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Angaben zur Veröffentlichung / Publication details:

Bilandzic, Helena, and Jessica Gall Myrick. 2024. "Information seeking and avoidance in the COVID-19 pandemic as a function of political ideology and national context: a survey comparing the US and Germany." Health Communication 39 (11): 2276–89.
https://doi.org/10.1080/10410236.2023.2263220.

Information Seeking and Avoidance in the COVID-19 Pandemic as a Function of Political Ideology and National Context: A Survey Comparing the US and Germany

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ABSTRACT

The COVID-19 pandemic sparked a globally heightened need for scientific information. At the same time, the abundance of information led to tendencies of media fatigue and information avoidance. Both information seeking and avoidance are embedded in a specific national context, in which conditions of and measures against the pandemic may differ dramatically. In addition, the pandemic quickly became entangled with political ideology. Using the Risk Information Seeking and Processing Model (RISP) as a theoretical background, we investigate the role of national context and political ideology for information seeking and avoidance in a comparative survey in the U.S. and Germany during the early phase of the pandemic. Results show that the factors predicting information behavior are effective in both countries with only few differences: In both countries, perceived hazard characteristics, information norms and perceived information gathering capacity were related to higher information seeking and lower information avoidance. Ideology too is an important influence: Right-leaning ideology was associated with lower levels of information norms in both countries; but only in the US was right-leaning ideology connected to less perceived hazard characteristics and less negative affective responses. Results are discussed regarding their implications for the RISP model.

When the new SARS-CoV-2 virus began its fast and devastating journey around the world, little was known about it. A sudden surge in news consumption (Nielsen et al., 2020) and an elevated demand for reliable information from professional journalists (Dreisiebner et al., 2022) at the beginning of the pandemic reflects the urgency people experienced to find valid information that could help them assess risks and plan actions. However, with an increasing amount of available yet complex information, audiences may eventually experience media fatigue (Yavetz et al., 2022) and be inclined to reduce their active intake of pandemic news so that they can avoid information overload (Link, 2021).

For health and science communication research, the COVID-19 pandemic presents a unique opportunity to study information seeking *and* avoidance in a situation of severe threat, especially since the global scale of the pandemic allows researchers to observe differences in information behavior between countries that pursued different strategies for dealing with the pandemic (e.g., Ahn et al., 2021; Kim et al., 2020). Being informed about the extent of the risk and the available protection measures is key to an efficient reaction and containment of the pandemic on a societal level. Thus, information behaviors can be considered a key starting point for any action on both individual and collective levels. Exploring the factors associated with information seeking and avoidance can inform us about what will either help or hinder pandemic containment. In times of crisis, having such knowledge readily at hand saves lives.

It also became clear from the very beginning of the pandemic that the health crisis had a strong political dimension (Kavanagh & Singh, 2020). Accepting and following the advice of scientists, health organizations, and public health professionals regarding protection measures and vaccination suddenly depended on political ideology (e.g., Albrecht, 2022; Cakanlar et al., 2022; Kiviniemi et al., 2022). Most notably, in different countries, political ideology became relevant for shaping the pandemic agenda and the presence of different types of COVID-related sources and information across media and social networks (see Cascini et al., 2022; Chen et al., 2021; Sun et al., 2021). Considering the role of political ideology for information behaviors can help locate the deeper roots of functional and dysfunctional processes. That is, if political ideology is a limiting factor for information seeking, the problem does not lie in the availability of information or understanding them. Instead, *resistance* to information becomes an issue, and it needs to be addressed by other means than increasing the flow of information. Investigating the national context allows us to test whether models of information seeking and avoidance are specific for one country or generalizable across several nations. The COVID-19 pandemic has created very different national prerequisites that make a cross-country comparison especially informative. With our study, we seek to address these questions about information seeking and avoidance and the interplay of political ideology in different national contexts.

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This study investigates factors predicting information seeking and avoidance across two countries: The U.S. and Germany. These two countries are apt for comparison as they each developed different strategies for dealing with the health threat of COVID-19 (Bergquist et al., 2020; Desson et al., 2020). We use the risk information seeking and processing model (RISP, Dunwoody & Griffin, 2015; Griffin et al., 1999) as a theoretical background, which details predictors such as the perception of threat, negative affective response, information norms, and perceived information gathering capacity for information seeking, and is ideally suited to explain information behavior in the pandemic (as a threat to health, implying urgent need to orient through information). We conducted a survey in those two countries and compared the relative contribution of the factors contained in RISP as well as the role of political ideology and national context in shaping information seeking and avoidance behaviors related to COVID-19 during the early phase of the pandemic. These early information use patterns are important as they likely contributed to habitual seeking or avoiding and helped shaped hard-to-change beliefs about the pandemic.

Risk information seeking and processing model

The risk information seeking and processing model (RISP) details predictors for information behavior (Dunwoody & Griffin, 2015; Griffin et al., 1999). These predictors include perceived hazard characteristics (perceptions of how serious the risk is), affective responses (generally negative emotions, like anxiety, evoked by the risk), informational subjective norms (social expectations for keeping informed about a certain risk topic) and perceived behavioral control (perceived information gathering capacity). The gap between perceived knowledge levels and desired knowledge levels is labeled "information insufficiency:" the larger the gap between actual knowledge and desired level of knowledge, the more probable is information seeking and the more probable is more systematic (rather than heuristic) processing (Dunwoody & Griffin, 2015). In the RISP, all factors predict information insufficiency, which serves as the sole direct predictor for information seeking and processing.

The RISP model has already been applied multiple times to explain information seeking and avoidance during the COVID-19 pandemic. Zhou et al. (2021) showed that RISP variables explained more than two thirds of the variance in information seeking, and about a third of the variance in information avoidance. The negative affective response of fear, information insufficiency, and channel beliefs were strong predictors of information seeking, while information insufficiency and channel beliefs (but not fear) were strong predictors of information avoidance.

Other work also tested and found support for various predictions of the RISP model. For instance, survey research using U.S (Huang & Yang, 2020), Chinese (Zhao & Liu, 2021; Zhou, 2021), and multi-country (Kim et al., 2020) samples found additional support for stronger risk perceptions predicting greater COVID-19-related information seeking. Additionally, the positive relationship, predicted by RISP, between affective responses (largely negative ones) and COVID-19-related information seeking was also supported in U.S (Huang & Yang, 2020; Yang, 2021; Zhou et al., 2021), Chinese (Li & Zheng, 2022; Zhao & Liu, 2021), and multi-country (Kim et al., 2020) samples. Similarly, the positive link between informational subjective norms and COVID-19-related information seeking was found in studies with U.S (Yang et al., 2022), Chinese (Li & Zheng, 2022), and multi-country (Kim et al., 2020) samples.

Understanding the predictors of information avoidance, in particular, is crucial in the modern context of understanding information-related behaviors around deadly threats since audiences have many alternatives for their attention and time. Using a German sample, Link (2021) found that negative affective risk responses, avoidance norms, and perceived information overload predict avoidance. Qu et al. (2021) conducted a study focusing on social network factors and found that social norms predict information avoidance. In the study by Zhao and Liu (2021), information avoidance was positively predicted by perceived susceptibility and the emotion of anger. Kim et al. (2020) found that risk perceptions, informational subjective norms, and information insufficiency were negatively related to information avoidance.

Given that the bulk of COVID-19-related studies found general support for the RISP, we first seek to replicate the basic RISP model:

H1: (a) Perceived hazard characteristics, (b) negative affective response, (c) information norms, and (d) perceived information gathering capacity are positively related to perceived information insufficiency.

H2: Perceived information insufficiency is positively related to (a) information seeking on COVID-19 and negatively related to (b) information avoidance on COVID-19.

Beyond these basic tenets of the RISP model, we also seek to explore the role of information insufficiency which (in the RISP) serves as the sole direct predictor for information seeking and processing. While some studies have confirmed the centrality of information insufficiency (e.g., Yang & Kahlor, 2013), a meta-analysis could not find a significant relationship between information insufficiency and information seeking (Yang et al., 2014). In the context of COVID-19, research also found mixed results for information insufficiency. Yang et al. (2022) and Li and Zheng (2022) both found information insufficiency was positively related to COVID-19 information seeking, but Kim et al. (2020) found no relationship between information insufficiency and information seeking. Meanwhile, Zhou et al. (2021) found that information insufficiency was actually associated with greater avoidance of COVID-19 information. These results suggest that additional work is needed to better predict when a perceived lack of information motivates audiences to seek more information, do nothing, or even avoid it.

A model that allows RISP predictors such as affective response, information norms, and perceived information gathering capacity to predict information seeking directly *and* through information insufficiency, is the planned risk information seeking model (PRISM, Kahlor, 2010). PRISM

explains risk information seeking as deliberate behavior and integrates ideas from the theory of planned behavior (Ajzen, 1991) and RISP. It complements these constructs with other health-related behavioral models such as the extended parallel processing model (Witte, 1992). While most factors in the RISP model are also included in the PRISM, the main difference is that PRISM abandons the strict bottleneck of information insufficiency leading to information seeking. Given the evidence that information insufficiency may not be as central to information seeking as the RISP originally assumed (Yang & Liu, 2021), we adapt this theoretical idea, expand it to information avoidance as well: When people perceive the COVID pandemic to be more serious and have a negative affective response to it, they should try to find more information that helps them to make sense of the threat and to determine what exactly is dangerous and what is not. Conversely, information avoidance should be reduced. Likewise, pressure from one's social group to keep informed (information norms) and the conviction that a person is able to find usable information (perceived information gathering capacity) should also be associated with more information seeking and less avoidance, as people feel more motivated and competent to actually find answers to their questions. Thus, we set up the following hypotheses:

H3: (a) Perceived hazard characteristics, (b) negative affective response, (c) information norms, and (d) perceived information gathering capacity are positively related to information seeking.

H4: (a) Perceived hazard characteristics, (b) negative affective response, (c) information norms, and (d) perceived information gathering capacity are negatively related to information avoidance.

The role of national context and political ideology

Information seeking and avoidance in the COVID-19 pandemic – a highly politicized and global issue – is likely to also depend on factors that are not specifically related to health. The RISP model has anticipated a non-health factor – political ideology – to be influential for health information behaviors. This is especially relevant for the COVID-19 pandemic since the recognition of the threat and compliance to state-mandated measures were divided across political camps from the very beginning – in some countries more, in some countries less. But it is not only ideology that may be differently influential in different countries; nations managed the crisis in diverse ways, which may have modulated the effectiveness of the RISP factors. To account for the specifics of the COVID-19 pandemic, we include national context and political ideology as potentially important non-health-related factors and explain them below.

National context

As a global phenomenon, COVID-19 has reached all countries worldwide, presenting them with a severe health crisis and its citizenry with the need to seek for information. At the same time, countries dealt with the health crisis in different ways, potentially also affecting the ways in which people think about the pandemic and seek information about it. There is some evidence that media are used differently for information on COVID in different countries and that there are differences between countries in how media use is related to the adoption of protective measures (e.g., for the US and China: Sun et al., 2021). Ultimately, the question of national context concerns how generalizable the RISP model is. If there are differences in the factors that predict information behaviors, we may need country-specific RISP-variations. If not, the model is valid across different national contexts.

Nonetheless, there are surprisingly few studies that compare the validity and strength of RISP predictors across different national contexts. In one of the few studies, Kim et al. (2020) found evidence of cultural differences across a number of RISP-related variables in South Korea, Singapore and the U.S.: In Singapore, risk perception concerning COVID-19 and informational subjective norms were lower compared to the U.S., while in Korea affective response was greater and informational subjective norms were lower compared to the U.S. Information insufficiency predicted information seeking only in the U.S. sample (and not in the Singapore and South Korea sample), while it predicted information avoidance both for the US and the South Korea sample (and not the Singapore sample). A different analysis of the same samples also revealed differences in negative emotions: Compared to South Korea, levels of fear, anger, sadness, and anxiety were lower in the U.S. and Singapore (Ahn et al., 2021).

In the present study we compare two countries, Germany and the U.S. Early in the pandemic, Germany introduced and enforced, nation-wide social distancing, restaurant and store closures, mandatory mask use in public space, and expanded ICU capacity to treat COVID patients, resulting in comparatively low infection and mortality rates (Desson et al., 2020). The U.S. response, in contrast, was characterized by a decentralized approach, in which the states mandated measures for containment; throughout the process, there was constant political and social pressure to re-open the economy and lift restrictions (Bergquist et al., 2020) as well as conflicting messages from health officials and politicians (Huberfeld et al., 2020). This resulted in high infection and mortality rates compared to other countries, despite initially having a high capacity for outbreak response (Haeder & Gollust, 2020; Kavanagh & Singh, 2020). These differences in the two country's responses to the COVID-19 pandemic may influence all factors and outcomes of the RISP model; the direction of the difference is, however, unclear from both the national situations and the theoretical model, leading to a research question:

RQ1: What are the differences between the U.S. and Germany concerning RISP predictors (perceived hazard characteristics, negative affective response, information norms, perceived information gathering capacity and perceived information insufficiency) and outcomes (information seeking and information avoidance)?

Political ideology

There is already substantial evidence that people navigate the pandemic in different ways depending on their political ideologies. In the U.S., conservatives showed less concern and perceived personal vulnerability to the coronavirus, regarded it as less of a health risk than liberals (e.g., Calvillo et al., 2020), and supported fewer policies to reduce its spread (e.g., Raihani & de Wit, 2020).

In Germany, the role of ideology is less pronounced and less clear. There is evidence that right-leaning ideology fosters opposition to COVID-19 mitigation measures: People who lean toward the German right-wing AfD party are more likely to support protests against governmental COVID-19 protection measures (Politbarometer, 2020) – compared to all other parties, including the conservative ones. Dohle et al. (2020) found that conservative Germans were less likely to adopt protection measures both immediately after the first COVID-19 lockdown and one month after. Thus, we offer hypothesis for both countries:

H5: Right-leaning political ideology is related to lower levels of (a) perceived hazard characteristics, (b) negative affective response, (c) information norms, (d) perceived information gathering capacity as well as (e) perceived information insufficiency compared to left-leaning political ideology. Right-leaning political ideology is related to lower levels of (f) information seeking and higher levels of (g) information avoidance.

Further, we assume that information seeking and avoidance are indirectly influenced by political ideology through its effects on the predictors in the RISP model:

H6: The RISP predictors – (a) perceived hazard characteristics, (b) negative affective response, (c) information norms, (d) perceived information gathering capacity and (e) perceived information insufficiency – will mediate the effect between political ideology and information seeking.

H7: The RISP predictors – (a) perceived hazard characteristics, (b) negative affective response, (c) information norms, (d) perceived information gathering capacity and (e) perceived information insufficiency) – will mediate the effect between political ideology and information avoidance.

There is some evidence that ideology may be more important for U.S. residents than for other people in other countries. Jennings et al. (2020) found that ideological divides are especially pronounced in the U.S.: Democrats estimated the personal threat and the threat to the country posed by COVID-19 as higher than Republicans; Republicans, more than Democrats, perceived media reports on COVID-19 to be exaggerated. These gaps were much larger than the gaps between supporters of the government and opposition parties in the UK, Australia, and Italy. Thus, we ask a final set of research questions:

RQ2: Does country (U.S. or Germany) moderate the relationship between political ideology and (a) information seeking and (b) information avoidance.

RQ3: Is there a conditional effect of country (U.S. or Germany) on the relationship between political ideology and information seeking, mediated by (a) perceived hazard characteristics, (b) negative affective response, (c) information norms, (d) perceived information gathering capacity and (e) perceived information insufficiency.

RQ4: Is there a conditional effect of country (U.S. or Germany) on the relationship between political ideology and information avoidance, mediated by (a) perceived hazard characteristics, (b) negative affective response, (c) information norms, (d) perceived information gathering capacity and (e) perceived information insufficiency.

Together, our hypotheses and research questions add to the literature on information seeking and avoidance in the context of COVID-19 by both replicating previous work and adding additional predictors, both psychological and demographic, that can help explain mixed results in previous research. Building on these hypotheses, our overall model (see Figure 1) defines political ideology as an independent variable, the RISP predictors (perceived hazard, negative affective response, information norms, perceived information gathering capacity) and information insufficiency as mediators, and information seeking and avoidance as dependent variables. Country serves as a moderator. Below, we detail our methods for testing our assumptions.

Method

Sample and participants

Quota samples were drawn from the U.S. and Germany, with age (three equal groups: 18–35 years, 36–59 year and 60+ years), gender (two equal groups: male, female) and education (two equal groups: US: 2 years of college or less, 4 years of college or more; Germany: no degree for higher education, degree for higher education) serving as the quotas. The German sample ($n = 639$) was secured by the online access panel company Respondi from May 28 to June 7 2020. An institutional review board approved the procedure based on the U.S. version of the questionnaire. An online U.S. sample ($n = 601$) was drawn using the company CloudResearch (Litman et al., 2017) from May 18 to 20, 2020.[1] The questionnaire was developed in English and translated into German by one of the authors who is a native German speaker. To ensure the accuracy of the translation, two other researchers fluent in both languages separately checked the match of the German and the English versions.

The data were cleaned to eliminate cases of negligent or superficial responses, based on response times, missing cases, and comments that indicated lack of involvement with the study. The final sample included 1038 respondents (US: $n = 524$; Germany $n = 514$). Table 1 shows that, after cleaning, the

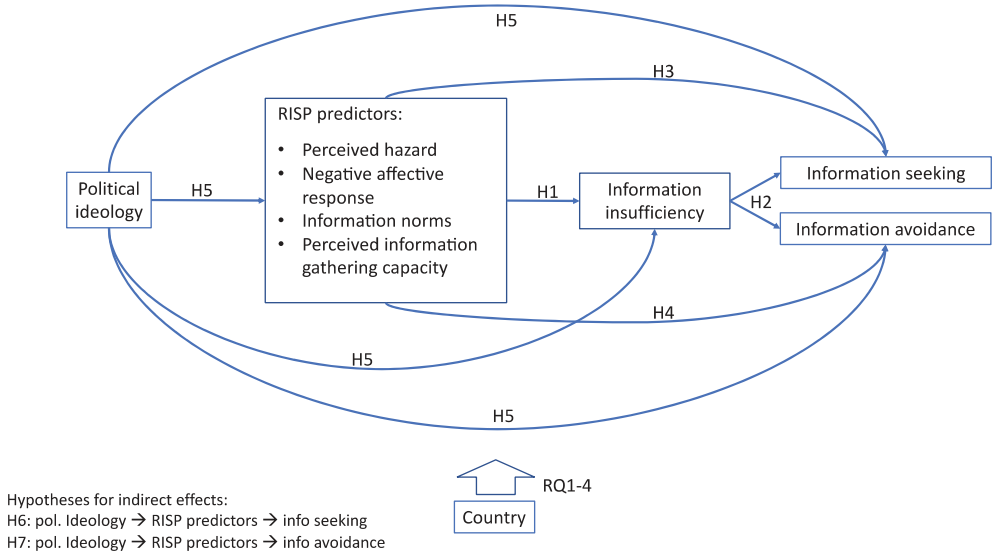

Figure 1. Conceptual model: ideology, country, RISP predictors and information behavior.

Table 1. Overview of final samples.

		Quota	US sample	German sample
Age	18–35 years	33%	32.4%	29.0%
	36–59 years	33%	35.3%	33.9%
	60+ years	33%	32.3%	36.8% (age missing $n = 2$)
	M (SD)		47.1 (16.3)	48.5 (16.7)
Gender	Male	50%	46.4%	47.3%
	Female	50%	53.4%	52.7%
Education	Low (US: 2 years of college or less Germany: no degree for higher educ.)	50%	48.1%	49.8%
	High (US: 4 years of college or more Germany: degree for higher educ.)	50%	51.9%	50.2%
Overall			50.5%	49.5%
Sample size			$n = 524$	$n = 514$

sample quotas were still approximated by the actual sample and that the sample (albeit not random) serves its purpose well in creating variance in demographics.

Measures

All items are fully documented in Appendix A1. For descriptive statistics and zero-order correlations, see Tables 2 and 3.

Independent variable

Ideology was measured with three items, asking the respondents to place themselves on a scale from 0 = strong conservative (right-leaning) and 10 = strong liberal (left-leaning) on (1) political issues, (2) economic issues, and (3) social issues (Huber et al., 2019). For the German version, a slight adaptation from a German national survey (Allbus, 2016) was used, avoiding the terms conservative and liberal, which are ambiguous in German, instead using this (translated) wording: "Many people use the terms left and right to characterize different political attitudes. How would you describe your views on political, social and economic issues from 0 = 'left' and 10 = 'right')?" The U.S. version was reversed so that the resulting scale is coded from 0 = left-leaning to 10 = right-leaning. The reliabilities of both the German (α = .90) and U.S. (α = .96) sample were high.

Mediators.

Perceived hazard characteristics assess the gravity of the threat by the COVID-19 pandemic. The construct was measured with three items from Yang and Kahlor (2013) (U.S. α = .86; German α = .82).

Negative affective response to the hazard expresses the extent to which the COVID-19 pandemic instigates negative emotions. It was measured with semantic differentials using the three pairs "not concerned (0) – very concerned (6)," "not worried – very worried" and "not anxious – very anxious" (Yang & Kahlor, 2013). The three items were combined into a scale (U.S. α = .93; German α = .88).

Informational subjective norms measure how much people think their social context expects them to seek information about the COVID-19 pandemic. Again, the instrument by Yang and Kahlor (2013) with five items (U.S. α = .93; German α = .91) was used.

Perceived information gathering capacity (PIGC) captured how easy or hard it is for respondents to find and understand COVID-related information. It was measured with three items (Yang & Kahlor, 2013). The items were averaged, and the scale

Table 2. Descriptives of metric variables.

		M (SD)					Cronbach's alpha	
	Min-Max	Overall	US	Germany	t	*p*	US	Germany
Involvement COVID	0 to 1	.37 (.48)	.44 (.50)	.29 (.46)	5.10	<.001		N.A.
Media use on COVID	1 to 8	3.33 (1.29)	3.25 (1.28)	3.42 (1.30)	−2.04	.04		N.A.
Ideology	0 to 10	4.47 (2.48)	4.42 (3.03)	4.53 (1.74)	−.72	.471	.96	.90
Perc. info. gathering capacity	1 to 7	5.93 (1.37)	5.84 (1.48)	6.01 (1.24)	−2.05	.04	.89	.83
Perceived hazard	1 to 7	5.27 (1.44)	5.54 (1.42)	5.00 (1.41)	6.16	<.001	.86	.82
Negative affective response	1 to 7	4.55 (1.77)	5.00 (1.81)	4.09 (1.60)	8.54	<.001	.93	.88
Informational subjective norms	1 to 7	4.58 (1.60)	4.92 (1.50)	4.24 (1.62)	7.04	<.001	.93	.91
Information insufficiency	−40 to 99*	40.72 (20.68)	43.69 (20.91)	37.69 (20.01)	4.72	<.001		N.A.
Information seeking	1 to 7	4.87 (1.66)	5.22 (1.46)	4.52 (1.76)	7.02	<.001	.94	.96
Information avoidance	1 to 7	2.26 (1.55)	2.25 (1.54)	2.27 (1.57)	−.25	.80	.95	.95

* Change index based on analysis of partial variance.

Table 3. Zero-order correlations.

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age	–												
2	Gender (0=male)	.00	–											
3	Education (0=lower)	−.02	−.03	–										
4	Involvement COVID	−.17***	.07*	.03	–									
5	Media Use on Covid	−.09**	−.02	.18***	.10***	–								
6	Country (0=US)	.04	−.01	−.02	−.16***	.06*	–							
7	Ideology	.08**	−.08*	−.10**	−.08*	−.11***	.02	–						
8	Perceived hazard	.11***	.14***	−.01	.12***	.16***	−.19***	−.25***	–					
9	Neg.affect. responses	.02	.14***	.02	.14***	.19***	−.26***	−.20***	.75***	–				
10	Informational subj. norm	−.00	−.00	.13***	.15***	.31***	−.21***	−.18***	.46***	.45***	–			
11	Perceived behav. control	.22***	.19***	−.06	−.06	−.19***	.06*	.01	−.01	−.16***	−.05	–		
12	Information insufficiency	.12***	.17***	−.04	.07*	.05	−.15***	−.11***	.40***	.33***	.27***	.00	–	
13	Information seeking	.08*	.02	.09**	.17***	.35***	−.21***	−.18***	.46***	.43***	.55***	.02	.28***	–
14	Information avoidance	−.27***	−.13***	.05	−.01	.03	.01	.09**	−.32***	−.18***	−.20***	−.47***	−.29***	−.39***

*$p < .05$, **$p < .01$.

reversed so that high values represent a high level of information gathering capacity. The reliabilities were high (U.S. α = .89; German α = .83).

Information insufficiency is based on two items (Yang & Kahlor, 2013): the actual knowledge on COVID-19 ("Estimate your knowledge of the Corona virus and the COVID-19 pandemic with 0 = "knowing nothing" and 100 = "knowing everything you could possibly know about the topic") and the amount of knowledge people think they need to have (subjective sufficiency threshold: "This time estimate how much knowledge you think you NEED on this same topic with 0 = need to know nothing and 100 = need to know everything you could possibly know about the topic"). Information insufficiency is the gap between those two items. To avoid problems of a simple difference score (e.g., the difference score contains variance due to actual knowledge, is sensitive to floor and ceiling effects), we followed the procedure recommended by Rosenthal (2013) for information insufficiency based on Cohen's and Cohen (1983) "index of change" as partial variance: In a first regression, the sufficiency threshold (knowledge needed) is regressed on perceived knowledge. The resulting statistic *b* is then multiplied with perceived knowledge and the product is subtracted from the sufficiency threshold (knowledge needed). The result is an index of information insufficiency representing the residual variance of information threshold after controlling for the variance of perceived knowledge (Rosenthal, 2013). The resulting index ranged from −40 to 99, with a mean of 40.72 (*SD* = 20.68).

Dependent variables

Measures for *information seeking and avoidance on COVID-19* were based on instruments by Yang and Kahlor (2013) (U.S. α = .94; German α = .96; U.S. α = .95; German α = .95, respectively).

Covariates

As controls, data on age (open-ended; *M* = 47.77; *SD* = 16.55) and gender (female: 53.2%) were collected. Education was measured with different categories for each national sample and collapsed into two comparable categories: higher education (51.1%): 4-year BA or higher in the US, Abitur or higher in Germany; lower education (48.9%): 2-year technical degree, some college or less in the US; no "Abitur," the German university entrance qualification) in Germany.

In addition, COVID involvement was measured because it should determine how much information people need. The measure contained four items (e.g., Have you, personally, been diagnosed with COVID-19?"). If at least one of the questions was answered in the affirmative, the COVID involvement was coded as 1; if all the questions were answered with "no," then the index was coded as 0 (*M* = .37, *SD* = .48).

Finally, media use about COVID was measured with 10 items representing one medium each (e.g., newspaper, television, social media). The question was: "In the past two weeks, how often did you encounter information or content specifically about COVID-19 in the following media?" and could be answered on an 8-point scale ("not at all" (1), "a few times" (2), "about once a week" (3), "a few times per week" (4), "nearly

every day" (5), "every day" (6), "a few times per day" (7) to "many times per day" (8)"). The 10 items were combined into a scale ($M = 3.33$, $SD = 1.29$).

Analytic approach

Mediation and moderated mediation analyses were computed using the PROCESS macro by Hayes (2022), model 80; for RQs 1 to 4, we customized model 80 with an additional moderator (country). All models were computed with 5,000 bootstrap samples.

In addition to the model variables, we also entered control variables (age, gender, education, COVID involvement, and COVID media exposure). Prior to analysis, we tested the assumptions required for using OLS regression. We could exclude multicollinearity but found problems with heteroscedasticity. To avoid biases, we used the heteroscedasticity consistent standard error and covariance matrix estimator HC3 (Hayes & Cai, 2007).

Results

The first two hypotheses put the basic assumptions of the RISP to test across both countries. The OLS regression in Table 4 shows the association of the RISP predictors on perceived information insufficiency. While the zero-order correlations show a small influence of three mediators on information insufficiency (perceived hazard: $r = .40$, affective response: $r = .33$ and informational norms: $r = .27$, Table 3), only one influence remains substantial when all mediators are entered into the equation: perceived hazard is associated with higher information insufficiency, $B = 4.88$, $p < .001$, confirming H1a. The other relationships are not significant: negative affective response, $B = .33$, n.s., information norms, $B = .81$, n.s. and perceived information gathering capacity, $B = -.49$, n.s., refuting H1b to d.

Then, in partial accordance with the RISP model, information insufficiency negatively predicts information avoidance, $B = -.01$, $p < .001$, but is not related to information seeking, $B = .005$, n.s.), confirming only H2b (Table 5).

H3 and H4 ask for direct effects of the RISP mediators on information seeking and avoidance, respectively. Table 5 shows that all RISP mediators but affective response have the predicted direct relationship with both information seeking (perceived hazard: $B = .17$, $p < .01$; information norms: $B = .32$, $p < .001$; perceived information gathering capacity: $B = .12$, $p < .001$) and information avoidance (perceived hazard: $B = -.22$, $p < .001$; information norms: $B = -.09$, $p < .01$; perceived information gathering capacity: $B = -.52$, $p < .001$). This confirms H3a, c and d as well as H4a, c and d, but not H3b and H4b.

In RQ1, we sought for differences for the RISP predictors and outcomes between the countries: Table 4 shows that three of the five RISP predictors are lower in Germany compared to the US (perceived hazard: $B = -.98$, $p < .001$; negative affective response: $B = -1.64$, $p < .001$, information norms: $B = -.57$, $p < .05$). Two are statistically equal (perceived information gathering capacity: $B = .28$, n.s., and perceived information insufficiency: $B = .03$, n.s.). Information seeking and avoidance do not differ by country ($B = -.37$, n.s., and $B = -.22$, n.s. (Table 5).

Then, H5 predicted that right-leaning political ideology is associated to lower levels of the RISP predictors. Indeed, results show that the more conservative respondents are, the lower the values for perceived hazard characteristics are, $B = -.16$, $p < .001$; this was also true for negative affective response, $B = -.16$, $p < .001$, and information norms,

Table 4. Ordinary least squares regressions with robust standard errors (H3 method) predicting perceived hazard, negative affective response, information norms, perceived information gathering capacity and information insufficiency.

	Perceived hazard			Negative affective response			Information norms			perceived information gathering capacity			Information insufficiency		
Predictors	B	SE	t	B	SE	t	B	SE	t	B	SE	t	B	SE	t
Constant	4,76	0,22	21,42***	4,13	0,27	15,27***	3,62	0,23	15,77	5,44	0,21	26,07***	7,04	6,14	1,15
Age	0,01	0,00	5,89***	0,01	0,00	2,82***	0,01	0,00	2,14	0,02	0,00	7,05***	0,13	0,04	3,36***
Gender (0=male)	0,34	0,08	4,08***	0,43	0,10	4,25***	−0,04	0,09	−0,49	0,50	0,08	6,09***	5,47	1,25	4,37***
Education (0=lower)	−0,18	0,08	−2,10*	−0,14	0,10	−1,31	0,18	0,10	1,90	−0,03	0,08	−0,43	−2,26	1,23	−1,84
Country (0=US)	−0,98	0,20	−4,95***	−1,64	0,24	−6,92***	−0,57	0,23	−2,52*	0,28	0,20	1,41	0,03	7,78	0,00
Ideology (0=liberal)	−0,16	0,02	−7,41***	−0,16	0,03	−5,93***	−0,08	0,02	−3,41***	−0,00	0,01	−0,23	−0,05	0,28	−0,18
Country x Ideology	0,10	0,04	2,24*	0,16	0,05	3,29**	−0,03	0,05	−0,57	−0,02	0,04	−0,52			
Covid involvement	0,21	0,09	2,45*	0,25	0,11	2,29*	0,28	0,09	3,01**	0,03	0,09	−0,34	0,84	1,25	0,63
Covid media exposure	0,19	0,04	4,81***	0,27	0,04	6,09***	0,36	0,03	10,55***	−0,18	0,04	−4,55***	−0,30	0,51	−0,60
Perceived hazard													4,88	1,03	4,76***
Perc. haz. x country													−0,98	1,39	−0,71
Neg. aff. response													0,33	0,76	0,44
Neg. aff. r. x country													−0,51	1,10	−0,46
Information norms													0,81	0,72	1,13
Info. norms x country													1,26	0,90	1,40
PIGC													−0,49	0,61	−0,81
PIGC x country													−0,14	0,96	−0,15
Conditional effects of interaction country x ideology	US: −.16, CI −.19, −.12; Ger: −.06, CI −.13, .01. R2 = .169, F(8, 1024) = 30.41***			US: −.16, CI −.21, −.10; Ger: −.01, CI −.08, .08. R2 = .172, F(8, 1024) = 29.85***			R2 = .179, F(8, 1024) = 34.58***			R2 = .117, F(8, 1024) = 11.95***			R2 = .205, F(15, 1017) = 16.91***		

*$p < .05$.**$p < .01$.***$p < .001$.
PIGC: Perceived information gathering capacity.

Table 5. Ordinary least squares regressions with robust standard errors (H3 method) predicting information seeking and avoidance.

	Information seeking			Information avoidance		
Predictors	B	SE	t	B	SE	t
Constant	0,167	0,314	0,53	7,97	0,363	21,96***
Age	0,007	0,003	2,56*	−0,01	0,003	−5,02***
Gender (0=male)	−0,14	0,084	−1,67	0,049	0,082	0,60
Education (0=lower)	0,027	0,083	0,33	0,079	0,078	1,02
Country (0=US)	−0,37	0,296	−1,26	−0,22	0,282	−0,80
Ideology (0=liberal)	−0,02	0,019	−0,18	0,001	0,019	0,07
Ideology x country	−0,01	0,043	−0,16	0,043	0,039	1,10
Covid involvement	0,24	0,084	2,87**	−0,07	0,082	−0,79
Covid media exposure	0,288	0,036	8,09***	0,006	0,036	0,17
Perceived hazard	0,171	0,053	3,22**	−0,22	0,048	−4,53***
Negative affective response	0,085	0,043	1,96	−0,01	0,036	−0,26
Information norms	0,323	0,037	8,85***	−0,09	0,031	−2,85**
Perceived info gathering capacity	0,116	0,032	3,65***	−0,52	0,038	13,54***
Information insufficiency	0,005	0,003	1,61	−0,01	0,003	−3,58***
Information insufficiency x country	0,002	0,004	0,49	−0,003	0,005	−0,58
		Adjusted R2 = .422, F(14, 1018) = 61.45***			Adjusted R2 = .388, F(14, 1018) = 39.87***	

*$p < .05$.**$p < .01$.***$p < .001$.

$B = -.08$, $p < .001$. H5a to c were confirmed, while H5d (perceived information gathering capacity: $B = -.004$, n.s.) and H5e (information insufficiency: $B = -.05$, n.s.) were not (Table 4). Ideology was related to neither information seeking, $B = -.02$, n.s., nor avoidance, $B = .001$, n.s. (Table 5), disconfirming H5f and H5g.

H6 stated that the RISP predictors will mediate the effect between political ideology and information seeking. In the mediation analysis presented in Table 6, we observe two mediation effects: Through perceived hazard and through information norms. Right-leaning ideology is related to lower perceived hazard, and perceived hazard is related to higher levels of information seeking, resulting in a significant negative indirect effect, $B = -.02$, 95% CI −.04, −.01. Right-leaning ideology is also associated with lower assessments of information norms, and information norms are associated with more information seeking, which shapes another significant negative indirect effect, $B = -.03$, 95% CI −.04, −.01. This confirms H6a, c, and e. The assumed relationships of H6 b and d were not confirmed.

Information insufficiency is involved in only one sequential mediation (Table 6) with perceived hazard: Right-leaning ideology is related to lower levels of perceived hazard; perceived hazard in turn is related to higher information insufficiency, which in turn strengthens information seeking, indirect effect: $B = -.004$, 95% CI −.01, −.001.

Testing H7 about mediators predicting information avoidance, we see that a positive mediation effect is visible for the same two predictors: right-leaning ideology is coupled with lower levels of perceived hazard, and perceived hazard shows a negative path to information avoidance, resulting in a positive indirect effect, $B = .03$, 95% CI .02, .04. Right-leaning ideology is also connected to lower levels of information norms, and information norms are connected negatively with information avoidance, indirect effect: $B = .01$, 95% CI .002, .02. In addition, avoidance is predicted by two sequential mediations involving information insufficiency: Right-leaning ideology is associated with less perceived hazard, which in turn is associated with more information insufficiency, which is then connected to less information avoidance, manifesting in

Table 6. Mediation of the relationship between ideology and information seeking/avoidance.

	Information seeking			Information avoidance		
Mediators	B	95%CI		B	95%CI	
Perceived hazard	**-0,023**	**-0,039**	**-0,009**	**0,029**	**0,016**	**0,044**
Negative affective response	−0,010	−0,020	0,000	0,001	−0,008	0,010
Information norms	**-0,028**	**-0,043**	**-0,014**	**0,008**	**0,002**	**0,015**
Perceived info gathering capacity	−0,001	−0,005	0,003	0,005	−0,012	0,022
Information insufficiency	−0,001	−0,004	0,003	0,001	−0,006	0,008
Perceived hazard via information insufficiency	**-0,004**	**-0,007**	**-0,001**	**0,007**	**0,004**	**0,012**
Negative affective response via information insufficiency	0,000	−0,001	0,001	0,000	−0,002	0,002
Information norms via information insufficiency	**-0,001**	**-0,002**	**-0,000**	**0,002**	**0,001**	**0,003**
Perceived behavioral control via information insufficiency	0,000	0,000	0,000	0,000	0,000	0,000
Direct effect	−0,023	−0,057	0,011	0,011	−0,022	0,044
Total indirect effect	**-0,067**	**-0,089**	**-0,044**	**0,053**	**0,030**	**0,075**

Values are unstandardized indirect effects and 95% confidence intervals. Process model 80 with 5000 bootstrap samples. Covariates: Age, gender, education, country, Covid involvement and Covid media exposure. Heteroscedasticity consistent standard error and covariance matrix estimator was applied (HC3). $n = 1033$.

a positive indirect effect, $B = .01$, 95% CI .004, .01. Also, right-leaning ideology has a negative path to information norms, which in turn is positively related to information insufficiency, which then leads to less information avoidance, $B = .002$, 95% CI .001, .003; Table 6). The results confirm H7a, c, and e, but not b and d.

The remaining RQ2 to 5 ask about a moderating effect of country within the overall model. First, answering RQ2, the direct conditional effects of country for the relationship between ideology and both information seeking and information avoidance were not significant (Table 7). This means that in both countries, ideology did not have a direct effect on information seeking or information avoidance.

Then we looked for conditional effect of country on the relationship between political ideology and information seeking, mediated by the RISP predictors (RQ3). As Table 7 shows, there is a negative conditional indirect effect of ideology through perceived hazard on information seeking for the U.S. sample ($B = -.03$, 95% CI −.05, −.01), but not the German sample ($B = -.01$, 95% CI −.03, .02). The index of moderated mediation (showing the difference between the two conditional effects) is significant (Index = .02, 95% CI .002, .04). Having a closer look at this conditional effect, we see that there is a significant interaction effect of ideology and country on perceived hazard: In the U.S., left-leaning ideology is significantly related to more perceived hazard (conditional effect: −.16, CI −.19, −.12) while in Germany it is not (conditional effect: −.06, CI −.13, .01., Table 4). However, the influence of perceived hazard on information insufficiency is not different in the two countries (interaction $B = -.98$, n.s., Table 4).

Also, in the U.S. sample, the conditional effect of ideology through affective response to information seeking is significant ($B = -.01$, 95% CI −.03, −.001) while in Germany, it is not ($B = .001$, 95% CI −.007, .01, Table 7). The conditional effect of ideology through information norms to information seeking is significant in both countries (US: $B = -.03$, 95% CI −.04, −.001; Germany: $B = -.03$, 95% CI −.06, −.001, Table 7). However, in both cases, the index of moderated mediation shows that the conditional effects for Germany were not significantly different from the US conditional effects (affective response: Index = .01, 95% CI .00, .03; information norms: Index = −.01, 95% CI −.04, .02, Table 7).

In the case of affective response, the significant indirect effect is rather small, and the non-significant indirect effect is close to, but does not equal, zero. The difference between the effects does not add up to a significant difference between the two conditional effects, as indicated by the non-significant index of mediated moderation. However, the conditional indirect effect for the US, albeit small, is still meaningful (see the discussion of conditional effects and the index of mediated moderation in Hayes, 2015).

A closer look at the interactions reveals that there is an interaction between country and ideology on negative affective responses ($B = .16$, $p < .001$, Table 4); the conditional effects demonstrates that (again) left-leaning ideology is related to more negative affective response in the U.S. (conditional effect U.S.: $B = -.16$, CI −.21, −.10, Table 4), but not in Germany (conditional effect Ger: $B = -.01$, CI −.08, .08, Table 4). Again, affective response is not related to information insufficiency differently in the two countries (interaction effect: $B = -.51$, n.s., Table 4)

Information norms and perceived information gathering capacity all are not impacted by the interaction of country and ideology ($B = -.03$, n.s.; $B = -.02$, n.s., respectively; Table 4).

Table 7. Mediation of the relationship between ideology and information seeking/avoidance, moderated by country.

	Information seeking			Information avoidance		
	B/Index	95%CI		B	95%CI	
Conditional direct effect of ideology						
US	-0,022	-0,060	0,015	0,001	-0,037	0,039
Germany	-0,029	-0,110	0,048	0,044	-0,022	0,109
Conditional indirect effect of ideology through...						
Perceived hazard						
US	**-0,027**	**-0,045**	**-0,010**	**0,034**	**0,019**	**0,052**
Germany	-0,010	-0,027	0,018	0,013	-0,003	0,032
Index of moderated mediation	**0,016**	**0,002**	**0,036**	**-0,021**	**-0,043**	**-0,003**
Negative affective response						
US	**-0,013**	**-0,028**	**-0,001**	0,002	-0,010	0,013
Germany	0,001	-0,007	0,010	0,000	-0,004	0,003
Index of moderated mediation	0,014	0,000	0,032	-0,002	-0,015	0,011
Information norms						
US	**-0,025**	**-0,041**	**-0,011**	**0,007**	**0,002**	**0,014**
Germany	**-0,034**	**-0,062**	**-0,008**	**0,009**	**0,001**	**0,021**
Index of moderated mediation	-0,009	-0,038	0,020	0,002	-0,006	0,012
Perceived info gathering capacity						
US	-0,001	-0,005	0,004	0,002	-0,018	0,021
Germany	-0,003	-0,012	0,005	0,013	-0,022	0,050
Index of moderated mediation	-0,002	-0,012	0,007	0,011	-0,028	0,053
nformation insufficiency						
US	0,000	-0,042	0,002	0,001	-0,006	0,007
Germany	0,000	-0,051	0,004	0,001	-0,007	0,009
Index of moderated mediation	0,000	-0,003	0,003	0,000	-0,003	0,003

Values are unstandardized indirect effects and 95% confidence intervals. Process model 80 with customized moderator country, with 5000 bootstrap samples. Covariates: Age, gender, education, country, Covid involvement and Covid media exposure. Heteroscedasticity consistent standard error and covariance matrix estimator was applied (HC3). $n = 1033$.

For information avoidance (RQ4), we find, again, that the US sample shows a conditional indirect effect of ideology through perceived hazard on information avoidance (B = .03, 95% CI .02, .05, Table 7), which is not present for the German sample. Again, the index of moderated mediation is significant (Index = −.02, 95% CI −.04, −.003, Table 7), indicating significant differences between the two conditional effects.

For the conditional effect of ideology on avoidance via information norms, the conditional effects of both countries are significant (US: B = .007, 95% CI .002, .01, Germany: B = .009, 95% CI .001, .02, Table 7), but again, not different from each other.

Discussion

Our study extends the literature on risk information seeking and avoidance along two important contexts: Country and ideology. Especially in a global health crisis like the COVID-19 pandemic, where citizens were forced to make potentially life-saving decisions, finding accurate and trustworthy information becomes a very salient goal. While all countries were forced to manage the COVID-19 crisis, they did so in different ways. We assumed that these different approaches had also repercussions for the information behaviors of their citizens, and that they depend on their political ideologies. Starting in 2020, it quickly became clear that COVID-19 divides people on the left and right of the political spectrum, with the latter being reluctant to accept COVID-19 as a threat and adopt COVID-19 prevention measures. Health communication scholars can no longer minimize or ignore political and cultural differences in response to health crises. Our data comparing US and German respondents help confirm that the inclusion of factors like country and ideology are crucial for updating health communication theories to a world where global health, related policies, and politics are intertwined.

Many, but not all relationships predicted by the RISP model were affirmed in our study. First, information insufficiency did not serve as a central bottleneck to predict information seeking and avoidance. Of all the mediators in our study, only perceived hazard was significantly (positively) related to information insufficiency. Information insufficiency, in turn, only (negatively) predicted information avoidance, but not information seeking. Rather than going through information insufficiency, 3 of 4 RISP predictors (perceived hazard, information norms and perceived information gathering capacity) directly impacted information seeking (positively) and avoidance (negatively). These findings support studies that also found a limited function of information insufficiency (Yang & Liu, 2021; Yang et al., 2014) and underline the assumption of the PRISM model that multiple pathways to information behaviors are possible (Kahlor, 2010). A possible explanation why information insufficiency failed specifically in the context of COVID-19 is that in a time where deadly diseases are quickly politicized, seeking information may not depend on the *amount* of information that a person has and strives to have. It is entirely plausible that even with high levels of knowledge and a firm belief that one knows sufficiently, seeking out a specific (e.g., better) *quality* or *type* of information may still motivate seeking or avoidance, for example, information from a trusted source or information that "feels good" or, in short, information that is expected to have subjective utility (Knobloch-Westerwick et al., 2005), even if this means that one's views are challenged by "cross-cutting" information (Zoizner et al., 2022). In addition, the concept of information insufficiency may not be suitable to deal with a highly fluid situation in which yesterday's knowledge is revised on an almost daily basis. Even if someone's knowledge is very good at a given point in time, permanently emerging new problems and evolving scientific evidence force citizens to update their knowledge constantly. Information insufficiency implies that there is a finite and fixed pool of information that needs to be known. In a dynamic crisis however, the surveillance function of seeking information in media (Knobloch-Westerwick, 2008), answering questions such as: "What has changed?," "Do I need to act differently today?" "What is safe, what is dangerous today?," becomes ever more important.

A surprising result in our data was that a negative affective state was neither related to information seeking nor avoidance. A possible explanation may be that perceived hazard and negative feelings share a substantial proportion of variance, having a correlation of r = .75, p < .001 – a finding that is well-known in research on risk behavior and is replicable across different types of behaviors (e.g., Van Gelder et al., 2009). While in our case the tests for multicollinearity did not surpass the threshold to be problematic, the overlap in variance between perceived hazard and negative affective response may still have suppressed the influence of negative affective response on other variables. Indeed, test runs of the same OLS regression without perceived hazard show significant relationships between affective response and information insufficiency, B = 2.43, p > .001, information seeking, B = .17, p > .001, and information avoidance, B = −.17, p > .001. This similar pattern indicates that one of the two factors may be redundant and can be possibly omitted in future studies without loss of information.

Looking into differences between Germany and the US, we found that values for three of the five RISP mediators – perceived hazard, affective response, and norms – were significantly lower in Germany than in the U.S., even after controlling for demographic variables, ideology and COVID involvement. However, the multiple regressions did not show any differences between the countries for neither information seeking nor avoidance. Conversely, differences that were still visible in a simple t-test for perceived information gathering capacity and information insufficiency disappeared with the inclusion of all mediators and the control variables in the multiple regression. This means that while country differences between perceived information gathering capacity and information insufficiency can be explained through individual differences of the respondents, the effects of perceived hazard, affective response and norms need to be attributed to country. This is particularly significant because it delineates boundaries of modeling information behavior with purely psychological factors. Both perceived hazard and affective response concern emotional processes, including appraisals of the risk situation. While emotions are often discussed as culturally universal, experiencing, interpreting, and acting due to emotions is culturally embedded, expressed in substantial differences in

emotional processes across countries and cultures (Boiger et al., 2018; Mesquita & Walker, 2003; Sommers & Kosmitzki, 1988). Likewise, norms are also culturally contextualized, including the how strongly norms influence intentions and behaviors (Fischer et al., 2019) and how norms and their bindingness are perceived (Heinrichs et al., 2006). An implication would be that negative emotions (such as perceived threat or fear) and norms thought to motivate information seeking work differently in the different countries. As this concerns one of the central tenets of the RISP and the PRISM models, further research is needed to validate the use of psychological factors in different countries.

Ideology turned out to be an important influence on three of the five RISP mediators: Right-leaning ideology was related to lower levels of perceived hazard, negative affective response, and information norms, but was unrelated to perceived information gathering ability and information insufficiency. There was also no direct relationship with information seeking and avoidance. A direct relationship of ideology and information behaviors was not present in either country. However, ideology had indirect effects: One indirect effect was visible in both countries: Right-leaning ideology was associated with lower levels of information norms which in turn were positively connected to information seeking and negatively to information avoidance. Another two indirect effects emerged only for the US: Right-leaning ideology was related to a less negative affective response and less perceived hazard in the US, which then predicted information seeking. This may not be surprising as right-leaning U.S. leaders, including then President Donald Trump, downplayed the severity of COVID-19 (Calvillo et al., 2020), likely leading right-leaning audiences to have less fear of the condition. Nonetheless, despite the differences in the strength of the indirect effects, ideology has a similar indirect effect via norms in both countries, indicating at least some generalizability of mechanisms proposed by the RISP model.

Together, these findings suggest that the majority of RISP predictors have the expected associations with information behaviors, thus validating the RISP across national contexts. However, the absolute values of the mediators themselves differ from context to context, as does their relationship with ideology. This indicates that the specific mechanisms leading to a certain value of the predictors may be country-specific.

Limitations

In this investigation with only two countries generalizations are necessarily limited. While the U.S. and Germany had many differences, not only in COVID-19 measures but also political polarization, the results cannot be automatically generalized to other developed countries. In addition, countries with fewer financial resources and less developed public health infrastructure have also not been considered in this study. That points to the need to expand this work to other countries in order to better test the intercultural validity of the psychological factors in the RISP.

Another important factor in the RISP model is channel beliefs, which are the views people have about the ability of a media channel to provide reliable information. We did not take this factor into account in our study because we were interested in investigating information seeking in general, across all media types. Nonetheless, there may be an imbalance between media types that is connected to country or ideology: People opposed to COVID-19 measures may not use established, professional media and rather turn to political media and/or social media for keeping informed. In this case, the quality of information may be unreliable and the information as less useful for avoiding illness.

Conclusion

This study provides initial evidence that the ways in which people decide to seek or avoid information is similar across the U.S. and Germany. Even though policy decisions about COVID-19 as well as public support for COVID-19 mitigation measures were drastically different, the basic factors worked similarly in both countries. However, country and political ideology did influence the absolute values of the factors, showing that national and political differences do manifest in the factors of the RISP model, but the subsequent process influences information seeking and avoidance in a similar fashion in both countries. The RISP model assumes that inner states of an audience are responsible for certain information behaviors. Demonstrating the validity of the model across different countries certainly helps us understand the applicability and effectiveness of health communication in a global crisis.

Note

1. The German institution involved in the research does not require IRB approval.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The author(s) reported there is no funding associated with the work featured in this article.

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Appendix

Appendix A1. Overview of items

Perceived hazard characteristics (based on Yang & Kahlor, 2013): "not serious at all" (1) to "very serious" (7)

- How serious of a threat to humans is the COVID-19 pandemic?
- How serious are the impacts around the world from the COVID-19 pandemic?
- How serious is the threat to you posed by the COVID-19 pandemic?

Affective response (based on Yang & Kahlor, 2013):
- not concerned (1) – very concerned (7)
- not worried (1) – very worried (7)
- not anxious (1) – very anxious (7)

Informational subjective norms (based on Yang & Kahlor, 2013): "strongly disagree" (1) to "strongly agree" (7)

- It is expected of me that I seek information about the COVID-19 pandemic.
- Most people who are important to me think that I should seek information about the COVID-19 pandemic.
- Others expect me to seek information about the COVID-19 pandemic.
- My family expects me to seek information about the COVID-19 pandemic.
- People in my life whose opinions I value seek information about the COVID-19 pandemic.

Perceived information gathering capacity (PIGC) (based on Yang & Kahlor, 2013): "strongly disagree" (1) to "strongly agree"(7)

- It is difficult to find information about the COVID-19 pandemic (-).
- I don't know where to find information about the COVID-19 pandemic (-).
- I have a hard time understanding information about the COVID-19 pandemic (-).

Information seeking (based on Yang & Kahlor, 2013): "strongly disagree" (1) to "strongly agree" (7)

- I actively seek information about COVID-19
- I try my best to find good information about COVID-19
- I try to find more detailed information about COVID-19
- I looked for information about COVID-19 from multiple sources
- I thoroughly searched for information related to COVID-19.

Information avoidance (based on Yang & Kahlor, 2013): "strongly disagree" (1) to "strongly agree" (7)

- I avoid information about COVID-19.
- When it comes to COVID-19, I don't want to know more.
- I refuse to listen to information about COVID-19.
- I tune out information about COVID-19.
- I ignore information about COVID-19.

COVID Involvement (yes = 1; no = 0). At least one question answered with "yes" = 1; all questions answered with "no" = 0.
- Have you lost your job or have your hours been reduced due to the COVID-19 pandemic?
- Have you, personally, been diagnosed with COVID-19?
- If you have not been diagnosed with COVID-19, do you suspect that you had the illness, even if you have not tested positive?
- Has a close family member or close friend of yours been diagnosed with COVID-19?

Media use on COVID (self-developed): Mean of 10 media use indicators: In the past two weeks, how often did you encounter information or content specifically about COVID-19 in the following media? "Not at all" (1), "a few times" (2), "about once a week" (3), "a few times per week" (4), "nearly every day" (5), "every day" (6), "a few times per day" (7) to "many times per day" (8)
- Newspaper (print, online, mobile app)
- Magazines (print, online, mobile app)
- Radio (including streaming, online, mobile app)
- Television (including streaming, online, mobile app)
- Social media, e.g. Facebook, Twitter, Instagram
- Wikipedia
- Internet sites about COVID-19 or related topics
- Podcasts
- Messaging services, e.g. Whatsapp, Texting
- Scientific publication