

Distributed Discovery of News and Perceived Misinformation Exposure: A Cross-Continent Application of the Resilience to Online Disinformation Framework

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Abstract

Perceived misinformation exposure (PME) among citizens is a global phenomenon and a normative concern because it can lead to reduced trust and faith in democratic institutions, actors, and processes. Using secondary data from multiple sources, this study analyzed individuals' online news habits across forty-six countries in six continents (North America, South America, Europe, Asia, Africa, and Australia: $N=91,061$) and country-level factors from the *resilience to online disinformation* framework that shape the relationship between distributed discovery of news and PME. Multilevel analyses showed that increased incidental news exposure and searching for news online at the individual level and news sharing on social media at the country level increased PME while aggregate media trust reduced PME. Cross-level interactions also indicated that higher levels of public service media in a country attenuated the relationship between online news search and PME, exhibiting what we call *soft resilience*. This study demonstrates the theoretical utility of the resilience to disinformation framework and certain country-level factors that can affect the individual-level dynamics of news consumption and PME.

Keywords

misinformation, online news, social media, polarization, media trust, public service media

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Much political, media, and academic discourse in past years have given attention to the problem of online misinformation: where it comes from, how it spreads, what are its effects, and how to stop it (Courchesne et al. 2021; Weeks and Gil de Zúñiga 2019). Misinformation entails false or incorrect information, and the 2016 U.S. presidential election, U.K. Brexit campaign, and the European refugee crisis are often cited as examples where it cascaded online and polarized people's attitudes and exacerbated political and social cleavages in society (e.g., Bennett and Livingston 2018; Jost et al. 2020). Yet, misinformation is not a uniquely Western problem. In Brazil, it has contributed to unprecedented levels of political violence in the 2022 elections (Rossini et al. 2023). It is also rife in some African countries where hyper-partisan politics and the Internet have engendered a fertile space for the spread of misinformation (Wasserman and Madrid-Morales 2019). Beyond politics, the COVID-19 pandemic was accompanied by an infodemic that contributed to vaccine hesitancy among citizens in many countries (Singh et al. 2022). Misinformation and its nefarious consequences are thus a global problem, yet there are few cross-continent studies that have examined the phenomenon beyond the United States and Western Europe.

This study explores the secondary effects of misinformation. That is, rather than examine whether people actually believe in and/or share misinformation online, which has already generated a sizable literature (see Pennycook and Rand 2021), we focus on individuals' *perceptions* of the prevalence of misinformation they come across in their everyday interactions with the news media. The study of perceived misinformation exposure (PME) is important because peoples' summative perceptions on the veracity of information in their communication environments could engender attitudes that lead to the "the breakdown of trust in democratic institutions of press and politics" (Bennett and Livingston 2018: 127). Among these include greater cynicism in politics (Jones-Jang et al. 2020) and decreased trust in the news media more generally (Ognyanova et al. 2020). The normative democratic implications of PME thus necessitates a deeper examination of its antecedents and the conditions in which it can be heightened or reduced.

We fill this gap with a multilevel analysis based on survey data from forty-six countries. At the individual level, we first examine the relationship between online news consumption and PME to political and COVID related content. Especially, people's news habits nowadays are increasingly characterized by "distributed discovery", that is, the use of digital intermediaries such as online search engines and incidental exposure from social media platforms and messaging apps to consume news and information about public affairs (Newman et al. 2020), which we theorize would increase PME. Then, at the country level we adopt and test the recently proposed "resilience to online disinformation" theoretical framework (Humprecht et al. 2020) and its implications for PME. By integrating both levels of analysis, we contribute to the literature by elucidating the structural conditions that shape the dynamics of online news consumption and PME from a cross-continent comparative perspective.

Literature Review

Misinformation and PME

In their well-regarded information disorder typology, Wardle and Derakhshan (2017) defined “misinformation” as false or misleading information that is shared with no intent to cause harm, which is in contrast to “disinformation” where there is such intent. Another common term is “fake news,” a specific type of disinformation that is formatted and styled to resemble real news (Tandoc 2019) though its use in academic discourse is discouraged because the term has been appropriated by politicians around the world to discredit the news media (Egelhofer and Lecheler 2019). Since this study focuses on audiences’ perceptions of misleading content and not the original intent of the source, we use the term misinformation.

Actual misinformation and perceived misinformation at the individual level are two distinct concepts with different research “logics” (Matthes et al. 2022). Studies following the *attitudinal* logic examine the processes and conditions in which people believe in and share misinformation, such as motivated reasoning based on ideological congruence of the message with the receiver (Sindermann et al. 2020); or people who do not devote cognitive resources to assess the accuracy of the message (Pennycook and Rand 2021). This study focuses on the *perception* logic, which entails individuals’ general impressions on the degree of misinformation they come across in their everyday interactions with the media. Specifically, we adopt the term “PME” from Stubenvoll et al. (2021), which is defined as “information that lacks facticity in the eyes of the individual, regardless of its actual facticity and the perceived intention behind its spread” (p. 2767). It can reflect personal experiences of actual misinformation or a subjective opinion that misinformation or “fake news” is prevalent in the media environment.

The two logics differ on at least two aspects. In terms of scale, research based on the United States suggested that the extent of misinformation circulating online is relatively low and limited to small audiences (Guess et al. 2019). Yet, in the 2021 Reuters Digital News Report (Newman et al. 2020), 54 percent of online users in the United States claimed they had come across some form of online misinformation in the previous week. The normative implications for democracy via both logics can also be different. Political knowledge has long been considered fundamental for a well-informed and engaged citizenry (Castro et al. 2021). Those who believe in misinformation might consider themselves knowledgeable about politics even if they are misinformed. They may not only further disseminate the same misinformation, but also “advocate for policies and support candidates who are, in fact, contrary to their best interests” (Boulianne and Lee 2022: 38). In contrast, research on PME has generally focused on the erosion of trust and faith in democratic institutions, actors, and processes. For example, Lee et al. (2023) found that PME was negatively related to trust in the mainstream U.S. media while Stubenvoll et al. (2021) found a similar relationship for the Austrian context, but only for those who have low political knowledge. A two-wave panel study by Jones-Jang et al. (2020) during the U.S. midterm

election also showed that PME increased political cynicism (i.e., superficial politicians who focus only on winning the campaign rather than on policy and caring more about themselves than their state). Aside from politics, a seventeen-country study by Matthes et al. (2022) found that PME was related to concerns about COVID-19. In all, these findings suggest that misinformation as a perceived phenomenon could have as much as a negative impact on democratic functioning as actual misinformation, especially given that evidence suggests PME is more salient among citizens than their exposure to actual misinformation.

Distributed Discovery of News and PME

In contrast to the *mass media logic* where news is traditionally produced by media professionals and distributed across media entities (i.e., press, broadcasters etc.) to location-bound mass audiences, today's online media environment has shifted toward the *network logic* that is exemplified by the ascendent roles of digital intermediaries that have changed the way people access and consume news (Klinger and Svensson 2015). These days most people do not get news directly by reading newspapers, watching TV news broadcasts, or going to dedicated news websites, but through "distributed forms of discovery" (Toff and Nielsen 2018: 637). According to the 2020 Reuters Digital News Report, these included social media, search engines, mobile alerts, aggregators, and email notifications, which accounted for how 72 percent of respondents came across news among forty countries. The two most common forms of news exposure were through social media (26%) followed by search engines (25%) (Newman et al. 2020), which are the focus of this study.

Users' exposure to news are often incidental to their original purposes for being online as they may unintentionally see news previews shared by their friends while browsing and updating their news feeds (Oeldorf-Hirsch 2018). Because of its prevalence much research has sought to understand the normative democratic consequences of incidental exposure to news, especially on social media, by examining whether it can lead to greater exposure to opposing political viewpoints (Lu and Lee 2019), increased political knowledge of candidate policy positions and democratic engagement (Schäfer 2023). Less work has examined the relationship between incidental exposure to news and PME, which is likely to be positive for several interrelated reasons. First, the network logic of social media means that "content can be relayed among users with no significant third-party filtering, fact-checking, or editorial judgment" (Allcott and Gentzkow 2017: 211). This provides conducive conditions for the creation and spread of misinformation and hence greater opportunities for people to come across actual misinformation. Second, social media platforms provide organizations and actors with non-mainstream and radical ideologies channels to espouse misleading content in ways that would not be possible through the traditional media. Thus, even for those who correctly discern the content to be misleading, they might infer from the number of user engagements that misinformation is "out there" in the social media space. Third, previous research suggest that social media platforms can engender cross-cutting exposure where individuals are exposed to content that is congruent

or opposite to their own political ideologies or beliefs (Min and Wohn 2018). This could lead to partisan motivated reasoning processes whereby individuals infer content that is inconsistent with their worldviews to be “fake news” even though it is factually accurate. All things being equal, these various pathways to some degree could lead to greater PME. Thus, we raise the first hypothesis as follows:

H1a: Incidental news exposure on social media is positively related to PME

Compared to research on the outcomes of incidental exposure, less is known about the outcomes of news search behaviors via search engines, which is a more active and directed form of news consumption. Findings from focus groups in the UK and the US revealed part of the motivation for using search engines is the general belief that “the information is out there” and that users would use search engines if the news they want does not “find them” from their regular channels, that is, “I just Google it” (Toff and Nielsen 2018). Yet, because search algorithms determine the ranking of the results there are opportunities for users to come across misinformation, particularly for controversial or polarizing topics. For example, an analysis of localized Google search results showed that vaccine-negative sources still appeared among the top search ten results in some countries even though the claimed linkage between vaccination and autism had long been debunked (Arif et al. 2018). Thus, when search results of news provide conflicting “facts” they may give rise to PME because of perceptions that if one set of facts is correct then others could be false. Therefore, we propose that:

H1b: Online news search is positively related to PME

Distributed discovery of news has become the norm for many users around the world to get information on public affairs with incidental exposure on social media and news search becoming the two primary channels to do so. To further understand these dynamics, it is important to examine them across different countries. As noted by Toff and Nielsen (2018) in their call for more cross-national comparative research: “Someone in rural India versus someone in an egalitarian, highly-connected, high-trust context like Finland will likely experience and assess distributed discovery in somewhat different ways” (p. 655). Thus, we integrate our individual-level examination of online news use and PME with a country-level framework.

Misinformation and Resilience to Misinformation

The resilience to online disinformation framework was conceived to explain the structural factors that can impede the belief in and spread of misinformation intentionally created and shared to cause harm (Humprecht et al. 2020). At its core is the premise that certain countries are more “vulnerable” to disinformation than others. Drawing from Hall and Lamont’s (2013) notion of *social resilience* that “encompass the capacities of societies to cope with many kinds of challenges” (p. 2), Humprecht et al. (2020) posited that certain political, media, and economic factors at the country-level can

stem the production, dissemination, and consumption of disinformation, which make countries more “resilient” to its negative effects. Their analysis found that the more resilient countries (i.e., the Northern and Western European countries) were characterized by lower levels of polarization and social media use along with higher levels of media trust and strong public service media. While informative, the analyses and findings were limited to eighteen Western countries and did not consider individual-level differences in online news habits that are characterized by distributed discovery. Moreover, as the name of the framework suggested, it is concerned with misinformation disseminated intentionally to cause harm. Nevertheless, the same assumptions of the model can also be applied to the context of PME, and we explicate the specific roles of five factors in the framework.

Political Factors and PME: Political Polarization and Populist Communication. Political polarization has been conceptualized in different ways. It can refer to widening opposition of opinions on policy issues among political elites (Stroud 2010) or the negative feelings held on different sides of the political spectrum by partisans toward others (Mason 2018). More generally, the antagonism between people from different political camps means that partisans would share more news that derogates the opposing camp regardless of whether the content is real or false (Osmundsen et al. 2021). Thus, polarization is not only conducive for the spread of actual misinformation but also increased PME because the proliferation of conflicting news and opinions make it difficult for individuals to discern their veracity. Some may even resort to cognitive shortcuts such as partisan motivated reasoning and perceive news unfavorable to the in-group or favorable to the out-group as misinformation regardless of its veracity.

The same can be said for high levels of populist communication, which is used by some political actors and their supporters to discursively construct a divide between ordinary people who are “virtuous” and elites that are “corrupt” and unresponsive to their grievances (van Kessel et al. 2020). This conception of populism emphasizes rhetoric rather than ideology (Norris 2020), and it often relies on the use of emotive language rather than factual information to express resentment against out-groups and instill distrust of political authorities and information from the mainstream media (Hameleers 2020). In terms of PME, it is reasonable to assume a segment of the population to share similar attitudes to populist actors, and so they may not perceive their populist communications as misleading or false. However, given that populist communications discursively create a “us” versus “them” divide, it is also logical to expect that high levels of populist communication in a country could increase PME among other segments of the population who are politically and ideologically aligned with the “targets” of such populist actors.

Economic Factor and PME: Social Media News Sharing. A substantial amount of misinformation is disseminated through social media platforms and messaging apps due to the low cost and ease in which misinformation can be created and shared. For example, misleading news content was more widely shared than mainstream news stories on Facebook during the 2016 U.S. presidential election (Allcott and Gentzkow (2017),

and bots especially had a substantial role in sharing COVID-19-related misinformation on Twitter (Himelein-Wachowiak et al. 2021). These are driven partly by the revenue-generating logic of social media and related economic pressures whereby the news media are constantly engaged in “speed-driven journalism” to increase user engagement and drive user traffic to their own platforms and news sites (Lee 2015). To some extent, the same logic also applies to misinformation in the form of clickbait headlines of questionable veracity that were not produced nor checked by media professionals or journalists. Thus, given the sheer quantity of information with different levels of veracity that pervades the social media space, it is reasonable to assume that PME is greater in countries where there are large proportion of users who share content through different social media platforms.

Media Factors and PME: Public Service Media and Media Trust. The normative benefits of strong public service media (PSM) are well documented in the literature because it engenders information environments in countries where there is more high-quality news and current affairs content (Horowitz et al. 2021), which is positively related to citizens’ knowledge of political and civic affairs (Van Aelst et al. 2017). Recent studies also showed that individuals can gain political knowledge through social media news in countries with high PSM (Park and Gil de Zúñiga 2020). Such knowledge is closely tied to people’s understanding of the functions and effects of the news media through increased news literacy, which can engender greater skepticism and vigilance against misinformation shared online (Vraga and Tully 2019). Thus, citizens in countries with strong PSM may have lower PME because they are more sensitized to the journalistic and stylistic norms of hard news produced by PSM outlets that improve their discernment of real and misleading news.

Media trust is the basis in which news audiences perceive the information provided by media outlets as credible. Yet, trust in the news at the aggregate level has been falling globally (Newman et al. 2020), which some researchers have attributed to the rise of alternative information sources online that has served to increase skepticism toward mainstream news and provide openings for misinformation to permeate (Stubenvoll et al. 2021). High levels of media trust at the country level are thus indicative of an information environment where the news media are generally perceived by citizens to offer reliable and accurate content, which should reduce PME. Conversely, lower levels of media trust could be indicative of greater PME as “factual information more and more comes to be seen as a matter of opinion, in which evidence is neglected, and in which misinformation, rumors and conspiracy theories increasingly permeate public discourse and public opinion” (Van Aelst et al. 2017: 14). Thus, overall media trust has a direct bearing on people’s general perceptions of the quality and veracity of news content. For example, a panel study by Lee et al. (2023) showed that lower social media trust and mainstream media trust at the individual level were related to greater PME, which in turn led to reduced mainstream media trust over time. Stubenvoll et al. (2021) similarly found a negative relationship between media trust and PME.

Overall, these five factors are not by all means exhaustive, but they are relevant to understand how country-level dynamics can shape PME from a cross-continent

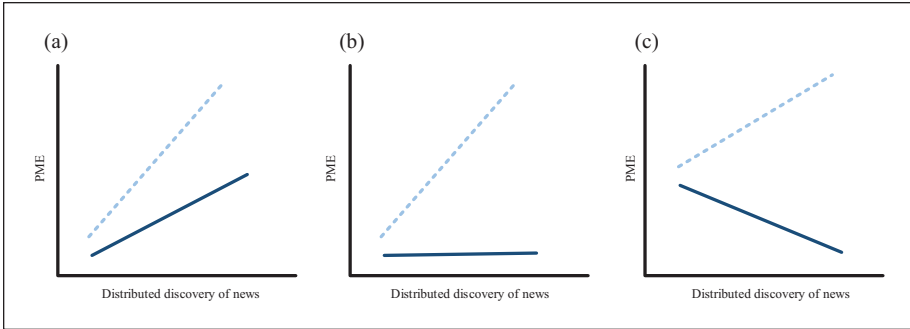


Figure 1. Resilience framework variables: Media trust and public service media.

Note. Solid lines represent higher levels and dashed lines represent lower levels of the country-level moderators.

perspective. Therefore, we propose the following hypotheses in line with the theoretical expectations of the resilience to disinformation framework (Humprecht et al. 2020):

H2: (a) Polarization, (b) populism, and (c) social media news sharing at the country level are positively related to individuals' PME.

H3: (a) Public service media and (b) trust in media at the country level are negatively related to individuals' PME.

How do Country-Level Factors Shape Distributed Discovery of News and PME?

Based on the premise that high levels of PME can have various negative consequences for democracy and that distributed discovery of news increases PME, the question arises as to whether one or several of the factors of the resilience to disinformation framework can indeed temper the relationship in accordance with the idea of “resilience”. Figures 1 and 2 present various theoretical possibilities based on the language of Holbert and Park’s (2020) moderation typology. Both lines represent the proposed relationships between distributed discovery and PME at two levels of the country-level variables. Following the assumptions of the resilience framework, the solid line shows the relationship between distributed discovery and PME to be *weaker* under conditions of high levels of media trust and public service media. Figure 1(a) thus represents what we call *soft resilience* as the country-level variables reduce the strength of the distributed discovery and PME relationship though it is still positive overall. The other figures represent *hard resilience* as the variables render the relationship non-significant (Figure 1(b)) or even reverses the relationship (Figure 1(c)). Conversely, Figure 2 show that higher levels of polarization, populist communication, and social media news sharing accentuate the relationship between distributed discovery and PME. Given that this is the first test of the resilience to online disinformation

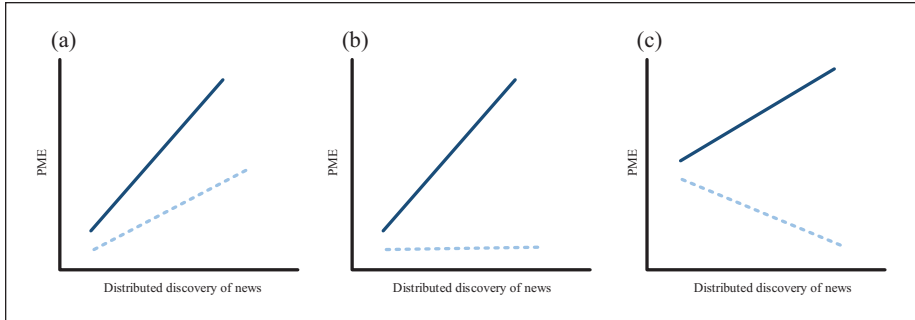


Figure 2. Resilience framework variables: Polarization, populism, and social media news sharing.

Note. Solid lines represent higher levels and dashed lines represent lower levels of the country-level moderators.

framework on individual-level relationships, we pose the following general research question:

RQ1: Which country-level factors will moderate the relationship between distributed discovery and PME and to what extent?

Method

Sample

To test the proposed hypotheses and research questions, we utilized datasets from the *Reuters Institute Digital News Report* (“DNR”; Newman et al. 2021) for individual- and country-level data; and the *V-Dem Institute (Varieties of Democracy) survey* (“V-DEM”; Coppedge et al. 2021), and the *Global Party Survey* (“GPS”; Norris 2020) for country-level data. The DNR seeks to understand news consumption behaviors among citizens around the world, and the 2021 dataset includes respondents from forty-six countries that are representative of the respective online populations.¹ All surveys were administered in their native languages by YouGov between January to February 2021. V-DEM and GPS measure multidimensional facets of democracy and political parties across countries around the world, and various political, social, and civic indicators were scored by country experts who have in-depth knowledge and expertise on those countries. For the V-DEM survey, each indicator for every country is typically scored by five experts. For indicators in the GPS survey, the number is around nineteen experts for each liberal democracy.² Our final sample consists of 91,061 respondents from the DNR dataset that is matched and combined with respective country-level data from the V-DEM and GPS datasets. Descriptive statistics of main study variables for each country are summarized in the Supplemental Information file (Table A1). We generally followed the operationalizations of Humprecht et al. (2020) for the

country-level resilience measures though exceptions are elaborated in the Supplemental Information file (Methodological notes).

Country-Level Measures

Polarization. The measure was created by combining and averaging answers to two questions from the V-DEM survey: (1) “How would you characterize the differences of opinions on major political issues in this society?” (i.e., 0 = “No polarization. There are differences in opinions, but there is a general agreement on the direction for key political issues” to 4 = “Serious polarization. There are serious differences in opinions in society on almost all key political issues, which result in major clashes of views”); and (2) “Is society polarized into antagonistic, political camps?” Answers ranged from 0 = “Not at all. Supporters of opposing political camps generally interact in a friendly manner” to 4 = “Yes, to a large extent. Supporters of opposing political camps generally interact in a hostile manner” ($M=2.37$, $SD=1.16$). Values ranged from 0.5 for Denmark up to 4 for Brazil, the United States, and others.

Public Service Media. We designed an original measure based on the percentage audience reach of public service media (PSM) in the respective countries from the DNR dataset. To identify the outlets, we referred to information sources such as public service media listed in *publicmediaalliance.org*. Using the U.K. public broadcaster as an example (i.e., BBC), 53.4 and 19.7 percent of U.K. respondents, respectively, accessed news offline in the previous week from *BBC TV News* and *BBC Radio News* while 47 percent accessed *BBC News online*. Taking into account those who accessed more than one BBC source, the total audience reach of news for the BBC was 71.6 percent of U.K. respondents. This procedure was applied to other countries ($M=46.7\%$, $SD=19.9\%$) and the reach of PSB ranged from 11 percent for Brazil to 77 percent for Finland.

Populist Communication. Similar to Humprecht et al. (2020), populist communication was operationalized as the total vote share of populist parties in recent national elections. However, we used the Global Party Survey (GPS) as it contained relevant data for forty-five of the countries in this study. In the GPS, populist communication was measured on a four-point scale (1 = Strongly Pluralist to 4 = Strongly Populist) based on country experts’ assessment of the degree of populist (i.e., “language typically challenges the legitimacy of established political institutions and emphasizes that the will of the people should prevail”) and pluralist rhetoric (i.e., “rhetoric rejects these ideas, believing that elected leaders should govern, constrained by minority rights, bargaining and compromise, as well as checks and balances on executive power”) adopted by each major political party. We then combined the GPS vote share data of political parties in that country considered “Strongly Populist” (rating = 4) in recent national elections ($M=19.9\%$, $SD=19.5\%$). The level ranged from 0 percent for countries like Canada and Taiwan to 69.6 percent for Italy.

Media Trust. Two questions on media trust from the DNR were combined and averaged. Respondents stated the level of agreement (1=strongly disagree to 5=strongly agree) to the questions: (1) I think you can trust most news most of the time, and (2) I think I can trust most of the news I consume most of the time ($M=3.23$, $SD=0.20$). The score ranged from 2.83 for Bulgaria to 3.65 for Finland.

Social Media News Sharing. The percentage of people in each country that shared news on social media was derived from affirmative answers to either of the following two statements from the DNR: (1) “Share a news story via social network” and (2) “Share a news story via an instant messenger” ($M=33.1\%$, $SD=11.5\%$). The percentage of respondents who shared news using these channels ranged from 11 percent for Japan to 56 percent for South Africa and Nigeria.

Individual-Level Measures

Dependent Variables

Perceived Misinformation Exposure. Respondents from the DNR survey answered the following question: “Have you seen false or misleading information about any of the following topics, in the last week?” The answer choices included: *Politics, Coronavirus, Other health issues, Celebrities, Immigration, Products and services, Climate change or the environment, and Other*. Affirmative answers were summed to create binary measures that measured PME to information related to the COVID (Yes=53.9%; Norway=29.8% to Columbia=72.3%) and politics (Yes=43.1%; Denmark=19.9% to Kenya=63.4%).

Distributed Discovery of News (Incidental News/News Search). Respondents read the following statement “Thinking about how you got news online (via computer, mobile or any device) in the last week, which were the ways in which you came across news stories? Please select all that apply.” The two answers that were relevant for this study were (1): “Used social media and came across news that way (e.g., Facebook, Twitter, YouTube, Instagram)”, which we used as a binary measure (1=Yes, 0=No) to measure *incidental news exposure* (Yes=58%; Japan=34% to Nigeria=85%); and (2) “Used a search engine and typed in a keyword about a particular news story,” which we used as a binary measure of *news search* (Yes=24%; Denmark=9% to South Korea=38%).

Control Variables. Demographic data was collected from the DNR, including age, gender, education, and household income. Moreover, pertinent attitudinal and news related variables were included as controls. This included frequency of news exposure, that is, “Typically, how often do you access news? By news we mean national, international, regional/local news and other topical events accessed via any platform (radio, TV, newspaper or online)” ($M=3.29$, $SD=1.75$; 1=never to 10=More than ten times a day); interest in news, that is, “How interested, if at all, would you say you are in news?” ($M=3.70$, $SD=0.92$; 1=Not at all interested to 5=Extremely interested) and

Table 1. Correlations of Country-Level Measures in this Study.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1). Polarization	—					
(2). Populist communication	.31*	—				
(3). Social media news sharing	.53**	.02	—			
(4). Public service media	-.68***	-.17	-.53***	—		
(5). Media trust	-.61***	-.25	-.24	.45**	—	
(6). PME (COVID)	.51***	.31*	.67***	-.43***	-.52***	—
(7). PME (Politics)	.69***	.22	.78***	-.69***	-.48***	.76***

Note. $N = 46$; * $p < .05$. ** $p < .01$. *** $p < .001$. PME = Perceived misinformation exposure.

political interest, that is, “How interested, if at all, would you say you are in politics?” ($M = 3.11$, $SD = 1.11$; 1 = Not at all interested to 5 = Extremely interested).

Results

Preliminary Country-Level Findings

Before reporting the main results, we ran Pearson correlations to examine whether the country-level variables were related to each other in accordance with the theoretical assumptions of the resilience framework (see Table 1). As expected, polarization, populist communication, and social media news sharing were negatively related to public service media and media trust. Moreover, the former set of variables positively predicted PME at the country level while the relationships were negative for the latter.

Predicting PME

The combination of individual and country-level variables along with binary outcomes necessitated the use of generalized linear mixed models to predict PME. We used the *lme4* package for R and first ran random intercept null models with no predictors to examine if PME varied by country. The intraclass correlation coefficients showed that country ($N = 46$) explained 6–7 percent of the variance for the PME measures, which suggested that further multilevel analysis was appropriate. We then tested full models that included all individual and country-level variables as well as ten cross-level interaction terms that crossed online news habits with the country-level variables. Random slopes of the lower-level variables involved in the interactions (i.e., “news search” and “incidental news”) were also added to the models (see Heisig and Schaeffer 2019). As there were numerous statistical tests in the full models (twenty-four variables), we used the Benjamini and Hochberg (1995) procedure to correct for potential false-positive findings (Type 1 error) using a conservative false discovery level of 5 percent. The results are summarized in Table 2.

Table 2. Multilevel Models Predicting Individuals' PME.

Variables	PME (COVID)	PME (Politics)
	Log odds	Log odds
Fixed effects (Individual)		
Intercept	.19***	-.31***
Age	-.11***	.16***
Gender (Female)	-.10***	-.21***
Education	.15***	.15***
Income	.01	.02**
News use	-.11***	-.14***
News interest	-.01	-.08***
Political interest	.18***	.31***
News search	.15***	.14***
Incidental news	.21***	.22***
Fixed effects (Country)		
Polarization	-.06	.06
Populist communication	.11*	.03
Social media news sharing	.21***	.25***
Public service media	.04	-.13**
Media trust	-.22***	-.11*
Cross-level interactions		
Search × Polarization	-.01	-.03*
Search × Populist communication	-.01	-.03***
Search × Social media news sharing	.01	.00
Search × Public service media	-.02	-.03**
Search × Media trust	.02**	.02
Incidental × Polarization	.01	.01
Incidental × Public service media	-.01	-.02
Incidental × Social media news sharing	-.02	.01
Incidental × Populist communication	.01	-.00
Incidental × Media trust	-.00	.01
Random effects		
Intercept	.10	.05
Log likelihood	-58486.8	-56718.1
Marginal R ²	.10	.15
Conditional R ²	.12	.16
N	91,061	91,061

Note. Standardized coefficients are shown; * $p < .05$. ** $p < .01$. *** $p < .001$. PME = Perceived misinformation exposure.

Inspection of the models showed that news search and incidental news positively predicted PME-COVID and PME-Politics. H1a and H1b were supported. Converting the log- odds to probabilities shows that a one-unit increase in incidental news, for

example, equates to a 55-percent probability of PME-COVID. Focusing on the country-level variables, the proportion of citizens who shared news on social media was positively related to PME-COVID and PME-Politics while greater trust in media was negatively related to PME-COVID and PME-Politics. H2c and H3b were supported. Polarization was not related to any PME measure, which did not support H2a. Interestingly, populist communication only predicted PME-COVID, whereas public service media only predicted PME-Politics. H2b and H3a were not supported. Using media trust as an example, a one-unit increase equates to a 45-percent probability of perceived exposure to COVID misinformation. The marginal effects of all the variables on PME are further summarized in the Supplemental Information file (Figures A1 and A2).

Cross-Level Interactions Between Online News Habits and Country-Level Factors. Both models showed several interactions for news search and the country-level variables though not for incidental news exposure through social media (RQ1). Subsequent slope analyses and visualizations of the interactions shown in Figure 3 provide a clearer picture of how the country-level variables shaped the news search and PME relationship. With reference to the proposed theoretical possibilities of the resilience to disinformation framework discussed earlier and visualized in Figures 1 and 2, only the public service media and news search interaction exhibited soft resilience (Figure 3(d)). While the relationship between news search and PME-Politics was positive overall, higher prevalence of public service media at the country level weakened the relationship at a greater rate compared to countries with low levels of public service media as individual-level news search increases. In other words, public service media suppresses the news search/PME-Politics relationship to some degree. This contrasts with the other interactions. In the case of media trust, higher levels slightly increased the rate of PME-COVID as news search increases (Figure 3(a)), though there remains a sizable gap between high media trust and low media trust countries where PME is higher for the latter. Moreover, the rate of increase on PME-Politics as news search increases is greater under lower levels of populist communication (Figure 3(b)) and polarization (Figure 3(c)). Put in another way, low levels of polarization and populist communication did not confer resilience against PME-Politics as news search on social media increases. Implications of the findings are discussed next.

Discussion

Misinformation can have devastating consequences for society as citizens who believe in misleading or false information could make decisions that go against their own personal interests and well-being. Equally problematic are citizens' perceptions that misinformation is "out there" because such perceptions can drive mistrust and cynicism toward politics and the news media. Following the perception logic to the study of misinformation (Matthes et al. 2022), this study showed that news consumption behaviors through distributed discovery leads to greater PME. This is understandable as social media is by and large an unregulated space where non-professionals can

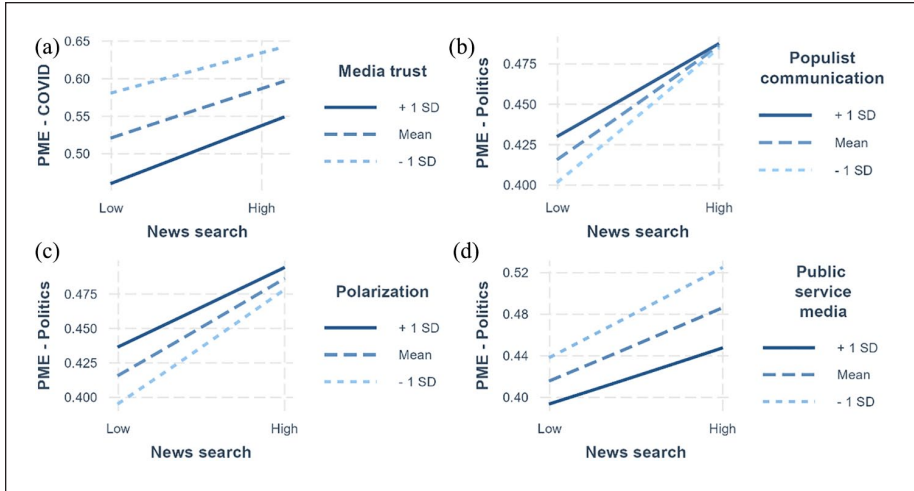


Figure 3. Cross-level interactions predicting PME-COVID and PME-Politics.
 Note. PME = Perceived misinformation exposure.

produce “news” of questionable veracity and non-mainstream actors can share radical or fringe opinions (Jones-Jang et al. 2020). Algorithmic sorting of search engine results might also not prioritize the veracity of news. From our global sample, 58 percent got their news incidentally from social media and 24 percent used search engines to look for news, so the “problem” of PME could be further exacerbated as distributed discovery increases around the world in the longer term.

Incorporating the resilience to online disinformation framework (Humprecht et al. 2020) in this study not only allowed for the examination of country-level predictors on PME but also test whether structural conditions at the macro level could indeed provide “resilience” to counter the distributed discovery of news and PME relationship. In terms of the direct relationships, the multilevel results replicated the country-level findings of Humprecht et al. (2020). That is, even when controlling for an extensive battery of individual-level variables we found that lower media trust and higher levels of social media news sharing at the country level predicted PME. The positive relationships are understandable because increased sharing of news on social media equates to greater quantity of news of questionable veracity in the social media space. Indeed, a perusal of the Supplemental Information file (Table A1) showed that countries with the lowest levels of news sharing (e.g., Denmark, Germany, Japan, Netherlands) generally had among the lowest overall PME, which contrasts with countries that have high levels of sharing (e.g., Colombia, Kenya, Nigeria, South Africa). The null finding for polarization is interesting as one would expect more substantial amounts of biased and opinionated information on social media in countries that are very polarized. A possible reason for this is that polarization was highly correlated with other variables in the framework (see Table 1), particularly with media trust and news sharing, so its predictive power was subsumed by the

other variables. It was also interesting that populist communication positively predicted PME-COVID and public service media negatively predicted PME-Politics, in accordance with the expectations of the resilience framework. This suggests that different country-level factors in the framework could be more salient for particular types of PME. For example, a cross-national survey of European Union countries showed that COVID vaccine hesitancy was associated with “anti-elite world views” engendered by populist parties rather than political ideology (Stoekel et al. 2022). The relationship between public service media news media and political knowledge is also well established in the literature (Fraile and Iyengar 2014), which presumably would engender better discernment of news veracity and contribute to lower PME. These possibilities can be further examined in future research.

From a normative standpoint, the resilience to online disinformation framework assumes that low levels of polarization, populist communication, and social media news sharing together with high levels of media trust and public service media “provide better conditions for resilience” against the dissemination and exposure of disinformation (Humprecht et al. 2020: 9). We extended these assumptions to PME in our cross-level interactions, but uncovered only one instance of soft resilience where higher levels of public service media attenuated the positive relationship between news search and PME-Politics. A possible explanation for this finding is that news from public service media is more prominent in news search results as major public broadcasters around the world have invested substantial resources on multiplatform news delivery and audience engagement (Debrett 2009), and the high audience reach of broadcasters such as the BBC in the U.K., NRK in Norway, and MediaCorp in Singapore, which exceed 70 percent, could be reflected in the high search engine placements of their content. And if the top search results are from sources known for high quality and professional journalism, it is reasonable to assume that PME could be lower.

The assumed resilience of high media trust, low polarization, and low populist communication was not evident in our cross-level interactions. In fact, the resilience of polarization and populist communication against PME-Politics dissipates as individuals engage in news search. A possible reason for this pattern of findings is that populist communications and polarized discourses do not feature prominently in news search results even though the country as a whole may be very polarized or have a substantive number of populist political parties or actors. There were no significant cross-level interactions for incidental news on social media even though the interaction with public service media again exhibited evidence of soft resilience, but at marginal statistical significance ($p < .10$). In all, this study provides a first test of the resilience to online disinformation framework on micro-level relationships and the results were mixed. This is not to say that the framework lacks explanatory power as measurement issues could also be a reason for the null findings as we elaborate later. Nevertheless, the finding that public service media could have an important role to engender greater resilience against PME when people navigate news online is a consequential one as it further exemplifies the importance of high-quality news and journalism as a bulwark against not only misinformation itself, but of citizens’ perceptions of misleading and false news in their media environments.

Limitations and Further Research

Several limitations of the study are worth noting. First, there were some factors in the resilience to disinformation framework that we were unable to include in the present study due to the practical difficulty to obtain data. Thus, our picture of the most important factors that makes a country resilient to misinformation is perhaps incomplete even though our significant findings for media trust and social media news sharing as the most salient predictors of PME were consistent with the findings of Humprecht et al. (2020). Second, as with any kind of analysis involving multilevel data, we must be cognizant that some of our country-level measures were aggregated from individual-level data. This is a perennial challenge in cross-national comparative research where expert-based surveys such as V-DEM and GPS can provide large number of indicators for between-country comparisons, but not those that are central to political communication researchers, such as social media news and media trust. Therefore, our findings should be interpreted with these practical constraints in mind. Third, some of our key measures were binary, and while our analyses found several significant relationships, it is possible that the lack of variance in the measures meant that other possible significant relationships were not uncovered. This might also explain why the effects sizes of the significant findings were not substantial. Future studies examining distributed discovery and PME could benefit by using continuous measures to take into account the relative strength of news media use and perceptions. Fourth, like previous studies of PME, this study took a normative position that PME is undesirable for democracy. Yet, some aspects of PME could feasibly overlap with concepts such as media skepticism, which some researchers have found to be positively related to general media trust (Quiring et al. 2021). Therefore, future work could take a more nuanced view of PME and not only continue to explicate the core antecedents that engender PME but also theorize and test for potential positive outcomes of PME.

Despite these limitations, this study makes an important contribution to the literature by integrating macro and micro perspectives to understand the conditions in which PME increases and decreases. Methodologically, it made incremental improvements to the resilience to disinformation framework by designing an original measure of PSB and using updated DNR data and a more conceptually consistent GPS data to operationalize populist communication. Practically, it replicated and extended the application of the framework to the phenomenon of PME beyond Western democracies to include countries in Asia, Oceania, Latin America, Africa, and Central/Eastern Europe. Indeed, PME is fundamentally different to actual exposure to misinformation, and the two phenomena might not even be correlated. Yet, it is no less important to continue to study PME at the global level because it can substantively affect citizens' attitudes toward their media environments and quality of their political systems.

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. There are some exceptions. In countries such as India, Kenya, Nigeria, and South Africa the samples are only representative of younger English speakers and not the national online population. See “Methodology” for more details at <https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2021/methodology>
2. More details on the selection of country experts are available at <https://www.v-dem.net/about/v-dem-project/methodology> for V-DEM and <https://www.globalpartysurvey.org/methods> for GPS data.

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