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Speaking the news

How conversational agents influence trust and issue salience

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Chapter V

General Conclusion

Central to this dissertation is the question of *how does interacting with conversational agents for news recommendations impact trust in the news recommender and subsequently issue salience of users?* By addressing this question, this dissertation contributes to a broader understanding of the effects of conversational agents as news recommenders. The dissertation focuses on the functional and affective experiences of user interactions with CAs, integrating insights from human-computer interaction, communication science, journalism, and law. With this approach, the dissertation has two main contributions. First, it enhances the understanding of trust in news recommenders. Particularly, by testing antecedents that were identified in the other contexts and applying them to news recommenders (Hwang & Kim, 2007; Komiak & Benbasat, 2006), and by examining the impact of explanations on trust in news recommenders (Dogruel, 2019; Eslami et al., 2018). Second, this dissertation provides insights on the implications of news recommendations through CAs on issue salience, in comparison to non-dialogical interfaces for news recommenders. It does so by extending upon previous research on the information distributed through CAs and news websites (Dambanemuya & Diakopoulos, 2020; Haim et al., 2018). Ultimately, this dissertation arrives at five key conclusions, which will be detailed in the following section.

Main Conclusions

Conclusion 1: *Conversational agents (CAs) users have a lower probability of agreeing on the most important issues a country faces (issue salience). This probability of agreeing is lower when users trust the CA to provide news.*

This dissertation examines users' perceptions of the most important issues in the country and the news (issue salience) when using CAs for news consumption. Furthermore, the dissertation compares issue salience among CA users with those receiving news through social media and news websites. This way, the dissertation extends previous research in information quality (Dambanemuya & Diakopoulos, 2020) and users' perceptions of news distribution through CAs (Ford & Hutchinson, 2019).

Chapter 2 presents two important insights about how news recommendations via CAs affect users' issue salience. The first insight suggests that individuals who mainly rely on CAs for news recommendations may have a slightly different perspective on the most important issues compared to those relying on traditional news websites or social media. For instance, while users who use Facebook agree the most important issues were health, housing, and the environment, those utilizing Google Assistant were also likely to consider energy as an important issue in the country. This insight suggests that the primary channel for news consumption can lead to differences in public issue salience. Additionally, it suggests that

CAs can potentially influence issue salience. Particularly because news recommendations in CAs are mostly based on user characteristics such as location and language, the information presented is more likely to align with these particular individual characteristics (Ojeda, 2021). By contrast, a traditional news website from the public service media aims to provide the public with relevant information while promoting a shared public sphere (Nielsen et al., 2016). Similarly, while social media may consider users' interests for news consumption (Thorson et al., 2021), it may also account for the overall popularity of particular issues (Meta, 2023). In this context, users consuming news through CAs can have a different understanding and prioritization of the most important issues. Combined with personalization, this can potentially reinforce the absence of a shared understanding of the most important issues. Additionally, it may lead to difficulties in reaching a consensus on which public policies need to be addressed (Paul & Fitzgerald, 2021).

Second, Chapter 2 shows that the more users trust CAs or social media for news consumption, the higher the probability of lower issue salience agreement. This finding extends prior studies conceptualizing different layers of trust by empirically evaluating two of the layers (generalized and trust in the channel) (Strömbäck & Kiousis, 2010). High trust in CAs and social media for news consumption could lead to users depending more on these channels for information (Strömbäck & Kiousis, 2010). Additionally, the more users trust either CAs or social media, the more likely they are to stop verifying the information given (van Zoonen et al., 2024). This dynamic can deepen the risk of having lower agreement on the most important issues that are presented in the news. This can represent a risk particularly if CAs diverge in the issues presented to users.

In brief, news consumption through CAs can lead to a lower issue salience agreement in comparison to news websites or social media. In other words, having a different understanding of the most relevant issues that the country faces. The differences in issue salience have two important democratic implications. First, it can drive individuals to decide on the specific parties for addressing the issues that they consider important (EnnserJedenastik et al., 2022). Second, issue salience serves individuals to agree on the issues that need to be addressed by public policies (Paul & Fitzgerald, 2021). If individuals cannot agree on the importance of certain issues, it can become challenging to reach a consensus on public policies (Paul & Fitzgerald, 2021). This could imply a democratic risk in deciding on the public policies that the country should address.

Future research can focus on evaluating the level of news personalization in CAs. This research would aim to enhance our knowledge of the criteria used by these algorithms for personalizing news content. Such insights can provide a more nuanced understanding of the influence of CAs in issue salience. Additionally, future studies can evaluate the extent to which personalization processes in CAs influence trust in these technologies.

These insights can foster our understanding of the relationship between algorithmic personalization, issue salience, and trust.

Conclusion 2: *Conversational agents (CAs) as news recommenders tend to be less trusted than websites, and this disparity is influenced by the level of perceived enjoyment associated with each channel.*

Chapter 3 suggests that CAs, in contrast to websites, are perceived as less trustworthy for news recommendations. The negative influence of trust is attributed to the lower levels of perceived enjoyment. This finding, centered on general news, differs from other studies (Ischen et al., 2020; Selamat & Windasari, 2021; Xiu et al., 2023) in the context of e-commerce and entertainment news. In particular, the study by Xiu et al. (2023), which focuses on entertainment news, highlights that the interaction with a CA may lead to an increased focus on the content presented. This implies that the type of content delivered, in addition to the dialogue with CAs, might affect users' enjoyment. Thus, potentially, the context of the information delivered to users and the dialogic interaction with CAs might affect how much users enjoy the interaction.

Moreover, it is crucial to highlight that Chapter 2 reveals that CAs from specific brands, such as Google Assistant, scored higher in trust than news websites and social media. Chapter 3 instead suggests that an unbranded CA was trusted less than a traditional unbranded website. These findings highlight the complexity of the factors leading to trust in the news recommender. They illustrate how brand recognition can influence users' trust in technologies such as news recommenders. Multiple studies have highlighted the way Google is trusted as a source of information (Peterson et al., 2022; Schultheiß & Lewandowski, 2023). The trust users place in Google extends to the technologies these platforms develop such as Google Assistant (Natale & Cooke, 2021; Noble, 2018). The findings from Chapter 2 follow this direction. Users trusted Google Assistant more than social media or a news website for the information received. Nevertheless,Chapter 3 presents a different trend, showing that an unbranded CA is not as trusted as a website for news recommendations. This discrepancy suggests the relevance of the brands behind CAs for trust.

A heavy reliance on brand recognition for establishing trust in CAs can lead to a concentration of information gatekeepers. Such a trend risks providing more control to well-known technological companies to decide on the information that the public deems important (Bodó, 2021; Helberger, 2021). This risk is particularly important for democratic processes, particularly if those trusted brands prioritize other interests than the public's best interests (Bodó et al., 2023).

Based on these findings, future studies could focus on two directions. First, future studies could explore how the interaction between dialogue in

CAs and the content presented influences perceived enjoyment and trust in news recommenders. Second, future studies can evaluate how the branding of a CA influences trust, especially in the context of news recommendations. Conducting an experiment to directly compare a CA branded by public service media against one from a tech organization would be important to future research. This comparison could serve to assess further user trust differences in CAs as news recommender. It can provide nuance on how trust varies between CAs associated with tech companies and those linked to news organizations. Understanding the mechanisms through which the organizations behind the CA affect trust can guide further literacy strategies to calibrate trust.

Conclusion 3: *Trust in news recommenders is influenced by perceived enjoyment, perceived personalization, and privacy concerns.*

This dissertation focuses on underlying factors that can shape trust in the context of CAs and websites as news recommenders. Chapter 3 and Chapter 4 reveal that perceived enjoyment, perceived personalization, and privacy concerns are relevant factors. Building upon previous research in the e-commerce context (Hwang & Kim, 2007; Komiak & Benbasat, 2006), this dissertation extends the applicability of the antecedents to the context of news recommenders. These factors – namely perceived ease of use, perceived enjoyment, perceived personalization, and privacy concerns– represent a combination of functional and affective antecedents that can influence the multidimensionality of trust (i.e., competence, benevolence, and integrity). Specifically, our findings highlight perceived enjoyment, perceived personalization, and privacy concerns as important antecedents for trust in the context of news recommenders.

In evaluating these factors, Chapter 3 shows perceived enjoyment as an important antecedent for influencing trust in interactions with news recommenders. Enjoyment is connected to the hedonic pleasure derived from using a technology, these in turn can influence the perceived value that users attribute to a technology (e.g., news recommenders in CAs or websites) (Hwang & Kim, 2007; Pitardi & Marriott, 2021). Upon reflection, it becomes relevant to consider enjoyment as a key antecedent, considering that the creation of positive experiences serves as the foundation for sustained engagement, which can then evolve into trust (Botsman, 2017). Recognizing the significance of enjoyment in this context highlights the importance of considering trust as a multidimensional construct with affective components (i.e., benevolence).

Additionally, chapters 3 and 4 identify perceived personalization as another key antecedent influencing trust in news recommender systems. Earlier research has highlighted the expectation of users to deliver information that is relevant and tailored to their individual preferences (Komiak & Benbasat, 2006). When users perceive that the news recommender

tailors the information to their needs or preferences, it can signal that the recommender understands them. This understanding is relevant for trust in news recommenders, as users may feel the news recommender is more likely to act in their best interest. Nevertheless, recognizing the importance of perceived personalization alongside other antecedents is necessary. Antecedents such as perceived enjoyment or privacy concerns are also relevant in connection to perceived personalization. Users' expectations of receiving relevant information can enhance the enjoyment of their experiences or amplify privacy concerns. Recognizing these nuances improves our understanding of the dynamics involved in perceived personalization within the context of news recommenders.

In this regard, while Chapter 4 recognizes privacy concerns as an important trust antecedent, Chapter 3 suggests that privacy concerns have a non-significant effect on trust in the news recommender. This difference might be related to the context of the studies. Chapter 3 examines a news recommender on a text-based dialogue conversational agent interface compared to a website. Instead, Chapter 4 explores the impact of explanations and modalities (audio vs text). The focus in Chapter 4 on disclosing information related to the news recommendation process may have affected the impact of privacy concerns. Privacy concerns might be a relevant antecedent for trust in the news recommender particularly when explicit information regarding data or privacy is at stake. In this context, privacy concerns can translate into a societal demand for more control of their information and transparency in data usage. In connection to the relevance of perceived personalization, users value information that aligns with their interests. However, it is crucial to ensure that this is achieved while also protecting their online information.

Thus, the discussion on the role of perceived personalization should be extended beyond its ability to influence trust. As the combination between perceived personalization and privacy concerns as key antecedents for trust signals important ethical considerations that should be discussed. While personalization can influence trust, it is important to notice that personalization can be balanced with privacy standards to protect user data (Slokom et al., 2021). Additionally, it is important to consider that personalization should not compromise the diversity of information presented to users (Vrijenhoek et al., 2021). Balancing personalized content with the need to expose users to a variety of perspectives is crucial for maintaining a well-informed public. Therefore, while personalization serves as a key antecedent for building trust in news recommender systems, it also needs careful consideration of privacy and diversity.

These findings contribute to emerging research on news recommenders by showing the distinct antecedents that influence trust in the news recommender. The findings also emphasize ethical considerations important in the development of recommender systems particularly highlighting the critical need to balance between personalization and user

privacy. In a way, future development of news recommenders must consider the multifaced antecedents of trust to guarantee a proper engagement with the users. Thus, future research could collaborate with user interface designers and developers to integrate the findings into the design and development of news recommendation systems.

Conclusion 4: *The audio modality of the conversational agent can play a role in influencing privacy concerns.*

Audio as a modality has been integrated into CAs as a convenient way to interact with the user (Newman, 2018; Rzepka et al., 2022). However, the modality of the conversational agent –specifically, whether the agent interacts through audio or text– may influence users' privacy concerns. Exploratory findings suggest that the level of detail of the explanations in the text modality raises privacy concerns. In comparison, the explanations did not seem to affect privacy concerns in the audio modality. Users showed similar levels of concern for privacy whether they were provided with global or local explanations via audio. This may hint into a situation where the audio modality itself may heighten awareness of data collection processes, regardless of the explanations (Ha et al., 2021). Users might inherently associate audio interactions with a higher likelihood of personal data collection, possibly due to the personal and pervasive nature of audio interactions (Turow, 2021). Particularly, since audio interactions require a microphone to continuously listen and collect data (Turow, 2021). Therefore, the modality through which information is delivered can play a role in influencing privacy concerns. This points towards a characteristic of audio interactions with CAs, which can prompt users to be more mindful of their privacy (Cho et al., 2020). Future research should gain further insights into this finding by comparing different modalities (audio, text, and possibly visual) to systematically assess how each modality influences privacy concerns among users. This includes examining user perceptions and concerns in different scenarios where CAs interact through solely audio, solely text, or a combination of modalities.

Conclusion 5: *More detailed explanations about personalization processes in a text-based recommender might affect trust in the news recommender.*

Technological affordances and the organizations behind CAs are not the only factors influencing trust. Regulatory frameworks also play a crucial role in shaping this dynamic. Regulations, such as the General Data Protection Regulation (GDPR), grant users the right to be informed about the way their data is processed and whether they are subjected to profiling and automated decisions (General Data Protection Regulation, 2016). Similarly,

the Digital Services Act (DSA) mandates that platforms disclose the main parameters involved in recommendations (Digital Services Act, 2022). This implies that platforms employing AI, including CAs, should incorporate explanations to offer users more insights into the recommendation process.

Within this framework, Chapter 4 conducts a comparison between global and local explanation types, assessing their effects on users' trust in the news recommender. Exploratory findings suggest that providing users with more detailed explanations does not significantly influence trust in the news recommender system, regardless of the modality. This is the case when disclosing the personalization process of algorithmic news recommendations—whether through general (global) or specific (local) disclosures. In summary, despite explanations influencing privacy concerns in text-based news recommenders, our findings indicate that explanations do not influence trust. This finding suggests that providing users with more specific information about the recommendation process could diminish their sense of control over their information (Eslami et al., 2018). Additionally, revealing detailed information in text-based news recommenders might heighten users' awareness of the data collection process by organizations operating the recommender systems (Baruh & Popescu, 2017). Nevertheless, providing more detailed explanations does not necessarily influence trust. Particularly, since there might be other factors affecting the extent to which users trust news recommenders.

This finding highlights the importance of not merely overwhelming users with information. Instead, the focus should be on enhancing the trustworthiness of news recommender systems (Van Drunen et al., 2019, 2022). Thus, it is critical that regulatory frameworks go beyond simple transparency. They must include control mechanisms that build trust in such systems, including conversational agents.

In this regard, it is pertinent for organizations that deploy news recommenders to meet user expectations and provide services that address and resolve issues when the technology fails to satisfy user needs. One approach could be to empower users by giving them control over their information personalization (Monzer et al., 2020; Van Drunen et al., 2019, 2022). Thus, it is crucial for future research to explore user requirements, beyond transparency.

Theoretical Limitations

This dissertation contributes to the fields of human-computer interaction, communication science, journalism, and law by developing a theoretical framework that examines how CAs as news recommenders, affect issue salience, media trust, and trust in news recommenders. This dissertation also tests how different CA affordances, such as dialogue and audio, influence users' trust in news recommenders. These insights are valuable for news

organizations that want to adopt CAs for news recommendations, as well as for future research in this area (Jones & Jones, 2019).

Despite its contributions, the dissertation also recognizes the limitations of the current conceptual framework and suggests directions for future research. For instance, in Chapter 3, this dissertation explores the impact of two dimensions of media trust—generalized trust and trust in the channel—on issue salience (Strömbäck et al., 2020). However, it is important to acknowledge that trust in the channel is an aggregated layer of trust in the news recommender. Thus, future studies should incorporate trust in news recommenders as an additional layer moderating the effect of issue salience. As trust in the news recommender can affect both information acceptance and technology adoption (Beldad & Hegner, 2018; Choi et al., 2011; Thurman et al., 2019), this layer of trust can serve to evaluate the extent to which particular technologies affect public issue salience.

Moreover, although prior research has investigated how brands associated with technology affect trust in that technology (Söllner et al., 2016), this dissertation did not specifically examine this effect. Extending the conceptualization and evaluating the effects to the context of news recommenders is important as there are democratic implications that need to be considered. Particularly, since the influence of trust in limited brands creating technologies could lead to reliance on limited sources for gatekeeping the information that reaches the public.

Finally, in a continuously evolving media ecosystem, the updates in regulations could also influence trust in technologies such as CAs. Emerging regulations, such as the AI Act, prioritize transparency as a key strategy for mitigating the risks associated with CAs (Helberger & Diakopoulos, 2023). In this context, news organizations will need to adhere to this regulatory framework, as far as it is relevant for the media. Potentially setting new benchmarks for transparency (Porlezza, 2023). With the AI Act introducing new transparency obligations for CAs, further research becomes critical. It is of particular importance to assess the effectiveness of the AI Act in meeting its goals. Specifically, through experimental designs and interviews, future research can evaluate the extent to which transparency affects trust in CAs.

Methodological Limitations

This dissertation integrates both surveys and experiments, to deepen our understanding of user perceptions. A survey was utilized to gather data from users over time, facilitating the analysis of trends, patterns, and the influence of conversational agents, social media, and news websites. This longitudinal data collection allows for a comprehensive evaluation of how user perceptions evolve and how various digital platforms impact these perceptions.

Conversely, the experimental components of this dissertation

provided a controlled setting to examine the specific effects of conversational agents and their different modalities, such as audio versus text. These experiments were designed to provide "real" user interactions, enhancing the ecological validity of the findings. In some instances, this involved the deployment of a conversational agent created particularly for experimental settings (Araujo, 2020).

Despite the methodological strengths of the longitudinal survey and the controlled experiments, future research has an opportunity to enhance the ecological validity of news recommenders in conversational agents (CAs) and websites. One path for improvement would involve integrating these recommenders into actual news platforms simulating real-world usage. This step can enhance the realism of the research setting and provide insights into how users interact with news recommenders in environments they are familiar with.

Moreover, considering the diversity of recommender systems that users encounter daily, future studies should broaden their scope to include various types of algorithms in the recommenders, such as collaborative filtering, content-based filtering, and hybrid algorithms. Investigating how interactions with different algorithmic approaches influence trust can serve to understand how the algorithm plays a role beyond the interface utilized. Additionally, the experiments conducted in this dissertation were limited to one-time interactions with conversational agents, websites, or recommenders, delivering information either through audio or text. However, it is crucial to acknowledge that users' perceptions can evolve over time. Thus, to have a clearer understanding of the impact of news recommenders on trust, future research should examine the longitudinal effects of interacting with different types of recommenders, considering both the interface and the underlying algorithms.

In summary, future research can benefit from evaluating users' perceptions over extended periods and in more ecologically valid settings. By doing so, it would be possible to gain a deeper understanding of the dynamic relationship between users, CAs, and trust in the recommenders.

Conclusion

The increasing prevalence of news recommenders across various platforms, including social media such as Facebook, as well as conversational agents such as Alexa, Siri, and Google Assistant, has sparked several concerns. These concerns revolve around issues such as the lack of transparency in algorithmic news recommendations, their impact on information diversity, and their control over the flow of information. Trust plays a crucial role in shaping users' acceptance of these technologies and the information they provide (Foehr & Germelmann, 2020; Thurman et al., 2019). This dissertation takes an initial approach to evaluating the complex and multidimensional

concept of trust, considering its various layers and the numerous factors that can influence it.

This dissertation contributes to the understanding of news consumption through conversational agents (CAs), indicating that a strong reliance on CAs might slightly reduce the level of agreement on key societal issues, particularly for users who trust the companies behind these agents. The dissertation further notes an unbranded CA is less trusted than an unbranded website, a perception related to lower perceived enjoyment. The difference between trust in branded and unbranded CAs highlights the relevance of the organizations behind CAs in influencing trust. These contributions point out an interplay between user trust, tech companies, and the broader implications for the public, suggesting challenges that might emerge with technologies such as CAs acting as intermediaries in news distribution.

Building upon these insights, this dissertation draws upon insights from e-commerce studies to pinpoint relevant antecedents for trust, both functional and affective. One example is the influence of perceived enjoyment on trust. Additionally, perceived personalization emerges as a critical antecedent, with important ethical considerations concerning privacy and information diversity.

Moreover, the dissertation evaluates the impact of detailed explanations about personalized news recommendations on trust, highlighting the importance of empowering users with personalization control over the information they receive. Additionally, it stresses the necessity for regulatory frameworks to extend beyond transparency, incorporating control mechanisms to enhance trust in news recommenders such as CAs. Overall, this dissertation provides an overview of the complex dynamics between news consumption through CAs, trust, and their societal effects.

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