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Received: 4 October 2024 | Revised: 8 July 2025 | Accepted: 12 July 2025

DOI: 10.1002/asi.70010

RESEARCH ARTICLE

JASIST WILEY

Right answers to wrong questions: The dysfunctional nature of information needs

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Abstract

People frequently experience difficulties when seeking information to complete tasks. To overcome these difficulties, people require help. Regarding struggles with information needs, past research focuses on unclear information requests, such as ambiguous, under-specified, and ill-defined queries, and repairing these by user-led strategies (e.g., clarification). In an exploratory qualitative study where information clerks were interviewed, we, however, found that well-formed and seemingly reasonable requests can conceal misconceptions inquirers have (e.g., about what information is required for their current task) and, therefore, interfere with information seeking and task completion, too. Besides being more difficult to identify than unclear requests, such hidden misconceptions also undermine current user-led repair strategies as they cause inquirers to believe they are making appropriate requests. Understanding misconceptions in information seeking and requests concealing these is, therefore, essential to building more effective information systems. Our study contributes to addressing this task: It is the first to provide empirical insights into how misconceptions can negatively influence information requests, information-seeking conversations, and task completion. Ultimately, our findings highlight that inquirers' perceived information needs can present an unreliable and even counterproductive basis for task support, implying that researchers and professionals should rethink the prevailing focus on user requests in designing information systems.

1 | INTRODUCTION

People frequently experience difficulties when seeking information to complete tasks (e.g., Feild et al., 2010; Sarkar et al., 2020). Regarding problems associated with addressing *information needs*[1] while information seeking (IS), research mostly concerns "the problem of non-specifiability of information need" (Belkin, 1980, p. 45; Taylor, 1968) and the unclear information requests it can produce, such as ambiguous, under-specified, and ill-defined inquiries. These have been studied in various IS contexts: in information-seeking conversations with librarians (e.g., Dewdney & Michell, 1996; Mount, 1966), in search engine use (e.g., Chen et al., 2021; Zhuang & Zuccon, 2022), and in conversational search (e.g., Keyvan & Huang, 2022; Wang & Ai, 2021). In all of these research areas, most effort has been spent on strategies to repair unclear requests. These strategies range from neutral

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questioning in library conversations (e.g., Dervin & Dewdney, 1986) to "Did you mean ...?" suggestions in search engine contexts (e.g., Zamani et al., 2023, p. 351) to clarifying questions in conversational search settings (e.g., Wang et al., 2023). All of these repair strategies can be considered *user-led* since clarification depends on the users' perceived information need and appropriate user input (e.g., Cassell & Hiremath, 2023, pp. 18–20).

These user-led repair strategies are, however, ineffective and may even be counterproductive in cases where requests communicate an inquirer's perceived information need clearly but where the information requests stem from conceptual misunderstandings that make the requests inappropriate for the underlying task. The problem only intensifies if the inquirers concerned are nevertheless convinced they are making appropriate requests. All this is, for example, true in situations where inquirers hold mistaken beliefs and seek inappropriate information to help with completing their task (e.g., asking for directions to an Italian restaurant to enjoy a pizza mallorquina, which is actually a Spanish dish). We refer to such cases as *misconceptions*. Here, misconceptions denote wrong ideas inquirers have of circumstances, facts, and conditions within a specific context that are relevant to performing activities appropriately and correctly in this context. We term information requests that are based on misconceptions *dysfunctional information requests*. The clarity with which such dysfunctional information requests communicate an information need can make it harder to identify their inappropriateness and the underlying misconceptions. However, identification, as well as repair, are necessary to prevent task failure—especially since inquirers with misconceptions are unaware that they need help.

Given all these challenges that misconceptions and dysfunctional information requests could pose—from hindering identification to undermining current user-led repair strategies to threatening task completion—it is important that information science research starts addressing these issues. This is particularly critical when considering the ever-evolving domain of virtual assistants where task support is explicitly targeted (e.g., in cooking, home improvement, and traveling) and where users typically cannot test their requests against several retrieved search results (Aliannejadi et al., 2019, p. 475), which makes it harder for them to identify dead ends. Consider, for example, a virtual assistant in an airport context: When air passengers request directions to the wrong gate, they are only likely to realize their mistake upon reaching the incorrect gate. This is only one of many examples of how dysfunctional information requests could threaten correct information provision and task completion in such settings. Thus, research is needed to understand what types of dysfunctional information requests are made in task-related contexts, what effects these can have on information-seeking conversations and task performance, and what we can learn from this to build more effective (conversational) information systems.

This article presents a qualitative grounded-theory-based interview study that contributes to addressing this research task. Our study provides empirical data on information clerks' experiences with misconceptions and dysfunctional information requests, specifically focusing on the experiences of eight airport information desk workers. This expert lens led to the discovery of these phenomena and, moreover, allowed us to effectively elicit dysfunctional information requests. Unlike inquirers, experts possess deep knowledge of how to ideally proceed with tasks within their domain. This enables them to relate inquirers' information requests to the information actually required for task completion. Moreover, this perspective can introduce task support systems to practiced strategies in dealing with dysfunctional requests (Ekstrand et al., 2023, p. 73). The airport context has proven to be a place where the phenomenon of dysfunctional information requests is easy to spot: Airports prompt a diverse range of spoken information requests as people often have to navigate through numerous tasks, fixed workflows, and tight schedules within this environment and turn to on-site information desks for help. The diversity of tasks that can await airport visitors makes our findings also likely to be transferable to other task-based contexts. Empirical results from the literature support this view, suggesting that our findings (e.g., on types of dysfunctional requests) are transferable to a wide range of contexts, such as everyday-life activities like cooking and home improvement as well as more work-related tasks, for example, doing taxes and programming (see section 5.4).

Our investigations ultimately give empirical insights into how misconceptions can negatively influence information requests, information-seeking conversations, and task completion. These insights can help to inform the design of (conversational) search systems, offering potential strategies that help to both identify and repair acts of mis-requesting. Furthermore, our findings imply the need to reassess request-centric approaches in information systems design, as even straightforward requests can be unreliable and inappropriate for the task at hand. This problem is what we call the dysfunctional nature of information needs.

2 | RELATED WORK

The subject of dysfunctional information requests relates to two fundamental research areas in information science: *research on information needs and requests* (see

Endnote 1 for a conceptual distinction between information needs and information requests) and *research on problems people face when seeking information*. In the following, we summarize work in the intersection of these two research areas and demonstrate why studying dysfunctional information requests is fruitful for this branch of research, as well as its practical relevance.

People frequently experience difficulties when seeking information (e.g., Feild et al., 2010; Sarkar et al., 2020). To overcome such difficulties and accomplish associated tasks, people require, desire, and make use of assistance (Babin et al., 2009; Taherbhai, 2005; Wu, 2011; Zerehsaz, 2017). Unsurprisingly, understanding people's difficulties has, therefore, been shown to carry implications for the design of assistance measures, making both interpersonal services and search systems more effective, for example, by helping to tailor library services to specific target groups and their information-seeking difficulties (Soltani & Nikou, 2020), improving the teaching of information skills (Boyle, 2022; Sycz-Opoń, 2024), informing help resources for web search (Odijk et al., 2015), contributing to a more holistic evaluation of search systems (Xu & Zhou, 2019), and supporting the prediction of user problems for interventions during search sessions (Aula et al., 2010; Hassan et al., 2014).

Although diverse information-seeking problems have been studied, struggles with information needs play a central role. Surveys of different information-seeking difficulties have repeatedly found that expressing information needs represents one of the situations where seekers need most help (Chowdhury et al., 2011; Xie & Cool, 2009; Zerehsaz, 2017). On top of that, these difficulties are critical to task completion as information needs form the starting point for IS (e.g., Sarkar et al., 2020; Savolainen, 2017) and can therefore affect the course of the entire subsequent search process (e.g., Naumer & Fisher, 2017, p. 2116).

Research on struggles with information needs is mostly concerned with users' difficulties in *recognizing* and *specifying* what information they require. These difficulties have been discussed in seminal conceptual works and found their way into the canon of information behavior theories. Taylor's (1968) prominent model for the expression of information needs, for example, suggests that the way seekers experience and understand their needs for information can be quite different from how they ultimately articulate it (Case & Given, 2016, p. 84). Belkin's (1980) hypothesis of the non-specifiability of information needs adds to this notion. Belkin distinguishes between linguistic constraints (not knowing how to translate a perceived need into a request) and cognitive constraints (not knowing what information is required to satisfy the need). Both difficulties can result in unclear requests (e.g., ambiguous, incomplete, and ill-defined requests) and in mismatches between perceived information needs and verbalized information requests.

The presence of such mismatches in real-world information seeking has been confirmed in several empirical works. Chatman (1991), for example, reports that people sometimes omit information requests completely despite the existence of information needs. Teevan et al. (2004) observed that searchers often try to overcome their inability to specify their information need by navigating to information targets in many small steps instead of using keyword search to directly jump to the target. More recently, Arguello et al. (2021) depicted the phenomenon of "tip of the tongue" information needs where web searchers attempt to find previously consumed items (e.g., movies or songs) but lack the information to formulate precise search requests, leading them to abandon search systems and turn to Q&A websites instead.

To date, research has tried to deal with users' difficulty in recognizing and specifying information needs in several ways. Early works mainly focused on the unclear information requests of library users and introduced various interviewing techniques to clarify these requests in user-librarian interactions (e.g., Dervin & Dewdney, 1986; King, 1972). In contrast, later work has increasingly been directed at specification problems in the context of search systems use. By considering multi-query sessions, Kanoulas et al. (2011), for example, adapted the evaluation of retrieval systems to account for repeated reformulations of initially under-specified queries in single search sessions. There is also a lot of work on classifying query reformulation types (e.g., Fidel, 1985; Huang & Efthimiadis, 2009; Lau & Horvitz, 1999; Zamani et al., 2020). These works provide important clues on how people reformulate their search statements to refine these and can help to improve query suggestions (Liu et al., 2010) and query autocompletion (Mitra, 2015). Such practical implications also pertain to efforts to detect unclear information requests and repair retrieval errors that result from unclear requests. So-called repair or recovery strategies include different forms of user intent clarification, for example, relevance feedback approaches (Zamani et al., 2023, p. 347) and "Did you mean" suggestions of commercial search engines (Zamani et al., 2023, p. 351). The problem of unclear requests intensifies in conversational search settings as conversational search systems typically do not allow users to test their queries against several retrieved search results (Aliannejadi et al., 2019, p. 475; Zamani et al., 2020, p. 418). Thus, asking clarifying questions to narrow down the user's information need is an important and extensively studied strategy in this area (Tavakoli et al., 2022; Zamani et al., 2023, p. 360).

In sum, there have already been numerous research efforts aiming to resolve struggles with information needs. These efforts, however, focus almost exclusively on unclear information requests and aim to clarify these. In contrast, the present study provides insights into information requests that indeed communicate an information need clearly (i.e., requests that explicitly state what information the inquirer seeks) but are based on misconceptions that make the requests inappropriate for the underlying task. Misconceptions describe incorrect *conceptual* ideas, as opposed to *language- or communication-based* misunderstandings (see, e.g., Hinchliffe et al., 2018, p. 6). More precisely, misconceptions, in this paper, mean incorrect ideas about circumstances, facts, and conditions within a specific context that are relevant to performing activities appropriately and correctly in this context. This expands definitions of misconceptions in education research and psychology where misconceptions very generally refer to ideas that contradict established scientific facts (see, e.g., Leonard et al., 2014, p. 180). Misconceptions can be explained by individuals (intuitively) drawing inferences from their limited or simplified conception of the respective context (e.g., Smith et al., 1994, pp. 119–120). The inquirers concerned are, therefore, convinced they are making appropriate requests. By exploring task-based IS at airports, we have uncovered several such cases, for example, requests stemming from incorrect ideas about which information is necessary to complete a task. Current repair strategies are ineffective in such cases and may even be counterproductive as they depend on the inquirers' perceived information need and appropriate user input (see, e.g., Cassell & Hiremath, 2023, pp. 18–20; Keyvan & Huang, 2022; Radlinski & Craswell, 2017, p. 118). In other words, current repair strategies aim at "finding out exactly what the user wants" and "work[ing] with the user to better formulate the question" (e.g., Cassell & Hiremath, 2023, pp. 18 and 20). Inquirers with misconceptions, however, make inappropriate requests for the underlying task while they explicitly state their perceived, but misled information need (i.e., what inquirers want is clear, but actually inappropriate), and they firmly believe they are making appropriate requests (i.e., inquirers are unaware that they need help). This complicates the identification and repair of dysfunctional information requests, making this phenomenon worthwhile to study.

3 | METHOD

3.1 | Methodological approach

We uncovered the phenomenon of dysfunctional information requests within a larger research project that aimed to understand and model the information behavior of airport visitors,[2] holistically.[3] To this end, we adopted an exploratory qualitative research approach, combining Corbin and Strauss' (2015) and Charmaz' (2006) variations of grounded theory methodology (GTM),[4] and based this larger GTM study on a triangulated research design incorporating multiple qualitative research methods. These methods included expert interviews with airport information desk workers. The open-ended and expert-centric nature of the expert interviews allowed us to uncover the phenomenon of misconceptions and dysfunctional information requests. This initiated the present sub-study with its aim of understanding the new-found phenomenon in more depth, focusing on

- *how misconceptions can affect information requests, information-seeking conversations, and task completion* and exploring
- *what strategies information desk workers practice to counteract the effects of misconceptions*.

The perspective provided by the expert interviews made it possible not only to uncover the phenomenon but also to effectively gather examples of dysfunctional information requests and misconceptions since experts, unlike the inquirers concerned, possess deep knowledge of how to ideally proceed with tasks within their domain (*domain-specific expertise*) and extensive knowledge about associated information needs (*client-focused expertise*).[5] This enables them to relate inquirers' information requests to the information actually required for task completion. The expert lens also provides insight into practiced strategies for dealing with dysfunctional requests.

Adopting an expert (i.e., non-inquirer) perspective requires an *epistemological comment*: There is a strong tradition within information science research of using experts to understand how people respond to their information needs (e.g., Belkin, 1984; Ingwersen, 1982; Taylor, 1968). In our work, (dysfunctional) information requests are considered *observable* manifestations of, first, inquirers' perceived information needs and, second, inquirers' (mis-) conceptions about relevant circumstances, such as their task, prevailing regulations, and other context conditions.

The expert lens, moreover, constitutes an *ontological perspective* on human information behavior that focuses on problems seekers have, namely, misconceptions, and views certain types of information requests as dysfunctional. Nevertheless, we understand seekers' dysfunctional information requests as potentially productive occurrences while information seeking. Although inquirers' mis-requests are indeed dysfunctional for the task at hand, such requests can, at the same time, be regarded as opening dialogues with information clerks that have the potential to resolve

the inquirers' misconceptions and enable task completion. To exploit this potential, however, it is necessary to identify and repair dysfunctional information requests. This ontological stance aligns with the "constructive" perspective of misconceptions in educational science, viewing misconceptions not to be "flaws, but part of a natural developmental process [in knowledge acquisition]" (Leonard et al., 2014, p. 180).

3.2 | Participants

3.2.1 | Participant recruitment and sampling

We used purposive and theoretical sampling (Palys, 2008; van den Hoonaard, 2008) to increase the coverage of our findings and capture the heterogeneity of the domain with its diversity of languages, cultures, and tasks and activities. To gain an expert-centric perspective on airport visitors' information behavior, airport information desk workers were identified as a suitable target population. These experts possess in-depth knowledge about airport visitors' information needs and the specific rules and conditions related to the visitors' airport activities.

Regarding the research site, we deemed international airports with different terminal layouts suitable settings to the aim of our larger GTM study. Such airports are pervasive worldwide (Edwards, 2005, p. 122) and feature diverse visitors and contextual conditions, making our findings applicable to other (airport) contexts. Munich Airport in Germany can be considered an archetype of such airports. Additionally, information desk workers at Munich Airport assist visitors through various communication channels (e.g., face to face, telephone, and social media) in over 15 languages (e.g., English, Hindi, and Spanish), which allows for broad insight.

In cooperation with Munich Airport, we gained access to this group. We combined two different recruitment strategies, namely, recruitment via gatekeepers (Jensen, 2008, p. 2) and face-to-face on-site recruitment (Thomas et al., 2007), to widen the participant pool and compensate for the limitations of individual strategies. Interviewees received no compensation for participating. The interviews, however, took place during paid working hours.

At first, participants were exclusively recruited by their immediate supervisor. However, as gatekeepers may unconsciously follow their own sampling strategies, which could lead to biases (Temple, 2008, p. 180), we also approached interested information desk workers directly on site and obtained permission from their supervisor to interview them. Only one of the workers we approached chose not to participate.

Initially, we selected participants from the target group based on specific properties, such as age, professional experience, and the communication channels the expert uses to assist visitors. Although the primary objective was to diversify the sample based on these attributes, there were no exclusion criteria or restrictions on demographic characteristics while selecting the participants.

After preliminary analyses of initial interviews and interview postscripts, we additionally selected participants and interview topics by theoretical sampling, that is, based on concepts that emerged from the data (Corbin & Strauss, 2015, p. 134). This way, we were able to further explore and scrutinize analytical concepts while still being open to discovering new phenomena. One concept refined through theoretical sampling was that of dysfunctional information requests. By exploring its sub-concept "persistency," we have, for example, found that the extent to which inquirers hold on to their misconceptions varies by situation. This enhanced our initial interpretation that inquirers are always resistant to correction. We stopped sampling when "theoretical sufficiency" (Charmaz, 2025, pp. 213 and 215) was considered reached.

3.2.2 | Participant characteristics

Our sampling approach has resulted in a heterogeneous group of information desk workers, reflecting the experts' variety in terms of professional experience, age, and cultural background as well as the communication channels and languages they offer. This made it possible to gain insights into information requests of diverse types of airport visitors. The expert sample consisted of eight women between the ages of approximately 25 and 61 years, who offered over 120 years of collective experience in airport information desk work (see Figure 1 for more details).

3.3 | Methods for data collection

We used theory-generating expert interviews (Bogner & Menz, 2009) for questioning the airport information desk workers. This method aligns with principles of interpretative and inductive research, including GTM (Bogner & Menz, 2009, p. 48) and is mixed with the in-depth (grounded theory) interviewing approach (Charmaz & Belgrave, 2012) in the present study. To make allowance for the exploratory research design of our study, the interviews followed a mostly unstructured open interview style that involved a semi-structured interview guide for only loose direction.

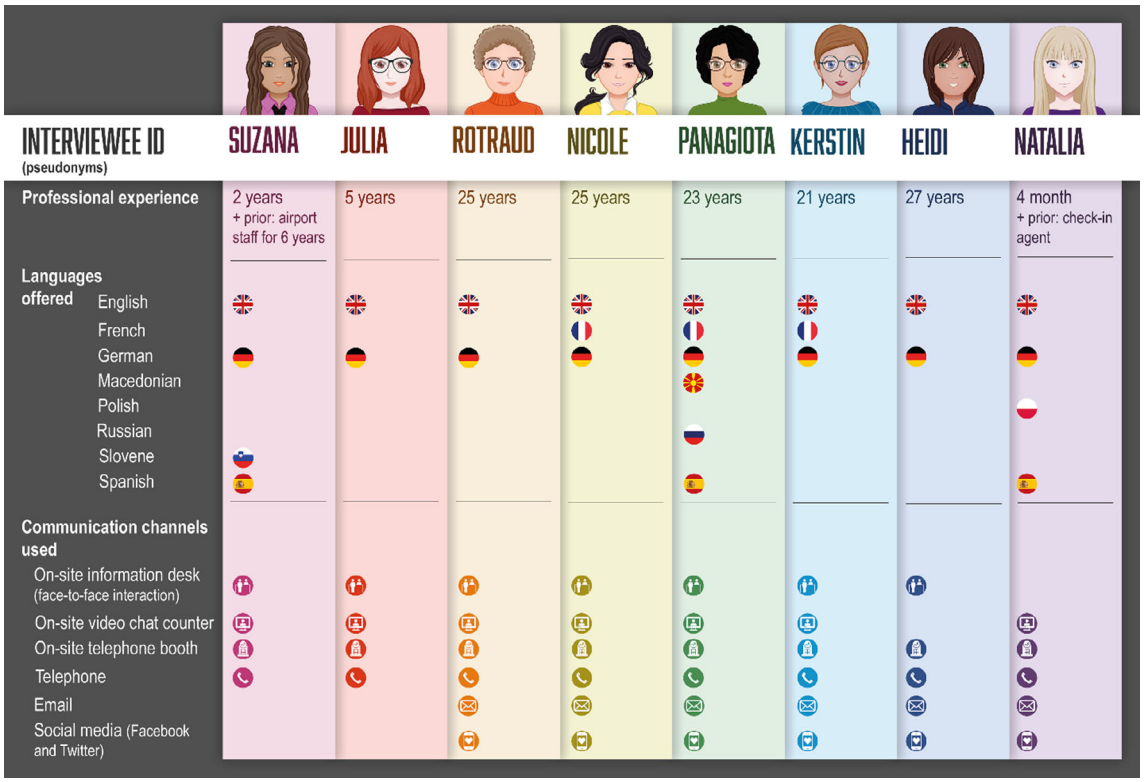

FIGURE 1 Characteristics of study participants.

The interviews took place at the participants' workplace, either in a separate room, where the researcher and the interviewee were alone, or at the participant's desk in an open-plan office while the interviewee was answering incoming calls from on-site telephone booths and video chat counters. Interviews conducted in the open-plan office provided additional insights as they assumed the character of contextual inquiries (Holtzblatt & Beyer, 2014, pp. 11–18). Eight interviews were performed over a 2-month period, between December 2016 and January 2017. On average, each interview lasted approximately 1 h and 20 min. The amount of interview data (overall 621 min) and the number of interviewees is consistent with other studies employing expert interviews (e.g., Duff & Johnson, 2002; McCay-Peet & Toms, 2015; Sirén-Heikel et al., 2023).

All interviews were audio recorded to preserve the complexity of human speech for a comprehensive analysis. Ethical standards regarding informed consent and data collection were met according to APA Ethical Standards 8.02–8.07.

We developed interview topics and questions from the main research questions of the larger GTM study (see Kilian, 2019, p. 414). To address the research questions comprehensively, we considered contrasting, complementary, and underlying (contextual) factors. This was achieved by using the generative analysis technique (Corbin & Strauss, 2015, p. 69) in combination with related work and own considerations. The interview topics and questions developed were included in the semi-structured interview guide mentioned above. We established rules for using these questions during interviews: Only open-ended questions initiated and guided the interviews (e.g., "Please share your experiences during today's shift," "What requests do airport visitors make?," and "How did you solve the passenger's information problem you described?"). Specific questions, such as "Do airport visitors ask for printed information?," were ideally unnecessary, as the open-ended format encouraged detailed narratives that naturally addressed these points. If not, specific questions were to be asked as direct, non-directive responses to interviewees' statements. In the same non-directive way, interviewees were presented with promising topics that came up in earlier interviews. Overall, the interview questions aimed to explore the interviewees' *experiences* and *behaviors* regarding airport visitors' information requests. Interview questions ultimately focused on what information requests airport visitors make, their associated (information) behaviors, and how experts handle these requests (for the interview guide and the instructions for using the guide, see Figures S1 and S2, Supporting Information).

3.4 | Methods for data analysis

Given the exploratory nature of the research design, we utilized an inductive approach to analyze the interview data. More specifically, we employed grounded theory techniques to systematically generate a theory that was grounded in the real-world data we collected. The three GTM coding strategies of open, axial, and selective coding (Corbin & Strauss, 2015, p. 344) directed the general course of data analysis. Overarching analytic strategies, such as memoing (Charmaz, 2006, p. 72) and constant comparisons (Corbin & Strauss, 2015, p. 85), supported the entire data analysis process.

Data analysis began during the data collection process, where we recorded initial impressions of significant phenomena to refine the interviews. After completing data collection and transcribing the interviews fully and verbatim, we used inductive open coding for unrestricted data immersion and exploration. Early on, dysfunctional information requests emerged as a key theme in different interviews. As the analysis progressed, we employed axial coding to identify connections between categories of data. This way, inner-code and between-code variations could be revealed and led to a typology of dysfunctional information requests. In the final analysis stages, we focused on dysfunctional information requests, detailing their features, variations, and conditions for a comprehensive understanding. This has resulted in a multi-layered typology of dysfunctional information requests, which is presented next.

4 | RESULTS

The results are structured according to the identified typology of dysfunctional information requests, which includes three main types, five sub-types, and four sub-sub-types. Specifically, we distinguish between:

1. *Requests with inappropriate content*, encompassing, for example, requests for irrelevant information, requests lacking information, and unanswerable requests.
2. *Requests made at an inappropriate process stage*, including premature and delayed requests.
3. *Requests directed at an inappropriate contact*.

See Figure 2 for a comprehensive overview.

For each type, we provide detailed explanations and examples below. Additionally, individual findings are related to existing literature in this section to directly demonstrate how the findings are connected with current knowledge and prepare readers for the broader discussion of the findings in section 5. The discussion of the typology as a whole (e.g., its implications for information systems design and its transferability to other contexts) can be found in section 5.

4.1 | Requests with inappropriate content

Seven out of eight interviewees encountered airport visitors with difficulties concerning the content of their information requests, involving situations where inquirers ask *the "wrong" questions*, pose *information-poor questions*, or state *unanswerable questions*. These issues mainly stem from inquirers' misconceptions about domain-specific conditions (*domain-related misconceptions*) and the actions necessary to complete a task (*task-inventory-related misconceptions*). We present the different sub-types of content-related request errors in detail to substantiate this assertion.

4.1.1 | Asking the "wrong" question

Five interviewees addressed "wrong" questions, including either incidents where inquirers request the "wrong" information (i.e., information that is not relevant or applicable to their specific task) or incidents where inquirers' requests contain incorrect information.

Requesting the "wrong" information can stem from language-based errors or conceptual errors. Heidi and Panagiota (see Figure 1) recall incidents where passengers make "(funny) slips of the tongue" while requesting check-in locations, such as asking about the "Happy-Lloyd" and "Concorde" check-ins instead of the correct "Hapag-Lloyd" and "Condor" check-ins. We see here that inquirers can request the "wrong" information by mispronouncing a term or confusing similar words. Such errors can be considered linguistic mistakes rather than conceptual misunderstandings of the task itself. Dewdney and Michell (1996) found similar cases in user-librarian conversations and labeled them as "communication accidents." We, however, are interested here in *conceptual* misunderstandings which are likely to be more challenging to detect and resolve. Suzana, for example, reports on misconceptions about codeshare flights, where airlines sell seats on routes operated by other airlines. Consequently, passengers who purchase a ticket from one airline need to check in at the counter of another airline. The flight code on the ticket, however, refers to the airline that sold it.

> [W]hen passengers say they fly with Airberlin, of course we sent the people to area

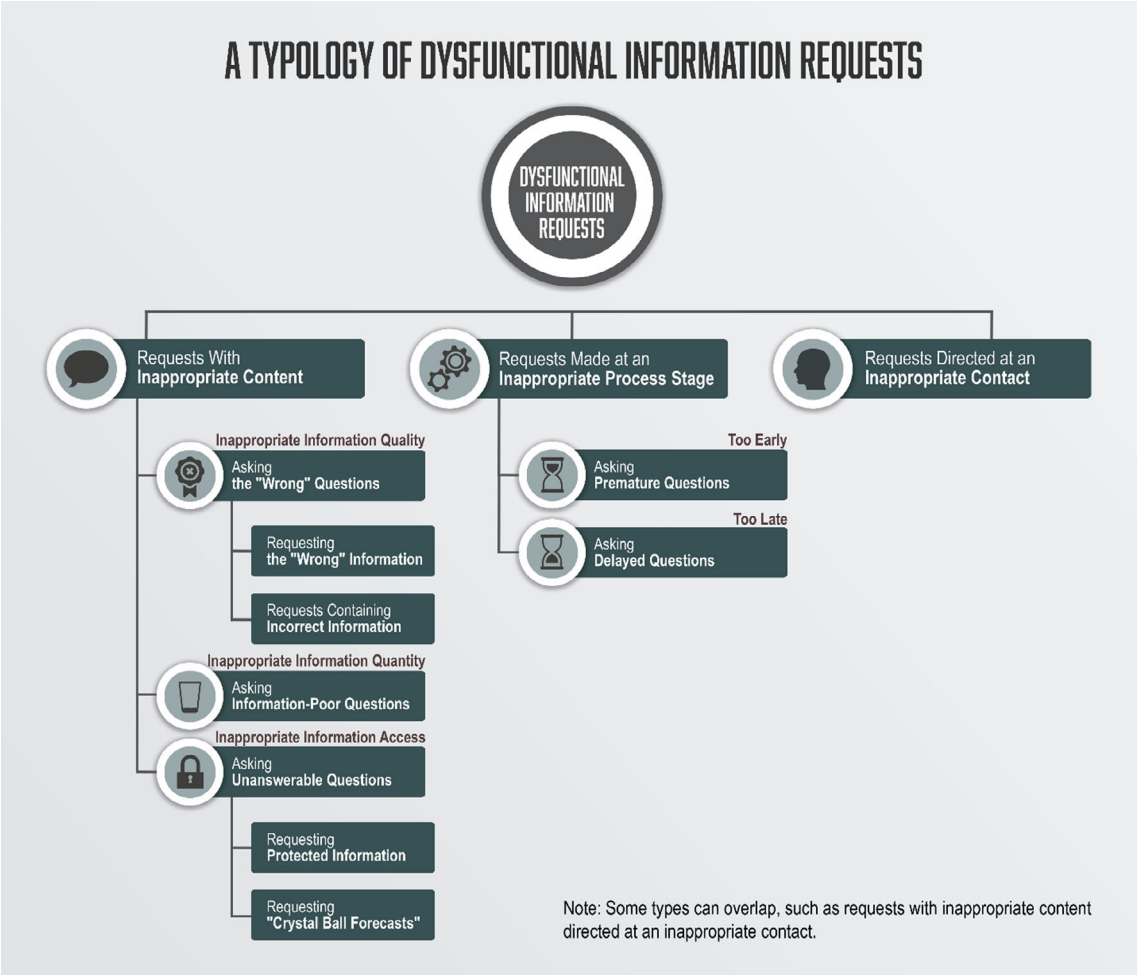

FIGURE 2 A typology of dysfunctional information requests.

> A. And that's where the whole drama unfolded, because [...] they were actually on the Alitalia plane, which meant [...] they had to walk to area D, and it wasn't unusual for them to miss their flight [...] And it's still the same with Vueling [...] and Iberia. [...] [W]hen they only ask, "Where is Iberia?," we automatically send them to area D, to Iberia [...], but they fly with Vueling [...] and that's another seven-, eight-minute walk.

In this example, passengers mistake the airline that sold the ticket and to which the code on their ticket refers (in this case Airberlin and Iberia) for the airline operating the flight (in this case Alitalia and Vueling). Codeshare flights get passengers "often somewhat confused," as Panagiota, another expert, states, adding that "it's really bewildering [...] if you're not a specialist." The passengers concerned seem to intuitively draw inferences from their limited or simplified domain knowledge. Panagiota explains, "[W]henever they book [such codeshare flights] [...] they just think they will be flying with the [airline where they booked the flight]." Indeed, this would be the case with regular flights, and passengers may have had this experience before. Such intuitive, but misleading inferences may explain the misconception described above. This explanation reflects educational-psychological research, indicating that misconceptions are rooted in plausible inferences from prior knowledge or previous experience (see, e.g., Hinchliffe et al., 2018, pp. 6–7).

The example on codeshare flights, moreover, illustrates that misconceptions can be hidden behind seemingly reasonable requests (e.g., "Where is Iberia?"). If information personnel answer such requests, it can complicate task completion and even result in task failure.

Suzana believes that the lack of context passengers provide with such requests additionally contributes to the risk of tasks failing:

> Iberia only departs from us [Munich Airport] to Madrid [...]. But if they say they fly with Iberia to Barcelona, we know right away

> there's something wrong, and we'll look into it [...] [I]f they just say, "Where is Iberia?," we automatically send them [...] the wrong way[.]

Panagiota agrees that "crucial clue[s]" are essential to identify requests for the wrong information. Context information can reveal inconsistencies within requests (e.g., when the flight destination does not match the airline) and tell the experts that, as Suzana puts it, "there's something wrong," prompting them to "dig deeper."

However, "dig[ging] deeper" and countering passengers' requests with inquiries about context information can lead to resistance. Suzana reports:

> [Given requests for the wrong information, it's] very important for us to simply ask, [...] "Where are you flying to?" [...] But [...] people are sometimes like [...] they want help, but they don't want to say where they're flying to.

Suzana even encountered resistance in cases where she could successfully obtain context information and thereby correct requests for the wrong information. One of her remarks seems to reveal the reason for the passengers' reluctant behavior. It concerns passengers who mistakenly request contact details of customs for questions about travel documents:

> When you say, "The federal police are responsible for that." A couple times passengers said [with disbelieving voice:] "Federal police?" [in the sense of] "Whoa, this means [ordinary] police [forces]." And then they say, "But it's about visa issues."

Here we see how inquirers' resistance results from misconceptions (i.e., "confus[ing]" federal police with ordinary police, thus mistaking federal police responsibilities for those of customs[6]). The inquirers seem to expect an answer that aligns with their beliefs and therefore mistrust the expert's correction or "try again and again" to get the information they originally requested, as Suzana observed in other cases. This might also explain why some passengers resist providing context; they expect a quick answer to their straightforward request, not a counter-question that extends the information-seeking conversation.

Thus, misconceptions impact not only the content of information requests but also inquirers' expectations for responses (see Figure 3 for a visual presentation of the effects of misconceptions, including misguided expectations and resistance to counter-questions and corrections). Providing information that contradicts these expectations can, consequently, be ineffective. This aligns with psychological research on cognitive dissonance, where conflicting information causes mental strain (Festinger, 1957), and studies on expectation-experience discrepancy, which show that unmet expectations reduce psychological well-being (De Meza & Dawson, 2021). Additionally, the common understanding in educational sciences that misconceptions are difficult to change (e.g., Hull et al., 2022; Leonard et al., 2014) is reflected here as well.

Our data suggest that it, however, depends on the context how strongly misconceptions are held on to during information seeking. We observed that inquirers are less resistant when their misconception creates a problem situation during the information-seeking conversation that prevents information clerks from providing help and, by extension, hinders task completion. For example, Panagiota recounts a Chinese passenger on a European trip asking for directions to his hotel: "[W]hen I didn't find it, I said, 'Are you sure it's in Munich? [I can't find the hotel.]' [...] He says, 'Oh-oh, no, that's the hotel in Berlin.'" Such observations are supported by conceptual change theory (Posner et al., 1982), which posits that, for successful conceptual change, the new concept must help with current problems that cannot be overcome by holding on to the existing misconception (Goris & Dyrenfurth, 2010, p. 7).

Requests containing incorrect information are another type of "wrong" question our interviewees discussed. Natalia recounts an associated incident:

> Recently, [...] [a] father called [...] from Finland [...] [H]is [sick] daughter [...] missed the connecting flight [...] and [...] wanted to use the Lufthansa lounge [while waiting.] [...] [H]is concern [...] [was:] "She said the Lufthansa lounge denied her access. [What should she do now?]" (pauses) But then I became skeptical about this claim somehow. I called the Lufthansa lounge[.] [...] [T]he lady at the reception desk [...] said, "[Access,] that's absolutely possible, but she must pay at the entrance." [...] I got him back, back on the phone [...] [H]e was actually satisfied with the answer. Because I don't know what kind of communication problems arose between him and the lady, [...] but in the end it wasn't true that she [his daughter] was denied access.

This incident highlights that misconceptions can also result in inquirers incorrectly describing the situation

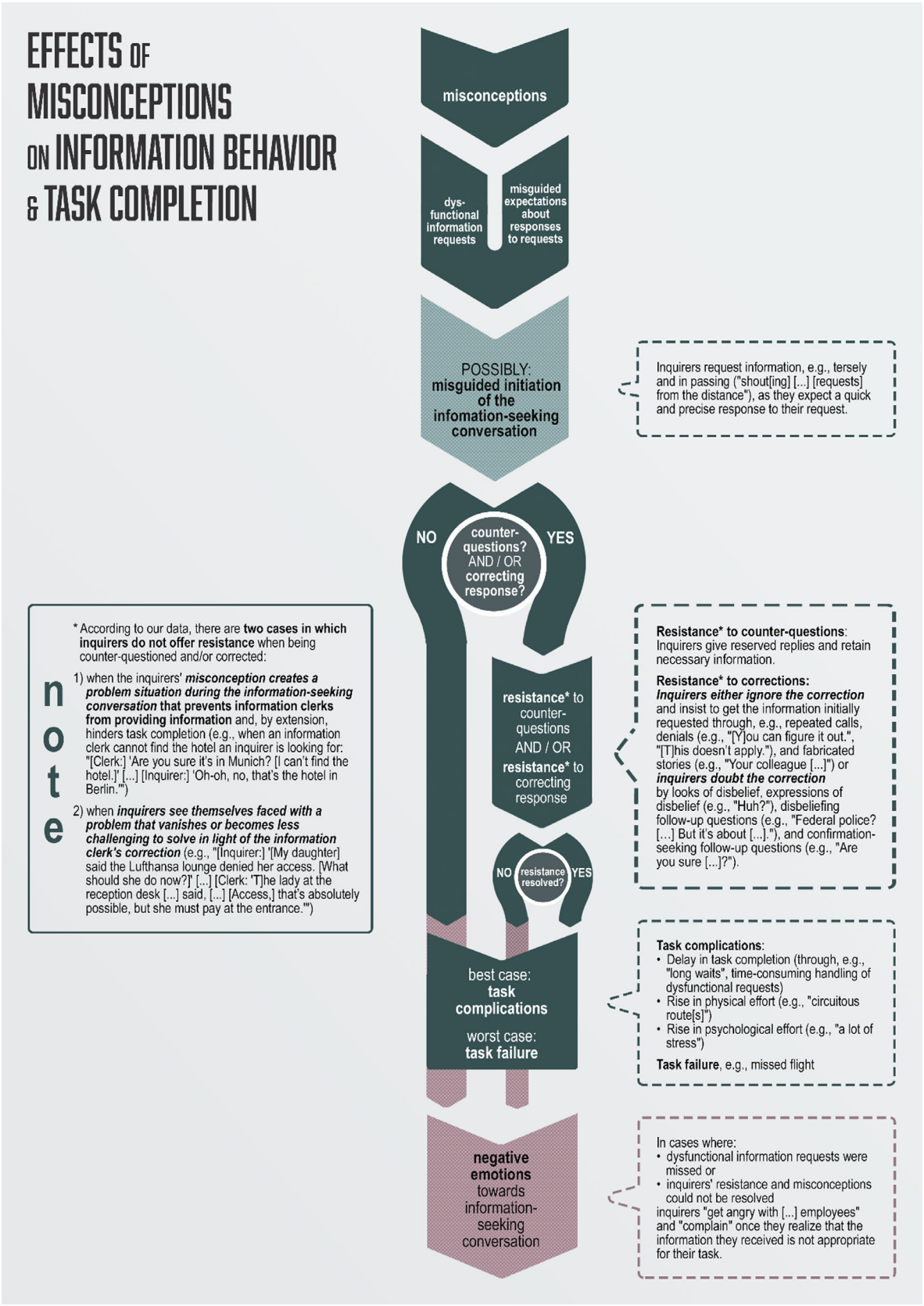

FIGURE 3 Effects of misconceptions and dysfunctional information requests.

they face. Though the expert eventually obtained the correct information, she initially wasted time trying to understand the alleged problem. Incorrect problem descriptions can, therefore, cause detours that delay task completion.

The "big worries," however, that the inquirers concerned have, according to Natalia, (in the case above: the father's concern that his sick daughter is not allowed to rest in the Lufthansa lounge) appear to help them tolerate detours during the information-seeking conversation, such as counter-questions and corrections: Aligning with prior observations regarding requests for the wrong information that create problem situations (see the example of the Chinese passenger traveling through Europe), our data show that inquirers providing incorrect problem descriptions also do not offer resistance when being corrected. A reason could be that the experts' correction may leave passengers feeling "satisfied," as Natalia notes, since they realize their "big worries" proved unfounded, and the perceived problem does not actually exist.

4.1.2 | Asking information-poor questions

Five interviewees mentioned *information-poor questions*, where individuals make requests that lack essential details for meaningful answers, but where these individuals mistakenly assume they have provided sufficient information. The interviewees' remarks allow us to distinguish between situations where inquirers actually lack the information that is missing in the request and situations where individuals simply do not provide the information. Heidi describes an incident that exemplifies the former scenario. It features a greeter (see Endnote 2) planning to pick up his daughter from the airport:

> He said to me, "My daughter's somewhere that sounds like a [...] candy bar."
> And then I just listed them [the various brands], and then one of them was *Milky Way*.
> "YES, THAT'S IT! [...] [M]y daughter departs from Milwaukee."
> [...]
> [The expert:] "If you don't know where the flight connects—did she say she flies via London or [...] via Washington [...]?—then we have [...] no possibility to find out [when she arrives at Munich]"

In this example, the inquirer merely provides a phonetic association with his daughter's departure point. While the expert is able to resolve this Taylor-esque vagueness in the expression of the information need and help the inquirer clarify where his daughter departs, the request still lacks information on where her flight connects. Without this information, however, it is impossible to fulfill the request. Interestingly, the greeter turns to the information desk instead of, for example, asking his daughter for more details beforehand. This suggests misplaced confidence in the experts' capability to manage such minimal information. Suzana, Rotraud, and Panagiota describe similar cases that support this interpretation. They relate the greeters' behavior to misconceptions about prevailing conditions in air traffic. Rotraud justifies the greeters' behavior as follows:

> [B]ecause people can't imagine that [flight connections]. They then say, as a reason, "That many [flights] won't come from Australia." We say, "The problem isn't the quantity, but the problem is that none at all come from (laughs) Australia" [...] [Rotraud imitates a greeter's voice:] "Why? What? What, what?"

Rotraud refers here to indirect flight connections. Suzana explains the underlying conditions when answering such requests from greeters: "I need to know where the passengers change planes [...] because we can only search the system for flights coming directly to Munich." Panagiota elaborates on this problem with a concrete example: "Flight from Thailand—there are 50 routes and 50 possibilities to change planes." Such a list of options is not specific enough to be useful for greeters. Information-seeking conversations where inquirers actually lack the missing information, therefore, reach a dead end. Panagiota illustrates this by sharing the quandary she often observes with information-poor requests: "Let two planes arrive at the same time from Madrid, and [the greeter] he cannot rip himself apart."

Beyond requests where inquirers lack the missing information, there are incidents where individuals have enough information but still ask information-poor questions due to misconceptions. Suzana recounts such a case:

> [An older] lady [...] was like [...], "Tomorrow there's a plane coming from the USA."
> And I'm like, "Can you be more specific?" (laughs)
> And the lady's like, "Well, there's a plane coming from California tomorrow."
> And I'm like, "Yeeeah? (laughs) More information, please." (laughs)
> She says, "Well, I don't know."

> "Los Angeles or San Francisco? Where's it coming from?"
> "That I don't know!"
> Then I said, "Do you have the time? Then I can search by time. We have about 17 planes from the USA a day, but if you tell me California, we only have two possibilities. These I can look up."
> [...] And then we approached [...] Los Angeles. But the thing is: I had to pull out everything. The lady wanted information, but she didn't want to say anything. [...] Well, I, I think older people still think it's an event when a plane comes from the USA [...] [T]hat's why she probably expected that a plane from the USA arrives every two days[.]

This example illustrates how inquirers' unwillingness to provide information in their requests can stem from misunderstandings about domain-specific conditions. Thus, *misconceptions can influence how much information inquirers include in their request*. Our data on information-poor requests, moreover, align with observations on "wrong" requests (section 4.1.1), showing that *misconceptions can influence inquirers' expectations of information-seeking conversations* and induce resistance when these expectations are not met (e.g., reserved replies as seen with the older lady). Furthermore, our data suggest that expectations for responses can also be reflected in how inquirers initiate information-seeking conversations. Nicole recounts incidents where inquirers "shout [...] [information-poor questions] from the distance" while moving along, indicating they do not expect counter-questions but prompt replies they can digest in passing (see this aspect also in Figure 3).

Regardless of the inquirers' expectations, experts require more details to resolve information-poor requests, leading to interrogations where they must try to "pull" or "tickle out information," as Suzana, Heidi, and Panagiota phrase it. While such interrogations can ultimately result in successful information-seeking conversations, as exemplified in the case of the older lady, Rotraud notes that "this, of course, takes time." Thus, information-poor questions at best delay task completion.

4.1.3 | Asking unanswerable questions

Seven out of eight interviewees mentioned receiving unanswerable requests. These can be distinguished into *requests for protected information* and *requests for what we call "crystal ball forecasts."*

Requesting Protected Information Five experts described incidents where they are asked for information they could not share or access due to *legal restrictions* or *work instructions*. Requests for legally protected information mostly involve passenger whereabouts, which are covered by data privacy laws. Examples range from "tragic affairs," such as Kerstin's account of a woman whose husband left her and might have flown to Pakistan, to "day-to-day" concerns where greeters are worried about relatives who have not arrived as scheduled or wonder if transfer passengers made their connecting flight. As regards information restricted by work instructions, Suzana provides a typical example:

> [If] the system [...] says, "internal number only" [...] we don't hand this [information] over. [...] For example [...] Lufthansa [office at Munich Airport]. [In cases of] delays or cancellations or, whatever, strikes, well, everyone calls, "We want to talk to Lufthansa at the airport." [This] doesn't work[.] [...] And then they say, "Your colleague put me through [once] [...]." She didn't. (laughs) If we do anything, we call by ourselves [...][,] but the Lufthansa number is like sacred, [it's] never handed over[.] [...] [T]he people know that, but they call again and again.

Suzana's account highlights two aspects mentioned by several experts: the "sacred" status of protected information and, by contrast, inquirers' misconceptions about accessing such information. The experts treat all protected information as if it were locked away, with their "hands [...] tied," as Kerstin noted. Regarding misconceptions, inquirers fall into two groups: *those unaware of the protected status of the information they request* and *those aware*. Both groups mistakenly assume that the information requested is accessible. This misassumption can be expected from the uninformed. However, it also pertains to the informed, as evidenced by their insisting behavior: They make repeated calls, dispute facts (e.g., "[T]his [regulation] doesn't apply [here]."), and fabricate stories to bring the experts around (e.g., "Your colleague put me through [once.]"), as Suzana and Rotraud report. Thus, while the uninformed simply mistake protected information for available information, those informed but still insistent mistakenly believe they can bypass the restrictions with "good" reasons. We refer to the former type of misassumption as *uninformed* misconception and to the latter as *informed* misconception. Uninformed misconceptions involve misunderstandings about domain- and task-related regulations, while informed misconceptions are misunderstandings about circumventing those regulations. Inquirers with informed misconceptions know their request conflicts with prevailing rules but mistakenly believe persistence will succeed.

Requesting "Crystal Ball Forecasts" Four interviewees discussed inquiries about future events for which no valid prognosis can be made at the time of the inquiry. In the cases our interviewees describe, inquirers are future passengers asking whether their flight will take place. Heidi gives an example that inspired the name for this request type:

> [Future passengers] also call and ask, uh, uh, "Today some flights are still canceled because of fog. Is it the same the day after tomorrow?" [Heidi with irony:] Well, hmm, do I have a crystal ball and can check whether there'll be fog the day after tomorrow?

Natalia believes those requests are always driven by "[inquirers'] concerns [that] [...] their flight will be canceled." The other interviewees' accounts support this assumption by connecting those requests with various conditions that can arouse such doubts: Panagiota names pessimistic weather reports that future passengers check before such requests. Heidi refers to news reports about strikes, for example, when "the newspaper says, 'Air France is planning to strike'." Kerstin mentions charter flights of leisure travel companies that do not belong to the regular flight schedule and where "it happens [...] that [such] flights simply do not take place." Beyond adverse circumstances, Natalia names "important meeting[s]" (e.g., "job interview[s]") to which the inquirers need to travel.

The experts appreciate the motives behind such requests. Kerstin, for example, states: "[When] there's snow chaos [...], of course, they want to know the weather forecast." Nevertheless, the experts are astonished that such unanswerable questions are asked at all (see Heidi's ironic statement). Requests for "crystal ball forecasts" cannot be met. The only thing experts can do, according to Kerstin, is to put off inquirers until a later date ("We can say, 'Call again [later.]'") and provide information on when the request can be answered, for example, by explaining that "Flight schedules are revised in the afternoon for the next day."

4.2 | Requests made at an inappropriate process stage

Seven out of eight interviewees reported questions asked at the wrong point in the task process, involving requests made too early (*premature questions*) or too late (*delayed questions*) within the required process sequence. Below, we show how these are related to inquirers' misconceptions about the sequence of activities that must be followed to complete a task (*task-sequence-related misconceptions*).

4.2.1 | Asking premature questions

Four interviewees mentioned premature questions, where inquirers plan to approach a sub-task that cannot be started until other sub-tasks have been completed. The inquirers are, however, neither aware of this sequence nor have they performed the preceding sub-tasks. Our data allow us to distinguish between scenarios where *inquirers plan to perform sub-tasks in reverse order* and scenarios where *inquirers completely overlook a sub-task*.

The experts' remarks suggest that *task-sequence-related misconceptions* motivate the former scenarios: Inquirers concerned often assume an incorrect task sequence, as Nicole observed with international travelers who want to claim tax refunds and mistakenly ask for customs before checking in. These travelers find the actual task sequence "confusing," as Nicole explains: "[W]hen you say they must go to the check-in counter first, [...] they're like, 'Huh?' They think they can go straight to customs with their purchases." This misconception likely arises because passengers typically drop off hold baggage at check-in, but, for tax refunds, the baggage needs to be inspected by customs. To prevent fraud, passengers must, however, check in first and then reclaim their hold baggage for customs inspection. Inquirers' misconceptions and premature requests stem here from experiences of what typically happens at certain process stages (e.g., checking in typically does not involve reclaiming hold baggage). Drawing inferences from limited domain knowledge can therefore lead to task-sequence-related misconceptions.

Scenarios where inquirers asked premature questions because they overlooked sub-tasks only involve very inexperienced passengers, namely, first-time flyers. Suzana and Natalia relate such inquirers' premature questions to wrong interpretations of flight information displays:

> [These] show the check-in counter [numbers], I don't know, "130 to 134," and that, uh, changes constantly with the gate number [.] [...] [T]hat confuses [inexperienced] people extremely[.] [...] They then come to ask where gate D22 is, you know, although they actually must go to 130 first, to the check-in counter[.]

This example demonstrates that premature requests can also result from *domain-related misconceptions*. The

inquirers' inexperience prevents them from mapping their activities (seeking area D22) to the required sub-tasks and their sequence. Instead, they merely act on environmental cues (displayed numbers) they do not fully understand, assuming these will bring them closer to task completion.

Again, our data show that such misconceptions can be hidden behind seemingly reasonable requests (e.g., "Where is, uh, D22?"). Answering such requests endangers task completion. To detect premature requests and prevent potential negative effects, contextual information is essential, as Suzana demonstrates: "[W]e see them standing [there] with their suitcases, and then we say, uh, 'You must check in first.'" Once premature questions are detected, experts pursue different strategies to manage such requests and inquirers' reactions to correcting answers. Rotraud and Suzana recommend verbally walking inquirers through the whole process they must follow. To overcome doubts of inquirers about corrections, Nicole "confirm[s] [...] [her answer] to them again and again" and provides, when possible, "written" information (e.g., "leaflets") explaining certain procedures. All these strategies, however, "take[...] time," as Rotraud concedes. Thus, premature questions, again, at best delay task completion.

4.2.2 | Asking delayed questions

Six interviewees reported delayed questions, where inquirers unknowingly plan to approach a sub-task that should have been done earlier, but where they had already completed the subsequent sub-task(s). Such situations involve *inquirers mistakenly performing sub-tasks in reverse order* or *inquirers failing to use information across several sub-tasks*. The following remarks focus on the latter cases.

Failures in cross-task information use occur when inquirers cannot associate an information unit with multiple sub-tasks, leading to the information being used later than necessary. For example, some transfer passengers do not consider connecting times when booking flights, and some departing travelers only look up their check-in area after arriving at the airport. These situations involve a sequence of sub-tasks (e.g., arriving at the airport, then checking in) and an information unit (e.g., check-in area) that is not needed for the initial sub-task but crucial to be considered in this sub-task for completing the subsequent one. Panagiota illustrates the misconception that arises when inquirers miss these implicit associations:

> [T]he most common question's just "Where do I need to go [to check in]?" [...] [M]any [who left their train to the airport at the first stop on airport grounds] complain then [...], "I've to go from [area] A to [area] D now. [...] The distances are so long." Um, that's always relative, right? If I know I need to get off at [area] D, then it's only a few meters.

Connecting the context of the request (here: inquirers located in area A) with the message communicated (here: inquirers ask for check-in in area D) makes it possible to recognize such requests as dysfunctional. This is important since simply answering delayed questions can lead to "complain[ts]" from inquirers, as Panagiota reports. Whereas experts can try to address inquirers' negative feelings and dissolve their misconceptions for future travels, they, as Nicole notes, "couldn't change [the situation] [...] now anyway." Damage to task completion has already been done in those cases, regardless of whether it entails task failure or complications, such as "circuitous route[s]," "long waits," and "a lot of stress," as Rotraud, Julia, and Panagiota illustrate.

4.3 | Requests directed at an inappropriate contact

All interviewees mentioned receiving requests beyond their authority or expertise (*misdirected questions*). These requests often stem from misconceptions. Some *inquirers mistakenly believe they have contacted the correct authority* (uninformed misconception), while others *consult an inappropriate authority, wrongly believing it can still assist them* (informed misconception, cf. Section "Requesting Protected Information").

As regards the former, there are inquirers who misdirect requests because they *confuse the contact's identity* (e.g., as often observed by Nicole, passengers mistakenly "think[ing] they're already speaking to the airline"). Others *misjudge the contact's authority* (e.g., as Suzana reports, connecting passengers who mistakenly turn to the departure airport because they "refuse to believe [...] it's always the last destination [...] [that's] responsible for their [lost] luggage").

When inquirers knowingly misdirect their request, this can be a result of *the appropriate authority not being available*. Examples are travelers who lost their luggage and call our experts in the misbelief to get a status update in a roundabout way as the appropriate authority does not answer its phone. Other *inquirers who knowingly misdirect their request want a second opinion*. Natalia recalls a telephone conversation with a woman who wanted to fly to Spain with her parrot during a wave of avian influenza. The woman inquired about corresponding entry

regulations and justified her misdirected request by saying that "The lady [at the veterinary office] wasn't competent." Natalia interprets this as a response to "not hear [ing] [...] what she wanted to hear[.]" This phenomenon of seeking alternative answers aligns with Greyson's (2018) observation that laypeople "consult multiple sources" when they feel "not taken seriously" by the initial authority they consulted or when the initial authority's respond was unsatisfactory for their problem (p. 873). Greyson's observation is confined to the "[health] domain where knowledge is contested" (p. 870). Our findings show such behavior in a domain of undisputed knowledge.

Regardless of the inquirer's motive, misdirected questions must be forwarded to the correct authority for (full) answers, which delays task completion. When the correct authority is unavailable, experts can only help inquirers bear this situation. Kerstin and Rotraud mention here emotion-targeted techniques, such as "listening," and more mind-targeted strategies, such as explaining why the experts "really cannot help them."

4.4 | Summary

To highlight the main contributions of this work, we hereafter summarize the findings in view of the following study goals: (1) understanding *misconceptions in IS and how they affect information requests*, (2) understanding *how misconceptions and dysfunctional information requests affect information-seeking conversations and task completion*, and (3) exploring *what strategies experts practice to handle dysfunctional information requests*.

4.4.1 | Misconceptions and their effects on information requests

Dysfunctional information requests clearly express an information need but are based on misconceptions. These misconceptions can be general *domain-related* or specific to the tasks one has to perform in the domain (*task-inventory- and task-sequence-related*). We term these *uninformed* misconceptions, where inquirers make assumptions based on their limited or simplified understanding of the domain. In contrast, inquirers with *informed* misconceptions knowingly disregard domain- or task-specific regulations but mistakenly believe their actions will still succeed (e.g., consulting the wrong authority or requesting protected information). Ultimately, all these misconceptions can lead to errors in information requests that can concern the *content* of requests, their *sequence*, and the *selection of the recipient* (see Figure 2).

4.4.2 | Effects of misconceptions and dysfunctional information requests on information-seeking conversations and task completion

Misconceptions and dysfunctional information requests can negatively affect task completion and corresponding information-seeking conversations (see Figure 3 for a detailed visual presentation). Effects on task completion range from complete task failure (e.g., missing a flight) to task complications, such as extra effort (e.g., "circuitous route[s]") and delays. Effects on information-seeking conversations are caused by the fact that inquirers holding misconceptions believe their requests are appropriate and expect prompt, exact responses. This affects how inquirers request information (e.g., in passing), how they handle counter-questions (e.g., retaining necessary information), and how they react to correcting replies (e.g., ignoring information and insisting on an answer to the initial request). The resistance offered by inquirers when they are counter-questioned and/or corrected shows that misconceptions are generally held strongly. The persistency of misconceptions, however, varies depending on the situation a request creates (see, e.g., section 4.1.1 on requests that create problem situations hindering task completion).

Furthermore, misconceptions and dysfunctional information requests generally involve inquirers having negative emotions regarding information-seeking conversations: These are expressed in the form of doubts and anger when the inquirers are counter-questioned or corrected. However, in cases where experts either miss dysfunctional information requests and, therefore, do not try to dissolve misconceptions by counter-questions and corrections or where experts are not able to dissolve misconceptions, inquirers get angry with hindsight as soon as they realize that the information provided by the expert is not appropriate for their task. This was observed, for example, when travelers posed dysfunctional requests on codeshare flights (see section "Requesting the 'wrong' information"), when inquirers with "visa issues" insisted on getting customs contact details (see section "Requesting the 'wrong' information"), and when travelers looked up their check-in area only after arriving at the airport (see section 4.2.2).

4.4.3 | Strategies for handling dysfunctional information requests

The experts interviewed use different strategies to handle dysfunctional requests (see Figure 4 for a detailed visual presentation). Broadly speaking, they pursue a two-step approach consisting of *entry strategies to uncover*

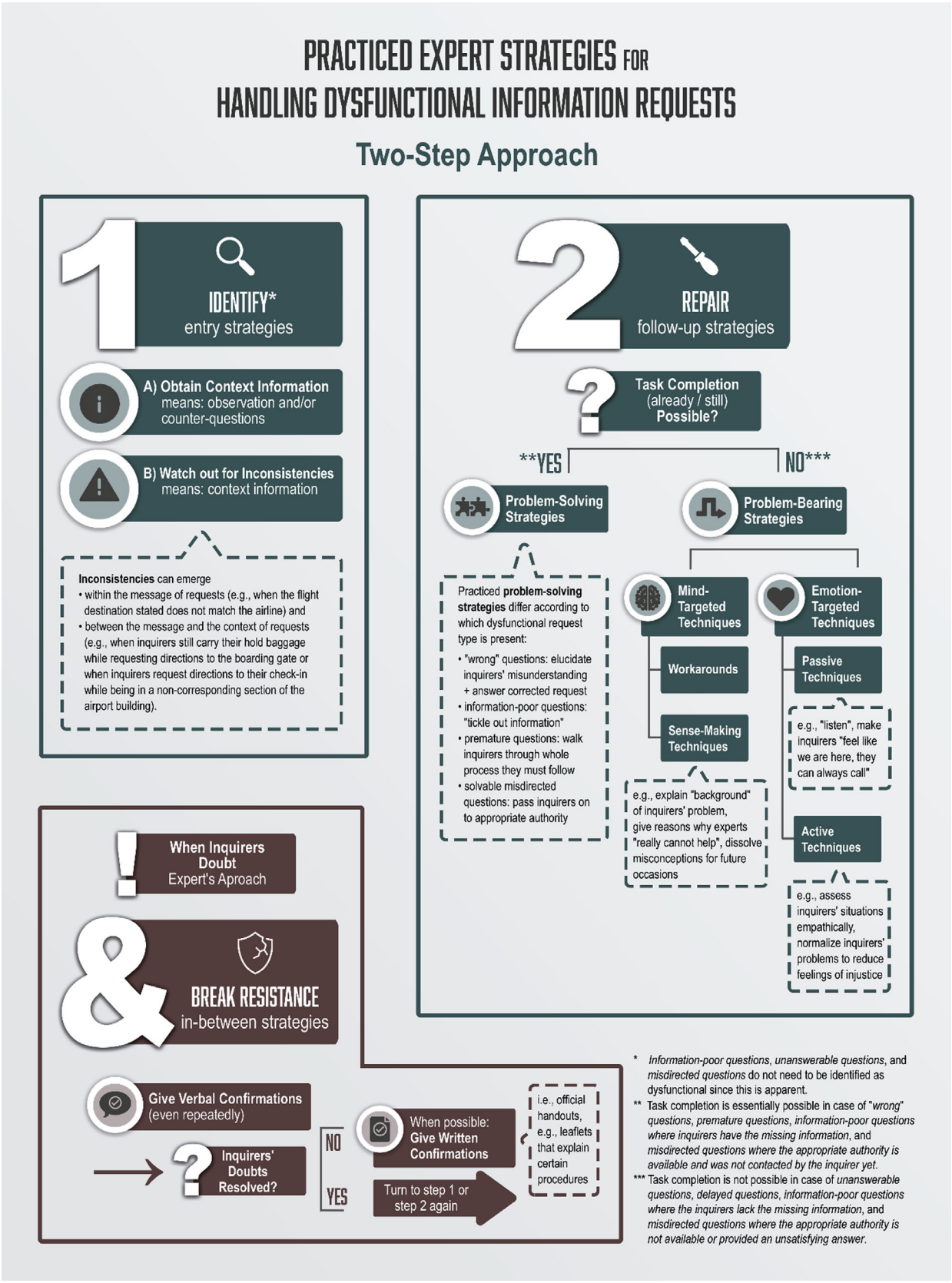

FIGURE 4 Strategies for handling dysfunctional information requests.

dysfunctional requests and immediately subsequent *follow-up strategies to repair such requests*.

To uncover dysfunctional requests, experts, first, gather context information through observations and/or counter-questions. By this, they aim to ascertain the inquirers' task and/or task progress behind the perceived and expressed information need, or, as Suzana puts it, they work toward discovering "what it [the request] is all about." Then they watch out for inconsistencies within the message of requests as well as between the message and the context of requests (e.g., the inquirers' location). This way, misconceptions can become apparent, as well as discrepancies between the inquirers' *perceived* information needs and the *objective* information requirements of the respective tasks.

Experts' strategies to repair dysfunctional requests can be distinguished into *problem-solving strategies* and *problem-bearing strategies*. When task completion is considered (still or already) possible, experts pursue problem-solving strategies. These are targeted at enabling task completion despite inappropriate requests. Experts provide support as the type of dysfunctional request requires (see Figure 4). Experts draw on problem-bearing strategies when it is no longer or not yet possible to help inquirers complete their task (e.g., in cases of delayed and unanswerable questions). Problem-bearing strategies include *emotion-targeted* and *mind-targeted* approaches. Emotion-targeted approaches range from *passive techniques*, such as listening, to more *active techniques*, such as normalizing inquirers' problems to reduce feelings of injustice. Mind-targeted approaches are *sense-making techniques*, such as contextualizing inquirers' problems, and *workarounds*.

The expert-led and task-focused lens of the experts' approach is essential to dissolve misconceptions and enable task completion where it is possible. However, resistance from inquirers can occur here as inquirers have to depart from their misconceptions and associated misguided expectations. This is where experts apply strategies to break resistance. Where corrections are doubted, experts give verbal confirmations, even repeatedly. When these also fail, experts, if possible, provide inquirers with written confirmation in the form of official handouts to further build trust (see section 4.2.1).

5 | DISCUSSION

5.1 | Major findings

This work is, to the best of our knowledge, the first to provide empirical insights into how misconceptions can *negatively affect information requests* (see Figure 2 and section 4.4.1) and *interfere with information-seeking conversations and task completion* (see Figure 3 and section 4.4.2). Besides, our data reveal *strategies* experts practice to manage misconceptions and dysfunctional requests (see Figure 4 and section 4.4.3).

5.2 | Relation to previous work

5.2.1 | Work on effects of misconceptions

Effects of misconceptions on task performance have been extensively investigated in educational psychology research (Smith et al., 1994, p. 121). Our findings support that misconceptions hinder task completion (e.g., Andre & Ding, 1991; Chen et al., 2020) and taint people's judgment about their task performance, often leading to misplaced confidence in their actions (here requests) (e.g., Yang & Sianturi, 2019, pp. 1522–1523). However, effects on information behavior (beyond learning contexts) have been underexplored thus far. This paper contributes to closing this gap, representing a first step to understanding how misconceptions can influence information requests and information-seeking conversations (see the corresponding Summary sections).

5.2.2 | Work on strategies for handling problematic information requests

Comparing the experts' strategies to manage misconceptions and dysfunctional requests with current strategies for handling problematic information requests in information search settings (e.g., in search engine use and conversational search) shows that current strategies, such as "Did you mean ...?" suggestions and clarifying questions, (regardless of their benefit in cases of *unclear* information requests) are inappropriate to handle dysfunctional information requests. This is most prominent when considering three main differences between the approaches:

First, current strategies are typically not initiated until there is an uncertainty regarding the inquirers' information need (see, e.g., Kim et al., 2021, p. 869; Zamani et al., 2023, pp. 347–348). The experts' strategies, by contrast, also account for requests that communicate an information need clearly. Thus, current strategies are likely to miss dysfunctional information requests.

Second, current strategies are directed at the users' *perceived* information needs (see, e.g., Cassell & Hiremath, 2023, pp. 18–20; Keyvan & Huang, 2022; Radlinski & Craswell, 2017, p. 118), whereas the experts' approach focuses on the inquirers' task and its *objective*

information requirements. This becomes apparent when one looks at how important it is for the experts' approach to identify task-related inconsistencies within inquirers' statements and between inquirers' statements and the given context. Current strategies, by contrast, mostly aim at helping users to clarify and refine their information needs or search intentions by, for example, letting them provide additional information on the meaning and intent of their query without challenging the user input (see, e.g., Cassell & Hiremath, 2023, p. 20). Thus, current strategies are likely to prioritize satisfying users' perceived information needs over encouraging task completion.

Third, the experts' approach includes problem-bearing strategies alongside problem-solving strategies to account for cases where task completion is not possible. Current strategies for handling *unclear* requests are more focused on information provision than on task support (see, e.g., Aliannejadi et al., 2019; Keyvan & Huang, 2022, p. 129:2). Helping users with problem bearing is, therefore, not yet on the research agenda associated with these strategies.

When we compare the experts' strategies with question negotiation practices in library settings, there are similar differences: First, research suggests that reference librarians do not probe inquiries that seem to be easy to answer (Bøyum et al., 2021), making it likely that dysfunctional information requests are overlooked. Second, guidelines and handbooks for reverence interviews (e.g., Ross et al., 2019; RUSA, 2023), while recommending the probing of inquirers' requests, only discuss techniques "to meet the person's reference or information needs" (RUSA, 2023, p. 7) and ignore the inquirer's task and its objective information requirements. The long tradition of question negotiation in the library context, however, may provide concrete starting points for integrating the experts' strategies (e.g., based on probing techniques to ascertain information needs, inquirers' high-level task could be identified).

5.3 | Implications: Moving beyond request-centric information systems design

Insights into how misconceptions can negatively affect information requests, information-seeking conversations, and task completion and what strategies experts practice to manage these effects are crucial to better support information seekers in their task performance. These insights can enrich both academic and professional work on information search, introducing information science researchers and professionals in different fields—from traditional IR to conversational search to task-based search—to the phenomenon of dysfunctional information requests and enabling them to explore and test new repair strategies for more effective information and task support systems. These research endeavors should take into account that dysfunctional information requests present a specific challenge: They are difficult to identify since they can appear to be reasonable requests, and the inquirers believe their requests are appropriate. Our data confirm these issues and show that inquirers' *perceived* information needs can present an unreliable and even counterproductive basis for task support, challenging the request-centric perspective prevailing in information science. Correspondingly, our data suggest basing information provision on inquirers' tasks and associated *objective* information requirements instead of inquirers' *perceived* information needs. More precisely, it is the inquirers' *high-level task* (e.g., departing from an airport) rather than the current sub-task (e.g., traveling to the airport) that should be considered to account for cross-task information requirements (e.g., considering the check-in area before traveling to the airport) (cf. section 4.2.2). Moving beyond request-based IR is not a new idea (see, e.g., Oddy's (1977) early concept of IR without query formulation and Shah et al.'s (2023) recent proposal for proactive search systems that encourage task descriptions over queries). The present study empirically substantiates the importance of such approaches. Our findings also suggest that proactive systems, which provide information without a user's initiative (e.g., without queries) by, for example, guiding users through task sequences, automatically considering context conditions, pointing at information requirements for the current task, and anticipating information needs, are more effective than request-based IR. Empirical evidence shows that even basic task-tracking capabilities in proactive systems can positively affect users' task perception (Kilian et al., 2019). However, our data, moreover, imply that the users and their practices, ways of knowing etc. should not be forgotten along this way (see, e.g., inquirers' resistance when their expectations are not met). Proactive systems should, therefore, include the experts' strategies to maintain inquirers' agency, such as enabling sense-making and providing opportunities to fact-check recommendations (e.g., access to official handouts) (see Figures 4 and 5 for more details and options).

5.4 | Delimitations and generalizability

The previous subsection assumes our findings are broadly transferable to task-based seeking and search. We will substantiate this now.

The setting of this study, an airport, represents a context where people must perform tasks, act upon rules, and follow procedures. Thus, our findings may be generalizable to other information-seeking contexts with

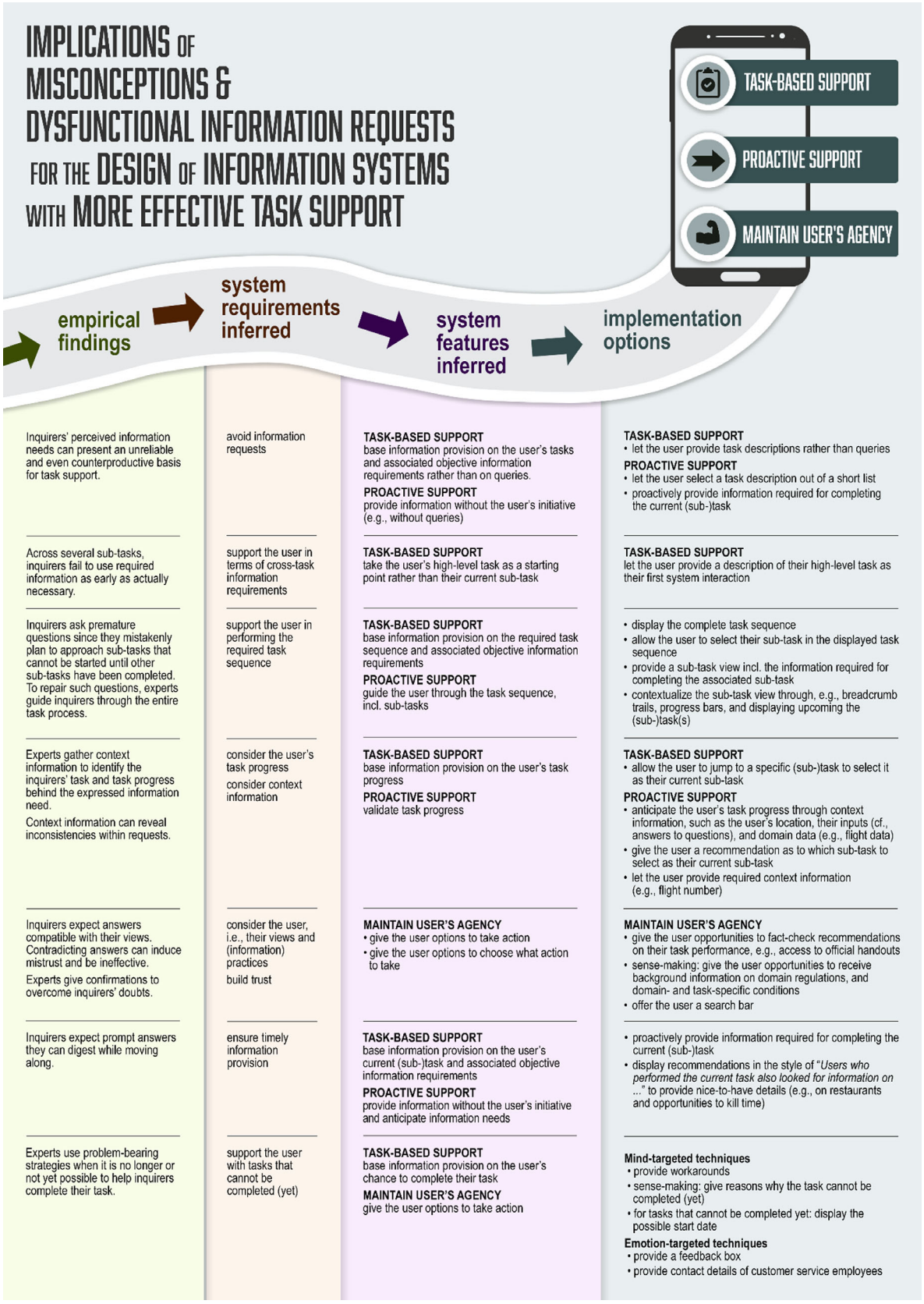

FIGURE 5 System design implications of misconceptions and dysfunctional information requests.

similar features. While our results from the airport context cannot provide an exhaustive picture of dysfunctional information requests in other similar information-seeking contexts, individuals in such contexts may nevertheless struggle with this phenomenon. The transferability of our findings is supported by the expert interviews conducted. These provide a rich data basis, representing over 120 years of collective experience in information desk work. Additionally, the methodology used to obtain our results, GTM, generates broad theoretical concepts enabling the applicability of findings beyond the context studied (Corbin & Strauss, 2015, p. 377). We have encouraged this by using GTM methods that increase abstraction, for example, constant comparisons (Charmaz, 2006, p. 187) and theoretical comparisons (Corbin & Strauss, 2015, pp. 94–96).

The literature suggests that our findings may indeed be generalizable to other information-seeking contexts involving tasks, regulations, and processes. However, instances of dysfunctional information requests are rarely documented. This rarity may be because such instances only become apparent when information requests are examined in relation to domain expertise, including the tasks, regulations, and processes prevailing in the domain, and their information requirements. Indeed, all supporting literature we found adopts this expert perspective. For example, Verne (2015) identified instances of dysfunctional information requests in conversations between citizens and administrative tax advisors, including what we call *requests for wrong information* (p. 59), *requests containing incorrect information* (pp. 58 and 62), *delayed questions* (p. 55), and *misdirected questions* (pp. 64, 72, and 77), as well as requests similar to our *crystal ball forecasts* (p. 64). Her work demonstrates that doing taxes is highly task-, regulations- and process-based, making this context comparable to the airport setting. Moreover, Verne (2023) shows that tax experts also use task-focused counter-questions when inquirers *request the wrong information* (pp. 6 and 8), and they check inquirers' tax data to identify inconsistencies in the inquirers' "often [...] misleading" statements (p. 6). Interestingly, Verne et al. (2022) also found an instance of a *request containing incorrect information* in chatbot conversations about welfare benefits. This indicates that dysfunctional information requests also occur in interactions with information systems and that our typology is applicable to public welfare administration contexts as well.

Beyond the airport and government services, our typology may also apply to everyday-life contexts involving tasks, rules, and processes (e.g., cooking and home improvement) and to work-related activities (e.g., programming and managing budgets). While there is no literature on dysfunctional information requests in these contexts, empirical works found misconceptions and failures there that accompany dysfunctional requests in our study. Sato et al. (2014), for example, explored difficulties in cooking with a recipe and found several mistakes, including *using the wrong utensil* and *missing a preparation step* (p. 122). These examples parallel *using the wrong processing number* (*gate* vs. *check-in counter number*) and *missing process steps* in the airport setting. Qian and Lehman (2017) investigated students' programming misconceptions and listed conceptually similar examples, namely, *using the wrong operator* and *misunderstanding the sequential execution of code* (p. 1:16). Such misconceptions may also lead to dysfunctional information requests when people seek information in these contexts. Using an existing data approach (e.g., Privitera, 2017, pp. 224–227) has substantiated this assumption: Interactions between experts and users on different question-and-answer websites show that people make dysfunctional information requests when seeking information in the context of programming and the context of cooking and baking (see Table S1, Supporting Information).

6 | CONCLUSION

The developed typology of dysfunctional information requests represents a first step to better understand misconceptions in IS and their effects on information requests, information-seeking conversations, and task completion. Beyond that, our typology has the potential to make researchers and professionals rethink the prevailing fashion of overly focusing on user requests in designing information systems. Whereas it is truly essential to consider users' search styles, experiences, contexts, and the like, our data show that it can be ineffective and even counterproductive to base information provision and task support mainly on users' perceived and expressed information needs. It will be exciting to see how future systems manage the balancing act between user orientation and effective task support and create an experience that is truly tailored to the needs and goals of users.

ACKNOWLEDGMENTS

The authors would like to thank the interview partners for their participation and the InfoGate Information Systems GmbH for their support in undertaking this research. Many thanks also to Markus Kattenbeck and the student helpers who assisted the authors in conducting and transcribing the interviews, respectively. The authors are also very thankful to the anonymous review team for their thoughtful comments and valuable suggestions.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data

are not publicly available due to privacy or ethical restrictions.

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ENDNOTES

[1] "Information need" is a central and widely used concept in the information science field. It often serves as an umbrella term for different, but similar entities (e.g., mental needs, requests, search engine queries, query intents, pre-query topics in TREC tasks). Many empirical works, for example, refer to the "information need" concept, although they actually focus requests or queries as these are observable entities (e.g., Ke et al., 2021; Ruthven et al., 2018). However, the notion of "information needs" is philosophically and epistemologically debatable and often only vaguely, if at all, defined (Case & Given, 2016, pp. 82–91). In this paper, information needs are, therefore, defined very generally and refer to *perceived* needs for information, contrasting with *objective* information requirements for task completion. Information requests are understood as *expressed* information needs (i.e., observable, behavioral entities). Hereafter, we use "information needs" as an umbrella term for perceived and expressed needs and switch to "information requests" where we want to focus the behavioral aspect. This way, we can reflect how information needs are generally used and understood in the related work without releasing philosophical and epistemological concerns. This also means that our definition is open to the two most accepted theoretical viewpoints on information needs, namely the cognitive view and the socio-cognitive view (see Hartel, 2019, also for an overview of different information need conceptualizations), making it possible to consider information needs as mentally and socio-culturally (co-)constructed.

[2] Airport visitors include here *air passengers*, *well-wishers*, who accompany departing passengers, *greeters*, who pick arriving passengers up, and *airport sightseers*, who visit the airport for entertainment.

[3] Kilian et al. (2019) provides more information on the aim and methodology of this research project.

[4] Starting with the third edition of their handbook on GTM, Corbin and Strauss's variant of GTM has "substantial[ly] move[d] away from post-positivism [...] toward explicit constructionism" (Charmaz, 2025, p. 234), making their approach consistent with Charmaz's position.

[5] Our understanding of experts follows Bogner et al.'s definition (Bogner et al., 2018, p. 657).

[6] In many countries, border control responsibilities are split into people-related and goods-related control functions. In Germany, the federal police oversee the former, customs the latter.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Kilian, M. A., Elsweiler, D., & Ruthven, I. (2025). Right answers to wrong questions: The dysfunctional nature of information needs. *Journal of the Association for Information Science and Technology*, *76*(11), 1508–1531. https://doi.org/10.1002/asi.70010