, N. (2019). On the democratic role of news recommenders. *Digital Journalism*, 7(8), 993–1012. doi:10.1080/21670811.2019.1623700
- Helberger, N., Araujo, T., & de Vreese, C. H. (2020). Who is the fairest of them all? Public attitudes and expectations regarding automated decision-making. *Computer Law & Security Review*, 39, 1–16. doi:10.1016/j.clsr.2020.105456
- Helbing, D., Frey, B. S., Gigerenzer, G., Hafen, E., Hagner, M., Hofstetter, Y., ... Zwitter, A. (2019). Will democracy survive big data and artificial intelligence? In D. Helbing (Ed.), *Towards digital enlightenment* (pp. 73–98). Cham, Switzerland: Springer International Publishing. doi:10.1007/978-3-319-90869-4_7
- Hetherington, M. J. (1998). The political relevance of political trust. *American Political Science Review*, 92(4), 791–808. doi:10.2307/2586304
- Hoff, K. A., & Bashir, M. (2015). Trust in automation: Integrating empirical evidence on factors that influence trust. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 57(3), 407–434. doi:10.1177/0018720814547570

- Hong, J.-W. (2022). I was born to love AI: The influence of social status on AI self-efficacy and intentions to use AI. *International Journal of Communication*, 16, 172–191.
- Jia, C., & Johnson, T. J. (2021). Source credibility matters: Does automated journalism inspire selective exposure? *International Journal of Communication*, 15, 3760–3781.
- Kohring, M., & Matthes, J. (2007). Trust in news media: Development and validation of a multidimensional scale. *Communication Research*, 34(2), 231–252. doi:10.1177/0093650206298071
- Lee, M. K. (2018). Understanding perception of algorithmic decisions: Fairness, trust, and emotion in response to algorithmic management. *Big Data & Society*, 5(1), 1–16. doi:10.1177/2053951718756684
- Levi, M., & Stoker, L. (2000). Political trust and trustworthiness. *Annual Review of Political Science*, 3(1), 475–507. doi:10.1146/annurev.polisci.3.1.475
- Logg, J. (2017). Theory of Machine: When do people rely on algorithms? *SSRN Electronic Journal*. doi:10.2139/ssrn.2941774
- Logg, J., Minson, J., & Moore, D. A. (2018). *Algorithm appreciation: People prefer algorithmic to human judgment* (SSRN Scholarly Paper No. ID 2941774). Rochester, NY: Social Science Research Network. Retrieved from <https://papers.ssrn.com/abstract=2941774>
- Luhmann, N. (2017). *Trust and power*. London, UK: Polity Press.
- Marien, S., & Werner, H. (2019). Fair treatment, fair play? The relationship between fair treatment perceptions, political trust and compliant and cooperative attitudes cross-nationally. *European Journal of Political Research*, 58(1), 72–95. doi:10.1111/1475-6765.12271
- Marquart, F., Goldberg, A. C., & de Vreese, C. H. (2020). 'This time I'm (not) voting': A comprehensive overview of campaign factors influencing turnout at European Parliament elections. *European Union Politics*, 21(4), 680–705. doi:10.1177/1465116520943670
- Matthes, J. (2006). The need for orientation towards news media: Revising and validating a classic concept. *International Journal of Public Opinion Research*, 18(4), 422–444. doi:10.1093/ijpor/edh118
- Montal, T., & Reich, Z. (2017). I, robot. You, journalist. Who is the author? *Digital Journalism*, 5(7), 829–849. doi:10.1080/21670811.2016.1209083
- Monzer, C., Moeller, J., Helberger, N., & Eskens, S. (2020). User perspectives on the news personalisation process: Agency, trust and utility as building blocks. *Digital Journalism*, 8(9), 1142–1162. doi:10.1080/21670811.2020.1773291

- Newman, N., Fletcher, R., Levy, D., & Nielsen, R. K. (2016). *The Reuters Institute digital news report 2016*. Oxford, UK: Reuters Institute for the Study of Journalism.
- Newman, N., Fletcher, R., Schulz, A., Andi, S., Robertson, C. T., & Nielsen, R. K. (2021). *Reuters Institute digital news report 2021*. Oxford, UK: Reuters Institute for the Study of Journalism.
- Nezlek, J. B. (2008). An introduction to multilevel modeling for social and personality psychology. *Social and Personality Psychology Compass*, 2(2), 842–860. doi:10.1111/j.1751-9004.2007.00059.x
- Nielsen, R. K., & Ganter, S. A. (2022). *The power of platforms: Shaping media and society*. New York, NY: Oxford University Press.
- Nysveen, H. (2005). Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the Academy of Marketing Science*, 33(3), 330–346. doi:10.1177/0092070305276149
- Oksanen, A., Kaakinen, M., Latikka, R., Savolainen, I., Savela, N., & Koivula, A. (2020). Regulation and trust: 3-month follow-up study on COVID-19 mortality in 25 European countries. *JMIR Public Health and Surveillance*, 6(2), 1–12. doi:10.2196/19218
- Park, S., & Yoon, S.-H. (2005). Separating early-adopters from the majority: The case of Broadband Internet access in Korea. *Technological Forecasting and Social Change*, 72(3), 301–325. doi:10.1016/j.techfore.2004.08.013
- Pierson, J., Kerr, A., Robinson, S. C., Fanni, R., Steinkogler, V. E., Milan, S., & Zampedri, G. (2023). Governing artificial intelligence in the media and communications sector. *Internet Policy Review*, 12(1), 1–28. doi:10.14763/2023.1.1683
- Reporters Without Borders. (2021). *Press freedom index*. Retrieved from <https://rsf.org/en/world-press-freedom-index>
- Ross, A. S., & Rivers, D. J. (2018). Discursive deflection: Accusation of “fake news” and the spread of mis- and disinformation in the tweets of president Trump. *Social Media + Society*, 4(2), 1–12. doi:10.1177/2056305118776010
- Smith, A. (2018). *Public attitudes toward computer algorithms* (pp. 1–40). Pew Research Center. Retrieved from <http://www.pewinternet.org/2018/11/16/public-attitudes-toward-computer-algorithms/>
- Stegmueller, D. (2013). How many countries for multilevel modeling? A comparison of frequentist and Bayesian approaches. *American Journal of Political Science*, 57(3), 748–761.

- Sundar, S. S. (2008). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 73–100). Cambridge, MA: MIT Press. Retrieved from http://www.marketingsociale.net/download/modello_MAIN.pdf
- Sundar, S. S. (2020). Rise of machine agency: A framework for studying the psychology of human–AI interaction (HAI). *Journal of Computer-Mediated Communication*, 25(1), 74–88. doi:10.1093/jcmc/zmz026
- Sundar, S. S., & Kim, J. (2019). Machine heuristic: When we trust computers more than humans with our personal information. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–9. New York, NY, USA: ACM. doi:10.1145/3290605.3300768
- Sztompka, P. (1999). *Trust: A sociological theory*. Cambridge, UK: Cambridge University Press.
- Tandoc Jr., E. C., Yao, L. J., & Wu, S. (2020). Man vs. machine? The impact of algorithm authorship on news credibility. *Digital Journalism*, 8(4), 548–562. doi:10.1080/21670811.2020.1762102
- Thurman, N., Dörr, K., & Kunert, J. (2017). When reporters get hands-on with robo-writing. *Digital Journalism*, 5(10), 1240–1259. doi:10.1080/21670811.2017.1289819
- Thurman, N., Lewis, S. C., & Kunert, J. (2019). Algorithms, automation, and news. *Digital Journalism*, 7(8), 980–992. doi:10.1080/21670811.2019.1685395
- Thurman, N., Möller, J., Helberger, N., & Trilling, D. (2018). My friends, editors, algorithms, and I. *Digital Journalism*, 0(0), 1–23. doi:10.1080/21670811.2018.1493936
- Tsfati, Y., & Cappella, J. N. (2003). Do people watch what they do not trust?: Exploring the association between news media skepticism and exposure. *Communication Research*, 30(5), 504–529. doi:10.1177/0093650203253371
- van der Kaa, H., & Kraemer, E. (2014). Journalist versus news consumer: The perceived credibility of machine written news. *Proceedings of the Computation+ Journalism Conference, Columbia University, New York, 24*, 1–4.
- van Deursen, A., & van Dijk, J. (2011). Internet skills and the digital divide. *New Media & Society*, 13(6), 893–911. doi:10.1177/1461444810386774
- van Deursen, A., & van Dijk, J. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, 21(2), 354–375. doi:10.1177/1461444818797082

- Waddell, T. F. (2018). A robot wrote this? How perceived machine authorship affects news credibility. *Digital Journalism*, 6(2), 236–255. doi:10.1080/21670811.2017.1384319
- Wang, P. (2019). On defining artificial intelligence. *Journal of Artificial General Intelligence*, 10(2), 1–37. doi:10.2478/jagi-2019-0002
- Wasilewski, K. (2020). When technology meets ideology: *First Monday*. doi:10.5210/fm.v25i8.10817
- Wojcieszak, M., Thakur, A., Ferreira Gonçalves, J. F., Casas, A., Menchen-Trevino, E., & Boon, M. (2021). Can AI enhance people's support for online moderation and their openness to dissimilar political views? *Journal of Computer-Mediated Communication*, 26(4), 223–243. doi:10.1093/jcmc/zmab006
- Wölker, A., & Powell, T. E. (2018). Algorithms in the newsroom? News readers' perceived credibility and selection of automated journalism. *Journalism*, 22(1), 86–103. doi:10.1177/1464884918757072
- Xu, H., & Gupta, S. (2009). The effects of privacy concerns and personal innovativeness on potential and experienced customers' adoption of location-based services. *Electronic Markets*, 19(2–3), 137–149. doi:10.1007/s12525-009-0012-4