Resilience to Online Disinformation: A Framework for Cross-National Comparative Research

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Abstract

Online disinformation is considered a major challenge for modern democracies. It is widely understood as misleading content produced to generate profits, pursue political goals, or maliciously deceive. Our starting point is the assumption that some countries are more resilient to online disinformation than others. To understand what conditions influence this resilience we choose a comparative cross-national approach. In the first step, we develop a theoretical framework that presents these country conditions as theoretical dimensions. In the second step, we translate the dimensions into quantifiable indicators that allow us to measure their significance on a comparative cross-country basis. In the third part of the study, we empirically examine 18 Western democracies. A cluster analysis yields three country groups: one group with high resilience to online disinformation (including the Northern European systems, for instance) and two country groups with low resilience (including the polarized Southern European countries and the United States). In the final part, we discuss the heuristic value of the framework for comparative political communication research in the age of information pollution.

Keywords: online disinformation, theoretical framework, resilience, cross-national comparison, cluster analysis

Introduction

The campaigns for the 2016 U.S. presidential election and the U.K. vote to leave the European Union ("Brexit") have increased the discussion about the potential influence of content disseminated to mislead recipients. Several authors argue that the phenomenon of online disinformation has gained more influence through social media but that the discussion around it is politicized and in need of clarity (Allcott & Gentzkow, 2017; Vargo, Guo, & Amazeen, 2017). An U.S. post-election study by Allcott and Gentzkow (2017) found that heavy users of social media were not well equipped to identify false information. This finding caused some concern, given that social media is an important source of news consumption (Newman, Fletcher, Kalogeropoulos, & Nielsen, 2019). However, empirical evidence regarding the rise of online disinformation and its effects on society is inconclusive, and little is known about the situation outside the U.S. Cross-national research can help understand the influences of the political, economic and media environment on online disinformation. To encourage comparative research on the topic, we propose a theoretical framework that identifies the conditions promoting or inhibiting the influence of disinformation, and we suggest measurable indictors to empirically examine the role of these conditions empirically.

Our study argues that certain countries are better equipped to face the problems of the digital era, demonstrating a *resilience* to manipulations attempts such as online disinformation. Based on a thorough literature review, we identify macro-level characteristics that help explain cross-national differences regarding the exposure to and the diffusion of online disinformation. We suggest empirical dimensions and indicators for the study of online disinformation, measure country differences and identify clusters of countries with different levels of resilience to online disinformation.

Literature Review

Traditionally, social scientists have been concerned with low levels of political knowledge among the electorate. Citizens need information about candidates, parties and

current issues to be able to make reasonable choices and to participate in democratic life

(Carpini & Keeter, 1996). In recent decades, however, the concern has shifted. Survey

research (mainly in the U.S.) has shown that a growing group of people—who are not

*un*informed but rather *dis*informed—hold inaccurate factual beliefs and use incorrect

information to form their preferences (Kuklinski et al., 2014). As a consequence, the

production, consumption, and dissemination of online disinformation is of growing interest

among scholars from different disciplines such as communications, political science, and

psychology (Ciampaglia, 2017; Guess, Nyhan, & Reifler, 2018; Lewandowsky, Ecker, &

Cook, 2017; Pennycook & Rand, 2017; Tandoc, Lim, & Ling, 2017).

Disinformation is widely understood as content produced to generate profits, pursue

political goals, or maliciously mislead, such as in the form of hoaxes (Nielsen & Graves,

2017). Wardle and Derakhshan (2017) argue that different types of information must be

distinguished, namely, misinformation, disinformation, and malinformation. According to

those authors, misinformation refers to the unintentional publication of false or misleading

information; disinformation means that false information is strategically shared to cause harm;

and malinformation occurs when genuine information is shared to cause harm, for example,

by disclosing private information to the public. In this article, we expand the understanding of

disinformation by adding further aspects, such as lack of context that leads to false

interpretations, disinformed opinions shared publicly on social media, and manipulated

comments often published by bots (see Figure 1). Following Wardle and Derakhshan (2017),

we argue that different elements should be separately examined, namely, the agent, messages

and interpreters. Moreover, misinformation, disinformation, and malinformation overlap, as

online users unintentionally share false information.

This paper focuses on the aspect of *disinformation* because it is strategically used to

influence audiences and is likely to be harmful to democracy (Benkler, Faris, & Roberts,

2018; Marwick & Lewis, 2017).

[Figure 1 about here]

Understanding the diffusion and consumption of online disinformation

Several authors have argued that the diffusion and consumption of disinformation is driven by mechanisms such as "confirmation bias" and "motivated reasoning", leading people to believe information that confirms their own worldviews (Nickerson, 1998; Robison & Mullinix, 2015; Shin, Jian, Driscoll, & Bar, 2017). Furthermore, people tend to believe that the only accurate perception of reality is their own, a phenomenon called "naïve realism" (Ross & Ward, 1996). From this perspective, people who voice different opinions are suspected of being biased or uninformed, and content that includes opposing views is labeled "fake" (Prior, Sood, & Khanna, 2015). People with strong confirmation bias towards their own strongly held beliefs are also less likely to trust interventions by fact-checkers (Brandtzaeg & Følstad, 2017).

Against this background, many studies are concerned about the consequences of disinformation for the functioning of democracy and the potential risks of strategic manipulation. Recent events, such as the 2016 U.S. presidential election and the 2016 Brexit referendum in the U.K., have demonstrated how quickly disinformation can spread on social media. Social media has been found to be a problematic source of information because it often provides highly selective and even biased views of public opinion (Guess et al., 2018; Shin & Thorson, 2017). Certain groups of actors are overrepresented in the social media environment. Studies show that advocacy groups—that is, groups of activists ranging from large unions and lobbying organizations to small citizen groups—actively use Twitter and Facebook to reach a broader audience (Chalmers & Shotton, 2016). Moreover, "undefined" actors or so-called social bots can also influence the distribution of political information, thus contributing to a skewed representation of viewpoints encountered online. As Bradshaw & Howard (2017, p. 11) have described, "bots can amplify marginal voices and ideas by

inflating the number of likes, shares and retweets they receive, creating an artificial sense of popularity, momentum or relevance". For example, during the 2016 U.S. presidential election, diverse forms of "computational propaganda" flourished (Howard, Bolsover, Kollanyi, Bradshaw, & Neudert, 2017). Elections in Europe have also experienced the invasion of bots and the spread of false information by strategic actors (Wardle & Derakhshan, 2017). At least in the U.S. case, there is proof that fake accounts and false information influenced the agenda of partisan media outlets (Vargo et al., 2017).

The combination of a massive diffusion of manipulated information created by different actors, techniques for amplifying content, and new platforms hosting and producing disinformation and the speed of information, especially via social media, has been labeled "information pollution" (Wardle & Derakhshan, 2017). As more people turn to social networks as a primary news source, the "polluted" online environment could become a major challenge to political communication in democracies. Moreover, the recent discussion about "fake news" and the politicized use of the term have alienated citizens. The Pew Research Center found that many Americans are confused about the nature of facts in general (Barthel, Mitchell, & Holcomb, 2017). A survey showed that most Americans suspect that disinformation had an impact on the 2016 U.S. elections. Nearly one-quarter of respondents said that they themselves had shared "fake news". Of those who shared disinformation, 14 percent knew at the time that the story was made up, and 16 percent realized later that the information was false (Barthel et al., 2017). In the U.K., two-thirds of the respondents in a recent study admitted sharing mis- and disinformation on social media (Chadwick, Vaccari, & O'Loughlin, 2018). Further, in a study based on focus group discussions, Nielsen and Graves (2017) found that the difference between "fake news" and news is not perceived as a clear distinction but rather as one of degree. Respondents were able to identify poor journalism, propaganda (lying politicians and hyper-partisan content), and certain kinds of advertising more easily than invented stories. The authors argued that the new confusion is driven by a

combination of news providers publishing disinformation, political actors contributing to its spread, and platforms disseminating it further (Nielsen & Graves, 2017).

The research focus on the U.S. and the U.K., following the 2016 elections and Brexit, has created the impression that online disinformation has become a global problem. Comparative data from the Digital News Report (2018) confirm this impression to a certain extent. The survey data show that not only in the U.S. but also in countries such as Spain and Greece citizens indicate that they are frequently exposed to online disinformation. At the same time, however, the data show great country variation with citizens in many Western and Northern European countries (e.g., Germany, Denmark, and the Netherlands) reporting low levels of exposure to online disinformation. Moreover, citizens in countries those countries are less willing to disseminate disinformation on social networks (Neudert, Howard, & Kollanyi, 2019).

Against this background, the question arises which framework conditions in different environments foster the diffusion and consumption of disinformation. Understanding the basic conditions can help researchers understand why disinformation spreads to different degrees across Western democracies and what the effects are on individuals and on democratic society as a whole.

A Framework for the Study of Online Disinformation

Based on a review of international research literature, we identify seven macro-level conditions that can weaken the resilience of countries to problems of online disinformation. We conceive resilience as a collective characteristic that transcends the individual level. Resilience is generally understood as "the capacity of groups of people bound together in a […] community or nation to sustain and advance their well-being in the face of challenges to it" (Hall & Lamont, 2013, p. 2). Such "challenges" are more likely in highly developed societies due to their greater complexity. The causes of these stress experiences usually come

less from unforeseeable shock events than from fractures that have been preceded over a longer period of time by structural aberrations (Adger, 2000).

For this reason, our study also focuses on structural factors. According to Benkler, Faris and Roberts (2018, pp. 348–387), media systems that are resilient to online disinformation are characterized by distinct structural features, such as a low degree of polarization and fragmentation; a low level of distrust in truth-seeking institutions that operate on reason and evidence (science, law, professionalism); a public health approach toward media regulation; and public funding for reliable truth-seeking media and an educated public. Based on the US experience, Benkler et al. (2018) argue that a resilient media system can first prevent the emergence of a large audience that no longer expects true reporting from its preferred ideological media, but primarily identity-confirming news and opinions – regardless of the truth content; secondly, a resilient system has a strong infrastructure of professional media that apply the principle of accountable verification to all information that rushes around in the old and new channels of the media environment.

More generally, resilience refers to a structural context in which disinformation does not reach a large number of citizens. At the same time, we argue that resilience is not only a consequence of simply not being exposed to disinformation. In countries that can be seen as resilient, people might also come across forms of disinformation. In those circumstances, people will be less inclined to support or further distribute such low quality information and, in some cases, they will be more able to counter that information.

In sum, we argue that resilience to online disinformation can be linked to structural factors related to different political, media, and economic environments. We propose a framework that will help scholars understand how the diffusion and consumption of online disinformation differ across national information environments and which constellations of contextual conditions make national information environments more vulnerable or more resilient to the spread and use of online disinformation. We also suggest measurable

indicators that allow us to rank countries according to individual dimensions or, more importantly, classify countries according to more comprehensive types.

Factors of the Political Environment Limiting Resilience

Polarization of society

Several authors have argued that increasing polarization is an important driver for the deliberate dissemination and production of online disinformation (Allcott & Gentzkow, 2017; Shin & Thorson, 2017). Polarization is difficult to measure and has been conceptualized in different ways. Many political scientists understand political polarization as the separation of partisans or elites on issues or policy spectrums (Dalton, 2008; Hetherington, 2001). In general, majoritarian systems with only two parties and a winner-takes-all system are seen as a breeding ground for party polarization and camp formation (Layman, Carsey, & Horowitz, 2006; Prior, 2013). However, Southern European countries with a multi-party system and deep historical partisan divisions are also often considered strongly ideologically polarized (Hallin & Mancini, 2004). More recently, Iyengar, Sood, and Lelkes (2012) have introduced the concept of affective polarization arguing that citizens' ties to the political world are often emotional rather than ideological. Allcott and Gentzkow (2017) argue that partisans hold strong negative feelings towards the opposite side of the ideological spectrum and are therefore more likely to believe only stories reflecting their own viewpoints. Muddiman and Stroud (2017) have found that partisanship increases the sharing of and commenting on political content. Moreover, partisans tend to share only content that is favorable to candidates from their own political party and neglect fact-checking messages supporting the opposing party (Pennycook & Rand, 2017; Shin & Thorson, 2017). Along this line, other studies have shown that partisans also distrust fact-checking websites and accuse them of being biased (Young, Jamieson, Poulsen, & Goldring, 2018).

In polarized environments, citizens are confronted with different deviating representations of the reality and therefore it becomes increasingly difficult for them to distinguish between false and correct information (Craft, Ashley, & Maksl, 2017; Swire, Berinsky, Lewandowsky, & Ecker, 2017). Thus, societal polarization can be assumed to decrease resilience to online disinformation.

Populist communication

Several scholars have argued that the phenomena of partisan disinformation and populism are linked (Bennett & Livingston, 2018; Marwick & Lewis, 2017). Both concepts share several key psychological underpinnings (Hameleers, 2018). First, populism and disinformation both relate to the spread of partisan information that supports one particular party's attitudinal stance whilst discrediting information from the other party. Second, similar to the social identification process underlying populism, partisan disinformation constructs an all-encompassing moral and causal divide between two camps: "we" are right and truthful and "they" are wrong and fake. In this vein, populist actors also frequently blame the news media for spreading "fake news" that allegedly mislead ordinary people (Ross & Rivers, 2018; Schulz, Wirth, & Müller, 2018). Third, populists claim that evil-doers in politics use misinformation to conspire against the ordinary public. However, populist actors disseminate misinformation themselves if it helps to strengthen their in-group/out-group narratives. Studies among citizens have found that belief in conspiracy theories correlates highly with being susceptible to populist politics. In sum, both populism and partisan disinformation share a binary Manichaean worldview, anti-elitism, mistrust of expert knowledge, and conspiracy theories (Bergman, 2018). As a consequence of these combined influences, citizens can obtain inaccurate perceptions of reality (Pennycook & Rand, 2018). Thus, in environments with high levels of populist communication, online users are exposed to more disinformation.

Factors of the Media Environment Limiting Resilience

Low trust in news

Previous research suggests that media trust plays a crucial role in how citizens and stakeholders perceive information and how they are aware of certain problems (Curran, Coen, Aalberg, & Iyengar, 2012; Van Aelst et al., 2017). Research has established that low levels of trust in news media stem from a general political malaise (Jones, 2004; Ladd, 2010). For example, conservative Republicans in the U.S. in particular distrust the news media and tend to perceive a "liberal bias" in news content (Jones, 2004). Furthermore, distrust in professional news media can lead to selective exposure because source credibility affects the interpretation of information (Chung, Nam, & Stefanone, 2012; Swire et al., 2017; Turcotte, York, Irving, Scholl, & Pingree, 2015). Distrust in news media also increases the use of alternative sources, such as online platforms that distribute disinformation (Tsfati & Cappella, 2003). In other words, in environments in which distrust in news media is higher, people are less likely to be exposed to different sources of political information and to critically evaluate those (Benkler et al., 2018). Based on this reasoning, it can be assumed that resilience to disinformation is lower in societies where distrust in professional news media is high.

Weak public service media

Studies have shown that information environments influence what citizens know about socially relevant topics. Aalberg et al. (2013) have demonstrated a positive relationship between the amount of hard news coverage available in a country and the citizens' level of public affairs knowledge. These authors, along with other studies, have found the highest levels of hard news and public affairs knowledge in countries with strong public service broadcasting (Aalberg & Curran, 2012; Curran et al., 2009). More important is the ecological effect of public service media on commercial media through a mechanism called "market conditioning": Comparative research indicates that public service content encourages rivals who compete for the same audience to spend more on original content; this "race to the top" increases overall quality and engenders informed citizenship (Aalberg & Cushion, 2016; Van

der Wurff, 2005). The higher level of knowledge that people gain is likely to play an

important role when confronted with online disinformation. Research has shown that

knowledge is an important factor in the manner in which people deal with information (Prior

et al., 2015). As people become more knowledgeable about a certain topic, their perception is

less likely to be guided by confirmation bias and naïve realism (Ross & Ward, 1996).

Therefore, it can be assumed that environments with weak public service media are less

resilient to online disinformation.

More fragmented, less overlapping audiences

It has been argued that the digitalization has led to a general increase in media

products (Webster & Ksiazek, 2012). In addition, the supply of niche or partisan media has

increased in some countries due to rising demand, which has led to more fragmented

audiences (Fletcher & Nielsen, 2017). This means that users being confronted with

disinformation in partisan or alternative media are less likely to encounter information

correcting or challenging false claims (Shin et al., 2017). Societies in which the users of news

are distributed across a large number of media, some of which are peripheral, offer more entry

points for disinformation than societies in which universally recognized news media can unite

large audiences in their online and offline offerings, for example because of their high

reputation and quality (Fletcher & Nielsen, 2017). Thus, it can be assumed that if the overlap

in news consumption is large, users are less likely to be exclusively confronted with false

information.

Factors of the Economic Environment Limiting Resilience

Large ad market size

False social media content is often produced in pursuit of advertising revenue, as was

the case with the Macedonian "fake news factories" during the 2016 U.S. presidential election

(Nielsen & Graves, 2017; Subramanian, 2017). In a British government report on

Disinformation and "Fake News", the role of advertising revenues in the production of online disinformation was highlighted (House of Commons UK, 2019). The report expressed the concern that changes in the selling and placing of advertising have encouraged the growth of disinformation. The business model of social media platforms such as Google and Facebook is to charge advertisers commission for every view and click. When content producers work with advertising networks, their content is simultaneously published on numerous platforms that maximize views, clicks, and revenue. Against this background, Tambini (2017) argues that the online advertising ecosystem "enables smaller publishers to thrive outside the ethical and self-regulatory constraints which in the past tightly reinforced an ethics of truth-seeking". Moreover, because disinformation often contains sensationalist and emotionalized aspects, it is likely to attract users' attention. It is therefore appealing for producers to publish this kind of content—especially if the potential readership is large. Thus, large-size advertising markets with a high number of potential users are less resistant to disinformation than smaller-size markets (Faris et al., 2017; Van Herpen, 2015).

High social media use

Social media is considered an amplifier of disinformation (Meraz & Papacharissi, 2013; Shin et al., 2017; Singer, 2014). Disinformation is particularly prevalent on social media (Fletcher, Cornia, Graves, & Nielsen, 2018) and in countries with very many social media users, it is easier for rumor spreaders to build partisan follower networks. Previous research has argued that social media is more often used for entertainment purposes than for seeking news (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2017). With this motivation, people are likely to share information without verifying it (Shin & Thorson, 2017). Moreover, it has been found that a media diet mainly consisting of news from social media limits political learning and leads to less knowledge of public affairs compared to other media sources (Shehata & Strömbäck, 2018). From this, it can be concluded that societies

with a high rate of social media users are more vulnerable (hence less resilient) to online disinformation spreading rapidly than other societies.

In sum, we argue that low levels of populist communication, low levels of societal polarization, high levels of trust in news media, strong public service broadcasting (PSB), high levels of shared media use, small-size media markets, and lower levels of social media use provide *better conditions for resilience* and—at the same time—less favorable conditions for the dissemination of and exposure to online disinformation (see Table 1).

[Table 1 about here]

Data and Operationalization

To illustrate country differences in relation to our theoretical framework we collected data for 18 Western democracies. For comparative reasons, we selected the countries used by Hallin & Mancini (2004) in their book on models of media systems. Since a large part of comparative research in the field of news media and political communication is based on their typology, Hallin & Mancini's (2004) selection of countries was a good starting point for us. However, we emphasize that it is necessary for future research to widen the scope and include a broader sample of countries.

Our data sources include the Digital News Report (2018), the Varieties of Democracies Project (Coppedge et al., 2019; Pemstein et al., 2019), data on populist parties from the Timbro Authoritarian Populism Index (2019), the Global Populism Database (Hawkins et al., 2019), Aalberg et al. (2016) and Van Kessel (2015); data on the strength of public service broadcasting from Brüggemann et al. (2014); and World Bank Data (2017) on the size of population and number of online users.

The Digital News Report presents annual data on more than 74,000 online media users from 37 countries and their news consumption habits. We used their representative country data on trust (general trust in media, and trust in those media that respondents use

themselves), social media (social media for news consumption and for sharing of news), and on exposure to dis- and misinformation. Our measure of shared media reflects the proportion of the most used news source per country, based on the Digital News Report (2019).

The Varieties of Democracies (VDem) project draws on theoretical and methodological expertise from academics who act as expert coders to answer 400 questions related to the state of democracy in their country (Coppedge & Teorell, 2016). To build our polarization index, we used two of their indicators: polarization of society and online media fractionalization. To measure the polarization of society, experts were asked how they characterize the differences of opinions on major political issues in their society (response options ranged from no polarization to serious polarization). For online media fractionalization, experts were asked whether domestic online media outlets give a similar presentation of major political news, with response options ranging from opposing presentation of major events to similar presentations of major events.

Further, we collected data on the percentage of votes of populist parties during the most recent national election and the difference in vote shares between 2008 and 2018 from the Timbro Authoritarian Populism Index (Timbro, 2019). Data for Canada and the U.S. was collected based on lists of populist parties from Aalberg et al. (2016) and Van Kessel (2015). In addition, we used content analysis data on the levels of populism in speeches of political leaders from the Global Populism Database (Hawkins et al., 2019).

Finally, we used Brüggemann et al.'s (2014) index of the strength of public service broadcasting (PSB). To construct the index, the authors used data from the European Audiovisual Observatory on the market share of public TV and its funding.

To allow for cross-national comparison, we merged the individual measures into average indices; they showed sufficient internal consistency (Cronbach's $\alpha > .71 < .96$). We prefer average to additive indices because they are less sensitive to missing values, which could not, despite complementary datasets, be completely avoided. Prior to data analysis, the

dimension indices were also z-standardized. Further, we inverted some indices so that all

indices pointed in the same direction. In other words, *high values of our indicators reflect*

high resilience to online disinformation and vice versa. This step made the results easier to

interpret.

Findings

Our aim was to operationalize and measure the theoretical dimensions for the study of online

disinformation. Our theoretical framework consists of seven dimensions that have been

operationalized and merged into seven indices (see Table 2).

[Table 2 about here]

Figure 2 shows that substantial country differences exist with regard to our indices.

Northern and Western European countries, such as Finland, Denmark, and the Netherlands

received high values on most indices suggesting greater resilience to online disinformation. In

contrast, countries such as Spain, Italy, Greece, and the U.S. obtained low index values. Thus,

these countries have conditions that favor an easier dissemination of and exposure to online

disinformation.

[Figure 2 about here]

To examine the relationship between our framework indicators and to identify

potential sub-indicators we conducted a principal components factor analysis with varimax

rotation. The analysis resulted in factors with eigenvalues greater than 1.0, explaining 69

percent of the variance. The strength of PSB was the only variable that loaded on both factors

(eigenvalues for factor 1 = .58 and factor 2 = .55). Factor 1 comprises social media use, media

trust, polarization, populism and strength of PSB, explaining 49.7 percent of the variance.

Factor 2 comprises market size, fragmentation of media consumption, and strength of PSB

and explains 19.1 percent of the variance in the analysis. The variables included in factor 1

are related to political communication and media use in a country, whereas factor 2 consists of variables related to the size of the media market and media organizations.

In the next step, we tried to group the countries with respect to their resilience towards online disinformation. We used the seven z-standardized indices to carry out a two-stage cluster analysis of the 18 countries. To identify the number of clusters, we performed a hierarchical cluster analysis using Ward's algorithm and the squared Euclidean distance as a heterogeneity measure. We chose a three-cluster solution for three reasons. First, merging the clusters beyond the third would have resulted in solutions that are too heterogeneous. If we display the sum of squared distances as a scree plot, this is reflected by a strong elbow at the third cluster. Second, the dendrogram for the three-cluster solution is very clear and highly interpretable. Third, we checked the clarity and interpretability of alternative solutions and found that they could not compete with the three-cluster solution. Figure 3 visualizes the country means for each cluster.

Cluster 1 consists of Northern and Western European countries, plus Canada (Austria, Belgium, Canada, Denmark, Finland, Germany, Ireland, the Netherlands, Norway, Sweden, Switzerland, and the U.K.). The bulk of these countries have been described as democratic-corporatist media systems, whereas Canada, Ireland and the U.K. have many features of liberal media systems (Hallin & Mancini (2004). However, several authors have stressed that the three Anglo-Saxon countries in many ways resemble the corporatist European systems, for instance, with respect to welfare expenditure, support for public broadcasting, and regulations of media ownership, advertising and electoral coverage (Büchel, Humprecht, Castro-Herrero, Engesser, & Brüggemann, 2016; Lawlor, 2015; Simpson, Puppis, & Van den Bulck, 2016). Because we still find a minimum of political and public support for the public service ethos in these countries as well as a comparatively high level of media trust, supplemented by comparatively low audience fragmentation and polarization, this cluster can be described—with all due caution—as *media-supportive and more consensual*. The conditions relevant for

online disinformation that we find in the countries of this cluster indicate a *high level of resilience* due to the consistently high values of our seven indices (Figure 3).

Cluster 2 includes Greece, Italy, Portugal, and Spain. All these countries, without exception, have polarized pluralist media systems (Brüggemann et al., 2014; Hallin & Mancini, 2004). The political history of these countries is characterized by late democratization, patterns of polarized conflict, a strong role of political parties and dirigiste state interventions. The history of the media in these countries is characterized by a commentary oriented, often partisan and less professionalized journalism. In our empirical analysis, this cluster is distinguished by comparatively high levels of societal polarization, populist communication, and social media use for news consumption. Countries in this cluster typically have lower levels of trust in media and shared media use. We describe this cluster as *polarized* since this label reflects its main characteristics and shows the similarities to Hallin & Mancini's (2004) polarized-pluralist media system model.

Finally, the last cluster only comprises the U.S. This finding reflects the exceptional role of the U.S. in the context of online disinformation. The country stands out because of its large advertising market, its weak public service media and its comparatively fragmented news consumption. The enormous size of its market—and its competitive and commercial culture—makes the U.S. attractive for producers of disinformation targeting social media users. Moreover, the country is characterized by high levels of populist communication, polarization, and low levels of trust in the news media. Nechushtai (2018) recently aptly described the changed conditions of the U.S. media system as a *low trust, politicized and fragmented* environment. Based on the contextual conditions shown by our empirical analysis here, the U.S. must be considered the most vulnerable country regarding the spread of online disinformation. The cluster profiles are displayed in Figure 3.

[Figure 3 about here]

To test the relationships between our framework indicators and the phenomenon of online disinformation, we ran a linear regression (OLS). As an outcome, we used data from the Digital News Report (2018) on exposure to disinformation[1]. To increase interpretability, all indicators have been inverted to meet our theoretical assumptions. This means that we expect negative relationships between all factors and the outcome. Table 3 shows that media trust, social media use, and market size have an influence on perceived exposure to online disinformation: $F(7,16) = 11.996$, $p = .001$, $n = 18$. It is noteworthy that 83 percent of the variance in the level of exposure to disinformation is explained by the independent variables in the model. This underlines the great empirical significance that the theoretical dimensions presented in this study have for the understanding of this socially relevant problem.

[Table 3 about here]

Discussion and Conclusion

Recent research has shown that some countries have stood out as being stable, adaptive and resilient in times of social and technological transformation (Baldersheim & Keating, 2016). In those countries, online disinformation can be considered a minor problem at present. However, there is an urgent need to better understand the conditions that create, sustain and reproduce social *resilience* and, simultaneously, to uncover factors that render societies vulnerable to phenomena such as online disinformation.

We aimed to fill this gap by suggesting a theoretical framework with measurable indicators that helps explain why disinformation is more or less prevalent in a country. The empirical analysis confirmed our assumption that resilience to disinformation differs systematically – depending on certain conditions that are stronger or less strong in a country. Our indicators proved to be highly effective in explaining cross-national differences in people's reported exposure to online disinformation.

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[1] In the survey, respondents were asked the following: "In the last week, which of the following have you personally come across? Stories that are completely made-up for political or commercial reasons."

The cluster analysis resulted in three groups of countries. The *media-supportive, more consensual* cluster is composed of Western European democracies and Canada. Most countries in this cluster have been described as countries with consensus political systems, strong welfare states, and pronounced democratic corporatism (Hallin & Mancini, 2004). These countries are likely to demonstrate high resilience to online disinformation: they are marked by low levels of polarization and populist communication, high levels of media trust and shared news consumption, and a strong PSB. Those countries seem to be well equipped to face the challenges of the digital information age because they have stable, trusted institutions that enable citizens to obtain independent information and uncover manipulation attempts. The countries in this cluster are not yet affected to a large extent by the problem of online disinformation. However, it is possible that this will change in the future and that online disinformation will become a greater threat. A case in point is the U.K. Although the country has a long democratic tradition and the BBC is a wide-reaching and greatly trusted media organization, disinformation was a major problem during the Brexit campaign (Howard & Kollanyi, 2017). In the politicized, heated public debate that led to the referendum, disinformation was easily disseminated (Bennett & Livingston, 2018). After the referendum the Brexit debate continued and led to further polarization (pro or against Brexit) and created the potential for new political players to transform the political landscape, i.e., the "Brexit Party" of Nigel Farage constantly attacking the BBC (Engesser, Ernst, Esser, & Büchel, 2016). This example illustrates the influence of the political and media environment on the possibilities to disseminate online disinformation. Against this background, we conclude that some countries in this cluster are potentially at risk of facing wide-reaching disinformation campaigns in the context of polarized debates.

The *polarized* cluster consists of Southern European countries that have a long history of stark partisan or ideological divides (Brüggemann et al., 2014; Büchel et al., 2016; Hallin & Mancini, 2004). The conditions found in our analysis fit this description: high levels of

polarization, populist communication, social media news use, and low levels of trust and shared media consumption are key features of the information environments in this cluster. Countries in the polarized cluster are thus the most likely to be vulnerable to online disinformation.

The third cluster features the *low trust, politicized and fragmented* environment of the U.S. The political and media environment of the country has also become more polarized and has created another fertile ground for the spread of disinformation today. Political communication in the U.S. is characterized by populist rhetoric while media coverage has become more partisan and trust in the media has decreased as a consequence. In addition, the large market makes it attractive to produce attention-triggering content for U.S. audiences. In the current political and media environments, political disinformation that discredits a particular party can widely attract attention. Our results show that the U.S. is particularly susceptible to disinformation campaigns—and its peculiar contextual conditions make it a unique case. Although the exceptionality of this case might be influenced by the prominence of Donald Trump, who according to the *Washington Post* has made over 10,000 false or misleading claims since entering office, we believe the structural characteristics of the US case go beyond the current president, as the problem of disinformation and false beliefs dates back before the rise of Trump (Kuklinski et al., 2014). Against this background, scholars may want to be aware that findings on the problem of disinformation in this country are limited to specific scope conditions that cannot be easily transferred to other Western countries. It is therefore unlikely that, for instance, European countries will experience the same problems with disinformation that the U.S. faced in the 2016 election.

To test the influence of relevant country-level factors, we ran a linear regression predicting perceived exposure to disinformation with seven indicators. Although the results show that our indicators explain a large part of the variance in the model, not all indicators in the model predict the outcome to the same extent. While the majority perform as predicted,

two of them run in the opposite direction as predicted. Such fluctuations in explanatory power are not unexpected and can be easily explained. For instance, the role of some indicators might be hampered by our dependent variable of self-reported experience with disinformation. Such measurements of reported exposure to disinformation are inherently distorted as they only reflect personal perceptions. It can be assumed that people who believe in disinformation do not recognize it and will therefore not report it in a survey. If we use another dependent variable to measure online disinformation that is not based on self-reports by media users but on expert assessments by academics, the two predictors polarization and shared media point in the expected direction. To be more precise, if the VDem[2] measurement is used as an outcome in our regression model (analysis not shown for space reasons), our set of indicators also shows relatively high proportions of explained variance (40%) and most of the correlations we expect are evident. However, only the variables populism and social media use significantly predict the outcome. Such fluctuations with existing secondary data underline the need to collect better primary data for future studies of online disinformation; this data must be collected in consistent and standardized ways across country contexts and time points in order to obtain comparative findings that are more robust than ours. Despite these limitations, it must be said that the data we use are the best available—especially in international comparison—and that our analysis is the best approximation to the ideal that was possible for us. The fact that not all predictors in Table 3 are significant does not detract from the theoretical relevance of the dimensions that we present and the heuristic value of our framework. Against this background, we stand by our indicators, but would like to urge researchers to validate our framework with better data and supplement it with further dimensions.

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[2] Questions used by VDem refer to "domestic disinformation dissemination by the government" and "domestic disinformation dissemination by political parties" (Coppedge et al., 2019).

The goal of this study was to provide researchers with a conceptual map for cross-national research on online disinformation. However, some aspects should be considered that are both theoretical and empirical in nature. First, some of our indicators are correlated with each other. This reflects connections among the seven dimensions of our framework. The factor analysis showed that these belong to two overarching factors, one comprises variables related to the political environment and to news consumption, and the second one comprises variables related to the market size and the size and importance of media organizations. This is an important finding that shows two things. On the one hand, the political environment and media use are closely connected. For example, in countries where populist politicians often attack journalists, public trust in traditional media suffers while the use of social media increases. Lower trust in traditional media and higher use of social media presents populists with improved opportunities to spread their messages about who is allegedly conspiring against the common people. On the other hand, the market is related to the strength of media organizations. In smaller markets, there is often a strong PSB that also acts as a link between the society and the media. Often the news broadcasts of the PSB are the most used programs across the entire population - and thus mitigate the fragmentation of media use.

This brings us to a several limitations of this study. First, we argue that the size of the advertising market is important because it is more attractive for producers of disinformation to generate content for large audiences. However, we have only included one large market in our study, namely the U.S. The U.S. is an exception in many respects, including but not limited to its size. To examine the influence of market size more broadly, future studies should include other large countries. The results of such comparisons can further show to what extent the U.S. resembles other large countries.

A second limitation is rooted in the nature and number of indicators used in the framework. Some of the indicators are volatile, for example vote shares of political parties. We tried to account for this by combining these indicators with more stable indicators, e.g.

content analysis data. Third, we identified seven indicators related to resilience to online information based on an extensive literature review. However, there might be other important drivers of the dissemination of online disinformation that we did not discuss, such as social-economic inequality. We hope that our framework will inspire researchers from different disciplines to think about such drivers and generate further ideas and, hopefully, measurable indicators. On the upside, our findings can guide case selection in future cross-national research on the topic. Studies examining similar countries can identify national specificities and clarify the role of single indicators.

A fourth limitation concerns the sample used in this study. We relied on Hallin & Mancini's (2004) typology and followed their country selection. However, online disinformation is currently a problem in many countries and especially in those with low levels of media freedom or with Internet censorship. Broadening the spectrum of countries is therefore an important step that has to be taken in future work. Moreover, taking into account countries beyond the Western world will likely require a broader set of empirical indicators.

A fifth limitation might result from the different data sources that we used in this study. Although other scholars have successfully worked with the same data sources because they enjoy high credibility, the sources capture country differences only in an aggregated form. An additional challenge is that situations in countries change over time and that our sources only provide a snapshot of the current situation. Many of our data sources are fairly new and their repeated use in the future will allow to also observe trends.

The initial goal of this study was to develop a theoretical framework to enable and stimulate cross-national research on the topic of online disinformation. Although scholarship on disinformation has increased substantially since 2016 (especially in the U.S.), there is a lack of work comparing these findings with the situation in other countries. Moreover, recent studies exploring the phenomenon of online disinformation have primarily focused on the individual level; however, the literature also emphasizes the importance of macro-level

factors (Allcott & Gentzkow, 2017; Graves, Nyhan, & Reifler, 2016; Vargo et al., 2017). By suggesting a theoretical framework for the study of online disinformation we want to help scholars to understand which contextual and individual factors foster the dissemination and consumption of online disinformation and with what effects. The consequences of technology-driven developments are often prematurely generalized, but our comparative analysis shows that they can have different effects in different countries. Future research in the field of political communication should focus on the relationship between structural conditions at the macro level and individual-level prepositions at the micro level. To understand when and why a person is willing to believe or share disinformation, we need to know more about how personal characteristics and attitudes interact with the structural context in which people receive and consume this kind of low-quality or even false information. We hope that our focus on resilience might inspire researchers and policy makers to think not only about disinformation as a problem but also about structural factors as a means to counter it.

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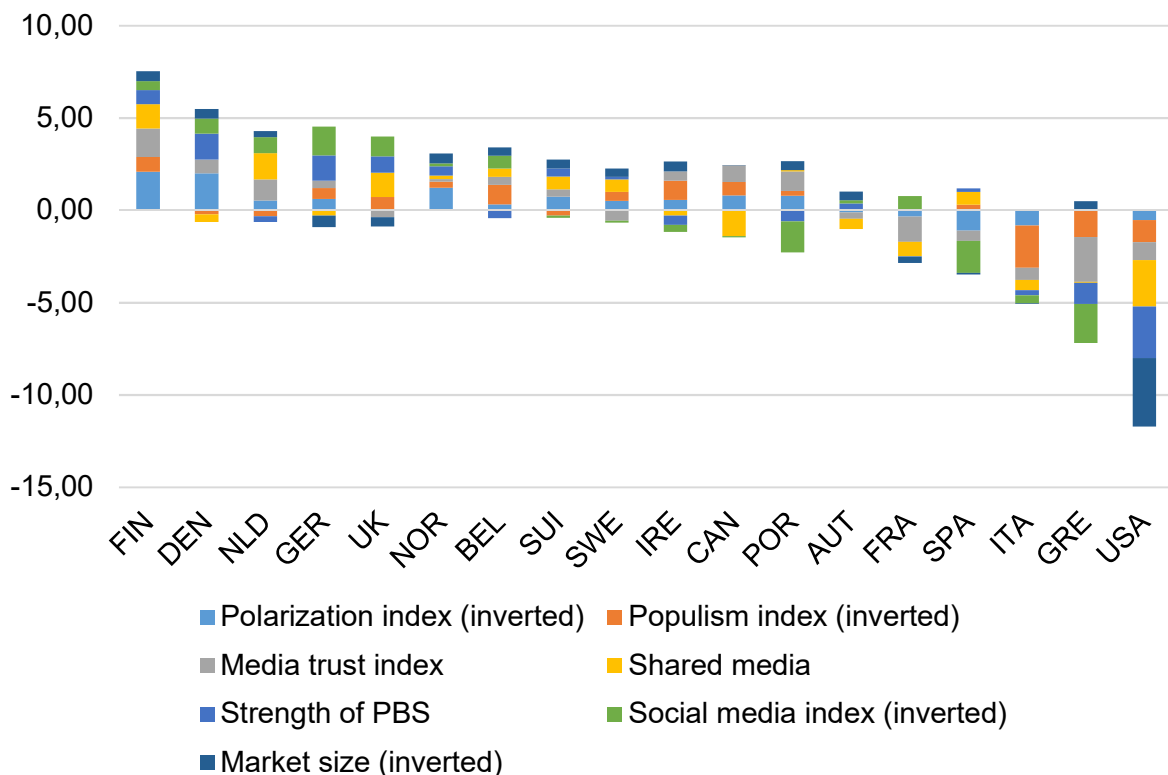
Figures

**Figure 1: Types of Information in the Social Media Environment**
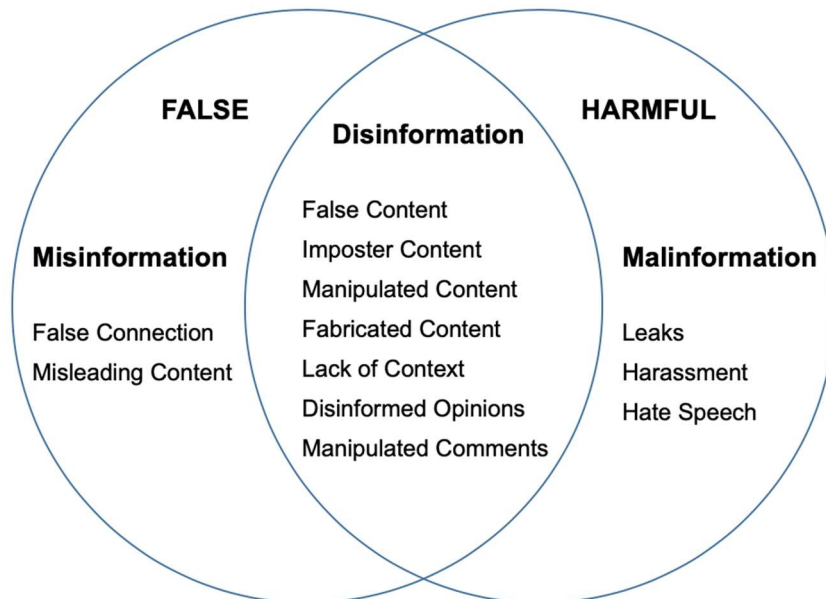
Source: Partly adapted from Wardle & Derakhshan (2017, p. 5)

Figure 2: Country Values of Framework Indicators

Note: Bars show added index values per country (z-standardized). Higher values indicate greater resilience towards disinformation; lower values indicate less resilience towards online disinformation.

Figure 3: Cluster Country Means
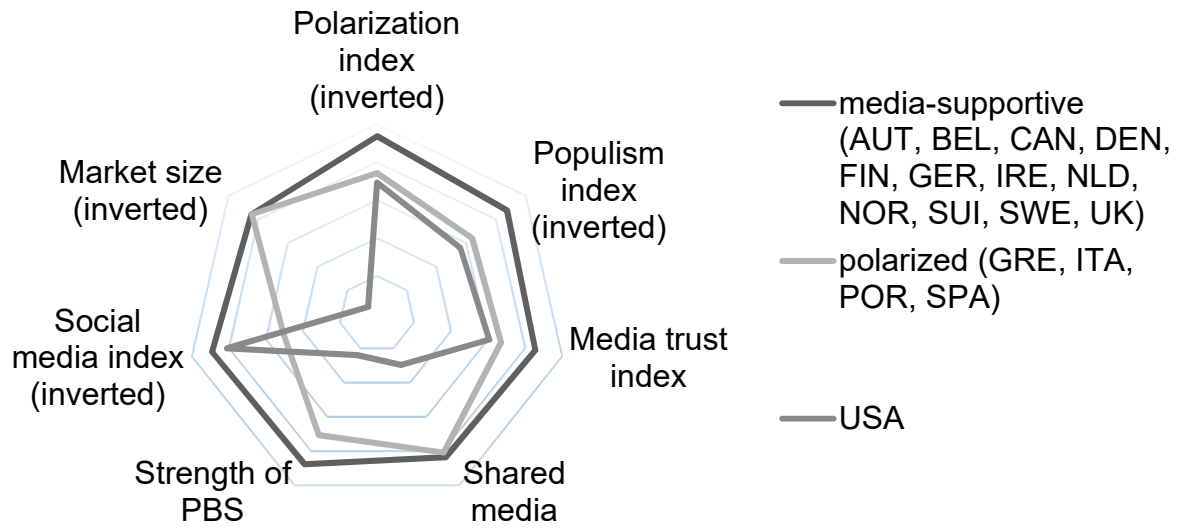
Note: Clusters represent country means of different framework indicators.

Tables

Table 1: Framework with Theoretical Dimensions, Measurable Indicators, and Data Sources

DIMENSION	MEASURABLE INDICATOR	DATA SOURCE
POLITICAL ENVIRONMENT		
POPULIST COMMUNICATION	Vote share of populist parties 2018 Change in vote share 2008-2018 Speeches of political leaders	Timbro Authoritarian Populism Index (2019), Aalberg et al. (2016), Van Kessel (2015) Global Populism Database (2019)
SOCIETAL POLARIZATION	Polarization of society Online media fractionalization	VDem (2019) VDem (2019)
MEDIA ENVIRONMENT		
TRUST IN NEWS MEDIA	Overall trust in news media Trust in news that I use	Digital News Report (2018)
STRENGTH OF PSB	Market share of public TV Public revenue (license fee)	Brüggemann et al. (2014)
SHARED MEDIA	Share of most used media outlets/ programs	Digital News Report (2019)
ECONOMIC ENVIRONMENT		
SIZE OF ONLINE MEDIA MARKET	No. of online users per country	World Bank Data (2017)
SOCIAL MEDIA NEWS CONSUMPTION	Social media use for news Sharing news on social media	Digital News Report (2018)
OUTCOME		
EXPOSURE TO ONLINE DISINFORMATION	Reported exposure to dis- and misinformation	Digital News Report (2018)

Table 2: Correlations between Indices

	Populism index (inverted)	Polarization index (inverted)	Media trust index	Shared media	Strength of PSB	Social media index (inverted)	Market size (inverted)
Populism index (inverted)	1	.42	.54*	.35	.45	.33	.31
Polarization index (inverted)		1	.66**	.26	.48	.32	.43
Media trust index			1	.31	.42	.36	.31
Shared media				1	.54*	.06	.62**
Strength of PSB					1	.45	.58*
Social media index (inverted)						1	-.15
Market size (inverted)							1

Note: N= 17; values are Pearson's correlation coefficients; marked values are statistically significant (*p< .05, **p< .01).

Table 3: Framework Indicators Predicting Exposure to Disinformation

	B	SE	*B*
Constant	-.19	.13	
Populism index (inverted)	-.12	.15	-0.10
Polarization index (inverted)	.36	.18	.30
Media trust index	-.58	.16	-.56***
Shared media	.35	.17	.32
Strength of PBS	-.16	.18	-.16
Social media index (inverted)	-.62	.15	-.62**
Market size (inverted)	-.41	.18	-.41*
R^2			.83

Note: Ordinary least squares (OLS) regression. Entries are unstandardized coefficients, standard errors (SEs) and betas. ***p < .001; **p < .01; *p < .05.