
How to Understand Trust in News Recommender Systems

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News Recommender Systems and Trust

Trust in media, particularly news media, has become “fragile” (De Coninck et al, 2023). While some research reassures that the decrease in news media trust is limited (Hanitzsch, Van Dalen, & Steindl, 2018), others (e.g., Stubenvoll, Heiss, & Matthes, 2021) observe a more rapid drop in trust which coincides with many citizens being distrustful of artificial intelligence (AI) and its growing omnipresence (Vandendriessche et al., 2021). Algorithmic news recommender systems, while crucial in helping news consumers find and filter relevant information, have been identified as playing a key role in this dwindling trust through their profit-driven logic, privacy and surveillance issues, lack of diversity, bias, contribution to the spread of dis-/misinformation and black-box operations (e.g., Angelov et al., 2021; Sørensen & Van den Bulck, 2020).

While a measure of critical awareness ensures that individuals recognize that news and information should not be taken at face value (Cabrera, 2021), systematic low levels of trust and increasing distrust in news and information media contribute to uncertainty regarding what you know and why, creating epistemic distress. Combined with a decrease in trust in public institutions and government information (Flew, 2021), this undermines trust in “traditional foundations of knowledge” while destabilizing “the grounds for establishing and legitimising ‘truth’ [ushering in] an uncertain epistemic future” (Dahlgren, 2018, p. 23, 24). For authors like Dahlgren (2018, see also Benkler et al., 2018), this constitutes an epistemic crisis.

Those concerned with Epistemic Welfare, here considered as creating and maintaining the conditions and capabilities for individuals’ epistemic agency in the public sphere, need to deal with this issue of trust. For all these reasons, we need to take another look at trust as what exactly constitutes and affects this trust remains relatively undefined, both conceptually and as an empirical measure.

Defining Trust

Studying trust in (news) recommender systems requires a dynamic understanding of the concept of trust. The concept of trust has been met with growing interest in the social sciences since the 1990s, seen as “an important basis for social order and a foundation for social cohesion” (Kohring & Matthews, 2007, p. 231) and trust in news (media) as a prerequisite for a well-functioning public sphere as it affects how individuals perceive and evaluate news media.

Mayer et al. (1995) provide a very productive and often quoted definition of trust as “the willingness of a trustor to be vulnerable to the actions of a trustee based on the expectation that the trustee will perform a particular action, irrespective of the ability to monitor or control that other party” (p. 713). At the centre of this definition is the idea of **trust as an active endeavour involving two parties that are in a particular relationship to one another**: the “trustor” as subject and the “trustee” as the direct object of the act of trusting. The trustor is not just an individual but can be a range of actors: individuals (do I, as a news consumer, trust one or another news recommender system?), but also organizations (e.g., news media evaluating which recommender systems they can trust to distribute and disseminate content), governments (trust and distrust as a basis for a policy framework) and wider society (as part of a so-called “post-truth” society).

Many who study trust (Bloebaum, 2014, 2016; Hardin, 2004) consider it not as a broad commitment but as involving a particular action. This means that a trustor (e.g., a news consumer) may trust a trustee (e.g., a particular news medium’s recommender system) to do one thing well (e.g., quick updates) but that does not mean that they will trust them to do something else well (e.g., in line with their political views). Others acknowledge that if the trustor trusts the trustee to be good at one particular action, they may trust them to be good at a related action either because of common characteristics of those actions or because of the longevity of the trustor-trustee relationship. For instance, Ali and Van den Bulck (2021), in their analysis of trust in US public broadcaster PBS, found that trust in PBS news is related to trust in its overall offering, including children’s programs watched growing up.

The latter points to **trust as an ongoing process**. Trust is about the past (previous trustor-trustee experiences), the present (current trustor-trustee interactions) and the future (expectations of future trustor-trustee relationships). A one-off breach of trust that was built up over time will not necessarily end a trust relationship but can affect future interactions. Importantly, research into security and surveillance in computer sciences or privacy-as-trust in work on AI (Moor,

1997; Thompson, 2020) puts trust opposite risk, i.e. trust as the reduction of or absence of risk. However, trust also develops (increases or decreases) in interactions where risk is low (Sørensen, et al., 2020). Moreover, in long-term trust relations, a violation of trust by the trustee may go unnoticed by the trustor, at least for a while (Denning, 1993). The slow but ongoing eroding of trust in legacy news media, for a long time considered trustworthy sources of information, is not necessarily the result of trustors correctly assessing the risk involved in getting information from one rather than another trustee.

Finally, it is important to recognize that trust and distrust are different constructs that have distinct characteristics and partly different determinants (Van de Walle & Six, 2013). When studying trust in news recommender systems, therefore, it is important not to treat distrust as simply the opposite end of a continuum from trust to distrust. As Popescu-Sarry (2023) argues, many aspects of the so-called post-truth era result from misplaced distrust in testimony rather than low interest or lack of trust in facts.

Operationalizing Trust

Trust comes with a set of preconditions and is contextualized by factors and characteristics of the trustor and the trustee and of the wider context of their interaction (see also Van den Bulck, Ali & Kropko, forthcoming).

On the one hand, to understand the basis for a trustor's feelings towards the trustee, trust can be operationalized through a better understanding of key features of the trustee. Zucker (1986) distinguished institution-based trust, process-based trust and characteristics-based trust, which can all come into play at any given time. Institution-based trust is impersonal, based in the conviction that society provides structures (regulations, institutions) that people can trust and that, through that, they can trust each other. This comes with structural assurance: structures have built-in "guarantees" that ensure trusting intentions (McKnight & Chervany, 2013). A media-related example would be a news recommender system from a public media organization that through its organizational structure, financing and core values has an "aura of trust" (Biltereyst, 2004, p. 341). Process-based trust results from repeated contact and interaction between trustor and trustee. The original contact may be coincidental (e.g., stumbling upon a particular news medium and its recommender system), repeated interaction can reduce uncertainty and build trust. Character-based trust, finally, results from the perceived trustworthiness of specifics of the trustee

by the trustor. Mayer et al. (1995) see three main characteristics of the trustee that contribute to the trustor's willingness to trust: ability, benevolence, and integrity.

On the other hand, understanding trust also requires insight into key features of the trustor. Denning (1993, p. 37), discussing computer engineering, sees trust from the perspective of the trustor as "an assessment that a person, organization, or object can be counted on to perform according to a given set of standards." It is not an inherent property of a system, person or organization but a contextual assessment and reassessment by an observer. Many factors affect this trust, including the above-mentioned "attribution of characteristics by the trustor on the basis of perception" (Bloebaum, 2016, p. 10). Trust is not the same as the trustor knowing exactly how the trustee will act but rather "a relationship between trustor and trustee in which the trustor is willing to assume that the trustee will act in the best interest of the trustor" (Harper and Watson, 2014, p. 17). The latter suggests that a news consumer does not necessarily need to know how exactly a recommender system works if they can assume it operates in their best interest of being informed.

From a psychology perspective, trust is studied as a dispositional variable (e.g., Wang et al., 2015): an individual has a consistent, general tendency to trust/distrust to a bigger or smaller extent people, groups or institutions across a broad spectrum. The two main components of an individual's trust disposition are the level of 'faith in humanity' and the extent to which they take a trusting stance (McKnight & Chervany, 2013). Sociological perspectives relate trust to characteristics of the trustor such as socio-economic status and to characteristics of wider society, such as increased populism or conspiracy thinking, that contribute to the post-truth era, and that can affect individual trustors and the general public's ability to trust. Communication studies typically consider the trustor's history of news and other media consumption (and avoidance), their general views on news, and in the case of algorithmic recommender systems, their wider views on technology, especially AI (e.g. Arlt, 2018).

Measuring trust

Given that trust is relational (a relationship between the news recommender system and the user), contextual and determined by characteristics of both parties, it cannot simply be assessed by analyzing the characteristics of the trustee, i.e. the news recommender system as such. What is more, these systems

tend to lack explicit trust information. As a result, researchers have developed and tested various trust metric approaches to infer implicit trust, yet they do not easily provide good insights nor generate accurate trust-related predictions (Guo et al., 2014).

Another way to understand trust in news recommender systems is to simply go and ask people. An early example is Fletcher and Park's (2017) use of Reuters Institute Digital News Report survey data (N = 21,524) to analyze people's trust in news in the digital era. Following De Coninck et al. (2023), we advertise that the role of trust can be "as a predictor, mediator, and moderator" and can be a dependent and independent variable, depending on the questions asked.

Moving Forward

Synthesizing insights from various disciplines has helped to elucidate the multifaceted nature of trust, from conceptualization to operationalization and measurement. An important task ahead for researchers and practitioners is to devise concrete strategies that address trust-related challenges in algorithmic news recommender systems. The notion of epistemic welfare serves as a guiding framework for the design and governance of these systems. Ensuring that news recommender systems fulfil epistemic standards may require actively modifying the characteristics and objectives of these systems by prioritizing individuals' epistemic agency in the public sphere. News recommender systems that adhere to epistemic standards subsequently empower users to access and disperse knowledge, fundamentally altering dynamics and relationships between users and news recommender systems. We argue that these transformative shifts have the potential to cultivate greater trust and reduce distrust in such systems and contribute to the creation of an informed and resilient citizenry.

References

Ali, C., Van den Bulck, H., & Lee, B. (2021). PBS could help rebuild trust in US media. *Columbia Journalism Review*. March 9. https://www.cjr.org/tow_center/pbs-could-help-rebuild-trust-in-us-media.php

Angelov, P. P., Soares, E. A., Jiang, R., Arnold, N. I., & Atkinson, P. M. (2021). Explainable artificial intelligence: an analytical review. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, 11(5), e1424.

Arlt, D. (2018). Who trusts the news media? Exploring the factors shaping trust in the news media in German-speaking Switzerland. *Studies in Communication Science*, 18(2), 231-245. <https://doi.org/10.24434/j.scoms.2018.02.003>

Benkler, Y., Faris, R., & Roberts, H. (2018). *Network propaganda: Manipulation, disinformation, and radicalization in American politics*. Oxford University Press.

Cabrera, F. (2021). Is epistemic anxiety an intellectual virtue? *Synthese*, 199, 13471-13495. Doi: 10.1007/s11229-021-03383-2

Biltreyst, D. (2004). Public service broadcasting, popular entertainment and the construction of trust. *European Journal of Cultural Studies*, 7(3), 341-362. Doi: 10.1177/1367549404044787

Bloebaum, B. (2014). *Trust and journalism in a digital environment*. Reuters Institute for the study of journalism.

Bloebaum, B. (2016). Key factors in the process of trust. On the analysis of trust under digital conditions. In B. Bloebaum (Ed.), *Trust in a digitized world. Models and concepts of trust research* (pp. 3-27). Springer.

Dahlgren, P. (2018). Media, knowledge and trust: The deepening epistemic crisis of democracy. *Javnost - The Public*, 25 (1/2), 20-27. DOI: 10.1080/13183222.2018.1418819

De Coninck, D.D., Boomgaarden H.G., Kronschnabl, H, & d'Haenens, L. (2023). The Trust Factor: Investigating the triple role of news media trust on perceived migrant threat. *International Journal of Communication*, 17(2023), 6076-6095.

Denning, D.E. (1993). A new paradigm for trusted systems. Proceedings on the 1992-1993 *Workshop on New Security Paradigms*, 129673, 36-41. Doi: 10.1145/283751.283772

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

Flew, T. (2021). The global trust deficit disorder: A communications perspective on trust in the time of global pandemics. *Journal of Communication*, 71(2), 163-186. doi: 10.1093/joc/jqab006.

Hanitzsch, T., Van Dalen, A., & Steindl, N. (2018). Caught in the nexus: A comparative and longitudinal analysis of public trust in the press. *The International Journal of Press/Politics*, 23(1), 3–23. doi:10.1177/1940161217740695

Kohring, M., & Matthews, J. (2007). Trust in news media: Development and validation of a multidimensional Scale. *Communication Research* 34(2): 231-25. Doi: [10.1177/0093650206298071](https://doi.org/10.1177/0093650206298071)

Mayer, R.C.; Davis, J.H., & Schoorman, F.D. (1995). An integrative model of organizational trust. *The Academy of Management Review*, 20(3), 709-734. Doi: 10.2307/258792

McKnight, D.H., & Chervany, N.L. (2013). Trust and distrust definitions. One bite at the time. In R. Falcone, M. Singh, & Y.H. Tan (Eds.), *Trust in cyber-societies* (pp. 27-54). Springer Verlag.

Moor, J. H. (1997). Towards a theory of privacy in the information age. *ACM SIGCAS Computers and Society*, 27(3), 27–32. Doi: 10.1145/270858.270866

Ou, C.X. & Sia, C.L. (2009). To trust or to distrust, that's the question. Investigating the trust-distrust paradox. *Communications of the ACM*, 52(5), 135-139.

Popescu-Sarry, D. (2023). Post-truth is misplaced distrust in testimony, not indifference to facts. Implications for deliberative remedies. *Political Studies* [online first], 1-15.

Sørensen, J.K. & Van den Bulck, H. (2020). Public service media online, advertising and the third-party user data business: A trade versus trust dilemma? *Convergence, The International Journal of Research into New Media Technologies*, 26(2): 421-447. DOI: [10.1177/1354856518790203](https://doi.org/10.1177/1354856518790203)

Sørensen, J.K.; Van den Bulck, H. & Sokol, K. (2020). Stop spreading the data: PSM, trust and third party service. *Journal of Information Policy*, 10: 474-513.

Stubenvoll, M., Heiss, R., & Matthes, J. (2021). Media trust under threat: Antecedents and consequences of misinformation perceptions on social media. *International Journal of Communication*, 15, 2765–2786

Thompson, P. B. (2001). Privacy, secrecy and security. *Ethics and Information Technology*, 3(1), 13–19. <https://doi.org/10.1023/A:1011423705643>

Van de Walle, S. & Six, F. (2013). Trust and distrust as distinct concepts: Why studying distrust in institutions is important. *Journal of Comparative Policy Analysis: Research and Practice*, 16(1), 158-174. DOI: [10.1080/13876988.2013.785146](https://doi.org/10.1080/13876988.2013.785146)

Van den Bulck, H., Ali, C., & Kropko, J. (forthcoming). The Mr Rogers effect: Why Americans trust PBS. [journal submission]

Vandendriessche, K., Steenberghe, E., Matheve, A., Georges, A. & Demarez, L. (2021). *Imec.digimeter 2020: digitale trends in Vlaanderen*. IMEC. <https://biblio.ugent.be/publication/8717212>

Wang, S.W., Ngamsiriudom, W., & Hsieh, C-H. (2015). Trust disposition, trust antecedents, trust, and behavioral intention, *The Service Industries Journal*, 35(10), 555-572. DOI: 10.1080/02642069.2015.1047827