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"Hide Our Heads in the Sand": Environmental information avoidance motives in the United States

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Information avoidance (IA) is a prevalent information behavior that is used by people to understand and act on environmental issues, yet is understudied in the environmental field, leaving us with an incomplete picture of environmental communication processes and outcomes. Compounding this partial knowledge is a lack of research into people's own conceptions of IA. Considering these issues together calls for exploratory research into people's lived experiences of environmental IA. To do so, we focused on a factor that drives behaviors like IA: motives. We investigated environmental IA motives among those living in the US and used the pre-theoretical planned risk information avoidance (PRIA) model to compare and contrast our findings. To undertake this work, we developed a short questionnaire; research company YouGov administered the project. They recruited our participants, who were panel members from their US panel, n = 200. We analyzed open-ended data on participants' IA motives with a framework thematic analysis, identifying seven motives: information credibility and exposure; interpersonal relationship frames; emotional arousal; agency; hazard perceptions; and environmental topics. These findings provide three contributions to environmental IA research. First, three of these motives have been under and/or unexplored in IA studies to date, and we suggest their inclusion in an expanded PRIA model to forward model development. Three other motives indicate boundary conditions associated with environmental issues and IA: scale, timeframe, and referents. Boundary conditions represent how well a theory or model fits into a research context and can sharpen future IA investigations within environmental contexts to increase predictive and explanatory power. Lastly, we also identified the top environmental issues our participants wanted to avoid. Our results provide an initial base to continue developing environmental IA research.

KEYWORDS

information avoidance, motives, planned risk information avoidance model, boundary conditions, climate change, waste, natural resource depletion

1 Introduction

Whether it's avoiding talking about gas fracking during dinner or changing the channel when climate change news airs, information avoidance (IA) is a widespread behavior. Research shows IA rates ranging from 34–70% among people in a variety of topic areas, from health to risk (Link, 2021; Pew Research Center, 2020). However, most information behavior research in environmental communication focuses on information seeking (IS) and IA processes are largely ignored. The

paucity of work in this area is concerning because people use *both* behaviors to make sense of environmental issues and act on them (Deline and Kahlor, 2019; Kim and Grunig, 2011). Understanding one information behavior (seeking) without understanding the other (avoidance) leaves us with an incomplete grasp of communication processes and outcomes, such as how different groups might avoid certain types of information, or how social norms enact and maintain IA intentions. Given the urgent need to understand how people make sense of and decide to act on environmental issues like climate change or biodiversity loss therefore requires environmental communication investigations into IA as well as IS.

One way to begin such work is to focus on IA motives. Motives represent concerns that drive behavior (Gollwitzer and Oettingen, 2015), making them integral to better understanding behaviors like IA (Foust and Taber, 2023; Link, 2024). Motives play a role in a variety of environmental IS research, ranging from motives that segment climate change audiences (Leiserowitz et al., 2021), to investigating how climate change affects seeking motives (Kahlor, 2007). However, we do not have a comprehensive understanding of what motivates IA, or environmental IA in particular (Deline and Kahlor, 2019; Foust and Taber, 2023). As de Young (2000) notes "No motive has universal appeal, works under all conditions or…is likely to meet both short- and long-term goals" (p. 523). This lack of a singular motive 'fix,' drives our investigation into the range of motives that guide environmental IA behavior to build a foundation for future environmental IA research.

2 Literature review

2.1 Current state of environmental IA research

An interdisciplinary concept, IA has spawned research across psychology, organizational behavior, and risk and health communication; within the communication field, it is frequently subjected to models and theories developed for IS (Deline and Kahlor, 2019; Griffin et al., 1999). For example, communication researchers often undertake a selective avoidance approach to IA (Garrett, 2009). In this tradition, IA is seen as the inverse of IS and is therefore also perceived to be driven by defense motivations, which refers to wanting to protect congruency between one's identity and attitudes, as well as behaviors (Garrett, 2009). Yet IA is a different behavior than IS and investigating it by presuming the factors of interest are those generated from IS research risks potentially missing other factors not previously identified, yet possibly more salient to people.

Compounding this reliance on IS factors is a research gap into people's IA experiences, including their IA motives (Foust and Taber, 2023; Link, 2024). As Ajzen and Kruglanski (2019) note about behavioral motives writ large: "…investigators generally do not pay enough attention to why, in their everyday lives, people consider engaging in a particular behavior in the first place" (p. 774). Thus, people's motives *in situ* are still largely unexplored in relation to IA, and for our purposes, in relation to environmental IA specifically. This is concerning because it also risks overlooking unidentified or underexplored factors that might be more strongly related to IA than the ones currently focused on by researchers. Such a situation can potentially weaken the explanatory power of subsequent IA models and theoretical development. We therefore suggest that factors grounded in people's lived IA experiences (such as motives) need to be identified and assessed to support stronger explanatory power in model and theoretical development moving forward (Lee, 1991; McPhee and Poole, 2016).

Finally, *environmental* IA is infrequently studied in comparison to work in the health and risk spheres, exemplified by the small number of inductive studies to date that explore people's lived IA accounts, none of which has yet occurred in the environmental communication field (Barbour et al., 2012; Broekhuis et al., 2022; Narayan et al., 2011; Link, 2024; Jia and Li, 2024).[1] This is problematic for environmental communication researchers because both behaviors and motives vary in relation to context (Willoughby and Myrick, 2016; Yzer, 2013), and it follows that IA in one context (for example, health IA) is likely to be different than environmental IA. Indeed, a recent meta-analysis found that IA antecedents exhibited different relationships and strengths depending on whether the IA was occurring in health or environmental contexts (Liu and Chen, 2024).

The gaps we have outlined are common in nascent fields of study, like IA (Deline and Kahlor, 2019; Foust and Taber, 2023). As Foust and Taber (2023) note, "…compared with research on information seeking, which continued throughout the second half of the 20th century, research on information avoidance is in its infancy and thus has fewer theoretical frameworks" (p. 9). Given the state of the field, a methodological fit approach suggests that exploratory, inductive work is needed. Methodological fit details that projects should demonstrate internal consistency between the state of theory and associated methods. By this logic, a nascent theoretical context should involve exploratory, inductive work on participants' worldviews to discover factors related to the phenomenon, and abductive work should examine newly identified factors in relation to established factors to provide initial explanations for the phenomenon. Finally, a mature theory context suggests the use of a deductive approach, confirming hypotheses through testing (Edmondson and Mcmanus, 2007; Woo et al., 2017).

Adopting a methodological fit approach, we find that the current state of environmental IA research suggests an exploratory, inductive approach, in which research designs investigate participants' worldviews in service of identifying factors pertinent to the phenomenon that may otherwise be overlooked or underexplored (Edmondson and Mcmanus, 2007; McPhee and Poole, 2016). Reviewing literature in such a nascent context is challenging because such assessments are typically broader than in deductive work (Cornelissen, 2017); we detail major review components here. First, we turn to the planned risk information avoidance (PRIA) model, to which we compare and contrast our exploratory findings (Deline and Kahlor, 2019).[2] We orient this discussion to exploratory fit by detailing how the PRIA was designed to expand through a discussion of boundary conditions and under/unexplored factors. We then introduce

1 Inductive logic uses logical inference to build process explanations from particular phenomenon; deductive logic uses rules to generalize causes (DeCoster and Lichtenstein, 2007). Abductive logic sees researchers move between inductive and deductive poles to better understand and theorize relationships between factors (Teddlie and Tashakkori, 2012).

2 We hoped to include the PRIA's Figure in this manuscript but the publisher does not grant Open Access licenses; we therefore provide the doi here, and detail major factors in-text in section 2.2. https://doi.org/10.1093/ct/qty035.

the concept of motives and their importance to IA and review key motive findings in relation to communication and environmental communication IA scholarship. We conclude by describing our setting and our participants' current understanding of environmental issues.

2.2 IA models

The communication field has developed a number of models and theories that include IA, ranging from risk (extended parallel process model [EPPM]; Witte, 1992) to health communication (uncertainty management theory; Brashers, 2001). However, while these models incorporate IA, the behavior is not their primary focus (Deline and Kahlor, 2019). We therefore turn to a model that solely investigates the IA phenomenon, the PRIA. With its theoretical roots in the risk information seeking and processing model (RISP) and planned risk information seeking model (PRISM), the PRIA is a *pre*-theoretical model that conceives of IA as a reasoned behavior, such as shutting off the TV or asking a group to change the conversational topic (Deline and Kahlor, 2019; Griffin et al., 1999; Kahlor, 2010). This focus on reasoned, active behavior distinguishes the PRIA's conception of IA from inertia: inaction in support of the status quo (Polites and Karahanna, 2012).

The pre-theoretical nature of the PRIA means it is not yet fixed, but instead a tool to be used for elaboration of a more comprehensive model and subsequent theoretical development (Deline and Kahlor, 2019; McPhee and Poole, 2016). Figure 1 outlines suggested stages of theoretical development in relation to the methodological fit perspective; we situate this study at the beginning of the exploratory stage, which necessarily structures its contributions and suggested next steps.

The purpose of exploratory stages is to first identify a wide array of factors pertinent to the phenomena (in our case, environmental IA) and to subsequently assess their importance and prevalence in different contexts (McPhee and Poole, 2016). While this will initially broaden the number of factors to be investigated, it will paradoxically yield a leaner and more parsimonious model later, given the likelihood it will be based on factors strongly pertinent to environmental IA (Therefore, concerns about model 'bloat' should be allayed at the exploratory stage, as the purpose of identifying a wide array of potential factors is to ensure the most meaningful ones are selected for subsequent development and investigations).

To date, the research on IA factors in communication has largely come to us from studies on factors important to IS and expert speculation (Liu and Chen, 2024). The PRIA model is a form of expert speculation – its authors canvased the literature for IA factors in cognitive, socio-cultural, and emotional categories.[3]

This literature, in conjunction with the authors' expertise, was used to make informed propositions about potentially important IA factors (Deline and Kahlor, 2019). Such studies are useful for model development purposes as long as they are not solely relied on for factor identification. This is because such reliance introduces the risk of ethnocentrism errors - when researchers assume that their own values and meanings they consider important to be the same as people experiencing the phenomena (Lee, 1991). Ethnocentric error thus risks lowering the explanatory power of subsequent theoretical work by potentially overlooking unidentified or underexplored factors relevant to people's everyday lived experiences, which might be more strongly related to IA. To date we know of only five exploratory IA studies, and the majority of them are in health communication (Barbour et al., 2012; Broekhuis et al., 2022; Narayan et al., 2011; Jia and Li, 2024; Link, 2024). Inconsistencies in findings across the IA literature (explored below) suggest that we are missing factors important to people's IA experiences and that exploratory environmental IA research is warranted.

Additionally, identifying the boundary conditions of environmental IA will enhance the predictive power of subsequent environmental IA studies (Cambell and Stanley, 1966; Lee, 1991). A lack of detailed boundary conditions for environmental IA might also explain the inconsistent findings to date in environmental IA research. Identifying and using boundary conditions as moderators could strengthen the predictive power of subsequent abductive and deductive work.

In sum, inductively investigating people's everyday environmental IA motives offers three contributions to theoretical development stages adopting a methodological fit approach. First, it will identify underexplored and/or unidentified motives relevant to environmental IA. Doing so will bring together factors derived from people's experiences and expert speculation to provider a richer menu of IA factors for PRIA

3 The model's factors contributing to IA range from *social norms* and *sense of community* (socio-cultural) to *perceived behavioral control* and *risk perceptions* (cognitive) to *affective risk response* (emotional).

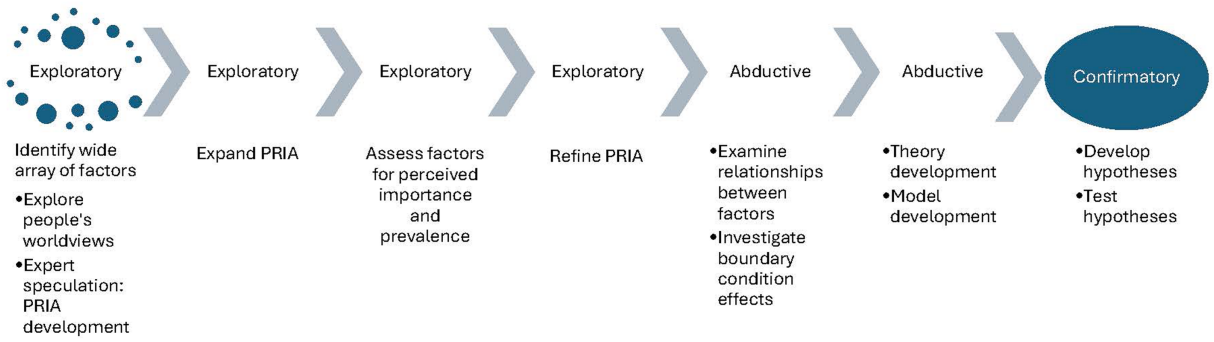

FIGURE 1
Suggested environmental information avoidance theoretical development stages.

expansion and subsequent assessment through abductive and deductive research (Edmondson and Mcmanus, 2007; McPhee and Poole, 2016). Second, the study identifies the environmental issues associated with environmental IA for Americans involved in environmental issues, the first such work that we know of. Third, the identified motives also provide the opportunity to speculate about probable environmental IA boundary conditions, whose subsequent investigation will strengthen theoretical predictive and explanatory power (McPhee and Poole, 2016). To discuss how the PRIA could be expanded, we focus below on boundary conditions, as well as IA motives.

2.3 Boundary conditions

Boundary conditions identify the 'who, when and where' of a theory's generalizability, making them integral to theory development stages (Holbert et al., 2022). In other words, boundary conditions demarcate when a theory works, who it works with, and where, as well as when it does not. In so doing, boundary conditions are essential for rigorous deductive research, as they identify and address the applicability of a model or theory to different contexts (Busse et al., 2017; Holbert et al., 2022). For example, the scale of a phenomenon – its level of analysis– is an often-overlooked boundary condition, as are timescales (Rousseau, 1985; Zaheer et al., 1999).

Environmental issues relate to time-scales – for example, both climate change and environmental racism represent long-standing environmental issues of sufficient duration to be associated with chronic message fatigue (Lu, 2022; Skurka et al., 2023a; Washington, 2019). Taking the case of climate change, if it was perceived as a new, unfamiliar phenomenon, chronic message fatigue would likely not be elicited as an IA motive.

While work into boundary conditions is beginning in IS and processing research, the PRIA's predecessor models – the RISP and PRISM – largely unspecified boundary conditions, noted as a model limitation by recent studies (Hwang and Jeong, 2020; Wang et al., 2021). We know of little research to date into boundary conditions in either communication IA writ large or environmental IA specifically, although a recent IA meta-analysis indicates that key IA factors exhibit differences in environmental, as compared to health, contexts (Liu and Chen, 2024). Additionally, a health meta-analysis found that geographic regions moderated the impact of risk perceptions on COVID-19 IA (Li, 2023) – though whether this holds in relation to environmental issues is unclear. Finally, inductive work by Link (2024) suggests that longer versus shorter timescales affected participants' IA. These initial findings signal the importance of boundary conditions to future environmental IA theory development.

2.4 Motives

Motive investigations help us to better understand what drives behaviors like IA (Brick et al., 2021). Motives range in scale from psychological to sociological: for example, early psychological research identified achievement and power as key personal motives, while sociological research identified individualism or cooperation as important social motives (McClelland, 2005; Weber et al., 2004). Motives are integral to studying information behavior in communication research – for example, IS is associated with constructs like involvement, which explains what people are motivated to consider salient, resulting in cognitive and emotional engagement (Gregory and Di Leo, 2003; Leiserowitz et al., 2021). Motives are also applied within environmental communication research –for instance, through their use to segment climate change audiences and describe associated information behaviors (Leiserowitz et al., 2021). We use the three major PRIA categories to structure an IA motive review below.

2.4.1 Cognitive factors

Agency is recognized as a key behavioral motive in a wide range of environmental communication research (Bandura, 2000). Two factors are commonly used in such investigations - the first is variously referred to as capability or perceived behavioral control, while the second is variously called response efficacy or outcome expectancy (Koletsou and Mancy, 2011). We use the terms capability and response efficacy. Both forms operate at different levels of analysis, from the individual to the collective: definitions can be found in Table 1.

Research to date with the PRIA, RISP, and PRISM appears to have largely constrained investigations of efficacy to capability rather than response efficacy, and to the personal level rather than collective or proxy levels (Hmielowski et al., 2019; Koletsou and Mancy, 2011). Environmental IA research continues this focus on individual-level capability efficacy and has typically investigated it in relation to information attainment. The small number of results in this area are mixed. Researchers working in the context of climate change found both negative relationships between capacity to find information and IA (Yang and Kahlor, 2012) and null effects in the area of Great Lakes health (Kahlor, 2006). However, Dunwoody and Griffin (2014), researching water resource risks, exhibited mixed findings, with one project showing a negative relationship between capacity to find information and IA, while another found the opposite. None of these studies appear to have examined the efficacy of *avoiding* information, or response efficacy. Of note, a recent IA meta-analysis did find that efficacy beliefs exerted a stronger relationship on IA in environmental than health contexts, but these beliefs were examined as a universal concept, 'confidence beliefs', without specifying whether they related to seeking or avoidance, or response versus capability efficacy (Liu and Chen, 2024). The only research we know of to date regarding response efficacy and environmental IA showed that the perceived financial burden of undertaking risk mitigations was positively related to IA (Losee et al., 2020).

2.4.2 Socio-cultural factors

The PRIA focuses on social norms as a key socio-cultural factor to the exclusion of others such as values (Steg and de Groot, 2012) or social support (Ou and Ho, 2022). Social norms are conduct codes that guide our behavior (Link et al., 2023). Norms drive IS (Ou and Ho, 2022; Liu et al., 2022), and recent research in health IA shows that IA *itself* can be seen as a non-normative behavior, compared to IS (Heck and Meyer, 2019; see also Fung et al., 2024). Work on IA and norms is in the beginning stages. Seeking to differentiate avoidance from seeking norms, researchers have now shown avoidance norms significantly increase avoidance intentions (Link, 2021; Qu et al., 2021). Mixed results within the small number of studies on the topic in environmental contexts might be due to differences between

TABLE 1 Capability and response efficacy levels of analysis.

Efficacy type	Efficacy level	Definition	Exemplar
Capability	Self efficacy	Self efficacy refers to "…people's beliefs in their capabilities to perform a specific behavior" (Koletsou and Mancy, 2011, p. 186), in other words, their belief in their own "…effective performance…" (Bandura, 1977, p. 191).	"I feel like I cannot do anything to change it so I do not want to listen" (90)
Capability	Collective efficacy	Collective efficacy refers to "…a measure of individual judgements of the ability of the collective to conduct a particular behaviour" (Koletsou and Mancy, 2011, p. 200).	"Sometimes it's hard hearing about environmental issues knowing there are a lot of people who do not care, and probably will not take action" (71)
Capability	Proxy efficacy	A belief in a representative's efficacy in representing and fulfilling people's own goals (Li, 2018). This often occurs in situations where the ability to solve problems is not within someone's own ability (Li, 2018), and they therefore have to have a proxy to effect change for them (as in political systems).	"It gets extremely depressing always hearing about how things are getting worse around our planet but our leaders who can actually do things to change things for the better do very little to nothing" (34).
Response	Self response efficacy	Self response efficacy refers to "…beliefs about the likely consequences of their actions" (Koletsou and Mancy, 2011, p. 186).	"…But what I do is less than a drop in the bucket in terms of a solution, it does nothing to offset the enormous industrial pollution that's really driving climate change …" (98)
Response	Collective response efficacy	Collective response efficacy involves assessing the likely consequences of others' actions (Koletsou and Mancy, 2011)	"I do not think there is anything we can do about global warming at this point. If we all work together and start now we can fix it, but the people with all the money and power would need to cooperate and they will not. It stresses me out" (55)

seeking versus avoidance norms, as well as between descriptive and injunctive norms (see, for example, Link, 2024).

Continuing this trend in environmental communication, research found both positive and negative relationships between seeking norms and avoidance in relation to climate change (Kahlor, 2006; Yang and Kahlor, 2012), a positive relationship between seeking norms and IA in relation to PFAS contamination (Liu and Yang, 2023), and positive relationships between *avoidance* norms and intentions in the context of manmade earthquakes (Kahlor et al., 2018). However, other researchers found null relationships between social norms and avoidance (Hwang and Jeong, 2020). Notably, the manmade earthquake study was the first to look at avoidance, as opposed to seeking, norms in environmental contexts. Overall, these mixed findings indicate more research is needed.

2.4.3 Emotional factors

IA research in communication typically adopts a dimensional approach to emotions that is concerned with valence or arousal as key predictors of IA where valence reflects emotional quality and arousal reflects emotional intensity (Deline and Kahlor, 2019; Leblanc et al., 2015). Valence research has shown that negative affect is negatively related to IA intentions (Kahlor et al., 2018), while arousal research has also shown effects: for example, overwhelming worry is associated with individuals avoiding cancer screenings (Peng et al., 2019). However, results here are also inconsistent, with recent research in the context of COVID-19 finding null effects between fear and IA (Xu et al., 2023; Zhou et al., 2021).

Contextualizing these factors within the environmental arena also shows mixed results. For example, research found that worry (identified as a negative emotion) was unrelated to attitudes about avoiding environmental health risks (Fung et al., 2018), but a recent meta-analysis showed that worry was more strongly related to IA in environmental, as opposed to health, contexts (Liu and Chen, 2024). On the other hand, researchers found that those with positive attitudes about climate change were more likely to avoid information on the topic, suggesting participants were seeking to maintain positive mood (Yang and Kahlor, 2012). And exploratory, inductive research has shown a desire to maintain hope as a form of mood management in relation to IA (Barbour et al., 2012); therefore, emotional motives also appear key to IA processes.

2.5 Setting

The U.S. is one of the world's largest contributors to waste *per capita* and greenhouse gas emissions, therefore negatively impacting other nations via downstream effects like climate change (Environmental Protection Agency, 2023b; Kaza et al., 2018). In addition to the environmental impacts they contribute to globally, Americans themselves live in a polluted environment subject to the climate crisis, and they know it: only 7% of Americans recently rated the overall quality of their environment as excellent (Gallup Organization, 2022). For example, many live in counties violating national air quality standards and biodiversity is disappearing at rapid rates (Environmental Protection Agency, 2023a; Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019). Additionally, climate change threatens social needs like drinking water and housing security across the US (Intergovernmental Panel on Climate Change, 2023).

Despite these conditions, public opinion research paints a somewhat complicated picture of perceptions of the importance of these issues and what to do about them. For example, only 2% of Americans recently considered the environment, pollution and/or climate change to be the most important issue facing the country (Gallup Organization, 2024). When asked *specifically* what they considered the top three environmental issues to be, climate change, waste and air and water pollution ranked highest (IPSOS, 2020). Additionally, when asked what issues the President and Congress

should prioritize addressing, at the time of this manuscript's writing, 45% of Americans said protecting the environment, and 36% said dealing with climate change (Pew Research Center, 2024).

Given this backdrop, where environmental issues are top of mind and important for only a minority of the country, it seemed prudent to ensure that our exploratory IA research focus on those living in the US who were strongly involved in environmental issues, given our conceptualization of IA as a motivated behavior. Issue involvement refers to the salience of an issue resulting in cognitive and emotional engagement (Gregory and Di Leo, 2003; Leiserowitz et al., 2021). Additionally, researchers in other areas, like psychology, have argued that IA involves information that is personally relevant to those undertaking IA (Foust and Taber, 2023).

This confluence of mixed IA findings and research gaps, in association with US environmental issue perceptions and involvement levels therefore led us to question:

> Research Question 1: What environmental IA motives do people living the US, who are strongly involved in environmental issues, hold?
>
> Research Question 2: What environmental issues are associated with IA motives for the same group of participants?

3 Methodology

3.1 Sample, recruitment, and instrument

This study was a purposive exploration of environmental IA motives among adults living and located in the US with strong environmental involvement (Patton, 2015). We report here on questions asked in a short questionnaire on IA: an open-ended question on avoidance motives and a question on associated environmental issues. The thrust of this project was thematic analysis of the open-ended question to identify environmental IA motives. This analysis was supported by asking what environmental issues were associated with avoidance motives via a closed question.

We worked with marketing research company, YouGov – they administered the study which involved recruiting, distributing, pre-screening, recording and cleaning the data, and compensating participants. We pre-tested questions with a split-ballot test in November 2021 and selected items based on participant understanding and clarity.

YouGov constructs representative samples using a sample-matching method, which saw YouGov recruit participants from their large, opt-in US panel, as well as draw a random sample from U.S. Census data that was used as a sampling frame.[4] Panel participants are then 'matched' to the sampling frame using a variety of techniques from propensity scoring to weighting, with a range of socio-demographic factors. For this study, the Census data was from the full 2019 American Community Survey (1 year sample); the socio-demographic factors used in the matching process were: age, gender, race, education; region, and 2016 and 2020 Presidential vote choice. In the interest of brevity, readers interested in further details can contact the corresponding author for the study's codebook. Our sample's socio-demographic characteristics are detailed in Table 2.

Data collection was administered by YouGov from March 16–28, 2022. Participants were pre-screened for environmental issue involvement using a climate change involvement measure adapted from Chryst et al. (2018) (a five point Likert scale; items ranged from *not at all important* to *extremely important* in response to 'how important are environmental issues to you personally') and indicated their IA motive *experience* with a measure adapted from Barbour et al. (2012) IA motive measure (response options were *yes* or *no*). Participants were instructed to consider IA an active behavior: "Sometimes people actively avoid information (for example, they may change the channel on the TV or radio, or change the conversation to avoid hearing about an issue)." Those who exhibited strong involvement and IA motive experience were invited to participate. Participants were then asked to detail their IA motive(s), again using the adapted IA motive measure from Barbour et al. (2012): "…you'd indicated that you wanted to actively avoid hearing about an environmental issue. Please explain." We did not define what the environmental issues were to ensure recall of IA *regardless* of environmental topic. We then asked a closed question about environmental issues adapted from IPSOS (2020); participants were asked what issue they associated with their IA motive(s). Possible responses included the following: *Global warming/climate change; dealing with the amount of waste we generate; water pollution; air pollution; depletion of natural resources; other (please indicate)*. Data was cleaned and YouGov used their sample matching method to form a total sample of 200 participants[5] representative of those living in the US.

3.2 Framework analysis

Open-ended motive data were analyzed by the first and third authors using framework analysis, a type of thematic analysis (Ritchie et al., 2013). This approach was chosen given our research questions, which sought to understand and describe the *entirety* of a range of motive themes across our sample – framework analysis is unique in reporting on that complete set of themes. A method like reflexive thematic analysis, on the other hand, traditionally has a limited

4 More detail on YouGov, their panels and sample matching can be found at www.yougov.com.

5 If we were assessing motive prevalence using probabilistic logic, this would not be enough participants, but that is not what we are doing here. Rather than considering sample *size* representing a population, sampling in qualitative research is guided by assessments about the study's purpose, rationale, and the range and variation of the phenomenon under study (Patton, 2015; Levitt et al., 2017; Ritchie et al., 2013). In the absence of sample size 'rules' in qualitative research, Patton (2015) instead describes breadth and depth assessment, suggesting that a large-scale qualitative study supporting breadth has samples of 60–100 data. Our study reflects broader rather than narrower concerns – we are exploring environmental IA variation in a nascent context, and therefore a large-scale sampling approach supporting breadth, as we do here, is appropriate (Patton, 2015; Malterud et al., 2016). Representative communication studies that use participant generated textual data, as ours does, also tend to large-scale sampling, as in environmental communication studies (Bowers et al., 2016; Krause and Bucy, 2018).

TABLE 2 Participants' socio-demographic characteristics.

Socio-demographic characteristics	*n*	%
Gender (*N* = 188)		
Woman	117	62
Man	66	35
Non-binary	5	3
Age (*N* = 188)		
19–24	15	8
25–30	25	13
31–40	30	16
41–50	32	17
51–60	31	17
61–70	34	18
71–79	15	8
81–86	6	3
Race (*N* = 188)		
White	132	70
Hispanic	21	11
Black	19	10
Asian	5	3
Other	5	3
Two or more races	3	2
Native American	2	1
Middle Eastern	1	1
Education (*N* = 188)		
Did not graduate from high school	3	2
High school graduate	45	24
Some college, but no degree (yet)	48	26
2-year college degree	23	12
4-year college degree	37	20
Post-graduate degree (MA, MBA, MD, JD, PhD, etc)	32	17
Family income (*N* = 170)		
Less than $10 K	18	11
$10–19,999	13	8
$20–29,999	20	12
$30–39,999	19	11
$40–49,999	14	8
$50–59,999	15	9
$60–69,999	9	5
$70–79,999	10	6
$80–99,999	12	7
$100–119,999	14	8
$120–199,999	15	9
$200–499,999	10	6
$500,000 or more	1	1
Party identification (*N* = 185)		
Democrat	101	55
Independent	49	27
Republican	28	15
Other	7	4
Ideology (*N* = 179)		
Very liberal	44	25
Liberal	43	24
Moderate	58	32
Conservative	19	11
Very conservative	15	8

'Prefer not to say' responses ($n = 18$) removed from family income results; 'not sure' responses removed from party identification ($n = 3$) and ideology ($n = 9$) results.

number of themes selected for presentation by researchers (Braun and Clarke, 2013).

To begin, we cleaned data using the Oxford English dictionary's (OED) *motive* definition[6] and removed accounts if participants did not detail a motive, or the answer was unclear. For example, in relation to the question that asked participants to explain wanting to actively avoid hearing about an environmental issue, this participant's response did not detail an IA motive: "Mother Nature needs to be kept clean!! Rivers, and all of nature!" (136)[7]. This left us with a sample of $n = 188$. Next, we developed a framework to undertake our analysis. Frameworks identify descriptive ideas about what it is that will be analyzed, and ours focused on IA motives, again based on the OED definition (Ritchie et al., 2013). We then undertook open coding, developing descriptions from participants' words and experiences, making sure each response was attended to. We used tools like memoing and discussion to compare our perspectives, ensuring crystallized descriptions (Miles et al., 2018; Tracy, 2019). After developing these open codes, we merged them into dimensions, representing a descriptive underlying meaning, and then arranged them into themes (Ritchie et al., 2013). This iterative process involved reviewing the dimensions, discussing them, and consulting literature until we developed themes in a codebook that covered all participant accounts (Ritchie et al., 2013). We then independently coded the accounts using our codebook, indicating multiple themes in accounts that warranted them (Ritchie et al., 2013). Exemplars were then chosen to represent the themes.

Rigor in the study was guided by Lincoln and Guba's (1985) concept of trustworthiness. Credibility refers to confidence the

6 Motives were defined as a "A circumstance or external factor inducing a person to act in a certain way; a desire, emotion, reason, argument, etc., influencing or tending to influence a person's volition. Also: a contemplated end the desire for which influences or tends to influence a person's actions." (Oxford English Dictionary).

7 We provide numbers in parentheses to differentiate participants' responses from others.

analysis emerges from the data, and transferability denotes describing the study clearly so it can be applied elsewhere. Credibility and transferability were supported by activities such as using several researchers for analysis, providing detailed exemplars, and purposive sampling (Guba, 1981; Lincoln and Guba, 1985).

3.3 Environmental issues

Our second question solicited the environmental issue participants had associated with their IA motive. It was a question with closed categories, ranging from global warming to depletion of natural resources as well as an open-ended 'other' category. 29 of our participants indicated the issue was 'other'. To code these inductive 'other' responses, we also undertook a coding process, similar to that detailed above, with these open ended responses. Such responses ranged from "All of the above" (23) to "Destruction of wildlife" (31). Overall, we identified twenty-nine 'other issue' themes (see Table 3).

4 Results

4.1 Environmental IA motives

In research question one, we asked what our participants' motives were for environmental IA. We identified 7 major avoidance motive themes: mood management; agency concerns; information exposure; hazard perceptions; relationship frames; information credibility; and specific topics. Below we describe each theme; additional exemplars can be found in Table 4.

4.1.1 Mood management

This theme described what occurred when participants used avoidance to manage their feelings. Participants described both emotional valence and arousal. For example, valence ranged from positive, described as '…good thoughts…'(32) to negative, such as one participant stating "Sometimes I just do not want the doom and gloom. It can be depressing to read about that all the time" (117). Arousal ranged from low levels [described as '…being upset…' (185)] to high levels [such as being '…overwhelmed…'(12)]. As one participant with high arousal stated "I cannot pinpoint it but it's definitely happened multiple times. It's almost like an impending doom feeling that sometimes I just cannot handle" (152). In addition to addressing their own valence or arousal, participants also referenced how mediated or interpersonal messages felt. For example, referring to the valence of mediated messaging, one participant noted, "You often see negative things in the news like forest burning and the garbage in the oceans. Its emotionally negative to always hear about all the bad news" (20) while another participant, referring to arousal regarding interpersonal messages noted, "Sometimes it gets overwhelming and I need to decompress before continuing the conversation" (69). These motives seem similar to mood management, a coping behavior to regulate one's

TABLE 3 'Other' issue themes.

Identified theme	Definition	*n*	%	Representative Quote
More than one issue	This issue occurs when participants indicate that they are concerned with multiple environmental issues. These may include all of the environmental issues mentioned in the question via an answer that states 'all' or more than one issue, as in the statement 'most of them'	12	41	"All environmental issues"(63)
Biospheric issues	This issue occurs when participants indicate that they are specifically concerned about biospheric referents. This therefore appears to be a representation of biospheric environmental concern values. Environmental concern values represent "the importance of valued objects" and there are three: concern for the self, others and the biosphere (Schultz, 2001, p. 328). Biospheric concerns represent attention to "plants and animals" (Schultz, 2001, p. 327). Participants expressed this issue by mentioning animals (i.e.: 'wildlife') and plants (i.e.: 'forests').	7	24	"Animals dying or going extinct" (21)
Behaviors from individuals or corporate entities	This issue occurs when participants indicated behaviors from others or corporate entities were the issue that they thought of regarding avoidance. These behaviors range from others denying climate change to inaction by polluting organizations.	4	14	"Lack of action from major polluters"(129)
Unclear	This issue occurs when the participant's response is unclear or incomprehensible in relation to an environmental issue.	3	10	"All but I do not know if it's a problem. Cuz it's cool I can. Whatevs" (194)
None of the above	This issue occurs when the participant indicates that none of the issues were what they were speaking about, but does not clarify what they were speaking about.	1	3	"None" (18)
Water issue – other	This issue occurs when the participant indicates that it's a water issue other than water pollution.	1	3	"Local water issue" (11)
Waste issue – other	This issue occurs when the participant indicates that it's a waste issue other than the one described.	1	3	"Different waste" (44)

TABLE 4 Additional theme exemplars.

Themes and subthemes	Sample responses
Mood management	
Valence	It gets depressing sometimes (17).
Arousal	There have been times when news is overwhelming and I avoid it by ignoring it (190).
Agency concerns	
Capability	Hearing about these issues makes me feel helpless and causes feelings of anxiety (75).
Response efficacy	Sometimes the narrative is overwhelming. Although we do a lot within our household, our efforts seem futile. I am scared for my children's future (46).
Information exposure	
Overload	I hear about it any day (100).
Chronic message fatigue	Don't want to just keep hearing the same thing over and over (25).
Specific topics	
	Sick of all the global warming hoopla (154).
Hazard perceptions	
Perceived severity	I do not like to hear about the environment being destroyed in some way (88).
Perceived susceptibility	I get tired of hearing how we are destroying our eco-system. This is obvious because of the intense weather we've been having in recent years and up to this day. I'm not an environmental fanatic, but I'm concerned about how we care for our environment (105).
Time orientation	Sometimes I choose not to hear about a situation because it makes me nervous for the future (65).
Environmental concern values	Sometimes the degree of suffering, particularly wildlife injuries, death, and extinction is too much for me and I can't take seeing it (31).
Relationship frames	
	If a person goes on and on and really doesn't want to hear someone else's opinion. That is why I wanted to actively avoid hearing this! (197).
Information credibility	
Message credibility	It all depends on if they are talking about and showing you a good explanation (44).
Source credibility	Basically most sources of so-called information about environmental issues are socially or politically motivated, and NOT scientifically accurate. When a piece of information seems intended to benefit an individual or business and my perception or opinion about them, particularly without providing citations or references, I find it incredulous and offensive and therefore I want to skip, ignore, or somehow move past it (165).

mood by attending to both emotional valence and arousal (Zillmann, 1988).

4.1.2 Agency concerns

Our participants expressed agency motives by assessing their own and others' perceived capability to address environmental issues, as well as whether they thought their efforts or those of others would result in consequential change. These motives seem to align with capability and response efficacy at different levels; definitions and exemplars for these levels are found in Table 1.

Turning first to capability, participants described a range of perceptions. For example, here a participant refers to their capability motivating IA: "If I'm doing all I can, there's not much use in getting stressed about it" (169) while another participant described how *incapability* perceptions motivated IA: "Sometimes the issue is to [*sic*] depressing because I know I cannot do anything to help or prevent it. I try to avoid or pretend it's not happening…" (126).

In addition to differing capabilities, participants also ranged in response efficacy, from not thinking that their own or others' actions would be consequential to thinking that they would be. For example, here one participant used IA to ensure their actions felt consequential:

> I do what I can to help, i.e., recycle, reduce consumption, eat less meat … anything a single person can do so listening to more bad news that is out of my control only makes my life worse. I'm doing what I can and I need to not feel like it's all meaningless and for nothing (109).

On the other hand, participants often described the perceived inconsequentiality of their actions as a reason for avoiding information:

> …I get sick of hearing things that I have little control over. Yes, I can make small changes in my own life but cannot change the overall picture. I have been recycling since the 60s, always purchased cars for their mileage and emissions ratings, purchased one of the first hybrid cars, etc. and am so, so tired of being responsible for everyone who chooses to keep their heads in the sand (164).

4.1.3 Hazard perceptions

Participants often appeared to perceive environmental issues as hazards motivating IA – that is, threats to themselves and what they valued (Paek and Hove, 2017). Our sample focused on how severe the threat was, as well as susceptibility, the timing of the threat, and who the threat was directed at. Threats in the literature are often defined in

terms of perceived severity and susceptibility: perceived severity refers to beliefs about how serious the threat is, while perceived susceptibility refers to perceptions about one's odds of experiencing a threat (Witte, 1992). Accordingly, participants ranged in how severe they perceived environmental threats to be, describing them as less severe '… problems…' (49) to more severe 'environmental disaster(s)' (39; 79) and 'destruction' (19) scenarios. Discussion of severe harm was common; as an example, one participant noted an avoidance motive as "catastrophe burnout" (11), while another stated, "I cannot bear to think about death of so many individual animals due to fires, ocean temperature rise, etc. Let alone species extinction" (60). Our participants were also motivated by perceived susceptibility, ranging from being sure to unsure about their vulnerability to environmental hazards. One participant described their surety about not being vulnerable this way:

> During the summer months here in CO, the last few years have had a lot of forest fires, some very near to where I live. There were definitely times when I knew that a particular fire was not threatening to myself, my house or work that the information stream was overwhelming, and I needed to turn it off, even though I knew that the situation was dire for others (58).

On the other hand, participants also described being unsure about their vulnerability, as expressed by this participant: "Sometimes it's scary or overwhelming to hear about the demise of the planet, and I wonder if it's being overblown, and why we do not hear from the scientists that denounce climate change" (145).

In addition to perceived severity and susceptibility, participants ranged from current to future hazard time orientation; here a participant discussed future hazards: "There are times when the weight of it all feels like too much. I do not think we are doing enough to stop global warming, and I worry what the future will look like for my kids" (127).

Finally, participants ranged in who they considered to be under threat. For example, here a participant referenced themselves as under threat: "Sometimes it's all bad news and I'll tune it out for my mental health…" (33).

On the other hand, many participants referred to other referents – both human and non-human - as motives: "Sometimes I'm just not in a place where I can hear about harm coming to people or animals" (196). This motive appears similar to environmental concern values which represent three types of valued referents – concern for the self (egoistic); others (altruistic); and concern for animals, plants and ecosystems (biospheric) (Schultz, 2001).

4.1.4 Relationship frames

Relationship frames represent cognitive schema about the qualities of relationships (Solomon and McLaren, 2008), and our participants appeared to use dominance-submission and affiliation-disaffiliation frames, indicative of relational framing theory (Solomon and McLaren, 2008). Dominance-submission "…refers to the degree to which someone controls, influences or has status over the other," while affiliation-disaffiliation "…captures the appreciation, esteem, or solidarity one person has for the other" (Solomon and McLaren, 2008, p. 3).

Participants described others who were communicating about environmental issues as unlikable and/or as overbearing, suggesting disaffiliation and dominance frames. Here, a participant described their dislike: "I have heard enough from and seen enough of Greta Thunberg to last a lifetime. Not impressed" (2). Another participant detailed overbearingness: "It's not any specific environmental issue--it is people who just will not let it go. It is people who carry on and harass people if they do not shore {*sic*} their feelings" (177). Notably, our participants did not use affiliation or submission frames of others as IA motives.

4.1.5 Information exposure

Participants often referenced information exposure as an IA motive. Many participants described the volume of information and messages about environmental issues as excessive: as one participant stated, "Sometimes it's just too much information, too sad, and I'll change the channel or move a conversation in another direction to avoid the topic" (132)." Many participants also referenced the repetitive nature of environmental information to which they were exposed: "Sometimes you hear about the same issues over and over and over. The content remains the same just a different talking head" (67). They detailed being tired and bored by such information: "I'm at the point where I'm tired of hearing about almost all issues. Especially the same old talk," (194) and "It's boring" (5). These four factors together comprise chronic message fatigue: "…an aversive motivational state of being exhausted and bored by overexposure to similar, redundant messages over an extended period of time" (So et al., 2017, p. 10). However, some participants only discussed being overexposed to information without qualifying it further, such as this participant: "Sometimes you get so much over load on an issue you just want to turn it off" (107). We must therefore consider that without those other chronic message fatigue factors, expressions of *only* overexposure mean those participants may be experiencing other information exposure phenomenon, such as information overload, which refers to being overwhelmed by information volume (So et al., 2017).

4.1.6 Information credibility

Participants referred to assessments of whether information was credible as an IA motive, and focused on both the information content and who the information was coming from. Content was assessed by participants using criteria such as accuracy, sufficiency, disinformation, and argumentation quality. For example, as one participant using accuracy and disinformation criteria stated:

> There are some arguments that are outright lies and I refuse to listen to the pseudo-science to fill an agenda. I do listen to arguments that inform, and are supported by factual data not contrived data (183).

Regarding information sources, participants ranged in referring to those external to themselves via mediated and interpersonal channels, as well as themselves as an information source. When assessing others as credible sources, participants used a range of assessment criteria, from ideology to beliefs to accuracy to disinformation to education levels. For example, as one participant using education criteria noted:

> When speaking to someone who I deem is uneducated about environmental issues or is only sharing information based on what they skimmed over in social media, I tend to steer the

> conversation in a different direction mainly because I do not want to listen to their ignorance (36).

On the other hand, participants who spoke of *themselves* as sources often referenced their belief in their knowledge or information salience as assessment criteria. For example, as one participant noted: "I know about the environmental issues facing us today and I do my part to try to help. I do not need to hear about something I already know about" (37). These different foci on content and source credibility appear like the concept of information credibility, defined as "…the believability of a source or information…evaluated at the medium, source and message levels" (Metzger et al., 2020). Occasions when participants assessed *themselves* as credible sources appear similar to the concept of epistemic authority, in which the self is considered a reputable source in source credibility decisions (Kruglanski, 2012).

4.1.7 Specific topics

Participants sometimes referred to a specific topic as a reason in and of itself for avoiding environmental information, and topics ranged from climate change to mining. As an example, one participant noted: "We all have tried to hide our heads in the sand at one time or another. Especially [*sic*] concerning the ozone layer and coal mining" (81). Such a statement is reminiscent of recent findings from Link (2024) that specific topics themselves induced IA, e.g., that information on disease-states was typically avoided, but other health related information was not.

4.2 Environmental issues associated with IA motives

Our second research question asked what issues our participants associated with environmental IA motives. We found that participants were most motivated to avoid information pertaining to issues of climate change, waste, and natural resource depletion, in that order (see Figure 2 for more detail). We also investigated and analyzed the issues that participants detailed under the 'other' category; we identified several other environmental issue themes from those accounts (see Table 3).

5 Limitations

There are several limitations in this study. First, the study relied on self-reported recall, which means that participants might have only remembered IA that was salient due to strong emotional arousal (Niederdeppe, 2014), and we acknowledge that this could be a study limitation. Relying on self-reported recall could be why IA motivated by mood management was a key theme – the strong arousal may have been more memorable than another motivated, but less arousing, IA experience. Future studies could instead use a diary design; this would see participants note down any motives whenever they occurred, obviating emotional effects on recall processes, and ensuring that 'mundane' IA is also accounted for (Broekhuis et al., 2022; Narayan et al., 2011).

Second, while we investigated key environmental issues, these findings are only applicable to our participants. Therefore, researchers who want to examine issue importance and prevalence in relation to IA will need to further investigate specific populations of interest (such as those non-involved in environmental issues) and with tools that can assess participants' importance perceptions (such as Q sorts - see for example Webler et al., 2009) or the prevalence of such issues (such as surveys).

6 Discussion

We asked what motives were used for environmental IA among those highly involved in environmental issues and found a wide range among our participants. Using the PRIA as a basis of comparison, these identified motives contribute to the field in several ways. First, to our knowledge they represent the first attempt to inductively

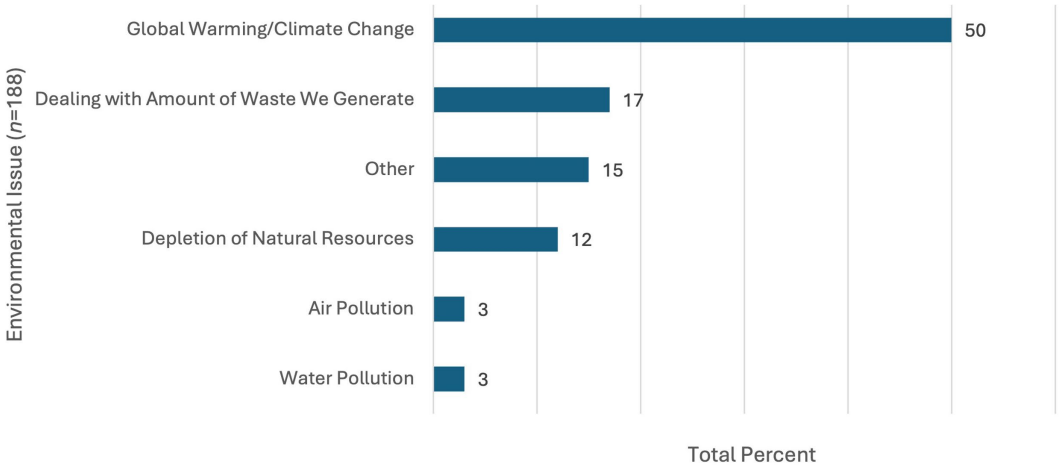

FIGURE 2
Frequency of participants' environmental issues associated with information avoidance.

investigate people's environmental, as opposed to health, IA motives. These findings are timely given recent research showing differences in IA factors and relationship strength in health versus environmental contexts (Liu and Chen, 2024).

Second, this study provides an incremental contribution to developing a more robust array of potential environmental IA factors than we have now, derived from people's lived experiences, reducing the risk of ethnocentrism errors and increasing the probability of explanatory power in theoretical development. Specifically, we identified environmental IA motives that are still relatively underexplored and/or unidentified. We suggest that they be used to initially expand the PRIA's categories and factors in relation to environmental IA, prior to further theoretical development activities (see Figures 1, 3).

Our third contribution concerns how some identified motives suggest boundary conditions for the PRIA when dealing with environmental issues. Further investigations that confirm these boundaries can enhance the subsequent predictive power of future environmental IA studies. Finally, we asked what environmental issues elicited IA motives for our participants; this identification provides a basis for more targeted environmental IA investigations in the future.

To structure our discussion, we first turn to the research implications of under/unexplored environmental IA factors to date, then suggested boundary conditions, and identified environmental issues. Finally, we address how these initial results can inform communication practice.

6.1 Under/unexplored factors

McPhee and Poole (2016) state that one of the reasons for developing pre-theoretical models and then working to elaborate them, as we do here, is to distinguish underexplored and previously unidentified factors that relate to the phenomenon of interest. Doing so provides a more varied array of factors, increasing the likelihood of identifying and employing factors strongly pertinent to IA (Lee, 1991). We identified motives suggestive of three such factors: information credibility, relationship frames, and emotional arousal. We detail them below and suggest potential future research specific to each of them.

6.1.1 Information credibility

Our participants were motivated by information credibility assessments to avoid information. Research in IS shows that information characteristics are an important factor for understanding that information behavior (Ou and Ho, 2022), and this motive seems to indicate the same importance in relation to IA. In risk communication, when credibility research is studied with models like the RISP, it is often subsumed under a factor called *relevant channel*

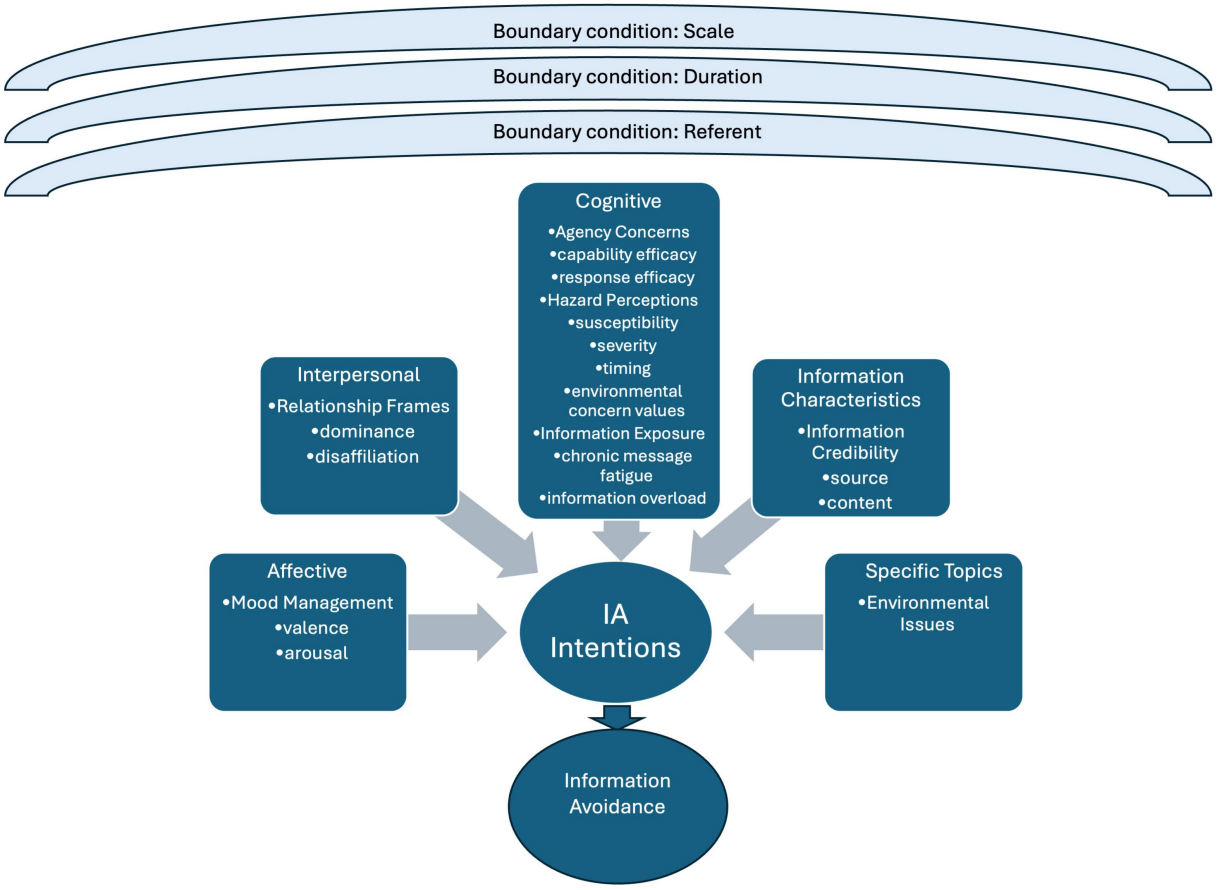

FIGURE 3
Environmental information avoidance motives and boundary conditions.

beliefs that appears to focus on medium credibility (Griffin et al., 1999; Hwang and Jeong, 2020; Metzger et al., 2020). These beliefs represent holistic assessments of information providers, ranging from doctors to TV programs, and are among the least studied factors in both RISP and PRISM research (Yang et al., 2014, 2022). Yet, the emphasis people placed on credibility in this study, as well as in other exploratory health studies (Barbour et al., 2012; Link, 2024) speaks to the importance of this concept to IA.[8] Recent research supports this significance, at least in relation to IS – health meta-analyses have found that information factors exhibited larger effect sizes on IS than cognitive or affective factors (Ou and Ho, 2022; Wang et al., 2021). Given these findings in relation to IS, mentions of it in exploratory health IA studies, and our participants' use of the factor, we suggest that information credibility therefore be added to the PRIA under its own category of Information Characteristics. IA researchers could use this factor to push the field forward, for example by investigating if IA credibility standards differ from IS standards, and the importance of those standards to different audiences.

Considering information characteristics also opens opportunities to consider IA relative to the news media. Today's media environment, with its proliferation of social media platforms and personalized algorithms has changed audiences' news practices (Swart, 2021; Toff and Nielsen, 2018). One way to reflect on these changes is by considering active versus inactive information engagement and IA.

According to media scholars, in the 20th century direct discovery was afforded by practices like watching TV broadcasts or reading newspapers, where people actively engaged with information directly from publishers. In contrast, the 21st century is characterized by distributed discovery, where digital intermediaries between publishers and audiences occur in the form of search engines and social media (Toff and Nielsen, 2018). In these environments, information is frequently curated by information proxies, such as algorithms (Stoldt et al., 2023; Swart, 2021). Using these proxies seemingly represents a degree of divestment from active information engagement (Swart, 2021). An example is the 'news finds me' (NFM) phenomenon, which refers to the belief that direct news engagement is unnecessary because exposure to news through ones' peers and platforms is sufficient (Toff and Nielsen, 2018). It is composed of three factors: a belief that one is adequately informed about public issues; a reliance on peers and platforms for news updates; and a corresponding belief that one has little need for active news engagement (Skurka et al., 2023b; Song et al., 2020). NFM is on the rise – recent research shows roughly over 1/3 of Americans hold the perception, and it has been studied as a form of IA (Gil de Zúñiga et al., 2020; Toff and Nielsen, 2018). How might considering distinctions between active and inactive information engagement inform our understanding of IA moving forward? Below we reflect on this question in relation to another information behavior, inertia (inaction in service to the status quo; Polites and Karahanna, 2012), and by conceiving of NFM as a process.

Turning first to information behavior, we recognize that active information engagement is a fundamental assumption of IA conceived of in the PRIA, given its theoretical roots in 20th century theories and models, like the RISP (Deline and Kahlor, 2019). Given NFM is a form of distributed discovery, associated with divestment from active information engagement via information proxies, we therefore question whether we should consider NFM as a form of active avoidance, or a related concept: inertia. Two NFM characteristics seemingly support an inertia classification: passive exposure and information proxy use.

The first factor, passive exposure, described as 'ambient news', occurs when one is exposed to information while doing other things on social media (Toff and Nielsen, 2018). Such exposure is also defined as information scanning – "…information acquisition that occurs within routine patterns of exposure to mediated and interpersonal sources…" (Niederdeppe et al., 2007, p. 154). This non-intention to engage with information one is exposed to seems similar to inertia's 'inaction'. The second factor aligns with Franklin's (1999) observation that technology is a practice, and the status quo practice designed into social media platforms and personalized algorithms is a seeming divestment of active information engagement to information proxies who provide a steady stream of curated and personalized information for one to be exposed to Swart (2021). Actively engaging with information by avoiding information that one is motivated to avoid (IA) is a different practice than passively encountering information within one's news feed that can be ignored (inertia).

But it is also possible that suggesting NFM as inertia obscures different forms of avoidance *within* NFM stages. In other words, might NFM contain both IA and inertia behaviors? And if so, how do the behaviors inform each other through the process? For example, part of NFM implicitly includes the active choosing or installation of apps and/or peer networks, representing a form of initial active information engagement with an information proxy (Barnidge and Xenos, 2024; Schäfer, 2023). If so, are source credibility considerations part of this process? Do people avoid certain platforms or peer networks? If they do, how and why do they do so? Further questions could examine whether proxy avoidance increases or decreases subsequent perceptions of quality or accuracy in the information one is exposed to. Considering IA relative to these factors can further inform explanatory and predictive power of the concept, as well as sharpen our understanding of distributed discovery processes like NFM moving forward.

Finally, information credibility could also be used to explore uneven findings in relation to other cognitive IA factors, such as efficacy. For example, one question potentially fruitful for future research would be whether, and if so, how, low information credibility assessments were related to collective response efficacy as an IA motivator. This is because collective response efficacy relies on perceptions of collective agreement levels, in this case, about whether the collective behavior will result in meaningful action (Koletsou and Mancy, 2011). However, perceptions of social agreement can be inaccurate, as discussed in literature discussing theories ranging from co-orientation to pluralistic ignorance (Geiger and Swim, 2016; Leong et al., 2007; Mildenberger and Tingley, 2019). It therefore seems reasonable to question whether credibility assessments might affect not only the trustworthiness of information about environmental issues, but also perceptions of collective agreement. For example, if I do not consider the environmental information I'm exposed to as credible, perhaps that credibility assessment spills over to perceptions that levels of collective actions in response to the

8 Barbour et al. (2012) appears to refer to credibility in his study as 'managing flawed information' (p. 219); Link (2024) does not detail credibility as a finding in and of itself, but instead relays participants' descriptions of "rat[ing] the trustworthiness of information…" in relation to information ignoring (p. 6).

environmental issue are also untrustworthy, decreasing my perception of collective response efficacy and further increasing IA. More research into these factor relationships through abductive research is warranted.

6.1.2 Relationship frames

The second unexplored motive we identified is relationship frames, which appears consistent with interpersonal relational framing theory (Solomon and McLaren, 2008). There are few studies that we know of pertaining to interpersonal communication within environmental communication, although a burgeoning field of work has experimentally examined a form of interpersonal communication, aggressive communication (see, for example, Yuan and Lu, 2020). In contrast to the environmental communication field, risk communication has addressed interpersonal factors more prominently with models such as the social amplification of risk, where social interaction increases or decreases perceived risk significance among laypeople (Kasperson et al., 1988; Rickard, 2011).

Given these findings and their potential relationship to how environmental risks are socially constructed through interpersonal communication (Cantrill, 2010) we suggest the inclusion of a new PRIA category – interpersonal factors, which would include relationship frames as an item for further investigation. For example, our participants who used these frames frequently referred to activists, consistent with other findings that environmental activists are often assessed as overbearing and unlikeable (see, for example, Klas et al., 2019). Future research could examine, for example, whether changes in levels of dominance or disaffiliation cues in activist messaging would affect IA.

Including relationship frames in the PRIA could also inform research in other environmental communication areas, such as environmental dialogue. Dialogue refers to developing shared understandings through communication processes that foster openness and respect, making civility important (Black and Wiederhold, 2014; Gastil and Black, 2018). Civility is often expressed through interpersonal communication norms – such as not interrupting others, or not using offensive language (Bonotti et al., 2024). Yet there are two major understandings of civility and we wonder whether, and if so how, misunderstandings about parties' conceptions of civility could affect environmental dialogue.

For example, one understanding of civility appears to be at the individual level, where politeness norms are enacted in service of tolerance - a basic acknowledgement of others as social actors that we exist with (Bardon et al., 2023; Bonotti et al., 2024). Bardon et al. (2023) call this *civility as politeness*. Another understanding is of civility at the community or social level, where civility is understood as a collective, civic goal of recognizing others' moral worth (Bardon et al., 2023; Bonotti et al., 2024). Bardon et al. (2023) call this *civility as public-mindedness*. Those who hold this second understanding of civility sometimes enact strategic incivility – called *critical impoliteness* – to secure public-minded civility (Bonotti et al., 2024). As Bonotti et al. (2024) note, "Grassroots movements…may sometimes need to employ impolite means in order to advance their public minded goals" (p. 8). However, this understanding of critical impoliteness, vis-a-vis dominance or disaffiliation behaviors, might not be shared with social actors like our participants. Instead, actors might instead ascribe an individual lens to these actions, and see critical impoliteness as violating basic acknowledgements of people as social actors, motivating their IA.

If this is the case, it might suggest a context of false consensus – where advocates and activists assume audiences, like our participants, share their conception of impoliteness as needed for the greater good of public-minded civility, but in fact this shared understanding is false (Leong et al., 2007). If this is the case, potential remedies could include efforts to correct civility misperceptions through activities like facilitated dialogues and workshops (Leong et al., 2007). Considering how relationship frames and civility operate relative to environmental dialogue and IA could therefore be a potentially fruitful avenue for research moving forward.

6.1.3 Emotional arousal

The last motive we address here, emotional arousal, is not new to the PRIA but is underexplored, represented in the PRIA with the *affective response* factor (Deline and Kahlor, 2019). We do not know much about arousal in relation to IA, providing a generative research gap. For example, traditionally RISP and PRISM studies have focused on valence to the exclusion of arousal, but a significant body of research suggests such uni-dimensional approaches limit our understanding of the full(er) extent of how emotion influences IS and avoidance behaviors (Hmielowski et al., 2019; Myrick and Nabi, 2017). As an example of such limitations, a recent IA metanalysis showed that negatively valenced emotions were differently related to IA, with anxiety positively related, and worry negatively related (Liu and Chen, 2024). These inconsistencies suggest additional emotional factors, such as arousal, be used to explain and predict IA relationships.

Future research could take a more comprehensive approach by using models that integrate the two factors: for example, the circumplex emotional model considers emotions to be governed by both valence *and* arousal (Leblanc et al., 2015; Russell, 1980). In this model, fear evinces high arousal and negative valence, while excitedness is comprised of high arousal and positive valence, countering the common misunderstanding that arousal necessarily equates anxiety (Burgoon et al., 1989) and paving the way for better understanding how a variety of participant experiences of arousal contributes to IA processes. For example, researchers could use the circumplex model to investigate the effects of both excitedness (positive valence, high arousal) and contentment (positive valence, low arousal) on IA (Russell, 1980).

6.2 Boundary conditions

We also identified three motives that appear to represent boundary conditions of scale, duration, and referents characteristic of features of the top environmental issues for our participants: climate change, waste, and natural resource depletion. These boundary conditions help us to understand which IA factors are likely to manifest in relation to the context, (i.e., certain motives, such as information exposure, might be elicited by the perceived duration of the climate change crisis, but not natural resource depletion). We describe these proposed boundary conditions below and provide suggestions for future research.

6.2.1 Scale

Our participants described multiple levels of response and capability efficacy motives, ranging from the self to proxies (see Table 1). This suggests participants perceived environmental issues to

be multi-scale phenomena, reflecting how such issues, like climate change, are conceived of in the literature (Koletsou and Mancy, 2011). This indicates that multiple levels of efficacy, from the self to governmental proxies be considered when dealing with multi-level environmental issues and IA (see Table 1). What little work we have on these factors' levels indicates more investigations are needed into issue scale in both environmental communication and IA research (Doherty and Webler, 2016; Koletsou and Mancy, 2011). For example, environmental communication research shows that collective efficacy is a stronger predictor than self-efficacy regarding pro-environmental behavior (Chen, 2015; Choi and Hart, 2021) and proxy efficacy - a belief that a third party's involvement is necessary to achieve one's goals - is perceived to be more effective at dealing with environmental issues writ large (Bostrom et al., 2019; Li, 2018). Establishing participants' perceptions of environmental issue scale therefore appears warranted to understand which levels of efficacy constructs might be at work. Pilot studies (commonly called elicitation studies in health communication: see Ajzen, 1991 and Niederdeppe et al., 2007) can be used for these purposes; to our knowledge, no such work to date in relation to environmental IA has occurred.

6.2.2 Duration

In addition to scale, one of our participants' motives – information exposure – represents their attention to issue duration and time, another boundary condition (Zaheer et al., 1999). Many environmental issues are labeled slow crises – that is, they extend over years (Lu, 2022). For example, toxic waste contamination is entrenched in communities of color in the US, a form of environmental racism (Bullard, 1993). Two of our participants' top three issues – climate change and waste – are of long duration and therefore factors such as chronic message exposure (Lu, 2022) and associated fatigue (So et al., 2017) would be fruitful concepts to consider in future research efforts, especially given our participants' references to chronic fatigue factors. Moreover, in addition to our findings on the topic, a recent inductive study on health IA identified two different types of IA based on temporal factors – a short term version to manage emergent emotions, and another related to what is perceived to be long-term threats (Link, 2024); in addition, recent deductive research shows fatigue's positive relationship to IA (Ford et al., 2022; Gurr and Metag, 2022).

Considering duration as a boundary condition in relation to IA will have practical benefits – for example, chronic message fatigue has been found to be harmful to laypeople's responsiveness to evolving environmental challenges (Siebenhaar et al., 2020) such as climate change (Lu, 2022), with the potential to hinder timely and effective mitigation and response. Future research could examine how IA is implicated in these relationships.

6.2.3 Referents

Participants attended to non-human stakeholders, which we suggest represents biospheric values – concern for animals, plants, and ecosystems (Schultz, 2001). Non-human referents are implicitly characteristic of natural resource depletion issues, one of our participants' other top three environmental issues. Additionally, non-human referents are not normally part of health communication discourse (Lapinski et al., 2023), which supports our contention that boundary conditions be examined for different communication spheres relative to the PRIA. To our knowledge, no work to date has examined these values in relation to IA.

6.2.4 Future research – boundary conditions

There are two major opportunities for future research associated with the boundary conditions suggested by these motives. The first approach is to consider which motives might be elicited by different boundary conditions, which can increase predictive and explanatory power. As de Young (2000) notes, there is no one motive that operates under all conditions; for example, proxy efficacy is not likely to be considered salient as an IA motive if the environmental issue is not perceived to be a collective level issue, requiring proxies' involvement. Likewise, chronic message fatigue is not likely to occur if the environmental issue is not perceived to be of long duration. This speaks to McPhee and Poole's (2016) assertion that theory development needs to consider context. Future research could map whether specific boundary conditions occasioned by different environmental issues might induce different IA motives.

Second, considering boundary conditions and the IA motives that they elicit can enrich our understanding of different IA processes (McPhee and Poole, 2016). For example, to our knowledge, no work has occurred on socio-cultural *values* in relation to environmental IA, however, our participants attended to biospheric referents as an IA motive, representing biospheric values (Steg and de Groot, 2012). Research links these values to environmental identification, which is a perception that nature is a part of who that person is (Clayton et al., 2021). It seems reasonable to suggest biospheric referents could therefore either evoke or signal environmental identification. If this were the case, threats to these species/ecosystems could constitute an identity threat that might be defensively avoided. Forwarding research in this way could contribute to bodies of environmental communication research. For instance, investigations into unexpected campaign effects on harm to animals to date has largely prioritized emotional factors (Lu, 2022; Swim and Bloodhart, 2015), but considering such effects through an identity based defensive avoidance process (see, for example, Braun and Niederdeppe, 2012) could broaden our understanding of the issue.

6.3 IA motive issues

Our second research question asked what environmental issues our participants referred to when experiencing IA. The top three issues for our participants were climate change, waste, and natural resource depletion. This slightly differs from the top three issues for Americans overall in 2020: climate change, waste, and air and water pollution (IPSOS, 2020). To our knowledge, this is the first study to identify which environmental issues are associated with IA motives, providing opportunities to investigate other participant samples (such as those *not* involved in environmental issues). We suspect, for example, that climate change will also be a top issue associated with IA for uninvolved audiences, but potentially with different IA motives. For example, Yale's Six America's project has developed and tracked American climate change segments, using involvement and attitudinal valence as segmentation factors (Chryst et al., 2018). Of their segments, those with low involvement are the 'cautious' and 'disengaged', currently representative of 15 and 6% of Americans in the latest report (Leiserowitz et al., 2023). Research from 2014 and 2021 shows that climate change is seen a 'distant' problem by these groups, and one where the Disengaged is largely unaware of how the risk relates to their family (Leiserowitz et al., 2021; Roser-Renouf et al., 2014). This suggests that their avoidance might be motivated by hazard perceptions, namely low perceived

susceptibility and a future hazard time orientation. Future research can investigate their motives, and comparing these findings will support future environmental IA segmentation efforts (Leiserowitz et al., 2021).

7 Implications for practice

In addition to advancing environmental IA theory development, our results have implications for communication practice, by providing initial direction to communication practitioners in areas such as segmentation and message development, as well as what environmental issues are likely to elicit IA behaviors. We turn to this latter concern first.

While research has identified the boredom Americans often experience in relation to ongoing climate change information (Lu, 2022), making such IA unsurprising, we *were* surprised to identify natural resource depletion as a topic strongly associated with IA for our participants. In fact, many campaigns have utilized resource threats to animals, endangered or otherwise, as a way to foster action on a variety of environmental issues (Aswad, 2019; Freeman and Zimmerman, 2022). We need more information on how IA operates in relation to this issue, for whom, its prevalence and importance. In the absence of such information, practitioners should consider our participants were often motivated to avoid information about this issue in relation to projected animal deaths. We therefore suggest that in light of this finding, practitioners should carefully consider campaigns that use messaging about animal deaths relative to resource depletion with highly involved Americans, as it may spark IA. More research is needed to provide more nuanced guidance on this issue in the future.

Regarding environmental issues writ large, to our knowledge this is the first research that has specifically asked Americans what environmental issues they are motivated to avoid information about, and while informative, our results are limited to our participants. Future survey research can assess which environmental issues are most likely to manifest avoidance intentions. The least prevalent issues could be used strategically by practitioners to reduce IA motives and subsequent IA behavior. For example, if I am developing an energy efficiency communication campaign, and choosing between framing the need for energy efficiency as resulting from climate change *or* air pollution, knowing which issue results in less IA activation can inform strategic messaging choices.

Turning from environmental issues to audience considerations, practitioners can use these motives to segment (i.e., identify) communication audiences (Slater, 1996). For example, a reasonable next step would be to undertake importance and prevalence assessments of these motives relative to different environmental issues. Importance assessments can be investigated using Q-studies; once the importance of motives is determined, their prevalence can then be investigated through surveys (Webler et al., 2009) (This would provide an initial motive 'map' that could be used by communication practitioners to segment involved audiences based on their likely IA motives relative to an environmental issue) (To create a more fulsome map, future research could elicit and compare motives from moderately involved or uninvolved audiences). This exercise could also potentially identify motives common to groups regardless of involvement levels or environmental issues, suggesting that they cross-cut contexts. If such motives are identified, practitioners could include them with confidence in all of their communication design planning.

These segmentation efforts would organically lead to messaging considerations – practitioners could ensure that their campaign messaging did not elicit IA motives with those audiences, reducing the likelihood of IA. For example, for those motivated by information credibility, messages could ensure sources are perceived to be more credible, such as by using accuracy or education cues. In these ways, our results can inform initial communication design efforts with the promise of more directed applications in the future.

8 Conclusion

Given the nascent state of environmental IA research, this study utilized an exploratory, inductive approach to investigate how those living in the U.S. involved in environmental issues engage in IA. Results from qualitative survey data indicate how to expand the PRIA model (Deline and Kahlor, 2019) in relation to environmental IA to account for under/unexplored IA motives, including perceived information credibility, relationship frames, and emotional arousal. These results contributed to identifying potential boundary conditions for the PRIA in relation to environmental issues, including the perceived scale and duration of a given issue, and the centrality of non-human (i.e., animal) actors. Our results also illuminate environmental issues used to invoke IA, which differ slightly from those identified as most important to Americans in recent public opinion polling. By suggesting future directions for researchers (e.g., identifying which IA motive(s) align with which boundary conditions) and practitioners (e.g., segmenting audiences based on IA motives), this study can function as a useful roadmap outlining several avenues for future development of environmental IA.

Data availability statement

The datasets presented in this article are not readily available because the data is owned by YouGov. Requests to access the datasets should be directed to MB Deline, medelin@ilstu.edu.

Ethics statement

The studies involving humans were approved by Illinois State University Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because participants consented through a consent button in an on-line survey.

Author contributions

MBD: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing, Resources. LR: Writing – review & editing. MK: Formal analysis, Writing – review & editing, Writing – original draft. MA: Writing – review & editing, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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