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Conceptual and methodological approaches in societal resilience research

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The report is one of five literature reviews by BECID aimed at highlighting different aspects of research relevant to the EDMO network. Find all on our website.

Introduction

This systematic literature review aimed to investigate public responses and capacities in coping with the increasing challenges and risks associated with disinformation and other media-related disorders. It is based on more than 150 articles published since 2010. The primary objective of this review was to understand how resilience to disinformation and other information disorders is conceptualized and operationalized in academic literature.

One central aspect of the study focuses on the conceptualization of resilience. The studies define societal resilience against disinformation mainly as the social capacities, competences, and resources available to individuals and different groups in society to recognize and counteract the harmful effects of disinformation.

Resilience to disinformation is defined as a state in which disinformation fails to reach a significant portion of citizens or, at the very least, is unsuccessful in persuading those who encounter it to disseminate it.

Research indicates that societal resilience and the capacity to cope with disinformation are specific to each country and highly dependent on the socio-political and information environment. These studies shed light on various factors, including structural conditions (networks, institutions, and discourses) on one hand, and social actors' (individual capacities and agency) approach on the other. They also highlight sociocultural factors (values, knowledge, trust, and practices) and contextual factors (social, political, and economic conditions, institutional settings, and power relations).

The study explores vulnerabilities stemming from disinformation, spanning various domains such as democracy, security, public health, economics, and technology. Furthermore, the report delves into conditioning factors that impact vulnerability or resilience to disinformation. These factors include characteristics of information, the environment, and information recipients.

Research and policy studies included in the literature review illustrate are providing evidence on the international, institutional, and both collective and individual awareness of the risks, including the ways and measures to cope with them.

The report examines the actors involved in bolstering resilience to disinformation, including policymakers, academia, media, civil society, business, and citizens. Cooperation among these actors is considered critical, especially in the absence of a lead agency responsible for countering disinformation. Malignant actors, which can encompass authoritarian states, political forces, media outlets, and unwitting contributors to disinformation, are also acknowledged.

The report discusses vulnerable groups, highlighting how demographics like age, education, and social status can condition vulnerability or resilience to information disorders. Finally, it introduces measures, interventions, and mitigation strategies for countering disinformation, which can be preventive, reactive, or proactive in nature.

In terms of research methods, a wide range of approaches is employed in the study of disinformation, including case studies, surveys, interviews, experiments, focus groups, discourse analysis, content analysis, ethnographic observations, and stakeholder mapping. This diverse methodological toolkit allows for a comprehensive exploration of resilience to information disorders.

By presenting a wide range of research approaches, this review provides a comprehensive examination of resilience to information disorders across different dimensions, making it a resource for addressing the contemporary challenges of disinformation.

Search protocol and inclusion/exclusion criteria

The timeline for the search was set from 2010 to May 2023. Two separate searches were conducted to approach the issue from different angles - using the terms "resilience" and "vulnerability" (and related terms) in combination with specific keywords (see Annex 1).

The search was conducted among peer-reviewed articles in English within the Web of Science, Scopus, and EBSCO databases. During the search, articles from fields unrelated to social science were excluded (see Annex 2).

For the "**resilience**" search, a total of 9,035 articles were found in Web of Science, 6,124 in Scopus, and 12,312 in EBSCO. For EBSCO, manual selection was further applied to include only articles related to the information and communication field within the context of media literacy, disinformation, and other forms of deviant information. This narrowed it down to 378 articles in the dataset. These 15,537 articles were uploaded to Rayyan, where automatic duplicate detection was applied with a threshold of 95% similarity. Subsequently, manual removal of duplicates resulted in 4,019 duplicates removed and the identification of 2 non-duplicates, leaving 11,518 articles for further analysis. Of these, 10,870 were deemed irrelevant to the topic of resilience to disinformation and other information disorders, leaving 226 articles for further study.

For the "**vulnerability**" search, a total of 8,012 articles were found in Web of Science, 7,041 in Scopus, and 20,721 in EBSCO. Similar to the resilience search, manual selection was applied for EBSCO to include only articles related to the information and communication field within the context of media literacy, disinformation, and other forms of deviant information, resulting in 109 articles in the dataset. These 15,162 articles were uploaded to Rayyan, where automatic duplicate detection was applied with a 95% similarity threshold. Manual removal of duplicates resulted in 4,007 duplicates removed and the identification of 2 non-duplicates, leaving 11,113 articles for further analysis. Of these, 10,834 were deemed irrelevant to the topic of resilience to disinformation and other information disorders, leaving 279 articles for further study.

In total, 505 articles were placed in the dataset, with 12 removed as duplicates (present in both the "resilience" and "vulnerability" datasets), 14 removed as they were not articles from peer-reviewed journals, and 6 removed for being in a language other than English. This resulted in **473** items that were subsequently studied by the research team.

Each article was reviewed by two scholars to make a decision, and if both independently decided to exclude it based on certain criteria, the article was excluded. Articles were further excluded based on specific criteria:

- articles in economics and marketing (15)
- articles in natural science (2)
- articles on the legislative topics not directly related to resilience to information disorders (7)
- articles on the mental health issues not directly related to resilience to information disorders (46)
- articles on the personal development and education not directly related to resilience to information disorders(48)
- articles on the ethics and philosophy not directly related to resilience to information disorders(12)
- articles on the political and security topic not directly related to resilience to information disorders (59)
- articles on the social justice and social security issues not directly related to resilience to information disorders (28)
- articles on the technological issues not directly related to resilience to information disorders (25)
- articles with quite narrow focus: on the conspiracy theories (2), deep fakes (3), health care disinformation (27), journalism (13), libraries (2), scientific knowledge (4)

This resulted in **181 articles to be included in the literature review**.

Literature orgnization

To identify the methodological approach of the articles, we categorized them into two groups: empirical and non-empirical. Empirical articles employed one of the following methods:

1. Qualitative text analysis
2. Interviews
3. Content analysis
4. Surveys
5. Mixed methods design
6. Case study analysis
7. Literature review
8. Social media/network analysis
9. Scenario analysis

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10. Computational methods

This list of approaches to the empirical material was compiled with consideration of methods commonly used in the social sciences and information and computer sciences. The classification of social science methods was based on Maares and Hanusch (2022), and additional methods were included in the list following the initial reading of the articles by coders.

To illustrate the scope of the treatment, we also coded the use of datasets, distinguishing between local/national and international comparative datasets. Additionally, we identified the context relevant to understanding the results, distinguishing between single-country studies and multi-country studies. This categorization allowed us to determine which countries were analyzed from the perspective of disinformation and societal resilience in the articles.

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Critical analysis: major trends, controversies, and/or gaps in the literature. Discuss any methodological limitations or biases in the existing research, especially pay attention to the results of already existing literature reviews

Resilience in the context of information disorders has gained recognition as an important concept in the realm of communication narratives. In the post-truth era, given the shared understanding among academics and policymakers that disinformation, much like a "biological" virus, may be difficult to completely eliminate, the concept of resilience towards it is likened to a form of "social immunity."

The first significant aspect of this study pertains to the conceptualization of key terms. When discussing disinformation in general, various related types of information disorders have been included for the purpose of this study. As highlighted by Kapantai et al. (2021) in their literature review, there is a multitude of terms used in this context, including fake news, false news, misinformation, rumors, information pollution, and more. Disinformation, in their understanding, encompasses all forms of false, inaccurate, or misleading information that is intentionally created, presented, and promoted to cause harm to the public or for profit. They acknowledge that while some scholars use "disinformation" as a hypernym (Amazeen & Bucy, 2019), others propose that "information disorder" is a broader term (Wardle & Derekshan, 2017).

The list of information disorders also includes conspiracy theories (Lewandowsky & Van Der Linden, 2021; Vériter et al., 2020), psychological information operations (Mlejnková, 2022), and propaganda (Golob et al., 2021).

Wardle & Derekshan (2017, as cited by Kyza et al., 2020) also distinguish between misinformation, disinformation, and malinformation, a distinction supported by other

scholars (Bjola & Papadakis, 2021; Di Mascio et al., 2021; Romanova et al., 2020). Misinformation refers to false information disseminated without an underlying intention to cause harm, while disinformation is characterized by a deliberate intent to do so. Malinformation is another type of information intended to cause harm while being genuine (Wardle & Derekshan, 2017, as cited by Kyza et al., 2020).

Some studies in the field of disinformation specifically address the risks associated with the online/digital environment (Bjola & Papadakis, 2021; Delgado et al., 2022; Kyza et al., 2020; Lee, 2018). However, the purpose of this review was not limited to that context.

Resilience to disinformation can be defined as a state in which disinformation fails to reach a large number of citizens or, at the very least, compels those who encounter it to refrain from further dissemination (Humprecht et al., 2020), or as an asset represented by an awareness of disinformation's impact and the ability to identify it (Rodríguez-Pérez & Canel, 2023). Scholars discuss societal resilience against the threat of disinformation as a collective national resource rooted in the attitudes and behaviors of individuals (Rodríguez-Pérez & Canel, 2023). In the context of modern information warfare, individuals influence each other, shaping the dynamics of resilience (Mlejnková, 2022). This resilience is a product of ongoing discourse and communicative interactions, representing a collective phenomenon rather than an isolated individual one (Buzzanell, 2010).

Humprecht's model elucidating resilience against online disinformation (2020), offering insights into cross-national variations in disinformation exposure and associated responses, has gained recognition among contemporary scholars and is referenced in numerous academic works. The model presents a set of indicators, encompassing factors such as the prevalence of populism, degrees of polarization, media trust, the robustness of public broadcasting, shared media environments, media market size, and social media news consumption. These indicators are of particular interest and will be included in the broader taxonomy of potential resilience indicators against disinformation. It is important to note that while these indicators are valuable, they are not exhaustive, and a comprehensive examination of additional factors remains relevant.

VULNERABILITIES

Resilience to information disorders has far-reaching implications across various fields of knowledge. Articles and literature reviews explore the detrimental effects of disinformation on democracy, security, public health, economic stability, technological issues, and more.

In the context of democracy, the threats posed by disinformation are discussed, including the risks of election manipulation by internal and external malignant actors (Kapantai et al., 2021; Lee, 2018; Shackelford et al., 2020; Vériter et al., 2020). Disinformation also fuels the rise of populist movements, reinforcing their claims (Di Mascio et al., 2021; Tripodi et al., 2023), and it is utilized to launch attacks on the democratic institutions of the EU or the US using COVID-related disinformation (Jerónimo & Esparza, 2022). Disinformation erodes trust in democratic societies, affecting the legitimacy of social and political institutions, leading to a trust crisis and a declining willingness of people to believe in facts (Claudia, 2022; Di Mascio et al., 2021; Lewandowsky & Van Der Linden, 2021; Rodríguez-

Pérez & Canel, 2023). Democracies are particularly vulnerable to disinformation due to limited means to deal with it effectively (Shadmy, 2022). Bjola & Papadakis (2021) provide a comprehensive overview, highlighting how disinformation harms the epistemological basis for truth-claim validation, intensifies emotional discussions, empowers destructive counterpublics, and reinforces challenges to multiculturalism and diversity. They note that information shared in this context often popularizes anti-EU and anti-NATO narratives.

Security challenges resulting from disinformation closely intertwine with democracy-related issues, partly due to the role of polarization and radicalization as security challenges. Scholars (Juurvee & Arold, 2021; Kapantai et al., 2021; Lewandowsky & Van Der Linden, 2021) argue that disinformation is associated with the spread of hatred, uncertainty, fear, hate crimes against minorities (e.g., immigrants), vandalism, supremacism, Islamophobia, racism, or misogyny (Vériter et al., 2020). Echo chambers amplify already-established radical beliefs, making them more dangerous (Bjola & Papadakis, 2021; Di Mascio et al., 2021).

In the realm of public health, scholars have focused on the impact of COVID-related infodemics (Boulianne et al., 2022; Di Mascio et al., 2021; Jerónimo & Esparza, 2022). However, the negative effects on public health extend beyond COVID, affecting areas like vaccination (Ajovalasit et al., 2021; Claudia, 2022), cancer, and nutrition (Kapantai et al., 2021).

From an economic perspective, disinformation leads to the rejection of technologies (Kapantai et al., 2021; Vériter et al., 2020), impacting economic stability, market responses, and media-policy adjustments related to information disorders (Kapantai et al., 2021; Kõuts-Klemm et al., 2022). It threatens economic recovery (Vériter et al., 2020) and facilitates scams and cyberattacks (Lee, 2018). Tripodi et al. (2023) provide a quantifiable estimate of the trust issues imposed by disinformation, causing daily losses of up to USD 50-300 million in the United States.

In the technological realm, the importance of cyber defense and safeguarding information systems is emphasized. This is closely tied to the social dimension, as technologies are ultimately evaluated and used by people. Human cognition and psychological factors in cybersecurity are as important as technological aspects (Juurvee & Arold, 2021; Mlejnková, 2022). This cybersecurity component is interconnected with the previously mentioned democracy and security aspects, as the spread of disinformation using technical means exacerbates challenges related to democracy, elections, and polarization (Manwaring & Holloway, 2023).

CONDITIONING FACTORS

In their literature review on disinformation taxonomy, Kapantai et al. (2021) consider various characteristics that describe the proliferation of disinformation. These characteristics fall into three key categories: characteristics of the information, characteristics of the environment, and characteristics of the information recipients. These categories encompass the majority of the conditioning factors discussed in academic literature on the topic.

When examining the **characteristics of information**, it becomes evident that psychological biases play a significant role. As mentioned earlier, information that aligns with an individual's existing beliefs is more readily accepted (Kapantai et al., 2021; Levine, 2022; Millar, 2022).

Mlejnková (2022) sheds light on selective exposure, a phenomenon in which dissatisfied information consumers seek alternative sources. These sources may either provide verified, trustworthy information or, conversely, propagate false news. This underscores the influence of psychological biases on the acceptance and pursuit of information.

Disinformation becomes more noticeable when it is repeatedly disseminated (Kapantai et al., 2021; Levine, 2022; Millar, 2022). Furthermore, the effectiveness of this propagation is enhanced when disinformation messages are infused with emotional content designed to engage and manipulate the irrational aspects of the human psyche (Kapantai et al., 2021).

Disinformation itself spreads more rapidly than actual information (Kyza et al., 2020) and has a "stickier" presence in human memory, exerting a prolonged influence (Lewandowsky & Van Der Linden, 2021). Millar (2022) adds that the continued influence of disinformation, even after it has been convincingly "corrected" for an individual, persists because the information is not simply deleted from memory but remains accessible and activated when prompted deliberately. This phenomenon is also related to the sleeper effect, which causes us to remember information longer than its source (Mlejnková, 2022).

While often carrying negative messages, disinformation spreads more rapidly due to factors such as arousing fear, a fundamental instinct (Kapantai et al., 2021), and informativeness (Salvi et al., 2021). A sense of urgency also contributes to the receptivity of disinformation (Kapantai et al., 2021), exemplified by click-bait ads and fake news on the internet.

In a post-truth context, false information is associated with questioning reality and presenting "alternative facts" that are used to provide a sense of "rationality" (Jerónimo & Esparza, 2022; Tripodi, 2023).

When it comes to the **characteristics of the environment**, it is widely acknowledged that the Internet and social media platforms contribute to decreased resilience and facilitate the rapid spread of disinformation (Boulianne et al., 2022; Di Mascio et al., 2021; Epstein et al., 2023; Golob et al., 2021; Humprecht et al., 2023; Kapantai et al., 2021; Miyamoto, 2021; Mlejnková, 2022; Vériter et al., 2020; Yang et al., 2021).

Tripodi et al. (2023) argue that individuals with weak literacy skills and a tendency to engage in "vertical reading" on the internet, often developed due to the overwhelming amount of information, are vulnerable to exploitation by propagandists. This is further elaborated by Pennycook & Rand (2021, as cited in Claudia, 2022), who point out that people tend to use quick, simplified thinking when encountering news headlines, making them more prone to believing something that looks familiar.

Additionally, the contemporary mode of content dissemination on social media, the business models employed by these platforms, and their technological designs contribute to the proliferation of disinformation (Bjola & Papadakis, 2021; Shadmy, 2022). The

situation has been exacerbated with the development of AI and bot technologies (Jerónimo & Esparza, 2022).

In a paradigm where we consider each individual as a unique universe, it becomes evident that an **individual's characteristics** play a crucial role in shaping their resilience to disinformation.

In a paradigm where we view each individual is a unique universe, the **characteristics of a person** play a role in shaping their resilience to disinformation.

Claudia's review (2022) highlights several factors that make people susceptible to disinformation, including characteristics such as anxiety, histrionism, schizotypy, paranoia, narcissism, delusionality, dogmatism, religious fundamentalism, receptivity to misinformation, overclaiming, and magical beliefs.

Resilience to disinformation is closely linked to cognitive abilities and analytical skills that enable individuals to effectively process incoming information, differentiating between truth and falsehood (Rodríguez-Pérez & Canel, 2023). A study by Salvi et al. (2021) succinctly illustrates that the capacity to recognize disinformation is negatively correlated with cognitive inflexibility, a tendency to overlook alternatives, and a propensity for binary ("black-and-white") thinking.

One interesting cognitive bias discussed by Millar (2022) and Greifeneder (2021, as cited in Claudia, 2022) is the truth bias. When individuals encounter a claim that could be either true or false, they tend to accept it as true. Millar's study suggests that cultivating a propensity for analytical thinking can help people identify disinformation, but it may still leave them susceptible to believing false information that aligns with their pre-existing beliefs. Moreover, Millar assumes that most people are unlikely to invest time, money, and effort into verifying information found on the internet. Furthermore, the conceptual treatment of human information processing by Zimmerman et al (2021) shows that the information disorders are difficult to compete with, since humans tend to presume honesty in others in most situations (2021, p. 122).

Resilience to disinformation is intricately linked to political interests, polarization, and ideology, as evidenced by various studies (Boulianne et al., 2022; Humprecht et al., 2023; Lewandowsky & Van Der Linden, 2021; Salvi et al., 2021; Stein et al., 2023). Motivated information consumers tend to overly believe content that aligns with their identity and position (Pennycook & Rand, 2021, as cited in Claudia, 2022).

The impact of social media cannot be underestimated, as certain groups actively exploit these platforms due to their absence from traditional channels (Jerónimo & Esparza, 2022). Individuals sharing certain marginal beliefs are also active internet users. It's worth noting that individuals often perceive members of opposing political parties as more susceptible to disinformation (Kapantai et al., 2021).

Political alignment with right-wing ideologies appears to play a significant role in shaping susceptibility to false information (Rodríguez-Pérez & Canel, 2023). This alignment shares characteristics such as skepticism towards fact-checking (Lyons et al., 2020).

Speaking of skepticism, it can also serve as a positive trait. People who deliberate more are less likely to believe false content and are better at distinguishing between true and false information (Pennycook & Rand, 2021, as cited in Claudia, 2022). Knowledge skepticism, characterized by questioning established facts and expert authority, poses additional challenges to disinformation resilience, as noted by Drotner (2020).

In polarized societies, issues with limited political consensus, such as critical health concerns (e.g., COVID-19 infodemics), are especially vulnerable to ideological divisions, making productive discussions unlikely (Ajovalasit et al., 2021). Conversely, one explanation for people believing fake news is the presence of social consensus, where they observe that many other people (Claudia, 2022) or people within their social network (Levine, 2022) believe it.

In addition to the characteristics discussed, scholars have noted cross-country differences in the resilience of citizens to disinformation (Humprecht et al., 2023; Rodríguez-Pérez & Canel, 2023). These differences will be the focus of our subsequent research. Various countries, including the Czech Republic (Rychnovská & Kohút, 2018), the Baltic states (Kõuts-Klemm et al., 2022), specifically Estonia (Miyamoto, 2021), the Western Balkans (Dolan, 2022), and Spanish-speaking countries (Rodriques-Virgili et al., 2021), have been specifically discussed in the context of the challenges posed by disinformation.

These factors can manifest at both the micro (individual) and macro (societal) levels and exhibit intricate interconnections.

ACTORS

The actors involved in sustaining resilience to disinformation include policymakers, academia, media, civil society, businesses, and citizens themselves, and their interaction is largely accounted for by cooperation.

Policymakers are perceived as responsible for keeping a pulse on "the real world" and taking steps to address problematic areas (Kyza et al., 2020; Rodríguez-Pérez & Canel, 2023). The recommendations they make and the sanctions they impose should be carefully balanced to avoid eroding trust within society (Kyza et al., 2020). Cooperation between policymakers, civil society, and the media plays a crucial role in countering disinformation (Di Mascio et al., 2021). Mlejnková (2022) highlights the increasing relevance of a holistic society-centric approach, placing society at the forefront of efforts to combat information warfare, emphasizing the interplay of one individual's influence on another. Rychnovská & Kohút (2018) note that the diversity of experts in the field of disinformation reflects the broad range of required knowledge and is beneficial for coverage since various audiences are connected to various kinds of experts.

This collaboration becomes particularly essential in the absence of a lead agency responsible for countering disinformation, a vacuum that is often exploited by malignant actors (Miyamoto, 2021). Also, the lack of understanding by policymakers of the importance of media policy and challenges in that sphere decreases the efficiency of their collaboration (Kõuts-Klemm et al., 2022).

The studies recognize the role of civil society and citizens in enhancing resilience against disinformation by promoting diverse ideas, opinions, and multiple stakeholder perspectives, thus fostering flexibility (Kyza et al., 2020; Romanova et al., 2020). Miyamoto (2021) cites Estonia and Taiwan as examples of successful civil society involvement in collaboration with governmental bodies. While citizens are considered vulnerable information consumers at the macro level (Bjola & Papadakis, 2021; Miyamoto, 2021), they simultaneously act as both consumers and distributors at the micro level, highlighting their multifaceted role in information ecosystems.

The role of media in sustaining resilience is largely related to directly combating disinformation, improving citizens' skills and knowledge, and enabling them to cope with information disorders (Kyza et al., 2020; Rodríguez-Pérez & Canel, 2023; Romanova et al., 2020), providing assistance with the interpretation of events, individuals, or objects that are on the agenda (Golob et al., 2021), and even contributing to the political transformation of societies and the functioning of democracies (Kõuts-Klemm et al., 2022).

Some scholars specifically discuss the role of news media. For instance, Altay et al. (2023) find limited support for the notion that news media exacerbate misinformation issues. They recognize that the role of news is not unequivocal, as it exposes individuals to disinformation risks, but conclude that news media are important for keeping people informed and resilient. Steensen & Eide (2019) argue that news has become separate from journalism since the rise of social media. Based on the analysis of the 2011 terrorist attacks in Norway and news coverage thereof, they suggest that polyvocality provided by the news is key to societal resilience to crises, allowing people to express themselves, access the sources they trust, and share a collective response.

Journalists are those who can tell the difference and identify fake news as "more of a thing" (Mcdougall, 2019), contributing to the debate on dealing with disinformation (Rychnovská & Kohút, 2018). The special importance of media is recognized in countries with sizable vulnerable populations, such as Estonia with its Russian-speaking minority, as exemplified by Miyamoto (2021). The importance of media, especially local media, is mentioned by Jerónimo & Esparza (2022) as a vulnerability that enables the easier proliferation of disinformation.

Regarding the participation of academia and educators, they are contributors on a broad level, taking part in the debate on fake news and disinformation (Rychnovská & Kohút, 2018) and updating curricula to make them suitable for modern information disorders (Golob et al., 2021; Miyamoto, 2021). Teachers and school leaders are important for daily interventions, encouraging the development of information skills (Monteiro et al., 2022), contributing to the strengthening of digital literacy (Chohan & Hu, 2022), developing educational approaches to facilitate challenges like knowledge skepticism (Dronter, 2020), citizens' awareness of their vulnerability (Rodríguez-Pérez & Canel, 2023), or disinformation about vulnerable groups (Melo-Pfeifer & Gertz, 2022).

The role of libraries is specifically mentioned as well, with libraries checking sources for information literacy (Mcdougall, 2019; Mehrad et al., 2020), and their employees being trusted community members capable of confronting disinformation (Tripodi et al., 2023).

The roles of business platforms are also mentioned by scholars, mostly concerning technological companies and their responsibility for policies and content (Golob et al., 2021; Habro et al., 2020; Romanova et al., 2020; Tan, 2022).

Speaking about malignant actors, although they are not sole contributors to the spread of disinformation, and this is largely explained by the character of the environment itself (Shadmy, 2022), it is better not to ignore the existence and role of such actors in the field.

Malignant actors may include authoritarian states (Bjola & Papadakis, 2021; Di Mascio et al., 2021; Manwaring & Holloway, 2023; Shackelford et al., 2020), populist and illiberal political forces within countries (Di Mascio et al., 2021; Juurvee & Arold, 2021), media organizations that participate in disinformation and propagandistic campaigns (Habro et al., 2020), and even "useful idiots" who unwittingly contribute to the spread of information disorders (Juurvee & Arold, 2021). In broader terms, as acknowledged by Vériter et al. (2020), "state and non-state actors are at the source of disinformation, which organizations, the media, and individuals, including public figures, may then relay".

Speaking of the latter, it is necessary to mention a study by Bjola & Papadakis (2021) on counterpublics, which offers an explanation of that phenomenon. Counterpublics are acknowledged as an important group that is both an actor and a group vulnerable to disinformation. Being politically mobilized, these groups promote issues associated with the disinformation agenda and engage in parallel discursive arenas, inventing and circulating counter-discourse to sustain the oppositional interpretation of their identities and interests. While classically associated with marginalized social groups (at different points, women, workers, racial or sexual minorities), from the standpoint of "unruly" actions, counterpublics are rather associated with populist or radical movements. For instance, elaborating on the Finnish case, the authors identify them as anti-immigrant, anti-feminist, anti-Islamist groups calling for traditional values (radical right-wing), while also expressing reservations against the state for being "corrupted".

VULNERABLE GROUPS

The discussion of vulnerable groups in terms of demographic characteristics in the present review offers several findings that may be taken into account. Demographic characteristics like age, education, and social status may play a role in conditioning vulnerability or resilience to information disorders, including specific types like conspiracy theories, fake news, and rumors. It's worth noting that some scholars argue that the strategies for dealing with information disorders, whether it's misinformation stemming from ignorance, disinformation being planned, or other types, do not fundamentally differ (Golob et al., 2021).

As for the age dimension, the sources tend to have a consensus that older people are more vulnerable to information disorders, including disinformation (Boulianne et al., 2022; Claudia, 2022; Dudin et al., 2019; Golob et al., 2021; Miyamoto, 2021; Rodríguez-Pérez & Canel, 2023); yet it is recognized that young people have their own challenges, largely associated with the extensive use of digital technologies (Miyamoto, 2021; Monteiro et al., 2022).

Education has some positive effect (Dudin et al., 2019; Golob et al., 2021; Rodríguez-Pérez & Canel, 2023), though it is not always decisive (Boulianne et al., 2022; Claudia, 2022). Higher income, at the same time, is a factor that favors resilience (Dudin et al., 2019).

As for the gender question, there are very different findings among scholars. Boulianne et al. (2022) argue that "being female is rarely significant as a factor in predicting awareness of, exposure to, and sharing of misinformation," while the article by Rodríguez-Pérez & Canel (2023) states that women have less resilience to disinformation, which, according to their own commentary, contradicts other studies (Golob et al., 2021; Humprecht et al., 2021). One of the potential explanations may be conveyed from Golob et al. (2021) study, where the authors elaborate that while having higher meta-reflexivity, women may have fewer opportunities to additionally check media content due to being more distracted in domestic spaces.

SOLUTIONS (MEASURES / INTERVENTIONS / MITIGATION STRATEGIES) FOR DISINFORMATION

Before delving into the studies of solutions for strengthening resilience, it's important to first understand how resilience is established or installed.

The importance of cooperation and multidisciplinarity in implementing these actions is emphasized in various dimensions, as discussed by Bjola & Papadakis (2021), Di Mascio et al. (2021), Jerónimo & Esparza (2022), Kapantai et al. (2021), Kõuts-Klemm et al. (2022), Kyza et al. (2020), Miyamoto (2021), and Shackelford et al. (2020).

Kapantai et al. (2021) discuss various actions against disinformation, including large counter-disinformation initiatives, educational interventions, fact-checking programs, the development of common codes of principles, and the establishment of relevant institutions.

Kyza et al. (2020) argue that responses to information disorders should consider the diverse voices of stakeholders and should be relevant to various fields, such as politics, healthcare, environmental protection, and commerce. They highlight the importance of close cooperation between online platforms and other stakeholders, enabling policymakers, experts, and fact-checkers to apply their expertise. They stress the need for transparent and explainable policies in this area, especially in the context of online disinformation.

Mlejnková (2022) notes that societal and technological resilience should go hand in hand, emphasizing that the role of people remains crucial in evaluating the outputs of modern technologies.

Di Mascio et al. (2021) investigate responses to the COVID-19 infodemic and observe a shift towards co-regulatory approaches. Platforms are expected to act more responsibly, shaping a multi-stakeholder decision-making triangle that includes the platforms, civil society (including researchers and fact-checkers), and policymakers (public authorities).

At the EU level, StratCom Task Forces have been created to address challenges, including Russian disinformation (Romanova et al., 2020). Additionally, a High-Level Expert Group on fake news and online disinformation (HLEG) was established (Di Mascio et al., 2021).

Regarding how cooperation functions in terms of these measures, there is a perspective on resilience to disinformation that aligns with the well-known "freedom-security dilemma". According to Romanova et al. (2020), this dilemma represents a continuum where one extreme is public security, and the other is public freedom.

In practical terms, this dilemma was exemplified by Kye et al. (2020), who describe an instance where people feared the removal of content they perceived as extremist, as it could have been seen as an attack on freedom of speech.

The concept of resilience to disinformation can be viewed through different paradigms.

The paternalistic paradigm involves bouncing back or returning to homeostasis, and it has its origins in hard science, among other fields (Buzzanell, 2010). In contrast, the adaptive paradigm focuses on "bouncing forward," which entails adjusting to new threats, as reflected in Kõuts-Klemm et al.'s (2022) observation that resilience helps in adapting to these new challenges. The former relies more on authorities, while the latter places greater emphasis on citizen involvement, empowering individuals to evaluate disinformation and prevent its spread (Lazer et al., 2018, as cited by Golob et al., 2021).

Romanova et al. (2020) define three approaches to resilience in the context of information disorders. Two of these approaches align with either the adaptive or paternalistic paradigms, while the third represents a hybrid of both paradigms. The first approach, rooted in the adaptive paradigm, emphasizes self-organization and adaptability for resilience. Systems evolve in response to threats in this approach. The second approach involves government intervention to maintain stability, indicating lower trust in citizens' critical thinking abilities. The third approach is characterized by government control and regulation, raising concerns about potential infringements on free speech and information rights.

While Romanova et al. (2020) believe that adaptive paradigm is more flexible, and the paternalistic approach while seeming more reliable has its limitations and turns rigid against some threats, it might not be safe to neglect some paradigm or approach. For instance, Mlejnková (2022) discusses four levels of resilience concerning information disorders: cognitive resilience, institutional settings, technological operations, and the legal framework. She points out that since cognitive resilience has natural limits, legal and technological measures are necessary components to effectively combat disinformation.

The academic literature reveals that measures employed by nation-states or international entities may encompass various strategies to combat information disorders. These strategies include **preventive**, which involve the containment and restriction of information disorders through regulatory enforcement and other policy actions; **reactive**, which encompass activities such as debunking and fact-checking to counteract misinformation; and **proactive**, which focus on the development of media and information literacy initiatives.

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The choice of strategy for addressing information disorders often depends on the specific context, goals, and available resources. The effectiveness of these measures may also vary when dealing with the pervasive challenges posed by information disorders in the contemporary information landscape. These measures necessitate the cooperation of different actors and emphasize the importance of an interdisciplinary approach.

Preventive measures are particularly reasonable in situations where powerful external sources of disinformation pose a threat to various aspects of societal stability, such as the healthcare system and economic recovery. Taking binding preemptive measures to contain and neutralize disinformation is just as critical as implementing reactive and proactive measures (Vériter et al., 2020).

In conclusion, this essay argues that the future of European stability depends not only on ensuring societal resilience to disinformation and conspiracy theories but also on designing preemptive mechanisms and confronting external sources of disinformation that jeopardize European healthcare provisions, economic recovery, and geo-economic strength.

<p style="text-align:center">✳ ✳ ✳</p>

While the importance of reactive measures is acknowledged (Rodríguez-Pérez & Canel, 2023; Romanova et al., 2020), especially in situations where citizens' ability to analyze information has not yet reached a desirable level (Golob et al., 2021), it's worth remembering that simply presenting corrected information doesn't always work for the public. In some cases, when fundamental beliefs are involved, it can even worsen the situation (Kyza et al., 2020; Millar, 2022).

Proactive measuresfocus on citizens and their attitudes, rather than just the information itself. Millar (2022) writes that fulfilling the obligation to avoid sources with disinformation is relatively easy, and it's important for citizens to engage in that practice.

There is a consensus recognizing media literacy, including its digital aspects, as a crucial point in sustaining resilience to information disorders. Civic media literacy, encompassing critical thinking and online culture, is mentioned by Bjola and Papadakis (2021). Policy recommendations on improving digital security and awareness of how algorithms and data function are offered by Miyamoto (2021). Monteiro et al. (2022) note that digital citizenship of the youth can be improved through education, and Lee (2018) suggests that there is room for action in the digital education of older adult populations as well. Rodríguez-Pérez & Canel (2023) emphasize that educational strategies in terms of information literacy should raise citizens' awareness of their vulnerabilities in differentiating truth claims from falsehoods. Citizens' empowerment complements regulatory policy responses and is of no less importance. Media literacy education is largely about empowering people to make informed decisions and take an active role in society, facilitating a critical approach to all sources. It is a long-term intervention rather than a short-term solution (Golob et al., 2021; McDougall, 2019).

Lewandowsky & Van Der Linden (2021) believe that inoculation may be a promising avenue to boost resilience to disinformation. Inoculation comprises warning messages that

activate the threat and prebunking (refutational preemption). This process may be more efficient when people are not passively provided with argument refutation but are tasked to generate their own counter-arguments.

Habro et al. (2020) also write about "vaccination" (inoculation), which consists of delivering the original message and preventing the detection of false claims that may arise when the message is released. However, they admit that it's not easy to reproduce such an approach in practice.

As an example of a comprehensive approach to sustaining resilience to disinformation, Bjola and Papadakis (2021) provide an example from Finland. Instead of fact-checking every narrative, policymakers aim to instill a new sense of identity based on education, social equality, and political stability, where there will be less space for information disorders.

METHODOLOGY

The articles published are mainly empirical, utilizing data collected through accepted social science methods. These methods encompass a wide range of approaches to study resilience-related issues. These methods can be classified based on the level of analysis, as micro-level, meso-level, and macro-level analyses often require distinct methodological approaches.

Micro-level analysis is the most common research design when analyzing vulnerability or resilience. Researchers employ various methods to study the vulnerability of social groups, individuals, or the activities of specific actors. These methods include in-depth interviews (Kyza et al., 2020; Mcdougall, 2019; Tripodi et al., 2023; Zainab et al., 2022), focus groups (Cummings & Cleghorn, 2022; Hammond et al., 2022; Kyza et al., 2020; Manwaring & Holloway, 2023), or experiments (Epstein et al., 2023; Habro et al., 2020; Scharrer et al., 2022; Stein et al., 2023). Survey designs are often used to incorporate an attitudinal component into the analysis and to generalize the findings to a broader scale (Altay et al., 2023; Bargaoanu & Radu, 2018; Boulianne et al., 2022; Delgado et al., 2022; Golob et al., 2021; Humprecht et al., 2023; Lyons et al., 2020; Manwaring & Holloway, 2023; Monteiro et al., 2020; Raposo-Rivas et al., 2021; Rodríguez-Virgili et al., 2021; Salvi et al., 2021). Less frequently, other qualitative methods are used, such as ethnographic observations (Tripodi et al., 2023) or stakeholder mapping (Rychnovská & Kohút, 2018).

Typically, researchers use a single-group design, whereas the multi-group design allows better consideration of the role of different actors in building the resilience of a particular group, as demonstrated by Hammond et al. (2022) in the case of digital resilience among pre-teens, who are also influenced by parents, teachers, and government actors. The generalizability of the study is often limited if contextual factors are not taken into account. The analysis of vulnerability and resilience has shown the importance of context.

Another object of research can be different types of texts. The analysis of public texts or social media posts provides knowledge about the structure that influences resilience. In this case, qualitative or quantitative analysis of media or other texts is used (Ajovalasit et

al., 2021; Romanova et al., 2020). The analysis of texts is less common when we talk about vulnerability or resilience.

At the **macro level**, researchers often compare different societies and countries to assess their resilience to disinformation. A pioneering study in this area was conducted by Humprecht et al. (2020), who presented indicators of resilience in cross-country comparisons. Various tools are used to distinguish more resilient from less resilient countries analytically. One approach is to utilize different indices that classify countries based on secondary data. Several indices come into play, such as NATO Stratcom's Permeability Index, IUT's Global Cybersecurity Index, GLOBSEC's Vulnerability Index, Democracy Index, V-Dem data, Disinformation Resilience Index, and many others. Comparative analyses are conducted on groups of countries, including the Balkans (Dolan, 2022), Central and Eastern Europe (Bargaoanu & Radu, 2018; Kyianytsia et al., 2022), the Baltics (Kõuts-Klemm et al., 2022), and more.

Another set of studies utilizes representative surveys to analyze resilience to disinformation. The most notable comparative survey that allows for cross-country comparisons is the Reuters Institute Digital News Report. Researchers have employed this survey to compare the situation in Spanish-speaking countries like Argentina, Chile, and Spain (Rodriquez-Virgili et al., 2021).

Macro-level studies are less common than micro-level studies but still prevalent in the field of resilience to disinformation. Macro-level analysis demands more complex data sets, and comparability issues are often addressed by using recognized international indicators. Researchers frequently employ the case study method to overcome the challenges of missing data and gain deeper insights into the social context (Bjola & Papadakis, 2020; Di Mascio et al., 2021; Fominaya, 2022; Kyza et al., 2020; Romanova et al., 2020). In some instances, research papers combine system analysis with theoretical and empirical findings (e.g., Kozyreva et al., 2020).

Social network studies, which primarily focus on online communication, provide valuable insights into the virtual world. Social network analysis is not restricted to specific groups or geographical areas (e.g., Zahind et al., 2022). While Twitter is a common platform for analysis, it tends to concentrate on English-language users, thereby limiting the scope. There are, however, a few positive examples from other regions, such as research on China and Japan (e.g., Zhao et al., 2020).

The research field is evolving and maturing, with the publication of several conceptual articles that synthesize existing knowledge from different perspectives. **Literature reviews** explore various aspects, such as human information processing from a psychological perspective (Kozyreva et al., 2020) and different conceptualizations of digital environments from an interdisciplinary standpoint (Caled & Silva, 2022). Additionally, researchers are examining AI solutions for combatting disinformation through fact-checking (Kertysova, 2018).

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Discussion of the importance of your findings for the BECID framework and/or in general (theoretical and practical guidelines for policy implications, further work in BECID, something that can be done already in our existing WPs)

The analysis presented in the report is crucial for understanding and addressing information disorders in the Baltic region, a region particularly susceptible to disinformation campaigns due to its geopolitical situation and historical context. By conceptualizing resilience, the study sheds light on the multifaceted nature of information disorders, emphasizing how they impact various domains such as democracy, security, and public health. This is important for the regions which is constantly dealing with external propaganda and disinformation campaigns.

The conditioning factors mentioned here, including the emotional content of information, the role of social media platforms, individual cognitive biases, provide a nuanced understanding of how disinformation spreads and takes hold. In the context where digital media is rapidly evolving, and the population's varied experiences with information sources shape their susceptibility to disinformation, this provides understanding of the priority areas of attention focus.

Moreover, the identification of key actors in building resilience, such as policymakers, academia, and civil society, underscores the need for collaborative efforts in the Baltic states to counteract these challenges. While each country in the region has unique vulnerabilities and strengths, shaped by their individual historical, cultural, and political experiences, all of them must be considered in developing targeted strategies to combat information disorders.

The solutions and interventions discussed in the document, including educational initiatives and fact-checking programs, are vital for building a more informed and resilient public in the Baltics.

This research offers a framework for addressing disinformation in the Baltic region by describing how it is disseminated, prevented, and countered. It draws attention to the intricate dynamics of those occurrences and the requirement for an all-encompassing, context-specific strategy.

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