Shared agency in information behaviour research: Human–Nonhuman interactions

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Abstract

Introduction. This study examines shared agency in information behaviour, advancing a post-anthropocentric perspective that recognises how humans co-participate with technological, biological, and environmental entities when interacting with information.

Method. Using secondary data analysis, the study synthesises findings from four previously published projects employing autoethnography, visual ethnography, mixed methods, and reflective phenomenology. These studies provide empirical insights from contexts including yoga, social media misinformation, and human–companion animal relationships.

Analysis. A cross-case thematic analysis was conducted, guided by theoretical frameworks from embodiment, sociomateriality, and multispecies perspective, to examine how agency emerges relationally across different assemblages.

Results. Three themes were identified. First, agency is not individually possessed but emerges between entities. Second, it is enacted through material-affective engagements involving bodies and environments. Third, it is grounded in caring connections with others. These findings show that meaning emerges through dynamic interaction rather than isolated individual action.

Conclusion. Information behaviour is a relational achievement of shared agency. This reconceptualisation offers insights for ethical and effective human–AI collaborations, encouraging a shift from viewing technologies as tools toward mutual incorporation and participatory sense-making.

Introduction

The landscape of human information behaviour studies is evolving, with artificial intelligence (AI), animals, and environmental systems playing an increasingly active role (Olsen-Kristiansen & Lund, 2024; Solhjoo, 2025; Wang et al., 2024). Understandings of information behaviour are expanding to recognise the agency of non-human actors, both technological and biological. Influential works in information studies have reimagined society by shifting away from human-centric models toward ecological-informational harmony (Floridi, 2013; Nardi & O'Day, 2000).

AI agents blur distinctions between communication channels and communicators (Guzman & Lewis, 2020), and between information and its sources (Sundin, 2025), challenging boundaries of existing views of information behaviour. Olsen-Kristiansen and Lund (2024) argue that AI systems show functional agency, influencing outcomes beyond deterministic tool use. Unlike static documents (e.g., books), AI dynamically tailors knowledge, acting as a participatory agent. While enhancing accessibility and efficiency (Liao et al., 2024), AI also raises concerns about trust, bias, and decision-making authority (Liao et al., 2024; Huang et al., 2025).

Animals, by advancing multispecies information science (Lueg, 2024; Solhjoo et al., 2023), challenge the human-centred boundaries of information behaviour studies. Other species demonstrate informational agency and promote inclusivity of nonhumans within social, cultural, and ecological contexts. They act not only as sources but also as users and providers of information, engaging with humans as informants and recipients. This resonates with Indigenous knowledge systems, which understand lands, animals, and nature as kin and collaborators in knowledge building (Du & Chu, 2022; Haines et al., 2023).

Nonhumans are therefore not just tools but collaborators influencing outcomes of practices and interactions. This creates shared understanding arising from mutual dependence, as *'it is not possible to fully experience information without others'* (Solhjoo et al., 2024, p. 722). Yet studies of information behaviour often remain human-centred, overlooking nonhuman agents. Addressing this gap requires reconceptualising agency: How do humans and nonhumans collaborate in information interactions?

This paper conceptualises shared agency, building on prior research to show how humans and nonhuman entities (co)participate in information interactions, and how meaning emerges through these interactions. It argues that agency is distributed across networks of human and nonhuman actors, offering insights for researchers and practitioners in human-AI collaboration.

Theoretical framework

The theoretical framework of this paper is based on the concept of *shared agency*. Classic view sees agency as intentional, autonomous action (e.g., a library user conducting a search in a database), overlooking the relational, distributed, and sometimes passive nature of agency. Developed by scholars such as Gomart and Hennion (1999) and Despret (2016) and further explored in Science and Technology Studies (STS), agency has been reconceptualised as a process of mutual shaping rather than one of control.

In this view, agency is not individual property but rather an emergent quality of entanglements that can both enable and constrain information. Instead of imposing their will onto the world, actors allow themselves to be affected by their connections in the assemblage, dissolving binaries between subject/object. This view reveals agency as a collaborative, embodied, and adaptive process, flourishing not through mastery, but through transformation (de Laet, Driessen, & Vogel, 2021).

Developments in cognitive science expand our understanding of the relational and shared nature of agency among humans and non-humans. The Socially Extended Mind Theory expands cognition

beyond the brain and body, incorporating external tools, environments (Clark & Chalmers, 1998), and social interactions (Gallagher, 2013). Building on this concept, Fuchs and De Jaegher's (2009) work on participatory sense-making illustrates how individuals merge with objects or others—such as a blind person's cane becoming an extension of their body, or tennis players anticipating each other's moves. Participatory sense-making creates a shared system where agency emerges between participants rather than residing within individuals. This perspective moves beyond viewing cognition as merely distributed, instead emphasising the dynamic interactions among individuals, tools, and practices within a broader system of learning and experience.

This relational view of agency aligns with several new metatheories in information behaviour studies, including embodiment (Lloyd, 2007; Bates, 2018), sociomateriality (Pilerot, 2014; Haider and Sundin, 2023), and multispecies movement (Solhjoo, et al., 2023; Solhjoo 2025). They all challenge traditional human-centred views of information and information behaviour. Rather than focusing solely on human agency, these metatheories advocate for a framework of shared agency that recognise the active roles of nonhuman entities in information behaviour research.

In line with the above theoretical perspectives, we position shared agency as a fundamental dimension of information behaviour studies. Our research challenges us to reconsider how information behaviour is shaped by the specific others —human and nonhuman—with whom we think and act.

Methodology

The methodological approach was justified by the nature of shared agency itself. Agency is an elusive and fluctuating phenomenon, empirically difficult to capture through a single method (Syrijälä & Norrgram, 2019). Its distributed and often non-verbal character, unfolding in the mundane interactions of everyday life, calls for methodological pluralism capable of capturing its breadth and depth. Accordingly, we employed a secondary data analysis (SDA) approach, aggregating and re-examining the authors' previously published studies. As defined by Wickham (2009), SDA involves using data collected for primary research to address different questions. This approach enables the investigation of complex, trans-contextual research questions.

The thematic synthesis involved reviewing findings from four prior studies by the authors (see Table 1). It is important to note that this was not a re-analysis of the primary datasets. Rather, the analysis revisited the findings already reported in these four case studies to examine them through the lens of a new research question: how shared agency manifests across information behaviour studies. There was no return to the raw data; instead, the researchers reflected on and interpreted their previously published results to identify themes relevant to shared agency. While the individual cases have been published elsewhere, their integration here enabled the generation of a higher-order theoretical understanding of shared agency in information behaviour studies.

The sampling process was purposive: the authors selected their own prior research in the field of information behaviour, specifically studies that demonstrated relational and existential information engagements, such as living with companion animals, digital environments, and embodied practices like yoga. This selection ensured that the data sources were rich in examples of shared forms of agency. Table 1 provides a summary of the methodologies employed by each study.

Case	Method	Author	Content	Purpose
1	Visual ethnography	Solhjoo, 2021	Yoga practitioners in Iran participated in a participatory photography of their yoga practices.	Documenting moments perceived as informational during yoga practice with attention to bodily and spatial experiences to identify patterns in embodied information experiences.
2	Mixed method	Huang, Zhang, & Du, 2025	Social media users' emotional responses to COVID-19 misinformation on X (Twitter)	Documenting how social media users form social bonds around misinformation, particularly in the context of COVID-19.
3	Autoethnography	Mansourian, 2025	Author personal diary with a 13-year-old retired farm dog in regional Australia on daily practices and home life.	Documenting deep, insider perspectives on information seeking, sharing, and using.
4	Reflective phenomenology	Solhjoo, Krtalić, & Goulding 2024	Families living with cats and dogs in New Zealand participated in walking interviews with reflecting on a day-in-the-life videos.	Documenting factors shaping shared understanding in multispecies families, focusing on the relationship between humans and companion cats and dogs.

Table 1. Summary of primary studies included in the secondary data analysis.

Stories of shared agency and information in digital, embodied, and multispecies contexts

Case 1: Embodied information in yoga

Yoga practitioners become more attuned to listening to different parts of their bodies to inform their yoga practice (Solhjoo, 2021). The body itself acts as the primary agent of information, with practitioners relying on embodied feedback to guide their practice. One participant, for instance, recognised her advancing capability in an arm balance pose when noticing bruises on her forearm. Many practitioners described similar examples as listening with their parts of bodies - tendons, breath patterns, and muscle engagement - treating these bodily elements as having their own communicative capacity and guiding the movement adjustments. Moreover, the physical environment provides feedback and acts as an extension of the yogi's body. All yoga practitioners relied on their surroundings while practicing, making connections through multiple senses beyond sight. For example, air currents influenced breathing rhythms, floor textures affected movement quality, and ambient elements like incense scents and music helped synchronise actions. Also, the social environment played a role, with some practitioners drawing inspiration from peers' body posture while others strategically positioned themselves to minimise distractions from others.

Case 2: Misinformation interactions on social media

Building on prior research that highlights the critical role social media users play in the dissemination of misinformation, the study employs an AI deep learning model to analyse emotional responses in interactions with pandemic-related posts (Huang, Zhang, & Du, 2025).

During the COVID-19 pandemic, due to social distancing measures and restrictions, many individuals turned to social networking sites as their primary source of health information. Through engagement with misinformation online, users not only expressed opinions but also connected with like-minded individuals and formed social bonds in virtual spaces. As users socially interact with misinformation, social media platforms function as shared agents—active mediators in the spread of misinformation. This study investigated social bonding behaviours in the context of misinformation spread, with a particular focus on the role of emotions. By analysing the relationship between emotional responses and social bonding, the study revealed notable differences in user behaviour when engaging with true information versus misinformation. The findings suggest that social bonding behaviours vary depending on the veracity of information. When interacting with misinformation, the emotion of surprise significantly contributes to its support, whereas anticipation is associated with its rejection. In contrast, in response to true information, anger and sadness are linked to its support, while fear is associated with its rejection. These results highlight that social bonds formed through emotional interactions among social media users play a crucial role in shaping how individuals collectively engage with and contribute to the dissemination of misinformation online.

Case 3: Human-dog information practices

This multispecies anti-anthropocentric autoethnography addressed how the caretaker seeks, shares, and uses information to care for and understand his companion dog (Mansourian, 2025). Information experiences were multifaceted and included numerous contextual factors, such as health-related, environmental, and social aspects. The dog played diverse roles in this process, ranging from initiating specific information-seeking episodes to knowledge sharing and decision-making. For example, the dog that suddenly started licking his paw excessively prompted the guardian to search for information about allergies. In another instance, when the dog avoided certain walking routes, it led the guardian to explore alternative paths. Therefore, the animal actively contributed to shaping the information experiences of the human custodian. This shared agency played a role in shaping the guardian's information practices, highlighting that the dog was not passive in the process but actively participated in how the guardian sought, shared, and used information.

Case 4: Interspecies information exchange

Empathy and affective engagement with animals foster participatory sense-making, where humans and animals co-adapt to each other's way of living (Solhjoo, 2024). Daily interactions create persistent patterns of care and attunement (Solhjoo, Krtalić, & Goulding, 2024). For example, humans and animals develop mutual understanding through routines such as greetings at the door or shared sleeping spaces, shaped by context-dependent experiences. Animals learn home routines and social cues (e.g., dinner times, specific words) through repeated interactions, while humans learn the animal cues (e.g., tail wagging, vocalisations). Touch (e.g., hugging, and kissing), forms a shared, non-verbal language between them, where meaning arises from the interaction, not from either participant independently. Playful activities (e.g., grooming rituals) create an autonomous, intersubjective space where meaning develops through mutual adjustment. This case study highlights how meaning is co-constructed in ways neither humans nor animals could achieve alone. Without human-animal affective bonds, these forms of interspecies information would not emerge, as they cannot be attributed solely to human language or animal way of communication.

Implications for understanding shared agency in information studies

By synthesising these diverse cases through the lens of shared agency, this paper advances post-anthropocentric information studies and identifies three key themes that contribute to current discussions in information behaviour.

- Agency in information behaviour studies emerges dynamically across bodies, species, and digital systems. Agency is not an intrinsic property of humans but rather emerges through dynamic interactions in-between various actors. In Case 1, yoga practitioners incorporate environmental elements—such as air currents and floor textures—into their sensorimotor systems, illustrating how cognition spills into the environment. Similarly, the interspecies exchanges (Case 3 and 4) revealed how agency distributes across species boundaries through persistent patterns of care and attunement.

- Affective and material connections are central to how information is enacted and understood. All four cases highlight the critical role of these connections. In the yoga study (Case 1), practitioners developed an emotional dialogue with their own bodies—treating their emotions, aches, breath patterns, and even bruises as communicative partners. The emotional dynamics observed in engagement with misinformation in the digital realm (Case 2) illustrate how agency emerges from affective entanglements with algorithmic systems and like-minded communities. Social media users' interactions with misinformation—where surprise facilitated its spread while anticipation supported its rejection—demonstrate how affectivity shapes epistemic processes at scale. The multispecies cases (Cases 3 and 4) further emphasise how care practices create affective bonds that structure information flows, with animals actively influencing human information seeking through embodied and contextual cues. Collectively, these findings suggest an approach in which acquiring and interpreting information emerges through doing and feeling within material-affective ecologies.

- What we learned from these cases is the importance of cultivating care (for both human and non-human actors) within information studies. Together, these cases illustrate many tools and technologies—such as yoga mats, social media platforms, and dog leashes—serve not merely as things to aid in tasks, but as interfaces for being with others and becoming informed with them. Using technology, as Nardi and O'Day (2000) argue, requires 'heart'— a relational and affective commitment. Being informed in this context is an existential engagement, one that goes beyond the mere acquisition of facts and is instead grounded in relationships, and caring connections with others (Gorichanaz, 2020). This resonates with Fuchs and De Jaegher's (2009) concept of mutual incorporation, where the in-between space of interaction becomes the source of intentionality. This emotional and interdependent ontology positions non-human entities as informational agents, recognising all actors—human, animal, algorithmic, and environmental—as co-shapers of meaning.

Implications for understanding human–AI collaborations

Advances in artificial intelligence increasingly exhibit lifelike behaviour and reshape how information is analysed and understood. According to our findings, we suggest that viewing AI as a sociable, rather than purely functional, entity, has important implications for understanding shared human–AI agency. Just as yogis attend to bodily and environmental cues or dog guardians respond to their animals' signals, AI should be designed as participatory agents whose contributions shape and transform, but do not dominate, the flow of interaction. Designing for mutual incorporation, as illustrated by the human-dog attunement in Case 4, involves creating systems where humans and AI adapt to each other's capacities.

This requires moving beyond transactional interfaces that prioritise instrumental accuracy or efficiency over epistemic and existential development. AI systems should support relational agency emerging through sustained interaction (e.g., 'Did this AI exchange help me grow?'). AI systems

must transcend purely functional exchanges to support shared agency - a process where meaning co-emerges through interaction rather than residing solely within humans or AI.

To achieve this, AI systems need to foster affective feedback loops enabling participatory sense-making. Case 2 on misinformation underscores the dangers of neglecting these principles, showing how current social media platforms encourage attachment patterns that bypass critical thinking.

Limitations and future research

While these four case studies provide valuable qualitative insights into shared agency in information behaviour, the paper has several limitations that suggest directions for future research. The current analysis relies on a small set of cases, and future work could include a larger and more diverse selection of studies from the information behaviour literature to strengthen generalisability. Furthermore, the findings and discussion could be better connected to the theoretical framework and to neighbouring fields, such as human–computer interaction and human–animal–computer interaction, thereby enhancing the paper's conceptual contributions. Future research could also explore how the identified themes refine or expand theoretical understandings of shared agency, particularly in addressing the question: How do humans and nonhumans collaborate in encountering, seeking, and interpreting information? Additionally, it would be valuable to examine the unique qualities of shared agency with different nonhuman entities—for example, being with a dog versus interacting with an AI agent—recognising that each type of nonhuman actor brings distinct relational and affective dimensions to information behaviour studies.

Methodologically, future research would benefit from mixed-method approaches that combine qualitative insights with computational techniques, as well as longitudinal studies to investigate how shared agency develops over time in human–AI interactions and other more-than-human relationships. The emotional dynamics observed in misinformation engagement also warrant further investigation in controlled experimental settings to better understand the role of affect in human–AI collaborations.

Conclusion

The four case studies presented in this paper collectively illuminate the complex dynamics of shared agency in information behaviour, spanning human embodiment, digital environment, and interspecies relationship. We demonstrated that whether in physical practice, digital engagement, or interspecies living, meaning and agency emerge relationally through material-affective entanglements. We provided an explanatory account of how agency emerges relationally across varied contexts. Agency is shared when the actions and outcomes (e.g., deciding on health information accuracy, arranging a room for doing yoga, or cooking food for a pet) cannot be attributed to a single entity but instead result from a constant negotiation and mutual adjustment among all involved. The findings laid the foundation for reimagining human-AI collaboration not as tool use, but as a form of mutual incorporation—where, much like yogis and their environments or dogs and their guardians, humans and AI systems develop shared perceptual capabilities that transcend what either could achieve alone.

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