



ANNOTATED BIBLIOGRAPHY FOR ONLINE MISINFORMATION

VERSION 1.0

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INTRODUCTION

Misinformation and disinformation threaten the health and safety of the Canadian public, as well as the basis of Canadian democracy. Especially in light of COVID-19, there have been numerous examples of online misinformation having direct impacts that harm the general public. To address and combat misinformation, Evidence for Democracy is undertaking a research project to better understand the research landscape of misinformation, develop novel training tools for the scientific community to help them recognize and respond to misinformation and identify potential policy options that would work to reduce online misinformation.

This annotated bibliography provides an up-to-date overview of the current state of misinformation and disinformation research. It covers how mis/ disinformation is transmitted online and how different areas of the general public are impacted by this information. The aim of this review is to support Evidence for Democracy's future misinformation research and to establish an updated knowledge base of misinformation. It will also help in the development of evidence-based practices addressing misinformation and disinformation.

This annotated bibliography is not intended to be exhaustive of all existing literature on misinformation. Instead, it covers mis/ disinformation literature in the context of Evidence for Democracy's priorities. As Evidence for Democracy advocates for science-based decision-making and aims to engage with the science community in Canada, this bibliography has a focus on literature regarding scientific misinformation. This bibliography also aims to capture literature on misinformation specific to the Canadian context, including how mis/ disinformation circulate in Canada, why Canadians are susceptible and how it has already impacted Canada.

As part of its [Truth Toolkit](#), Evidence for Democracy has identified confirmation bias, social bias and algorithmic bias as reasons that we may be susceptible to misinformation. It also discusses corrections, and the inoculation method as some strategies to combat misinformation. Building on this resource, this bibliography provides an updated overview of these theories. It also looks at various mechanisms through which misinformation is transmitted, including echo chambers, because Evidence for Democracy is currently doing an in-depth review of echo chamber literature.

This bibliography was collected through keyword searches of key misinformation topics and by snowball of citations.

GLOSSARY OF KEY TERMS

Astrourfing: “Fake grassroots campaigning” (Dubois & McKelvey, 2019)

Backfire effect: The effect of retractions of misinformation strengthening the very misconception they are meant to correct (Ecker & Ang, 2019)

Bots: “automated online agents that mimic human behaviour” (Dubois & McKelvey, 2019)

Confirmation bias: “Whether a claim is accepted by an individual is strongly influenced by social norms and by the claim’s coherence with the individual’s belief system” (Del Vicario et al., 2016)

Continued influence effect: “Invalid information continues to influence people’s memory and inferential reasoning after the information has been corrected, even if people demonstrably remember the correction” (Ecker & Ang, 2019)

Disinformation: “false information that is purposely spread to deceive people” (Lazer et al, 2018)

Echo Chambers: “A bounded, enclosed media space that has the potential to both magnify the messages delivered within it and insulate them from rebuttal” (Jamieson & Cappella, 2008)

Fake News: “fabricated information that mimics news media content in form but not in organizational process or intent” (Lazer et al, 2018)

Filter Bubble: “A situation in which algorithms inadvertently amplify ideological segregation by automatically recommending content an individual is likely to agree with” (Pariser, 2011, from Falxman, Goel & Rao, 2016)

Homophily: “The principle that a contact between similar people occurs at a higher rate than among dissimilar people” (McPherson et al., 2001)

Incidental exposure: “Encountering news and political information disseminated within social networks that [users] did not actively seek out, including information that disagrees with or challenges existing political attitudes” (Weeks et al, 2017)

Inoculation: “Preparing people for potential misinformation by exposing some of the logical fallacies inherent in misleading communications *a priori*.” (Cook, Lewandowsky & Ecker, 2017)

Misinformation: “false or misleading information” (Lazer et al, 2018)

Misperceptions: “Cases in which people’s beliefs about factual matters are not supported by clear evidence and expert opinion” (Nyhan & Reifler, 2010)

Motivated reasoning: “Tendencies to seek out, favorably evaluate, and preferentially remember information that is congruent with one’s attitudes and beliefs, while being distrustful of evidence that runs counter to one’s attitudes and beliefs” (Ecker & Ang, 2019)

Opinion leaders: “Individuals who consume political information above average and share their opinions on social media above average” (Dubois et al., 2020)

Selective exposure: “The theory that a person’s exposure to political information will reflect individual partisan leanings. People will avoid information that they expect will be discrepant or disagreeable and seek out information that is expected to be congruent with their preexisting attitudes” (Bennett & Iyengar, 2008)

Source credibility: Composed of trustworthiness and expertise of an information source (Guillory & Geraci, 2013)

Trolling: “[A] specific kind of political activity that is marked by a refusal to participate in the kind of productive exchange of ideas that marks democratic politics. Trolls actively work to dominate and control the conversations on any given site” (Forestal, 2017)

WHAT ARE MISINFORMATION AND DISINFORMATION?

The concept of misinformation has been captured by a diversity of terms including “fake news”, “false news”, “misperceptions”, “post-truth”, “propaganda”, “information disorder” and others. The following references cover various definitions of misinformation popular in the literature. They also discuss the distinction between misinformation, unintentionally false information, and disinformation, which is spread intentionally. Some sources, including the report from Facebook on information operations, are not peer reviewed, but offer useful and succinct definitions.

FALLIS, D. (2015). WHAT IS DISINFORMATION? *LIBRARY TRENDS*, 63(3), 401–426.

[HTTPS://DOI.ORG/10.1353/LIB.2015.0014](https://doi.org/10.1353/lib.2015.0014)

Key words: Disinformation, deception, motivation

Approach: Review

Main findings: Disinformation is misleading information that has the function of misleading and includes concepts such as true disinformation, visual disinformation, side-effect disinformation, and adaptive disinformation. A precise analysis of disinformation can help efforts to develop techniques for detecting disinformation and policies for deterring its spread.

LAZER, D. M. J., BAUM, M. A., BENKLER, Y., BERINSKY, A. J., GREENHILL, K. M., MENCZER, F., METZGER, M. J., NYHAN, B., PENNYCOOK, G., ROTHSCHILD, D., SCHUDSON, M., SLOMAN, S. A., SUNSTEIN, C. R., THORSON, E. A., WATTS, D. J., & ZITTRAIN, J. L. (2018). THE SCIENCE OF FAKE NEWS. *SCIENCE*, 359(6380), 1094–1096. [HTTPS://DOI.ORG/10.1126/SCIENCE.AA02998](https://doi.org/10.1126/science.aa02998)

Key words: Fake news, journalism, social bots, algorithms, fact-checking, regulation

Approach: Review and argument

Main findings: “Fake news” is defined as fabricated information that mimics news media content in form but not in organizational process or intent. Fake news overlaps with other information disorders, such as misinformation (false or misleading information) and disinformation (false information that is purposely spread to deceive people).

VRAGA, E. K., & BODE, L. (2020). DEFINING MISINFORMATION AND UNDERSTANDING ITS BOUNDED NATURE: USING EXPERTISE AND EVIDENCE FOR DESCRIBING MISINFORMATION. *POLITICAL COMMUNICATION*, 37(1), 136–144.

[HTTPS://DOI.ORG/10.1080/10584609.2020.1716500](https://doi.org/10.1080/10584609.2020.1716500)

Key words: Misinformation, expertise, science

Approach: Review

Main findings: Defining “misinformation” in a consistent and coherent way has been a challenge for the field. There is a growing scholarly emphasis on misinformation as that which contradicts the best expert evidence available at the time. Implicit in this definition is the inherently bounded nature of misinformation, which we consider by drawing on both the nature of expertise and evidence.

WEEDON, J., NULAND, W., & STAMOS, A. (2017). *INFORMATION OPERATIONS AND FACEBOOK. FACEBOOK.H*

[HTTPS://I2.RES.24O.IT/PDF2010/EDITRICE/ILSOLE24ORE/ILSOLE24ORE/ONLINE/_OGGETTI_EM
BEDDED/DOCUMENTI/2017/04/28/FACEBOOK-AND-INFORMATION-OPERATIONS-V1.PDF](https://i2.res.24o.it/pdf2010/editrice/ilsole24ore/ilsole24ore/online/_oggetti_embedded/documenti/2017/04/28/facebook-and-information-operations-v1.pdf)

Key words: America, election, Facebook, economic incentives, trust, regulation

Approach: Review

Main findings: The term “fake news” has emerged as a catch-all phrase to refer to everything from news articles that are factually incorrect to opinion pieces, parodies and sarcasm, hoaxes, rumors, memes, online abuse, and factual misstatements by public figures that are reported in otherwise accurate news pieces. Information operations, false news, false amplifiers, and disinformation are terms used instead.

WARDLE, C. (2018). THE NEED FOR SMARTER DEFINITIONS AND PRACTICAL, TIMELY EMPIRICAL RESEARCH ON INFORMATION DISORDER. *DIGITAL JOURNALISM*, 6(8), 951–963.

[HTTPS://DOI.ORG/10.1080/21670811.2018.1502047](https://doi.org/10.1080/21670811.2018.1502047)

Key words: Information disorder, journalism, misinformation, disinformation, fake news

Approach: Review and argument

Main findings: The phrase “fake news” does not adequately capture the complex media ecosystem. The seven categories of information disorder identified and defined are: satire or parody, misleading content, imposter content, fabricated content, false connection, false context and manipulated content.

HOW IS MISINFORMATION TRANSMITTED?

Numerous studies collect large amounts of online content to map out the spread of misinformation online. This provides insight into how fast, how far, and through what networks rumours and online misinformation can spread, including rumours about COVID-19. Further studies cover specific mechanisms or channels that enable misinformation to spread online, including through echo chambers, filter bubbles, selective exposure and the design of online and social media platforms. Finally, misinformation can be transmitted deliberately through disinformation campaigns, and the organized use of bots and trolls.

MAPPING NETWORK STRUCTURES

AHMED, W., VIDAL-ALABALL, J., DOWNING, J., & LÓPEZ SEGUÍ, F. (2020). COVID-19 AND THE 5G CONSPIRACY THEORY: SOCIAL NETWORK ANALYSIS OF TWITTER DATA. *JOURNAL OF MEDICAL INTERNET RESEARCH*, 22(5), E19458. [HTTPS://DOI.ORG/10.2196/19458](https://doi.org/10.2196/19458)

Key words: United Kingdom, COVID-19, Twitter, social media conspiracy

Approach: Social network analysis and content analysis of Twitter data with the #5GCoronavirus hashtag

Main findings: The two largest network structures consisted of an isolates group and a broadcast group. There was a lack of an authority figure who was actively combating such misinformation. Fake news websites and YouTube were the popular sources shared

BRENNEN, S., SIMON, F., HOWARD, P., & NIELSEN, R. (2020). *TYPES, SOURCES, AND CLAIMS OF COVID-19 MISINFORMATION*. UNIVERSITY OF OXFORD. [HTTP://WWW.PRIMAONLINE.IT/WP-CONTENT/UPLOADS/2020/04/COVID-19_REUTERS.PDF](http://www.primaonline.it/wp-content/uploads/2020/04/COVID-19_REUTERS.PDF)

Key words: COVID-19, fact-checking, misinformation, social media, misleading content, content source

Approach: Sample of 225 pieces of misinformation rated false or misleading by fact-checkers published in English between January and the end of March 2020

Main findings: The number of English-language fact-checks rose more than 900% from January to March 2020. Most misinformation involves reconfiguration: existing information is spun, twisted, recontextualized or reworked. Less was completely fabricated and non were deepfakes. Social media platforms varied, but most removing or attaching warnings to fact-checked information.

CHEN, E., LERMAN, K., & FERRARA, E. (2020). TRACKING SOCIAL MEDIA DISCOURSE ABOUT THE COVID-19 PANDEMIC: DEVELOPMENT OF A PUBLIC CORONAVIRUS TWITTER DATA SET. *JMIR PUBLIC HEALTH AND SURVEILLANCE*, 6(2), E19273. [HTTPS://DOI.ORG/10.2196/19273](https://doi.org/10.2196/19273)

Key words: Twitter, COVID-19, source credibility, data set

Approach: Collected tweets related to COVID-19

Main findings: Researchers have collected over 123 million tweets relating to COVID-19 since January 21, 2020, with over 60% of the tweets in English. Twitter activity responds and reacts to COVID-19-related events. This dataset is publicly available and could be used to track COVID-19 related misinformation on Twitter.

CINELLI, M., QUATTROCIOCCHI, W., GALEAZZI, A., VALENSISE, C. M., BRUGNOLI, E., SCHMIDT, A. L., ZOLA, P., ZOLLO, F., & SCALA, A. (2020). THE COVID-19 SOCIAL MEDIA INFODEMIC. *ARXIV:2003.05004 [NLIN, PHYSICS:PHYSICS]*. [HTTP://ARXIV.ORG/ABS/2003.05004](http://arxiv.org/abs/2003.05004)

Key words: COVID-19, social media, source credibility, rumours, amplification, epidemic model

Approach: Collect all pieces of content related to COVID-19 from January 1 to February 14 on Twitter, Instagram, YouTube, Reddit and Gab

Main findings: There are different volumes of misinformation on each platform. Information from reliable and unreliable sources have similar spreading patterns. Information spreading is driven by the interaction paradigm imposed by the specific social media and the specific interaction patterns of groups of users engaged with the topic

EJAZ, W., & ITTEFAQ, M. (2020). DATA FOR UNDERSTANDING TRUST IN VARIED INFORMATION SOURCES, USE OF NEWS MEDIA, AND PERCEPTION OF MISINFORMATION REGARDING COVID-19 IN PAKISTAN. *DATA IN BRIEF*, 32, 106091. [HTTPS://DOI.ORG/10.1016/J.DIB.2020.106091](https://doi.org/10.1016/j.dib.2020.106091)

Key words: Pakistan, COVID-19, source credibility

Approach: Online survey

Main findings: Researchers gathered data from 537 Pakistani individuals to measure their perceptions toward sources of (mis)information regarding COVID-19. The data can be used to examine various characteristics of media use and trust in information sources in Pakistan, compared with other countries

GIGLIETTO, F., IANNELLI, L., VALERIANI, A., & ROSSI, L. (2019). 'FAKE NEWS' IS THE INVENTION OF A LIAR: HOW FALSE INFORMATION CIRCULATES WITHIN THE HYBRID NEWS SYSTEM. *CURRENT SOCIOLOGY*, 67(4), 625–642. [HTTPS://DOI.ORG/10.1177/0011392119837536](https://doi.org/10.1177/0011392119837536)

Key words: Fake news, hybrid media system, sociocybernetics, propagation,

Approach: Theoretical argument

Main Findings: False news is a process which includes micro-level (criteria to judge the falsehood of news and decide to spread it); meso-level (four possible relations between individual judgements and decisions); and macro-level (global circulation cascades) processes. In a hybrid news system, the intention of the creator of false information does not determine the future evolution of the false information cycle.

GRINBERG, N., JOSEPH, K., FRIEDLAND, L., SWIRE-THOMPSON, B., & LAZER, D. (2019). FAKE NEWS ON TWITTER DURING THE 2016 U.S. PRESIDENTIAL ELECTION. *SCIENCE*, 363(6425), 374–378. [HTTPS://DOI.ORG/10.1126/SCIENCE.AAU2706](https://doi.org/10.1126/science.aau2706)

Key words: America, election, Twitter, fake news, audience, mainstream media

Approach: Collected tweets from 16,442 sampled accounts during the 2016 election season

Main findings: Engagement with fake news sources among registered voters on Twitter was extremely concentrated. Only 1% of individuals accounted for 80% of fake news source exposures, and 0.1% accounted for nearly 80% of fake news sources shared. Most people across the political spectrum were exposed to political news from mainstream media outlets.

KOUZY, R., ABI JAOUDE, J., KRAITEM, A., EL ALAM, M. B., KARAM, B., ADIB, E., ZARKA, J., TRABOULSI, C., AKL, E., & BADDOUR, K. (2020). CORONAVIRUS GOES VIRAL: QUANTIFYING THE COVID-19 MISINFORMATION EPIDEMIC ON TWITTER. *CUREUS*. [HTTPS://DOI.ORG/10.7759/CUREUS.7255](https://doi.org/10.7759/cureus.7255)

Key words: Twitter, COVID-19, misinformation, verification

Approach: Collected 673 English tweets with COVID-19-related hashtags

Main findings: Unverified twitter accounts posted more misinformation than verified accounts, with healthcare and public health accounts posting the lowest rate of unverified information. The number of likes and retweets per tweet was not associated with a difference in either false or unverifiable content. The keyword “COVID-19” had less misinformation and unverifiable information than “#2019_ncov” and “Corona”.

KREPS, S. E., & KRINER, D. (2020). MEDICAL MISINFORMATION IN THE COVID-19 PANDEMIC. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3624510](https://doi.org/10.2139/ssrn.3624510)

Key words: America, infodemic, COVID-19, persuasiveness, correction

Approach: Controlled experiment

Main Findings: Americans had relatively low levels of true recall of fake claims. However, many struggle to distinguish fact from fiction: many believe false claims and even more fail to believe facts. Corrections may succeed in reducing misperceptions in some contexts. Misinformation was unlikely to significantly affect policy beliefs and political judgments.

SHAHI, G. K., DIRKSON, A., & MAJCHRZAK, T. A. (2020). AN EXPLORATORY STUDY OF COVID-19 MISINFORMATION ON TWITTER [PREPRINT]. *ARXIV:2005.05710 [CS]*.

[HTTP://ARXIV.ORG/ABS/2005.05710](http://arxiv.org/abs/2005.05710)

Key words: Twitter, COVID-19, infodemic, science communication, fact-checking

Approach: Collected tweets and account information

Main findings: Verified twitter handles are involved in creating and spreading misinformation. False claims propagate faster than partially false claims. Tweets with misinformation are more often concerned with discrediting other information on social media. Authors use less tentative language and appear to be more driven by concerns of potential harm to others.

SHEARES, G., MIKLENCICOVA, R., AND GRUPAC, M. (2020). THE VIRAL POWER OF FAKE NEWS: SUBJECTIVE SOCIAL INSECURITY, COVID-19 DAMAGING MISINFORMATION, AND BASELESS CONSPIRACY THEORIES. *LINGUISTIC AND PHILOSOPHICAL INVESTIGATIONS*, 19(0), 121.

[HTTPS://DOI.ORG/10.22381/LPI1920209](https://doi.org/10.22381/LPI1920209)

Key words: Conspiracy theory, COVID-19, fake news, science communication

Approach: Survey, data modelling, meta-analysis

Key findings: The internet is facilitating the spread of COVID-19 misinformation. Most respondents report having come across misinformation, most often on Facebook. Most respondents trust official government bodies as sources of accurate information and most took actions to verify misinformation including checking other sources and using established news sources.

SHIN, J., JIAN, L., DRISCOLL, K., & BAR, F. (2018). THE DIFFUSION OF MISINFORMATION ON SOCIAL MEDIA: TEMPORAL PATTERN, MESSAGE, AND SOURCE. *COMPUTERS IN HUMAN BEHAVIOR*, 83, 278–287. [HTTPS://DOI.ORG/10.1016/J.CHB.2018.02.008](https://doi.org/10.1016/j.chb.2018.02.008)

Key words: Twitter, America, election, lifecycle, diffusion, rumours

Approach: Trace data: 17 popular political rumors on Twitter over 13 months during 2012 US election campaign, text analysis, multiple-case study approach

Main Findings: Misinformation is malleable, dynamic and transforms over time: it tends to reappear, become exaggerated, and gain visibility through influential users on social media. True rumors originate from mainstream media while false rumors are from obscure websites.

SINGH, L., BANSAL, S., BODE, L., BUDAK, C., CHI, G., KAWINTIRANON, K., PADDEN, C., VANARSDALL, R., VRAGA, E., & WANG, Y. (2020). A FIRST LOOK AT COVID-19 INFORMATION AND MISINFORMATION SHARING ON TWITTER. *ARXIV:2003.13907 [CS]*.

[HTTP://ARXIV.ORG/ABS/2003.13907](http://arxiv.org/abs/2003.13907)

Key words: Twitter, COVID-19, myth, location, source credibility

Approach: Collected COVID-19 related tweets from January 16, 2020 to March 15, 2020

Main findings: COVID-19 cases are highly correlated with Twitter conversations. Attention is focused on the countries that have been hardest hit, suggesting that discussion and information sharing are greatest for those who are most impacted. People are sharing URLs, but only 0.4% are sharing from very credible health sources like the CDC and WHO.

SUNSTEIN, C. R., & VERMEULE, A. (2009). CONSPIRACY THEORIES: CAUSES AND CURES*. *JOURNAL OF POLITICAL PHILOSOPHY*, 17(2), 202–227. [HTTPS://DOI.ORG/10.1111/J.1467-9760.2008.00325.X](https://doi.org/10.1111/j.1467-9760.2008.00325.x)

Key words: America, Conspiracy, extremist groups, terrorism

Approach: Narrative review

Main findings: conspiratorial belief is unique because the very statements and facts that may disprove a conspiracy can be taken as further evidence on their behalf, making it difficult for governments to debunk. Risks include undermining democratic debate and potentially incite violence.

VARGO, C. J., GUO, L., & AMAZEEN, M. A. (2018). THE AGENDA-SETTING POWER OF FAKE NEWS: A BIG DATA ANALYSIS OF THE ONLINE MEDIA LANDSCAPE FROM 2014 TO 2016. *NEW MEDIA & SOCIETY*, 20(5), 2028–2049. [HTTPS://DOI.ORG/10.1177/1461444817712086](https://doi.org/10.1177/1461444817712086)

Key words: America, election, big data, computational analysis, fact-checking, network agenda setting, partisan media, Granger

Approach: Computational analysis

Main Findings: Content from fake news websites is increasing, however, these sites do not set the overall news media agenda. Fake news has a reciprocal relationship with online partisan media, both responding and settings its issue agenda. Fact-checkers' are largely autonomous in what they chose to cover and are not influential in determining the agenda of news media overall.

ZAREI, K., FARAHBAKHS, R., CRESPI, N., & TYSON, G. (2020). A FIRST INSTAGRAM DATASET ON COVID-19. *ARXIV:2004.12226 [CS]*. [HTTP://ARXIV.ORG/ABS/2004.12226](http://arxiv.org/abs/2004.12226)

Key words: Instagram, COVID-19, infodemic

Approach: Collected all Instagram posts

Main findings: Researchers have created a public dataset of all public Instagram posts associated with the COVID-19 hashtags, continuously collecting since March 2020. Data could be used to evaluate the flow of misinformation (e.g., memes) on Instagram and to explore the role of bots in amplifying misinformation.

ZUBIAGA, A., LIAKATA, M., PROCTER, R., WONG SAK HOI, G., & TOLMIE, P. (2016). ANALYSING HOW PEOPLE ORIENT TO AND SPREAD RUMOURS IN SOCIAL MEDIA BY LOOKING AT CONVERSATIONAL THREADS. *PLOS ONE*, 11(3), E0150989. [HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0150989](https://doi.org/10.1371/journal.pone.0150989)

Key words: Twitter, fact-checking, diffusion, source credibility, Canada, America, Sydney, France

Approach: Collected 330 rumour threads (4,842 tweets), 9 newsworthy events

Main findings: Rumours that are ultimately proven true tend to be resolved faster than those that turn out to be false. Users are less capable of distinguishing true from false rumours when they are still unverified. Users tend to support every unverified rumour. Highly reputable users such as news organizations endeavor to post well-grounded statements, but these often prove to be unverified pieces of information that give rise to false rumours

ECHO CHAMBERS & HOMOPHILY

AUXIER, B. E., & VITAK, J. (2019). FACTORS MOTIVATING CUSTOMIZATION AND ECHO CHAMBER CREATION WITHIN DIGITAL NEWS ENVIRONMENTS. *SOCIAL MEDIA + SOCIETY*, 5(2), 205630511984750. [HTTPS://DOI.ORG/10.1177/2056305119847506](https://doi.org/10.1177/2056305119847506)

Key Words: Social news, customization, echo chambers, partisanship, anxiety, information overload

Approach: Survey

Main Findings: Consumers who diversify their online news streams report lower levels of anxiety related to current events. Social media provide users access to diverse perspectives, but at the same time facilitate extreme customization that create echo chambers, filter bubbles, and facilitate the spread of misinformation.

BASTOS, M. T., MERCEA, D., & BARONCHELLI, A. (2017). THE SPATIAL DIMENSION OF ONLINE ECHO CHAMBERS. *ARXIV:1709.05233 [PHYSICS]*. [HTTP://ARXIV.ORG/ABS/1709.05233](http://arxiv.org/abs/1709.05233)

Key words: United Kingdom, Brexit, Twitter, echo chamber, filter bubble, polarization, geographic proximity

Approach: Collected trace data

Main findings: Echo chambers in the “Leave” campaign are associated with geographic proximity and are associated with geographic distance in the “Remain” campaign. Geographically close social enclaves interact with polarized political discussion in an echo-chamber.

BARBERÁ, P., JOST, J. T., NAGLER, J., TUCKER, J. A., & BONNEAU, R. (2015). TWEETING FROM LEFT TO RIGHT: IS ONLINE POLITICAL COMMUNICATION MORE THAN AN ECHO CHAMBER? *PSYCHOLOGICAL SCIENCE*, 26(10), 1531–1542. [HTTPS://DOI.ORG/10.1177/0956797615594620](https://doi.org/10.1177/0956797615594620)

Key words: America, Twitter, polarization

Approach: Collected trace data

Main findings: Political issues were discussed among users with similar ideologies. Non-political current events were discussed across ideologies.

COTA, W., FERREIRA, S. C., PASTOR-SATORRAS, R., & STARNINI, M. (2019). QUANTIFYING ECHO CHAMBER EFFECTS IN INFORMATION SPREADING OVER POLITICAL COMMUNICATION NETWORKS. *EPJ DATA SCIENCE*, 8(1), 35. [HTTPS://DOI.ORG/10.1140/EPJDS/S13688-019-0213-9](https://doi.org/10.1140/epjds/s13688-019-0213-9)

Key words: Brazil, impeachment, Twitter, echo chamber, public opinion,

Approach: Collected 12 million tweets data

Main findings: Two distinct echo chambers emerged based on Twitter mentions: one supporting the impeachment of President Dilma and the other opposing it. Users' ability to spread content beyond their echo chambers depends on their political leaning.

DEL VICARIO, M., VIVALDO, G., BESSI, A., ZOLLO, F., SCALA, A., CALDARELLI, G., & QUATTROCIOCCHI, W. (2016) ECHO CHAMBERS: EMOTIONAL CONTAGION AND GROUP POLARIZATION ON FACEBOOK. *SCIENTIFIC REPORTS*, 6 (1), 37825. DOI: 10.1038/SREP37825

Key words: Facebook, scientific, conspiracy

Approach: Assessment of Facebook groups

Main findings: Echo chambers can affect public debate on socially relevant issues. The emotional behavior of communities is affected by the users' involvement inside the echo chamber. A higher involvement of users corresponds to a more negative approach. More active users show a faster shift towards the negativity than less active ones.

DEL VICARIO, M., BESSI, A., ZOLLO, F., PETRONI, F., SCALA, A., CALDARELLI, G., STANLEY, H. E., & QUATTROCIOCCHI, W. (2016). THE SPREADING OF MISINFORMATION ONLINE. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 113(3), 554–559. [HTTPS://DOI.ORG/10.1073/PNAS.1517441113](https://doi.org/10.1073/pnas.1517441113)

Key words: Facebook, scientific, conspiracy, selective exposure, echo chamber, polarization, trolls, confirmation bias

Approach: Model content cascades: 67 public Facebook pages 2010-2014

Main Findings: There are highly segregated communities around conspiracy and scientific topics on Facebook. Users tend to share content according to a specific narrative and ignore the rest. Social homogeneity is the primary driver of content diffusion which results in homogenous, polarized clusters (echo chambers).

DUBOIS, E., MINAEIAN, S., PAQUET-LABELLE, A., & BEAUDRY, S. (2020). WHO TO TRUST ON SOCIAL MEDIA: HOW OPINION LEADERS AND SEEKERS AVOID DISINFORMATION AND ECHO CHAMBERS. *SOCIAL MEDIA + SOCIETY*. [HTTPS://DOI.ORG/10.1177/2056305120913993](https://doi.org/10.1177/2056305120913993)

Key words: France, opinion leaders, two-step flow, fact-checking, trust, echo chambers, polarization, verification

Approach: Survey: French Internet users from 2017 election

Main Findings: Opinion leaders and leader-seekers are more likely to trust the news media, more likely to fact-check online, and less likely to get caught in an echo chamber. Those who trust the media the least are also least likely to fact-check.

Recommendations: Social media platforms should: Recognize the different user behaviors and incentivize positive information practices; and incorporate existing social relationships into political information sharing tools.

DUBOIS, E., & BLANK, G. (2018). THE ECHO CHAMBER IS OVERSTATED: THE MODERATING EFFECT OF POLITICAL INTEREST AND DIVERSE MEDIA. *INFORMATION, COMMUNICATION & SOCIETY*, 21(5), 729–745. [HTTPS://DOI.ORG/10.1080/1369118X.2018.1428656](https://doi.org/10.1080/1369118X.2018.1428656)

Key words: United Kingdom, echo chamber, high choice media environment

Approach: Survey: UK Internet users

Main Findings: Those who are interested in politics and those with diverse media diets tend to avoid echo chambers. Only a small segment of the population who are not politically interested and do not use diverse media are likely to find themselves in an echo chamber. Single media studies do not realistically test the media environment and user's habits.

DYAGILEV, K., & YOM-TOV, E. (2014). ECHO CHAMBER AMPLIFICATION AND DISAGREEMENT EFFECTS IN THE POLITICAL ACTIVITY OF TWITTER USERS. *ARXIV:1403.7102 [PHYSICS]*. [HTTP://ARXIV.ORG/ABS/1403.7102](http://arxiv.org/abs/1403.7102)

Key words: America, Twitter, political activity, echo chamber

Approach: Analyzed 200, 000 twitter users who expressed explicit support for one of the presidential candidates of the 2012 US presidential election

Main findings: The highest level of political activity occurs in those in balanced virtual environments. Users surrounded by like-minded peers have low levels of political activity. The like mindedness of the geographical environment does not have a significant effect on the level of political activity of users.

HALBERSTAM, Y., & KNIGHT, B. (2016). HOMOPHILY, GROUP SIZE, AND THE DIFFUSION OF POLITICAL INFORMATION IN SOCIAL NETWORKS: EVIDENCE FROM TWITTER. *JOURNAL OF PUBLIC ECONOMICS*, 143, 73–88. [HTTPS://DOI.ORG/10.1016/J.JPUBECO.2016.08.011](https://doi.org/10.1016/j.jpubeco.2016.08.011)

Key words: Twitter, homophily, America, election

Approach: Predictive model

Main Findings: Users affiliated with majority political groups have more connections, are exposed to more information and are exposed to information more quickly than those who are not. All users are disproportionately exposed to like-minded information and information reaches like-minded users more quickly.

JACOBSON, S., MYUNG, E., & JOHNSON, S. L. (2016). OPEN MEDIA OR ECHO CHAMBER: THE USE OF LINKS IN AUDIENCE DISCUSSIONS ON THE FACEBOOK PAGES OF PARTISAN NEWS ORGANIZATIONS. *INFORMATION, COMMUNICATION & SOCIETY*, 19(7), 875–891. [HTTPS://DOI.ORG/10.1080/1369118X.2015.1064461](https://doi.org/10.1080/1369118X.2015.1064461)

Key words: Facebook, cable news, echo chamber, hyperlinks, partisanship

Approach: Evaluate hyperlinks in audience discussions on Facebook pages

Main findings: Facebook audiences show a preference for a small group of information resources. Politically polarized audiences shared an even smaller number of information resources in common. Partisan political discussions on social media are segregated by political orientation.

JASNY, L., & FISHER, D. R. (2019). ECHO CHAMBERS IN CLIMATE SCIENCE. *ENVIRONMENTAL RESEARCH COMMUNICATIONS*, 1(10), 101003. [HTTPS://DOI.ORG/10.1088/2515-7620/AB491C](https://doi.org/10.1088/2515-7620/AB491C)

Key words: America, experts, echo chamber, climate policy, science communication, polarization

Approach: Analysis of policy actors

Main findings: Echo chambers continue to play a significant role in the network of information exchange among policy elites, primarily around whether climate change is caused by humans. Ideological polarization drives the selection of expert information and can be a factor in misinformation diffusion among political elites.

JASNY, L., WAGGLE, J., & FISHER, D. R. (2015). AN EMPIRICAL EXAMINATION OF ECHO CHAMBERS IN US CLIMATE POLICY NETWORKS. *NATURE CLIMATE CHANGE*, 5(8), 782–786. [HTTPS://DOI.ORG/10.1038/NCLIMATE2666](https://doi.org/10.1038/NCLIMATE2666)

Key words: America, climate policy, echo chambers, science communication, confirmation bias

Approach: Survey: American science policy practitioners

Main Findings: The homogeneity of information (the echo) and multi-path information transmission (the chamber) play significant roles in policy communication and create echo chambers on the topic of climate policy. Scientific experts are called on by political actors for their expertise and for how well they fit into particular political narratives.

KARLSEN, R., STEEN-JOHNSEN, K., WOLLEBÆK, D., & ENJOLRAS, B. (2017). ECHO CHAMBER AND TRENCH WARFARE DYNAMICS IN ONLINE DEBATES. *EUROPEAN JOURNAL OF COMMUNICATION*, 32(3), 257–273. [HTTPS://DOI.ORG/10.1177/0267323117695734](https://doi.org/10.1177/0267323117695734)

Key words: Norway, motivated reasoning, confirmation bias, disconfirmation bias

Approach: Online survey experiment

Main findings: People claim to communicate with those who hold opposing views. Both confirming and contradicting arguments similarly reinforce attitude. Two-sided neutral arguments have weaker reinforcing effects suggesting that online debates could contribute to collective learning.

QUATTROCIOCCHI, W., SCALA, A., & SUNSTEIN, C. R. (2016). ECHO CHAMBERS ON FACEBOOK. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.2795110](https://doi.org/10.2139/ssrn.2795110)

Key words: Italy, America, Facebook, conspiracy, science, confirmation bias, selective exposure, group polarization

Approach: Analyzed users' interaction through Facebook conspiracy and scientific groups

Main Findings: Users tend to promote their preferred narratives and form polarized groups. Because they focus on their preferred narratives, users tend to assimilate only confirming claims and to ignore apparent refutations.

TÖRNBERG, P. (2018). ECHO CHAMBERS AND VIRAL MISINFORMATION: MODELING FAKE NEWS AS COMPLEX CONTAGION. *PLOS ONE*, 13(9), E0203958. [HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0203958](https://doi.org/10.1371/journal.pone.0203958)

Key words: Twitter, echo chamber, complex contagion model, diffusion, media logic, polarization, cascade

Approach: Network simulation model

Main Findings: Misinformation and rumours spread easier in networks where there is a presence of an echo chamber due to an emergent network effect result. News originating in segregated clusters of users tends to spread further than in networks without clusters. Virality increases with network homophily.

FILTER BUBBLES

BOZDAG, E., & VAN DEN HOVEN, J. (2015). BREAKING THE FILTER BUBBLE: DEMOCRACY AND DESIGN. *ETHICS AND INFORMATION TECHNOLOGY*, 17(4), 249–265.

[HTTPS://DOI.ORG/10.1007/S10676-015-9380-Y](https://doi.org/10.1007/s10676-015-9380-y)

Key words: Democracy, selective exposure, diversity

Approach: Examples of software designed to break filter bubbles

Main findings: The majority of the tools to combat filter bubbles are designed with norms required by liberal or deliberative models of democracy in mind. All models have their weaknesses; thus it would be beneficial if designers were exposed to other conceptions of democracy.

COHEN, J. N. (2018). EXPLORING ECHO-SYSTEMS: HOW ALGORITHMS SHAPE IMMERSIVE MEDIA ENVIRONMENTS. *JOURNAL OF MEDIA LITERACY EDUCATION*, 10(2), 139–151.

[HTTPS://DOI.ORG/10.23860/JMLE-2018-10-2-8](https://doi.org/10.23860/jmle-2018-10-2-8)

Key words: America, election, algorithm, filter bubble, media literacy, data

Approach: Narrative review

Main findings: Users may tend to believe misinformation as a result of algorithms tailoring content to the user in social media information and distribution systems. The algorithm itself should be considered an immersive media environment that permits users to consume unique media feeds that may affect civic actions.

FLAXMAN, S., GOEL, S., & RAO, J. M. (2016). FILTER BUBBLES, ECHO CHAMBERS, AND ONLINE NEWS CONSUMPTION. *PUBLIC OPINION QUARTERLY*, 80(S1), 298–320.

[HTTPS://DOI.ORG/10.1093/POQ/NFW006](https://doi.org/10.1093/poq/nfw006)

Key words: America, polarization, partisanship, social media, ideological segregation

Approach: Web browsing histories for 50,000 US-located users who regularly read online news

Main findings: Social networks and search engines are associated with an increase in the mean ideological distance between individuals but also with an increase in exposure to material from the individual's less preferred side of the political spectrum. The vast majority of online news consumption is accounted for by individuals simply visiting the home pages of their favorite, typically mainstream, news outlets.

GESCHKE, D., LORENZ, J., & HOLTZ, P. (2019). THE TRIPLE-FILTER BUBBLE: USING AGENT-BASED MODELLING TO TEST A META-THEORETICAL FRAMEWORK FOR THE EMERGENCE OF FILTER BUBBLES AND ECHO CHAMBERS. *BRITISH JOURNAL OF SOCIAL PSYCHOLOGY*, 58(1), 129–149.

[HTTPS://DOI.ORG/10.1111/BJSO.12286](https://doi.org/10.1111/bjso.12286)

Key words: Algorithm, cognitive bias, confirmation bias

Approach: Agent-based model simulation

Main findings: even without any social or technological filters, echo chambers emerge as a consequence of cognitive mechanisms when there is a central source sending information to a large part of the population. When social and technological filtering is added to the model, society becomes polarized into even more distinct echo chambers.

SPOHR, D. (2017). FAKE NEWS AND IDEOLOGICAL POLARIZATION: FILTER BUBBLES AND SELECTIVE EXPOSURE ON SOCIAL MEDIA. *BUSINESS INFORMATION REVIEW*, 34(3), 150–160. [HTTPS://DOI.ORG/10.1177/0266382117722446](https://doi.org/10.1177/0266382117722446)

Key words: Facebook, algorithm, polarization, misinformation, confirmation bias, availability bias, echo chamber, selective exposure

Approach: Case study: 2016 American election and 2016 Brexit referendum

Main Findings: Technology firms need to take more responsibility for fake news and misinformation. Citizens need to be aware that news consumption should be an active process of seeking out diverse sources. Further study is needed to investigate ideological polarization, selective exposure and algorithmic curation.

ZUIDERVEEN BORGESIOUS, F. J., TRILLING, D., MÖLLER, J., BODÓ, B., DE VREESE, C. H., & HELBERGER, N. (2016). SHOULD WE WORRY ABOUT FILTER BUBBLES? *INTERNET POLICY REVIEW*, 5(1). [HTTPS://DOI.ORG/10.14763/2016.1.401](https://doi.org/10.14763/2016.1.401)

Key words: Personalization, algorithm, selective exposure

Approach: Review

Main findings: There is little empirical evidence that warrants any worries about filter bubbles. Personalization on news sites is still at an infant stage, and personalized content does not constitute a substantial information source for most citizens. However, if personalization technology improves, and personalized news content becomes people's main information source, problems for our democracy could indeed arise.

SELECTIVE EXPOSURE AND SHARING

ARCENEUX, K., JOHNSON, M., & MURPHY, C. (2012). POLARIZED POLITICAL COMMUNICATION, OPPOSITIONAL MEDIA HOSTILITY, AND SELECTIVE EXPOSURE. *THE JOURNAL OF POLITICS*, 74(1), 174–186. [HTTPS://DOI.ORG/10.1017/S002238161100123X](https://doi.org/10.1017/S002238161100123X)

Key words: Partisanship, selective exposure, media bias

Approach: Laboratory experiments

Main findings: Counter attitudinal news programming is more likely to induce hostile media perceptions than pro-attitudinal programming, but the presence of choice blunts oppositional media hostility. Evidence supports a selective exposure effect.

DVIR-GVIRSMAN, S. (2019). POLITICAL SOCIAL IDENTITY AND SELECTIVE EXPOSURE. *MEDIA PSYCHOLOGY*, 22(6), 867–889. [HTTPS://DOI.ORG/10.1080/15213269.2018.1554493](https://doi.org/10.1080/15213269.2018.1554493)

Key words: Israel, partisan media, selective exposure

Approach: Survey experiment

Main findings: Political social identity influences media selection. Strength of gender identity and of political-social identity may mitigate the influence of conflict between the identities presented in the media text.

DYLKO, I., DOLGOV, I., HOFFMAN, W., ECKHART, N., MOLINA, M., & AAZIZ, O. (2017). THE DARK SIDE OF TECHNOLOGY: AN EXPERIMENTAL INVESTIGATION OF THE INFLUENCE OF CUSTOMIZABILITY TECHNOLOGY ON ONLINE POLITICAL SELECTIVE EXPOSURE. *COMPUTERS IN HUMAN BEHAVIOR*, 73, 181–190. [HTTPS://DOI.ORG/10.1016/J.CHB.2017.03.031](https://doi.org/10.1016/j.chb.2017.03.031)

Key words: America, personalization, deliberative democracy, polarization, selective exposure

Approach: Experiment

Main findings: Various forms of customizability technology increase selective exposure of online political news consumption. Customizability has a stronger effect on minimizing exposure to counter-attitudinal information than it has on increasing exposure to pro attitudinal information, particularly for ideologically moderate individuals

JOHNSON, T. J., & KAYE, B. K. (2013). THE DARK SIDE OF THE BOON? CREDIBILITY, SELECTIVE EXPOSURE AND THE PROLIFERATION OF ONLINE SOURCES OF POLITICAL INFORMATION. *COMPUTERS IN HUMAN BEHAVIOR*, 29(4), 1862–1871. [HTTPS://DOI.ORG/10.1016/J.CHB.2013.02.011](https://doi.org/10.1016/j.chb.2013.02.011)

Key words: America, selective exposure, credibility, personalization, fragmentation

Approach: Survey of politically interested Internet users during the 2008 presidential campaign

Main findings: There was little evidence of credibility leading to selective exposure, selective avoidance and fragmentation of social and political views. Respondents who judge blogs as credible both searched for information that supports and challenges their point of view.

JUN, N. (2012). CONTRIBUTION OF INTERNET NEWS USE TO REDUCING THE INFLUENCE OF SELECTIVE ONLINE EXPOSURE ON POLITICAL DIVERSITY. *COMPUTERS IN HUMAN BEHAVIOR*, 28(4), 1450–1457. [HTTPS://DOI.ORG/10.1016/J.CHB.2012.03.007](https://doi.org/10.1016/j.chb.2012.03.007)

Key words: America, selective exposure, political diversity

Approach: Survey

Main findings: While Internet news use has no direct relationship with political diversity in individuals' social networks, it nevertheless moderates the negative effect of selective online interaction and indirectly contributes to political diversity.

KIM, Y. (2015). DOES DISAGREEMENT MITIGATE POLARIZATION? HOW SELECTIVE EXPOSURE AND DISAGREEMENT AFFECT POLITICAL POLARIZATION. *JOURNALISM & MASS COMMUNICATION QUARTERLY*, 92(4), 915–937.

[HTTPS://DOI.ORG/10.1177/1077699015596328](https://doi.org/10.1177/1077699015596328)

Key words: America, South Korea, election, selective exposure, polarization

Approach: Surveys

Main findings: The polarization gap between those with high disagreement and low disagreement became wider when people consumed a larger number of like-minded media. Encountering dissimilar opinions through interpersonal discussion networks weakened the association between partisan media use and political polarization.

KNOBLOCH-WESTERWICK, S., JOHNSON, B. K., & WESTERWICK, A. (2015). CONFIRMATION BIAS IN ONLINE SEARCHES: IMPACTS OF SELECTIVE EXPOSURE BEFORE AN ELECTION ON POLITICAL ATTITUDE STRENGTH AND SHIFTS. *JOURNAL OF COMPUTER-MEDIATED COMMUNICATION*, 20(2), 171–187. [HTTPS://DOI.ORG/10.1111/JCC4.12105](https://doi.org/10.1111/JCC4.12105)

Key words: America, election, selective exposure, confirmation bias, source credibility, motivated reasoning

Approach: Online experimental study

Main findings: Users preferred to access attitude-consistent messages and messages from high-credibility sources through online search. Exposure to attitude-consistent search results increased attitude accessibility and reinforced attitudes, whereas exposure to attitude-discrepant content had opposite effects, regardless of messages' source credibility.

KNOBLOCH-WESTERWICK, S., & MENG, J. (2011). REINFORCEMENT OF THE POLITICAL SELF THROUGH SELECTIVE EXPOSURE TO POLITICAL MESSAGES. *JOURNAL OF COMMUNICATION*, 61(2), 349–368. [HTTPS://DOI.ORG/10.1111/J.1460-2466.2011.01543.X](https://doi.org/10.1111/J.1460-2466.2011.01543.X)

Key words: America, selective exposure, confirmation bias

Approach: Lab-based and online experimental study

Main findings: Participants preferred attitude consistent messages over counter attitudinal ones regardless of political issue and media use context. This strengthened the political self-concept through increased accessibility.

MASIP, P., SUAU-MARTÍNEZ, J., & RUIZ-CABALLERO, C. (2018). QUESTIONING THE SELECTIVE EXPOSURE TO NEWS: UNDERSTANDING THE IMPACT OF SOCIAL NETWORKS ON POLITICAL NEWS CONSUMPTION. *AMERICAN BEHAVIORAL SCIENTIST*, 62(3), 300–319.

[HTTPS://DOI.ORG/10.1177/0002764217708586](https://doi.org/10.1177/0002764217708586)

Key words: Spain, selective exposure, polarization, hybrid media system, serendipity

Approach: Survey and focus group

Main findings: Selective exposure is predominant among users: more than half only subscribe to like-minded news sites and only a small percent frequently receive dissenting ideological information through social networks. However, a significant percentage subscribe to ideologically unrelated news sites and read news from non-like-minded media sites.

SHIN, J., & THORSON, K. (2017). PARTISAN SELECTIVE SHARING: THE BIASED DIFFUSION OF FACT-CHECKING MESSAGES ON SOCIAL MEDIA: SHARING FACT-CHECKING MESSAGES ON SOCIAL MEDIA. *JOURNAL OF COMMUNICATION*, 67(2), 233–255.

[HTTPS://DOI.ORG/10.1111/JCOM.12284](https://doi.org/10.1111/jcom.12284)

Key words: America, Twitter, election, fact-checking, partisanship, polarization, bias, selective sharing, selective exposure, social identity theory

Approach: Content analysis of Twitter data

Main Findings: Partisans selectively share fact-checking messages that support their own candidate which results in an ideologically based flow of fact-checks. Partisans are more likely to publicly accuse fact-checking organizations of bias, even if fact-check rulings are neutral towards the candidate. Democrats share more fact-checking posts while Republicans are more hostile towards fact-checkers.

WEEKS, BRIAN E., LANE, D. S., KIM, D. H., LEE, S. S., & KWAK, N. (2017). INCIDENTAL EXPOSURE, SELECTIVE EXPOSURE, AND POLITICAL INFORMATION SHARING: INTEGRATING ONLINE EXPOSURE PATTERNS AND EXPRESSION ON SOCIAL MEDIA. *JOURNAL OF COMPUTER-MEDIATED COMMUNICATION*, 22(6), 363–379. [HTTPS://DOI.ORG/10.1111/JCC4.12199](https://doi.org/10.1111/jcc4.12199)

Key words: America, selective exposure, incidental exposure, partisanship

Approach: Survey

Main findings: Incidental exposure to counter-attitudinal information drives stronger partisans to more actively seek out like-minded political content, which subsequently encourages political information sharing on social media. Exposure to disagreeable information online is thought to be democratically valuable, but it may instead drive some partisans to seek even more like-minded content.

WESTERWICK, A., JOHNSON, B. K., & KNOBLOCH-WESTERWICK, S. (2017). CONFIRMATION BIASES IN SELECTIVE EXPOSURE TO POLITICAL ONLINE INFORMATION: SOURCE BIAS VS. CONTENT BIAS. *COMMUNICATION MONOGRAPHS*, 84(3), 343–364.
[HTTPS://DOI.ORG/10.1080/03637751.2016.1272761](https://doi.org/10.1080/03637751.2016.1272761)

Key words: America, selective exposure, confirmation bias, polarization, partisanship

Approach: Experiment

Main findings: Participants demonstrated a confirmation bias regardless of the source quality. The more time individuals spent with attitude-consistent content associated with slanted sources, the more immediate attitude reinforcement occurred. Selective exposure did not only affect attitudes in the short run – its impacts could still be detected two days later.

MEDIA DESIGN

ALLCOTT, H., & GENTZKOW, M. (2017). SOCIAL MEDIA AND FAKE NEWS IN THE 2016 ELECTION. *JOURNAL OF ECONOMIC PERSPECTIVES*, 31(2), 211–236.
[HTTPS://DOI.ORG/10.1257/JEP.31.2.211](https://doi.org/10.1257/JEP.31.2.211)

Key words: America, election, economics, social media, trust, polarization, confirmation bias

Approach: Survey: after the 2016 American election; database of 156 false news stories

Main Findings: Americans were exposed to and remember at least one fake news headline from the election. Education level, partisanship and media consumption level impact who believes fake news. Social media platforms are conducive for fake news because they have low barriers to entry, value short term clicks over long-term reputation-building, and users/ networks are ideologically separated.

BASTANI, P., & BAHRAMI, M. A. (2020). COVID-19 RELATED MISINFORMATION ON SOCIAL MEDIA: A QUALITATIVE STUDY FROM IRAN (PREPRINT). *JOURNAL OF MEDICAL INTERNET RESEARCH*. [HTTPS://DOI.ORG/10.2196/18932](https://doi.org/10.2196/18932)

Key Words: Iran, Telegram, WhatsApp, COVID-19, health misinformation

Method: Discourse analysis

Main Findings: The ease of information dissemination, marketing incentives and the poor legal supervision of online contents are the main reasons for misinformation dissemination on social media. Active and effective presence of health authorities on social media and the improvement of public health literacy are recommended to combat misinformation.

LENG, Y., ZHAI, Y., SUN, S., WU, Y., SELZER, J., STROVER, S., FENSEL, J., PENTLAND, A., & DING, Y. (2020). ANALYSIS OF MISINFORMATION DURING THE COVID-19 OUTBREAK IN CHINA: CULTURAL, SOCIAL AND POLITICAL ENTANGLEMENTS. *ARXIV:2005.10414 [CS]*.
[HTTP://ARXIV.ORG/ABS/2005.10414](http://arxiv.org/abs/2005.10414)

Key words: China, Weibo, infodemic

Approach: Collected Weibo posts

Main findings: Misinformation follows an issue-attention cycle, and covered city lockdown, cures, preventions and school reopening. Sources of authority weigh in on these topics, but their influence is complicated by peoples' pre-existing beliefs and cultural practices. Cultural, political, and social factors must be considered in protecting the public from misinformation

DISINFORMATION CAMPAIGNS

INNES, M., DOBREVA, D., & INNES, H. (2019). DISINFORMATION AND DIGITAL INFLUENCING AFTER TERRORISM: SPOOFING, TRUTHING AND SOCIAL PROOFING. *CONTEMPORARY SOCIAL SCIENCE*, 1–15. [HTTPS://DOI.ORG/10.1080/21582041.2019.1569714](https://doi.org/10.1080/21582041.2019.1569714)

Key words: United Kingdom, Twitter, Facebook, terrorism

Approach: Over 30 million data points collated from multiple social media platforms using Sentinel

Main findings: Three digital influence engineering techniques are associated with communicating misinformation and disinformation: 1) spoofing: individuals falsify or misrepresent their identity, social status, or the content of messages; 2) truthing: individuals claim to present the “real truth” or hidden facts; and 3) social proofing: creating the illusion of large numbers who share a belief.

Recommendations: more attention should be paid to how strategic communications interventions can counteract the effects of misinformation and disinformation

JAISWAL, J., LOSCHIAVO, C., & PERLMAN, D. C. (2020). DISINFORMATION, MISINFORMATION AND INEQUALITY-DRIVEN MISTRUST IN THE TIME OF COVID-19: LESSONS UNLEARNED FROM AIDS DENIALISM. *AIDS AND BEHAVIOR*, S10461-020-02925-Y.
[HTTPS://DOI.ORG/10.1007/S10461-020-02925-Y](https://doi.org/10.1007/S10461-020-02925-Y)

Key words: America, infodemic, conspiracy belief, racism

Approach: Commentary

Main findings: Two forms of push-back against dominant scientific evidence have become prominent during COVID-19: 1) disinformation propagated at the institutional/federal government level to preserve power and

undermine already marginalized groups; and 2) inequality-driven mistrust among communities that have been made vulnerable by historical and ongoing structural inequities.

TENOVE, C., BUFFIE, J., MCKAY, S., & MOSCROP, D. (2018). DIGITAL THREATS TO DEMOCRATIC ELECTIONS: HOW FOREIGN ACTORS USE DIGITAL TECHNIQUES TO UNDERMINE DEMOCRACY. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3235819](https://doi.org/10.2139/ssrn.3235819)

Key words: Canada, disinformation, cyber security

Approach: Review

Main findings: The threat of digital interference is not limited to its impact on electoral outcomes. Foreign actors use hacking attacks, mass misinformation campaigns, micro-targeted manipulation and trolling operations to interfere in elections. These techniques can undermine democratic participation, deliberation, and institutional action.

BOTS AND TROLLS

DUBOIS, E., & MCKELVEY, F. (2018). *CANADA: BUILDING BOT TYPOLOGIES (VOL. 1)*. OXFORD UNIVERSITY PRESS. [HTTPS://DOI.ORG/10.1093/OSO/9780190931407.003.0004](https://doi.org/10.1093/oso/9780190931407.003.0004)

Key words: Canada, political bots, media literacy, social media

Approach: Interviews and Twitter data

Main findings: There are four types of bots in the Canadian political ecosystem:

- Dampeners: suppress certain messages, channels, or voices
- Amplifiers: increase the number of voices or attention paid to particular voices and messages
- Transparency bots: draw attention to the behavior of particular political actors
- Servant bots: automate simple tasks, help maintain data, or simplify data analysis

DUBOIS, E., & MCKELVEY, F. R. (2019). POLITICAL BOTS: DISRUPTING CANADA'S DEMOCRACY. *CANADIAN JOURNAL OF COMMUNICATION*, 44(2). [HTTPS://DOI.ORG/10.22230/CJC.2019V44N2A3511](https://doi.org/10.22230/CJC.2019V44N2A3511)

Key words: Canada, election, bots, trust, astroturfing

Approach: Review

Main findings: There are four problems associated with bots in Canadian politics:

- Identification: bots are becoming more complex and harder to detect;
- Evidence: lack of archiving on social media makes forensic research difficult;

- Attribution: it is difficult to attribute creation or use of a bot to particular actors; and
- Enforcement: identifying bots does not relieve their effect (enforcement is too late).

Recommendations: Social media platforms should define good practice for bots (banning nefarious bots and communicating the value of non-nefarious bots). Enhanced digital literacy is needed among citizens.

FERRARA, E. (2020). WHAT TYPES OF COVID-19 CONSPIRACIES ARE POPULATED BY TWITTER BOTS? *FIRST MONDAY*. [HTTPS://DOI.ORG/10.5210/FM.V25I6.10633](https://doi.org/10.5210/fm.v25i6.10633)

Key words: America, Twitter, COVID-19, bots

Approach: Tracking in real-time COVID-19 tweets from January 21, 2020 to March 12, 2020

Main findings: Accounts that are likely to be bots use COVID-19 to promote visibility of ideological hashtags associated with the alt-right in the United States. Human users are predominantly concerned with public health and welfare.

FERRARA, E., VAROL, O., DAVIS, C., MENCZER, F., & FLAMMINI, A. (2016). THE RISE OF SOCIAL BOTS. *COMMUNICATIONS OF THE ACM*, 59(7), 96–104. [HTTPS://DOI.ORG/10.1145/2818717](https://doi.org/10.1145/2818717)

Key Words: Social bots, bot detection

Approach: Review

Main Findings: Effective bot detection should use a hybrid of the existing bot detection approaches, as all approaches have some downside. Systems based on social network information rely on behavioral assumptions which may not be true. Systems based on crowdsource are not cost effective, not accurate individually, and raise privacy issues. Feature-based bot detection using machine learning must adapt to bots continuously evolving to avoid detection.

KELLER, F. B., SCHOCH, D., STIER, S., & YANG, J. (2020). POLITICAL ASTROTURFING ON TWITTER: HOW TO COORDINATE A DISINFORMATION CAMPAIGN. *POLITICAL COMMUNICATION*, 37(2), 256–280. [HTTPS://DOI.ORG/10.1080/10584609.2019.1661888](https://doi.org/10.1080/10584609.2019.1661888)

Key words: Twitter, South Korea, astroturfing, disinformation strategy, bot detection, trust

Approach: Trace data: 2012 South Korea election

Main Findings: Past research on social bots does not account for campaigns using human or cyborgs accounts to avoid detection. Bots can be better identified by coordinated activity patterns. Similar behavior among a group of managed accounts can signal a disinformation campaign.

Recommendations: Social media platforms should not be permitted to permanently delete data of accounts implicated in disinformation campaigns to allow for research and fake online accounts, including bots, should not be covered under privacy protection laws.

WHY ARE WE SUSCEPTIBLE TO MISINFORMATION?

The following references cover individual and social biases that can make us susceptible to misinformation. At the individual level, previously being exposed to the information, the tendency to fit information into our current worldview, emotion, individual motivation and other cognitive biases can make us more vulnerable to misinformation. Further, social pressures and increasing polarization and political partisanship can also make us susceptible.

PRIOR EXPOSURE

EFFRON, D. A., & RAJ, M. (2019). MISINFORMATION AND MORALITY: ENCOUNTERING FAKE-NEWS HEADLINES MAKES THEM SEEM LESS UNETHICAL TO PUBLISH AND SHARE. *PSYCHOLOGICAL SCIENCE*. [HTTPS://DOI.ORG/10.1177/0956797619887896](https://doi.org/10.1177/0956797619887896)

Key words: Moral judgement, misinformation, repetition, prior exposure, fluency, illusory truth effect

Approach: Four online experiments

Main Findings: Repeatedly encountering misinformation makes it seem less unethical to spread, regardless of whether one believes it. Perceiving the headlines as less unethical predicted stronger inclinations to express approval of it online. People were more likely to share repeated headlines than new headlines.

Recommendations: Fact-checking will be insufficient as long as people find it morally permissible to share previously encountered misinformation.

ECKER, U. K. H., HOGAN, J. L., & LEWANDOWSKY, S. (2017A). REMINDERS AND REPETITION OF MISINFORMATION: HELPING OR HINDERING ITS RETRACTION? *JOURNAL OF APPLIED RESEARCH IN MEMORY AND COGNITION*, 6(2), 185–192.

[HTTPS://DOI.ORG/10.1016/J.JARMAC.2017.01.014](https://doi.org/10.1016/j.jarmac.2017.01.014)

Key words: Australia, continued influence, familiarity, debunking

Approach: Controlled experiment

Main findings: Retractions that explicitly repeated the misinformation were more effective in reducing misinformation effects than retractions that avoided repetition, presumably because of enhanced salience. Recommendations for effective myth debunking may thus need to be revised.

PENNYCOOK, G., CANNON, T. D., & RAND, D. G. (2018). PRIOR EXPOSURE INCREASES PERCEIVED ACCURACY OF FAKE NEWS. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: GENERAL*, 147(12), 1865–1880. [HTTPS://DOI.ORG/10.1037/XGE0000465](https://doi.org/10.1037/XGE0000465)

Key words: America, election, Facebook, illusory truth effect, fake news, fact-checking

Approach: Three online experiments

Main Findings: Prior exposure increases perceptions of accuracy, even when stories are labeled as contested by fact-checkers or are inconsistent with the users' political ideology. Social media platforms help to incubate belief in blatantly false news stories. Interventions that prevent users from seeing fake news in the first place will be more effective than qualifiers discounting fake news they have already seen.

PENNYCOOK, G., & RAND, D. G. (2020). WHO FALLS FOR FAKE NEWS? THE ROLES OF BULLSHIT RECEPTIVITY, OVERCLAIMING, FAMILIARITY, AND ANALYTIC THINKING. *JOURNAL OF PERSONALITY*, 88(2), 185–200. [HTTPS://DOI.ORG/10.1111/JOPY.12476](https://doi.org/10.1111/JOPY.12476)

Key words: Fake news, reflexive open-mindedness

Approach: Three online surveys experiment: 1,600 participants

Main Findings: Individuals who overclaim their level of knowledge also judge fake news to be more accurate than it is. Belief in fake news may be driven by a general tendency to be overly accepting of weak claims.

SWIRE, B., ECKER, U. K. H., & LEWANDOWSKY, S. (2017). THE ROLE OF FAMILIARITY IN CORRECTING INACCURATE INFORMATION. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: LEARNING, MEMORY, AND COGNITION*, 43(12), 1948–1961. [HTTPS://DOI.ORG/10.1037/XLM0000422](https://doi.org/10.1037/XLM0000422)

Key words: Continued influence effect, backfire effect, correction, fact-checking

Approach: Experiment

Main Findings: Repeating a myth in corrections increases familiarity and thus reinforces belief in the myth; however, not repeating the myth is ineffective for corrections. A greater level of explanatory detail promoted more sustained belief change. Fact affirmations were more effective at changing beliefs compared to myth retractions. Adults over 65 were worse at sustaining their post correction belief that myths were inaccurate.

MOTIVATED REASONING

CINELLI, M., QUATTROCIOCCI, W., GALEAZZI, A., VALENSISE, C. M., BRUGNOLI, E., SCHMIDT, A. L., ZOLA, P., ZOLLO, F., & SCALA, A. (2020). THE COVID-19 SOCIAL MEDIA INFODEMIC. *ARXIV:2003.05004 [NLIN, PHYSICS:PHYSICS]*. [HTTP://ARXIV.ORG/ABS/2003.05004](http://arxiv.org/abs/2003.05004)

Key words: Twitter, Instagram, YouTube, Reddit, Gab, COVID-19, rumour, amplification, infodemic

Approach: Collected content and user data across five platforms

Main findings: Mainstream platforms are less susceptible to misinformation diffusion. However, information from both reliable and questionable sources do not present different spreading patterns. The interaction patterns of each social media platform combined with the peculiarity of the audience of the specific platform play a pivotal role in information and misinformation spreading.

ECKER, U. K. H., LEWANDOWSKY, S., FENTON, O., & MARTIN, K. (2014). DO PEOPLE KEEP BELIEVING BECAUSE THEY WANT TO? PREEXISTING ATTITUDES AND THE CONTINUED INFLUENCE OF MISINFORMATION. *MEMORY & COGNITION*, 42(2), 292–304. [HTTPS://DOI.ORG/10.3758/S13421-013-0358-X](https://doi.org/10.3758/S13421-013-0358-X)

Key words: Australian, retractions, continued influence, cognitive bias, motivated reasoning, fluency, familiarity

Approach: Experimental studies

Main findings: People use race-related information in their inferential reasoning mainly when this information is congruent with their preexisting attitudes. People's racial attitudes did not determine the effectiveness of retractions. Retractions reduced reliance on the critical information, equally for people in the high- and low-prejudice groups

FLYNN, D. J., NYHAN, B., & REIFLER, J. (2017). THE NATURE AND ORIGINS OF MISPERCEPTIONS: UNDERSTANDING FALSE AND UNSUPPORTED BELIEFS ABOUT POLITICS: NATURE AND ORIGINS OF MISPERCEPTIONS. *POLITICAL PSYCHOLOGY*, 38, 127–150. [HTTPS://DOI.ORG/10.1111/POPS.12394](https://doi.org/10.1111/POPS.12394)

Key words: American, motivated reasoning, corrections, democracy, misperceptions, political elites, polarization

Approach: Narrative review

Main findings: Misperceptions are widespread and that elites and the media play a key role in promoting these false and unsupported beliefs. In many cases, misperceptions appear to distort people's opinions and behavior. Even when they do not have such effects, these misperceptions can still have pernicious consequences for the factual basis of both political debate and public policy itself

HORNSEY, M. J., HARRIS, E. A., & FIELDING, K. S. (2018). THE PSYCHOLOGICAL ROOTS OF ANTI-VACCINATION ATTITUDES: A 24-NATION INVESTIGATION. *HEALTH PSYCHOLOGY*, 37(4), 307–315. [HTTPS://DOI.ORG/10.1037/HEA0000586](https://doi.org/10.1037/HEA0000586)

Key words: Vaccines, motivated reasoning, deficit model, science communication

Approach: Survey

Main findings: In order of magnitude, anti-vaccination attitudes were highest among those who (a) were high in conspiratorial thinking, (b) were high in reactance, (c) reported high levels of disgust toward blood and needles, and (d) had strong individualistic/hierarchical worldviews. In contrast, demographic variables (including education) accounted for nonsignificant or trivial levels of variance.

KAHAN, D. M. (2012). IDEOLOGY, MOTIVATED REASONING, AND COGNITIVE REFLECTION: AN EXPERIMENTAL STUDY. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.2182588](https://doi.org/10.2139/SSRN.2182588)

Key words: America, polarization, partisanship, science communication, heuristics

Approach: Controlled experiment

Main findings: Both liberals and conservatives demonstrated the same unconscious tendency to fit assessments of empirical evidence to their ideological predispositions. Ideologically motivated cognition is a form of information processing that promotes individuals' interests in forming and maintaining beliefs that signify their loyalty to important affinity groups.

KAHAN, D. M., & PETERS, E. (2017). RUMORS OF THE “NONREPLICATION” OF THE “MOTIVATED NUMERACY EFFECT” ARE GREATLY EXAGGERATED. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3026941](https://doi.org/10.2139/SSRN.3026941)

Key words: Motivated reasoning, numeracy, replication study, gun control, risk perception, science communication

Approach: Response and replication study

Main findings: The design defects (principally, the lack of statistical power) in Ballarini & Sloman (2017)'s replication study make it misleading for them to claim that they “failed to replicate” the results of Kahan, Peters et al. (2017). When researchers report “non replications” without the “faithful recreation of a study with high statistical power”, they weaken the utility of replications in social psychology. More numerate study participants use their cognitive proficiency to fit the evidence to the position that predominates within their cultural community.

KAHAN, D. M., PETERS, E., DAWSON, E. C., & SLOVIC, P. (2013). MOTIVATED NUMERACY AND ENLIGHTENED SELF-GOVERNMENT. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.2319992](https://doi.org/10.2139/SSRN.2319992)

Key words: America, cognitive bias, motivated reasoning, polarization, partisanship, science

Approach: Controlled experiment

Main findings: More numerate subjects highest did substantially better at solving problems from empirical than less numerate ones when the data were presented as results from a study of a new skin-rash treatment. Subjects' responses became politically polarized and less accurate when the same data were presented as results from the study of a gun-control ban. Such polarization increased among subjects highest in numeracy. More numerate subjects use their quantitative-reasoning capacity selectively to conform their interpretation of the data to the result most consistent with their political outlooks.

KAHNE, J., & BOWYER, B. (2017). EDUCATING FOR DEMOCRACY IN A PARTISAN AGE: CONFRONTING THE CHALLENGES OF MOTIVATED REASONING AND MISINFORMATION. *AMERICAN EDUCATIONAL RESEARCH JOURNAL*, 54(1), 3–34.

[HTTPS://DOI.ORG/10.3102/0002831216679817](https://doi.org/10.3102/0002831216679817)

Key words: Youth, motivated reasoning, partisanship, media literacy, education, political knowledge

Approach: Controlled experiment

Main findings: Youth assessments depended on (a) the alignment of the claim with one's prior policy position and to a lesser extent on (b) whether the post included an inaccurate statement. Political knowledge did not improve judgments of accuracy, but media literacy education did.

PENNYCOOK, G., MCPHETRES, J., BAGO, B., & RAND, D. (2020). WORKING PAPER: ATTITUDES ABOUT COVID-19 IN CANADA, THE U.K., AND THE U.S.A.: A NOVEL TEST OF POLITICAL POLARIZATION AND MOTIVATED REASONING. [10.31234/OSF.IO/ZHJKP](https://doi.org/10.31234/OSF.IO/ZHJKP)

Key words: Canada, America, UK, COVID-19, polarization, ideology, motivated reasoning

Approach: Survey experiment

Main findings: Polarization was greater in the U.S. than in the U.K., but not Canada. In all three countries, cognitive sophistication correlated negatively with misperceptions and was a stronger predictor than political ideology. There was no evidence that cognitive sophistication was associated with increased polarization, contrary to identity-protective cognition accounts of motivated reasoning. Thus, although there is some evidence for political polarization, accurate beliefs about COVID-19 were broadly associated with the quality of one's reasoning regardless of political polarization

REDLAWSK, D. P., CIVETTINI, A. J. W., & EMMERSON, K. M. (2010). THE AFFECTIVE TIPPING POINT: DO MOTIVATED REASONERS EVER "GET IT"? *POLITICAL PSYCHOLOGY*, 31(4), 563–593.

[HTTPS://DOI.ORG/10.1111/J.1467-9221.2010.00772.X](https://doi.org/10.1111/J.1467-9221.2010.00772.X)

Key words: America, Motivated reasoning, anxiety, affective intelligence, emotion

Approach: Process-tracing, experiment: simulated election campaign

Main Findings: The existing affect towards a political candidate is an important factor in determining the extent to which new information is accurately perceived and evaluations correctly updated. An affective tipping point exists, where individuals will update their evaluations of a candidate based on new evidence.

THORSON, E. (2016). BELIEF ECHOES: THE PERSISTENT EFFECTS OF CORRECTED MISINFORMATION. *POLITICAL COMMUNICATION*, 33(3), 460–480. [HTTPS://DOI.ORG/10.1080/10584609.2015.1102187](https://doi.org/10.1080/10584609.2015.1102187)

Key words: America, belief echoes, continued influence effect, corrections, fact-checking, motivated reasoning

Approach: Online survey experiments

Main Findings: Citizen’s pre-existing political identities shape how they respond to new information. Exposure to negative political information continues to shape attitudes even after the information has been discredited. Fact-checking is not sufficient to eliminate the consequences of misinformation.

Recommendations: Journalists should check facts before publishing a claim and resist publicizing false statements.

WEEKS, B. E., & GARRETT, R. K. (2014). ELECTORAL CONSEQUENCES OF POLITICAL RUMORS: MOTIVATED REASONING, CANDIDATE RUMORS, AND VOTE CHOICE DURING THE 2008 U.S. PRESIDENTIAL ELECTION. *INTERNATIONAL JOURNAL OF PUBLIC OPINION RESEARCH*, 26(4), 401–422. [HTTPS://DOI.ORG/10.1093/IJPOR/EDU005](https://doi.org/10.1093/IJPOR/EDU005)

Key words: America, election, effective deliberation, democracy, partisan motivated reasoning, backfire effect

Approach: National telephone survey

Main Findings: Individuals were more willing to believe negative rumours about a candidate from the opposing party than from their party. Rumour rebuttals are uniformly effective and do not produce backfire effects. Political rumouring can have important electoral consequences: the probability of voting for a candidate decreases when rumours about that candidate are believed.

COGNITIVE BIAS

MARIE, A., ALTAY, S., & STRICKLAND, B. (2020). THE COGNITIVE FOUNDATIONS OF MISINFORMATION ON SCIENCE: WHAT WE KNOW AND WHAT SCIENTISTS CAN DO ABOUT IT. *EMBO REPORTS*, 21(4). [HTTPS://DOI.ORG/10.15252/EMBR.202050205](https://doi.org/10.15252/EMBR.202050205)

Key words: America, science, misinformation, cognitive bias

Approach: Narrative review

Main findings: Various cognitive biases impact our ability to form accurate scientific beliefs: a tendency to trust one's own intuitions too much and ignore one's own ignorance, a built-in myside bias, paranoid tendencies, and a propensity to simplify when remembering and to exaggerate when communicating.

Recommendations: Science communicators should frame scientific information to maximize intuitiveness and memorability and should actively and directly engage with laypeople.

SCHWARZ, N., SANNA, L. J., SKURNIK, I., & YOON, C. (2007). METACOGNITIVE EXPERIENCES AND THE INTRICACIES OF SETTING PEOPLE STRAIGHT: IMPLICATIONS FOR DEBIASING AND PUBLIC INFORMATION CAMPAIGNS. IN *ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY* (VOL. 39, PP. 127–161). ELSEVIER. [HTTPS://DOI.ORG/10.1016/S0065-2601\(06\)39003-X](https://doi.org/10.1016/S0065-2601(06)39003-X)

Key words: Fluency, familiarity, accessibility, bias

Approach: Narrative review

Main findings: Individuals are more likely to judge information that they have seen before or that is easier to process as true. Public information campaigns that confront myths with facts, or warn people that a given claim is false, necessarily reiterate the information they want to discredit and thus increase familiarity and acceptance of untrue statements. Corrections must be closely linked to false statements or avoid repeating false statements to ensure the correct information is remembered.

MOTIVATION AND ABILITY/ INTRAPERSONAL CHARACTERISTICS

ISLAM, A. K. M. N., LAATO, S., TALUKDER, S., & SUTINEN, E. (2020). MISINFORMATION SHARING AND SOCIAL MEDIA FATIGUE DURING COVID-19: AN AFFORDANCE AND COGNITIVE LOAD PERSPECTIVE. *TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE*, 159, 120201. [HTTPS://DOI.ORG/10.1016/J.TECHFORE.2020.120201](https://doi.org/10.1016/j.techfore.2020.120201)

Key words: Bangladesh, COVID-19, affordances, social media fatigue, cognitive load

Approach: Online survey

Main findings: People who are driven by self-promotion and entertainment, and those suffering from deficient self-regulation, are more likely to share unverified information. Exploration and religiosity correlated negatively with the sharing of unverified information. However, exploration also increased social media fatigue. The different use purposes of social media increased misinformation sharing.

KAHAN, D. M. (2016). THE "GATEWAY BELIEF" ILLUSION: REANALYZING THE RESULTS OF A SCIENTIFIC-CONSENSUS MESSAGING STUDY. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.2779661](https://doi.org/10.2139/ssrn.2779661)

Key words: America, scientific consensus, climate change, environmental communication, polarization

Approach: Response and revisiting experimental results

Main findings: The claim that exposure to a consensus message generates a significant increase in key beliefs about climate change as compared to a control group is an incorrect representation of the data collected. The authors did not report the responses of subjects in the control group. Subjects' increases in support for public action was not significant as compared to the control group.

KAHAN, D. M. (2017). MISCONCEPTIONS, MISINFORMATION, AND THE LOGIC OF IDENTITY-PROTECTIVE COGNITION. *SSRN ELECTRONIC JOURNAL*.

[HTTPS://DOI.ORG/10.2139/SSRN.2973067](https://doi.org/10.2139/ssrn.2973067)

Key words: Misperceptions, motivated reasoning, science communication, climate change

Approach: Narrative review of literature

Main findings: Individuals are more likely to accept misinformation and resist corrections when it is identity-affirming rather than identity-threatening. Effectively counteracting these dynamics requires more than supplying citizens with correct information. It also demands the protection of the science communication environment from toxic social meanings that fuse competing understandings of fact with diverse citizens' cultural identities.

KAHAN, D. M., & CORBIN, J. (2016). A NOTE ON THE PERVERSE EFFECTS OF ACTIVELY OPEN-MINDED THINKING ON CLIMATE-CHANGE POLARIZATION. *SSRN ELECTRONIC JOURNAL*.

[HTTPS://DOI.ORG/10.2139/SSRN.2819820](https://doi.org/10.2139/ssrn.2819820)

Key words: America, open mindedness climate change, motivated reasoning, science communication, polarization

Approach: Survey

Main findings: Political polarization over the reality of human-caused climate change increases in tandem with individuals' scores on a standard measure of actively open-minded thinking. This finding is at odds with the position that attributes political conflict over facts to a personality trait of closed-mindedness associated with political conservatism.

KAHAN, D. M., JENKINS-SMITH, H., & BRAMAN, D. (2010). CULTURAL COGNITION OF SCIENTIFIC CONSENSUS. *SSRN ELECTRONIC JOURNAL*.

[HTTPS://DOI.ORG/10.2139/SSRN.1549444](https://doi.org/10.2139/ssrn.1549444)

Key words: America, science communication, scientific consensus, cultural cognition, heuristics, source credibility

Approach: Online survey and experiment

Main findings: Cultural cognition shapes individuals' beliefs about the existence of scientific consensus, and the process by which they form such beliefs, relating to climate change, the disposal of nuclear wastes, and

the effect of permitting concealed possession of handguns. Individuals systematically overestimate the degree of scientific support for positions they are culturally predisposed to accept as a result of a cultural availability.

KHAN, M. L., & IDRIS, I. K. (2019). RECOGNISE MISINFORMATION AND VERIFY BEFORE SHARING: A REASONED ACTION AND INFORMATION LITERACY PERSPECTIVE. *BEHAVIOUR & INFORMATION TECHNOLOGY*, 38(12), 1194–1212.

[HTTPS://DOI.ORG/10.1080/0144929X.2019.1578828](https://doi.org/10.1080/0144929X.2019.1578828)

Key words: Indonesia, media literacy, education, training, information literacy, verification

Approach: Survey

Main findings: Perceived self-efficacy to detect misinformation on social media is predicted by income and level of education, Internet skills of information seeking and verification, and attitude towards information verification. Sharing of information on social media without verification is predicted by Internet experience, Internet skills of information seeking, sharing, and verification, attitude towards information verification, and belief in the reliability of information

KLEIN, C., CLUTTON, P., & DUNN, A. G. (2019). PATHWAYS TO CONSPIRACY: THE SOCIAL AND LINGUISTIC PRECURSORS OF INVOLVEMENT IN REDDIT'S CONSPIRACY THEORY FORUM. *PLOS ONE*, 14(11), E0225098. [HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0225098](https://doi.org/10.1371/JOURNAL.PONE.0225098)

Key words: Reddit, conspiracy theories, self-selection

Approach: Survey and experiment

Main findings: There are consistent language use differences between users who will become engaged in conspiracy theory fora compared to users who do not. Many of these differences are related to users actively selecting to engage with social groups whose interests and motives fit with an incipient conspiratorial mindset. These findings suggest amplification of existing biases rather than a new radicalization process.

LAATO, S., ISLAM, A. K. M. N., ISLAM, M. N., & WHELAN, E. (2020). WHAT DRIVES UNVERIFIED INFORMATION SHARING AND CYBERCHONDRIA DURING THE COVID-19 PANDEMIC? *EUROPEAN JOURNAL OF INFORMATION SYSTEMS*, 29(3), 288–305.

[HTTPS://DOI.ORG/10.1080/0960085X.2020.1770632](https://doi.org/10.1080/0960085X.2020.1770632)

Key words: Bangladesh, COVID-19, infodemic, cognitive load, cyberchondria

Approach: Online survey

Main findings: A person's trust in online information and perceived information overload are strong predictors of unverified information sharing. These factors, along with a person's perceived COVID-19 severity and vulnerability influence cyberchondria. Females were significantly more likely to suffer from cyberchondria, with males more likely to share news without verifying its reliability. To mitigate the spread of COVID-19 misinformation and cyberchondria, measures should be taken to enhance a healthy skepticism of health news while simultaneously guarding against information overload.

PENNYCOOK, G., & RAND, D. G. (2020). WHO FALLS FOR FAKE NEWS? THE ROLES OF BULLSHIT RECEPTIVITY, OVERCLAIMING, FAMILIARITY, AND ANALYTIC THINKING. *JOURNAL OF PERSONALITY*, 88(2), 185–200. [HTTPS://DOI.ORG/10.1111/JOPY.12476](https://doi.org/10.1111/JOPY.12476)

Key words: America, analytic thinking, fake news, reflexive open mindedness, partisan media

Approach: Online surveys

Main findings: The tendency to ascribe meaning to randomly generated sentences correlates positively with perceptions of fake news accuracy, and negatively with the ability to differentiate between fake and real news. Individuals who over claim their level of knowledge also judge fake news to be more accurate. This relationship is not moderated by the presence/absence of the headline’s source or by familiarity with the headlines.

SCHEUFELE, D. A., & KRAUSE, N. M. (2019). SCIENCE AUDIENCES, MISINFORMATION, AND FAKE NEWS. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 116(16), 7662–7669. [HTTPS://DOI.ORG/10.1073/PNAS.1805871115](https://doi.org/10.1073/pnas.1805871115)

Key words: America, science communication, motivated reasoning, science literacy

Approach: Narrative review

Main findings: Being misinformed is a function of a person’s ability and motivation to spot falsehoods, but also of other group-level and societal factors that increase the chances of citizens to be exposed to correct information. Harnessing the science of science communication to ensure that socioeconomic disparities do not impact access to the best available scientific information for policy choices is critical.

WALTER, N., BALL-ROKEACH, S. J., XU, Y., & BROAD, G. M. (2018). COMMUNICATION ECOLOGIES: ANALYZING ADOPTION OF FALSE BELIEFS IN AN INFORMATION-RICH ENVIRONMENT. *SCIENCE COMMUNICATION*, 40(5), 650–668. [HTTPS://DOI.ORG/10.1177/1075547018793427](https://doi.org/10.1177/1075547018793427)

Key words: America, network, science, climate change, vaccines, scientific consensus

Approach: Online survey experiment: feasibility study of a communication ecology model

Main Findings: In the communication ecology perspective: micro-level (intrapersonal characteristics/ interpersonal communications), meso-level (local newspapers) and macro-level (cable tv) sources interact to predict beliefs in misperceptions on climate change and vaccine safety.

EMOTION

BEBBINGTON, K., MACLEOD, C., ELLISON, T. M., & FAY, N. (2017). THE SKY IS FALLING: EVIDENCE OF A NEGATIVITY BIAS IN THE SOCIAL TRANSMISSION OF INFORMATION. *EVOLUTION AND HUMAN BEHAVIOR*, 38(1), 92–101. [HTTPS://DOI.ORG/10.1016/J.EVOLHUMBEHAV.2016.07.004](https://doi.org/10.1016/j.evolhumbehav.2016.07.004)

Key words: Emotion, positive/ negative valence, bias, transmission, social media

Approach: Experiment: serial reproduction experiment on text-based stories

Main Findings: Unambiguously negative stories are more likely to be transmitted and will survive longer than positive stories. Ambiguous story events are likely to be negatively transformed as they are transmitted. Increased anxiety does not increase the transmission and survival of negative story events.

BERGER, J. (2011). AROUSAL INCREASES SOCIAL TRANSMISSION OF INFORMATION. *PSYCHOLOGICAL SCIENCE*, 22(7), 891–893. [HTTPS://DOI.ORG/10.1177/0956797611413294](https://doi.org/10.1177/0956797611413294)

Key words: Emotion, social transmission, anxiety, rumours

Approach: Controlled experiments

Main findings: Physiological arousal can plausibly explain transmission of news or information in a wide range of settings. Situations that heighten arousal should boost social transmission, regardless of whether they are positive (e.g., inaugurations) or negative (e.g., panics) in nature. Public-health information, for example, might spread more effectively if it evokes anxiety rather than sadness.

BERGER, J., & MILKMAN, K. L. (2012). WHAT MAKES ONLINE CONTENT VIRAL? *JOURNAL OF MARKETING RESEARCH*, 49(2), 192–205. [HTTPS://DOI.ORG/10.1509/JMR.10.0353](https://doi.org/10.1509/JMR.10.0353)

Key words: Email, emotion, virality

Approach: Dataset of 7000 New York Times articles, over three months

Main Findings: People are driven to share content based on the type of emotion it elicits. Content is more likely to be viral the more positive it is. Emotions characterized by activation (awe, anxiety, anger) are positively linked to virality, and emotions characterized by deactivation (sadness) negatively linked to virality.

BOLER, M. (2020). *AFFECTIVE MEDIA, SOCIAL MOVEMENTS, AND DIGITAL DISSENT: EMOTIONS AND DEMOCRATIC PARTICIPATION IN THE 'POST-TRUTH' ERA* (DIGITAL ECOSYSTEM RESEARCH CHALLENGE). [HTTPS://WWW.DIGITALECOSYSTEM.CA/REPORT](https://www.digitalecosystem.ca/report)

Key words: Canada, election, Twitter, Reddit, YouTube, emotion, public opinion, polarization

Approach: Collected social media content

Main findings: To understand how political communication mobilizes emotions over social media it is crucial to consider, the micro-level creation and recreation of narratives through posts and comments on social media, and the macro-level narratives which structure the Canadian political spectrum. Highly charged issues like national identity and polarized views regarding racism and “free speech” became more apparent in the discourse surrounding unexpected events.

MACKUEN, M., WOLAK, J., KEELE, L., & MARCUS, G. E. (2010). CIVIC ENGAGEMENTS: RESOLUTE PARTISANSHIP OR REFLECTIVE DELIBERATION. *AMERICAN JOURNAL OF POLITICAL SCIENCE*, 54(2), 440–458. [HTTPS://DOI.ORG/10.1111/J.1540-5907.2010.00440.X](https://doi.org/10.1111/j.1540-5907.2010.00440.x)

Key words: Emotion, anxiety, aversion, partisanship, citizenship, deliberative democracy

Approach: Survey experiment

Main Findings: Emotions shape the way people acquire political information. Anger (aversion) causes people to shut down their information search, practice selective attention and become close-minded about alternatives. Anxiety causes people to be more willing to seek new perspectives and become open to compromise.

REYNA, V. F. (2020). A SCIENTIFIC THEORY OF GIST COMMUNICATION AND MISINFORMATION RESISTANCE, WITH IMPLICATIONS FOR HEALTH, EDUCATION, AND POLICY. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 201912441. [HTTPS://DOI.ORG/10.1073/PNAS.1912441117](https://doi.org/10.1073/pnas.1912441117)

Key words: Science communication, misinformation, decision-making, values, emotion

Approach: Theoretical: authors propose a conceptual framework

Main findings: Misinformation can be more compelling than information when it provides an interpretation of reality that makes better sense than the facts. The gist, which reflects knowledge and experience, induces emotions and brings to mind social values. However, changing mental representations is not sufficient by itself; gist representations must be connected to values. Science communication needs to shift from an emphasis on disseminating rote facts to achieving insight, retaining its integrity but without shying away from emotions and values

WEEKS, BRIAN E. (2015). EMOTIONS, PARTISANSHIP, AND MISPERCEPTIONS: HOW ANGER AND ANXIETY MODERATE THE EFFECT OF PARTISAN BIAS ON SUSCEPTIBILITY TO POLITICAL MISINFORMATION: EMOTIONS AND MISPERCEPTIONS. *JOURNAL OF COMMUNICATION*, 65(4), 699–719. [HTTPS://DOI.ORG/10.1111/JCOM.12164](https://doi.org/10.1111/jcom.12164)

Key words: Emotion, partisanship, fact-checking, misinformation, political misperceptions, motivated reasoning

Approach: Online experiment

Main Findings: Anger and anxiety determine whether citizens consider uncorrected misinformation in a partisan or an open-minded fashion. Anger encourages partisan-motivated evaluation which results in beliefs consistent with the supported political party. Anxiety promotes initial beliefs based less on partisanship and more on the information environment. Exposure to corrections improves belief accuracy, regardless of emotion or partisanship.

VALENTINO, N. A., HUTCHINGS, V. L., BANKS, A. J., & DAVIS, A. K. (2008). IS A WORRIED CITIZEN A GOOD CITIZEN? EMOTIONS, POLITICAL INFORMATION SEEKING, AND LEARNING VIA THE INTERNET. *POLITICAL PSYCHOLOGY*, 29(2), 247–273. [HTTPS://DOI.ORG/10.1111/J.1467-9221.2008.00625.X](https://doi.org/10.1111/j.1467-9221.2008.00625.x)

Key words: Emotion, anxiety, anger, political threat, information seeking

Approach: Experiment

Main Findings: Anger, enthusiasm, and anxiety all lead people to claim they will pay more attention to a campaign. Anger depresses total information seeking. Exposure to a political threat triggers several emotions, but only anxiety boosts information seeking and learning.

SOURCE CREDIBILITY

BERINSKY, A. J. (2017). RUMORS AND HEALTH CARE REFORM: EXPERIMENTS IN POLITICAL MISINFORMATION. *BRITISH JOURNAL OF POLITICAL SCIENCE*, 47(2), 241–262. [HTTPS://DOI.ORG/10.1017/S0007123415000186](https://doi.org/10.1017/S0007123415000186)

Key words: America, rumors, health, partisanship, fluency, source credibility, fact-checking

Approach: Controlled experiments

Main Findings: Rumours acquire power through familiarity and repetition, even if that repetition is in the context of debunking the misinformation. Attempting to quash rumors through direct refutation may facilitate their diffusion by increasing fluency. Partisan corrections (a person who makes proclamations that run contrary to their personal and political interests) are most effective at countering false information.

GUILLORY, J. J., & GERACI, L. (2013). CORRECTING ERRONEOUS INFERENCES IN MEMORY: THE ROLE OF SOURCE CREDIBILITY. *JOURNAL OF APPLIED RESEARCH IN MEMORY AND COGNITION*, 2(4), 201–209. [HTTPS://DOI.ORG/10.1016/J.JARMAC.2013.10.001](https://doi.org/10.1016/j.jarmac.2013.10.001)

Key words: Source credibility, continued influence, correction, fact-check

Approach: Controlled experiment

Main findings: Receiving a correction from a source high in trustworthiness and expertise reduced participants' use of original information when making inferences. Source trustworthiness alone significantly

decreased participants' use of the misinformation when making inferences, but source expertise did not. People may be able to reduce their reliance on misinformation if they receive a correction from a person who is deemed to be highly trustworthy.

SOCIAL BIASES

CHEN, X., SIN, S.-C. J., THENG, Y.-L., & LEE, C. S. (2015). WHY STUDENTS SHARE MISINFORMATION ON SOCIAL MEDIA: MOTIVATION, GENDER, AND STUDY-LEVEL DIFFERENCES. *THE JOURNAL OF ACADEMIC LIBRARIANSHIP*, 41(5), 583–592.
[HTTPS://DOI.ORG/10.1016/J.ACALIB.2015.07.003](https://doi.org/10.1016/j.acalib.2015.07.003)

Key words: Singapore, misinformation, students, information literacy, uses and gratifications theory, motivation

Approach: Survey: students from two public universities in Singapore

Main Findings: The top reasons students share misinformation is related to information's perceived characteristics (a good topic of conversation, interesting, new and eye-catching), self-expression, and socializing; not accuracy or authoritativeness. More research is needed to determine if there are differences in sharing patterns between genders.

Recommendations: Information literacy training should address social and self-expression motivations that drive sharing

COLLIANDER, J. (2019). "THIS IS FAKE NEWS": INVESTIGATING THE ROLE OF CONFORMITY TO OTHER USERS' VIEWS WHEN COMMENTING ON AND SPREADING DISINFORMATION IN SOCIAL MEDIA. *COMPUTERS IN HUMAN BEHAVIOR*, 97, 202–215.
[HTTPS://DOI.ORG/10.1016/J.CHB.2019.03.032](https://doi.org/10.1016/j.chb.2019.03.032)

Key words: Facebook, conformity, self-concept, attitude, disinformation

Approach: Experiment: role-play scenario & questionnaire

Main Findings: After exposure to comments critical of a fake news article, individuals are less likely to share, have a positive attitude towards, or post positive comments on a fake story. The use of a disclaimer from a social media company alerting individuals to the fact that the news might be fake does not lower an individual's likelihood of sharing or commenting positively.

Recommendations: Users should be involved in social media platforms' efforts to stem fake news; users should be encouraged and incentivized to debunk fake news. Policymakers must play a role to develop digital literacy tools: ex. source criticism. Authorities should also launch public information campaigns about fake news and individual's role in countering it.

VÄHÄMAA, M., & WEST, M. D. (2014). THE DILEMMA OF GROUP MEMBERSHIP IN THE INTERNET AGE: PUBLIC KNOWLEDGE AS PREFERRED MISINFORMATION. *JAVNOST - THE PUBLIC*, 21(1), 5–18. [HTTPS://DOI.ORG/10.1080/13183222.2014.11009136](https://doi.org/10.1080/13183222.2014.11009136)

Key words: America, science, media use, social group, socioeconomic status

Approach: National Opinion Research Center 2008 General Social Survey

Main findings: Some socioeconomic group variables, cultivation and media choice play a role in people's interest in science. Individuals create knowledge as a result of the influence of social knowledge which they gain from the media and through their social encounters in order to maintain social status.

POLARIZATION AND PARTISANSHIP

BECKER, J., PORTER, E., & CENTOLA, D. (2019). THE WISDOM OF PARTISAN CROWDS. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 116(22), 10717–10722. [HTTPS://DOI.ORG/10.1073/PNAS.1817195116](https://doi.org/10.1073/pnas.1817195116)

Key words: America, democracy, homogeneity, polarization

Approach: Web-based experiments

Main findings: Response to objective, fact-based questions became more accurate as a result of social influence, despite partisan bias and politically homogeneous social networks. Information exchange can mitigate partisan bias, yet public opinion remains polarized.

CACCIATORE, M. A., YEO, S. K., SCHEUFELE, D. A., XENOS, M. A., CHOI, D.-H., BROSSARD, D., BECKER, A. B., & CORLEY, E. A. (2014). MISPERCEPTIONS IN POLARIZED POLITICS: THE ROLE OF KNOWLEDGE, RELIGIOSITY, AND MEDIA. *PS: POLITICAL SCIENCE & POLITICS*, 47(03), 654–661. [HTTPS://DOI.ORG/10.1017/S1049096514000791](https://doi.org/10.1017/S1049096514000791)

Key words: America, election, motivated reasoning, selective exposure, confirmation bias, television, mass media, polarization, partisanship

Approach: Online survey

Main Findings: Believing misinformation is a product of motivated reasoning based on partisanship. Greater levels of attention to politics through traditional media and late-night comedy shows were associated with higher probabilities of believing rumors. Online news consumers were more likely to correctly identify rumors: the Internet can have an important role in supplementing information unavailable in traditional media channels.

FRIMER, J. A., SKITKA, L. J., & MOTYL, M. (2017). LIBERALS AND CONSERVATIVES ARE SIMILARLY MOTIVATED TO AVOID EXPOSURE TO ONE ANOTHER'S OPINIONS. *JOURNAL OF EXPERIMENTAL SOCIAL PSYCHOLOGY*, 72, 1–12. [HTTPS://DOI.ORG/10.1016/J.JESP.2017.04.003](https://doi.org/10.1016/j.jesp.2017.04.003)

Key words: America, Canada, partisan, selective exposure

Approach: Experimental study

Main findings: Participants indicated that they anticipated that hearing from the other side would induce cognitive dissonance (e.g., require effort, cause frustration) and undermine the sense of shared reality with the person expressing disparate views (e.g., damage the relationship). There was no evidence of a difference between liberals' and conservatives' desire to remain in their own ideological bubble.

GRUZD, A., & MAI, P. (2020B). GOING VIRAL: HOW A SINGLE TWEET SPAWNED A COVID-19 CONSPIRACY THEORY ON TWITTER. *BIG DATA & SOCIETY*, 7(2), 205395172093840. [HTTPS://DOI.ORG/10.1177/2053951720938405](https://doi.org/10.1177/2053951720938405)

Key words: America, Twitter, COVID-19, conspiracy belief

Approach: Collected Tweets and Twitter user information

Main findings: Prominent conservative politicians and far right activists-built awareness within the US and were followed by a second wave of the campaign outside the US. While the spread of misinformation can be potentially mitigated by fact-checking and credible sources, misinformation driven by politics and supported by strong convictions and not science is much harder to root out.

JOST, J. T., VAN DER LINDEN, S., PANAGOPOULOS, C., & HARDIN, C. D. (2018). IDEOLOGICAL ASYMMETRIES IN CONFORMITY, DESIRE FOR SHARED REALITY, AND THE SPREAD OF MISINFORMATION. *CURRENT OPINION IN PSYCHOLOGY*, 23, 77–83. [HTTPS://DOI.ORG/10.1016/J.COPSY.2018.01.003](https://doi.org/10.1016/j.copsy.2018.01.003)

Key words: America, Twitter, partisanship, echo chamber, social influence, motivation

Approach: Narrative review

Main findings: Conservatives are more likely to prioritize conformity and tradition, exaggerate within-group consensus and maintain homogenous social networks that contribute to the spread of misinformation. Liberals underestimate the extent to which they share consensus with others. These psychological differences may help to explain asymmetric polarization.

MOTTA, M., STECULA, D., & FARHART, C. (2020). HOW RIGHT-LEANING MEDIA COVERAGE OF COVID-19 FACILITATED THE SPREAD OF MISINFORMATION IN THE EARLY STAGES OF THE PANDEMIC IN THE U.S. *CANADIAN JOURNAL OF POLITICAL SCIENCE*, 1–8. [HTTPS://DOI.ORG/10.1017/S0008423920000396](https://doi.org/10.1017/S0008423920000396)

Key words: America, COVID-19, partisan media

Approach: Collected content from mainstream and partisan news media and survey data

Main findings: Right-leaning broadcast and cable media (for example, Fox News, Breitbart) regularly discussed misinformation about COVID-19 during the early stages of the pandemic. People who consumed right-leaning media during that time were more likely to endorse COVID-19 misinformation, suggesting that media coverage of the virus in the early stages of the pandemic may have had important public health consequences.

NELSON, J. L., & WEBSTER, J. G. (2017). THE MYTH OF PARTISAN SELECTIVE EXPOSURE: A PORTRAIT OF THE ONLINE POLITICAL NEWS AUDIENCE. *SOCIAL MEDIA + SOCIETY*, 3(3), 205630511772931. [HTTPS://DOI.ORG/10.1177/2056305117729314](https://doi.org/10.1177/2056305117729314)

Key words: America, Facebook, selective exposure, polarization

Approach: Web tracking of users and surveys

Main findings: Users frequently navigate to news sites from Facebook, and congregate among a few popular, well-known political news sites. Political news sites comprise ideologically diverse audiences, and that they share audiences with nearly all smaller, more ideologically extreme outlets. Calls into question the strength of the red/blue divide in actual web use.

NIGHTINGALE, S., FADDOUL, M., & FARID, H. (2020). QUANTIFYING THE REACH AND BELIEF IN COVID-19 MISINFORMATION [PREPRINT]. *ARXIV:2006.08830 [PHYSICS]*. [HTTP://ARXIV.ORG/ABS/2006.08830](http://arxiv.org/abs/2006.08830)

Key words: America, COVID-19, social media, partisanship

Approach: Controlled experiments

Main findings: There is a troublingly wide reach and belief in COVID-19 related misinformation that is highly partisan and is more prevalent in those that consume news primarily on social media. It remains unclear the extent to which COVID-19 misinformation is a result of coordinated attacks or has arisen organically through misunderstanding and fear.

RIBEIRO, M. H., CALAIS, P. H., ALMEIDA, V. A. F., & MEIRA JR, W. (2017). "EVERYTHING I DISAGREE WITH IS #FAKENEWS": CORRELATING POLITICAL POLARIZATION AND SPREAD OF MISINFORMATION. *ARXIV:1706.05924 [CS]*. [HTTP://ARXIV.ORG/ABS/1706.05924](http://arxiv.org/abs/1706.05924)

Key words: America, Twitter, polarization, fake news

Approach: Collected tweets and external URLs

Main findings: Information labeled with fake news keywords and hashtags was associated with an increase in the polarization of users and URLs (in terms of their associated political viewpoints), when compared to information not labeled as "fake news". There is a significant use of "fake news" related keywords to express disagreement.

SCHMIDT, A. L., ZOLLO, F., SCALA, A., BETSCH, C., & QUATTROCIOCCHI, W. (2018). POLARIZATION OF THE VACCINATION DEBATE ON FACEBOOK. *VACCINE*, 36(25), 3606–3612. [HTTPS://DOI.ORG/10.1016/J.VACCINE.2018.05.040](https://doi.org/10.1016/j.vaccine.2018.05.040)

Key words: Facebook, selective exposure, network analysis, echo chamber

Approach: Collected Facebook posts and user information over 7 years 5 months

Main findings: The consumption of content about vaccines is dominated by the echo chamber effect and that polarization increased over the years. Well-segregated communities emerge from the users' consumption habits i.e., the majority of users consume information in favor or against vaccines, not both.

SWIRE, B., BERINSKY, A. J., LEWANDOWSKY, S., & ECKER, U. K. H. (2017). PROCESSING POLITICAL MISINFORMATION: COMPREHENDING THE TRUMP PHENOMENON. *ROYAL SOCIETY OPEN SCIENCE*, 4(3), 160802. [HTTPS://DOI.ORG/10.1098/RSOS.160802](https://doi.org/10.1098/rsos.160802)

Key words: America, election, source credibility, polarization, partisanship, corrections, continued-influence effect, motivated reasoning

Approach: Survey experiments

Main Findings: Republican supporters of Trump were more likely to believe information that was attributed to Trump than if it was presented without attribution, whereas the opposite was true for Democrats. Belief updating was more influenced by perceived credibility of the individual initially purporting the information. Voters did not change their voting intentions even if they altered beliefs about the truth of statements.

USCINSKI, J. E., KLOFSTAD, C., & ATKINSON, M. D. (2016). WHAT DRIVES CONSPIRATORIAL BELIEFS? THE ROLE OF INFORMATIONAL CUES AND PREDISPOSITIONS. *POLITICAL RESEARCH QUARTERLY*, 69(1), 57–71. [HTTPS://DOI.ORG/10.1177/1065912915621621](https://doi.org/10.1177/1065912915621621)

Key words: Opinion formation, partisanship, media bias, conspiracy theory, public opinion

Approach: Survey experiment: 1000 participants

Main Findings: Conspiratorial belief is statistically independent to partisanship and predicts political behavior including voter participation. Conspiratorial belief predicted belief in media conspiracies only among those who did not have strong prior beliefs about the conspiracy in the first place. Partisanship strongly affects propensity to see a conspiracy when the conspiracy has a partisan element.

HOW CAN WE COMBAT MISINFORMATION?

Combating misinformation is complicated and requires a range of strategies. The following references cover previous research on the effectiveness and strategies for external fact-checking as well as retractions including the potential risk of a backfire effect from fact-checking. It also covers strategies including inoculating the public against misinformation, improving detection technologies, science communication, media literacy education and training and improving laws and policies to address emerging challenges.

LAZER, D., BAUM, M., GRINBERG, N., FRIEDLAND, L., JOSEPH, K., HOBBS, W., & MATTSSON, C. (2017). *COMBATING FAKE NEWS: AN AGENDA FOR RESEARCH AND ACTION* [CONFERENCE REPORT]. HARVARD UNIVERSITY; NORTHEASTERN UNIVERSITY.
[HTTPS://WWW.SIPOTRA.IT/WP-CONTENT/UPLOADS/2017/06/COMBATING-FAKE-NEWS.PDF](https://www.sipotra.it/wp-content/uploads/2017/06/combating-fake-news.pdf)

Key words: Heuristics, corrections, detection, cognitive bias, source credibility, partisanship

Approach: Review

Main findings: Involving more conservatives in the discussion of misinformation in politics, collaborating more closely with journalists in order to make the truth “louder,” and developing multidisciplinary community-wide shared resources for conducting academic research on the presence and dissemination of misinformation on social media platforms can help combat misinformation

LEWANDOWSKY, S., ECKER, U. K. H., & COOK, J. (2017). BEYOND MISINFORMATION: UNDERSTANDING AND COPING WITH THE “POST-TRUTH” ERA. *JOURNAL OF APPLIED RESEARCH IN MEMORY AND COGNITION*, 6(4), 353–369.
[HTTPS://DOI.ORG/10.1016/J.JARMAC.2017.07.008](https://doi.org/10.1016/j.jarmac.2017.07.008)

Key words: Corrections, polarization, inequality, science communication, inoculation, continued influence effect

Approach: Review

Main findings: Misinformation is therefore not just about being misinformed but also about the overall intellectual well-being of a society. The increase of misinformation may be linked to broader societal trends including a decline in civic engagement, growing inequality, increasing polarization, declining trust in science and politically asymmetric credulity.

FACT-CHECKING

FRIDKIN, K., KENNEY, P. J., & WINTERSIECK, A. (2015). LIAR, LIAR, PANTS ON FIRE: HOW FACT-CHECKING INFLUENCES CITIZENS' REACTIONS TO NEGATIVE ADVERTISING. *POLITICAL COMMUNICATION*, 32(1), 127–151. [HTTPS://DOI.ORG/10.1080/10584609.2014.914613](https://doi.org/10.1080/10584609.2014.914613)

Key words: Political advertising, fact-checking, negative campaigns, America, election

Approach: Online survey experiment

Main Findings: Fact-checks influence people's assessment of the accuracy, usefulness, and tone of negative political ads. Sophisticated citizens and citizens with low tolerance for negative campaigns are most responsive to fact-checks. Negative fact-checks challenging the truthfulness of claims are more powerful than positive fact-checks.

JUN, Y., MENG, R., & JOHAR, G. V. (2017). PERCEIVED SOCIAL PRESENCE REDUCES FACT-CHECKING. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 114(23), 5976–5981. [HTTPS://DOI.ORG/10.1073/PNAS.1700175114](https://doi.org/10.1073/pnas.1700175114)

Key words: America, social bias, fact-checking

Approach: Controlled experiments

Main findings: People are less likely to fact-check statements when they feel that they are evaluating them in the presence of others compared with when they are evaluating them alone. Social contexts may impede fact-checking by lowering people's guards in an almost instinctual fashion, known as reduced vigilance. These contexts can take the form of platforms that are inherently social (e.g., Facebook) or can be queued by features of online environments such as "likes" or "shares" that a message receives.

KRAUSE, N. M., FREILING, I., BEETS, B., & BROSSARD, D. (2020). FACT-CHECKING AS RISK COMMUNICATION: THE MULTI-LAYERED RISK OF MISINFORMATION IN TIMES OF COVID-19. *JOURNAL OF RISK RESEARCH*, 1–8. [HTTPS://DOI.ORG/10.1080/13669877.2020.1756385](https://doi.org/10.1080/13669877.2020.1756385)

Key words: COVID-19, infodemic, fact-checking, trust, emotion

Approach: Literature review

Main findings: Fact-checking efforts should be viewed as risk communication; in that they attempt to define the risk of misinformation and to establish the fact-checkers as trustworthy risk mitigators. Risk communication researchers have long demonstrated that different publics view risks differently, and that varied risk perceptions can have consequences for how people respond to communications, including how they take action to mitigate risks. These principles should be applied to the misinformation and COVID-19 contexts.

RASHKIN, H., CHOI, E., JANG, J. Y., VOLKOVA, S., & CHOI, Y. (2017). TRUTH OF VARYING SHADES: ANALYZING LANGUAGE IN FAKE NEWS AND POLITICAL FACT-CHECKING. *PROCEEDINGS OF THE 2017 CONFERENCE ON EMPIRICAL METHODS IN NATURAL LANGUAGE PROCESSING*, 2931–2937. [HTTPS://DOI.ORG/10.18653/V1/D17-1317](https://doi.org/10.18653/v1/D17-1317)

Key words: America, satire, automation, trust, detection

Approach: Collected samples of reliable and unreliable news sources and from fact-check websites and trained a model to detect truthfulness

Main findings: Various lexical features can contribute to our understanding of the differences between more reliable and less reliable digital news sources. Unreliable sources are more likely to use personal pronouns and exaggerating and hedging words than trusted sources.

CORRECTIONS AND RETRACTIONS

BENEGAL, S. D., & SCRUGGS, L. A. (2018). CORRECTING MISINFORMATION ABOUT CLIMATE CHANGE: THE IMPACT OF PARTISANSHIP IN AN EXPERIMENTAL SETTING. *CLIMATIC CHANGE*, 148(1–2), 61–80. [HTTPS://DOI.ORG/10.1007/S10584-018-2192-4](https://doi.org/10.1007/s10584-018-2192-4)

Key words: America, source credibility, climate change, polarization, partisanship, fact-checking, science communication

Approach: Survey experiment

Main Findings: Corrections from Republicans speaking against their partisan interest are more likely to persuade respondents to agree with scientific consensus on anthropogenic climate change because this is a more costly behaviour. The partisan gap on climate change can be reduced by highlighting the views of elite Republicans who acknowledge the scientific consensus on anthropogenic climate change.

BODE, L., & VRAGA, E. K. (2015). IN RELATED NEWS, THAT WAS WRONG: THE CORRECTION OF MISINFORMATION THROUGH RELATED STORIES FUNCTIONALITY IN SOCIAL MEDIA. *JOURNAL OF COMMUNICATION*, 65(4), 619–638. [HTTPS://DOI.ORG/10.1111/JCOM.12166](https://doi.org/10.1111/jcom.12166)

Key words: Facebook, fact-checking, health communication, vaccines, selection bias, filter bubbles, algorithm, motivated reasoning, vaccines, GMOs

Approach: Survey experiment

Main Findings: When Facebook’s “related stories” correct a post that includes misinformation, misperceptions are significantly reduced. The effect is caused by suggestions from Facebook’s algorithms, absent any heuristic views from members of one’s social network. Users who are exposed to stories that reflect their opinion on an issue rate those stories more favorable.

CAPPELLA, J. N., MALONEY, E., OPHIR, Y., & BRENNAN, E. (2015). INTERVENTIONS TO CORRECT MISINFORMATION ABOUT TOBACCO PRODUCTS. *TOBACCO REGULATORY SCIENCE*, 1(2), 186–197. [HTTPS://DOI.ORG/10.18001/TRS.1.2.8](https://doi.org/10.18001/trs.1.2.8)

Key words: Corrections, emotion, belief echoes, continued influence

Approach: Narrative review

Main findings: To be effective, corrective message designs should (1) show the presence of continued influence effects or belief echoes; (2) test longer term effects on beliefs, knowledge, and intentions; and (3) create messages that include narrative structures, causal sequences, and emotional linkages.

CHAN, M. S., JONES, C. R., HALL JAMIESON, K., & ALBARRACÍN, D. (2017). DEBUNKING: A META-ANALYSIS OF THE PSYCHOLOGICAL EFFICACY OF MESSAGES COUNTERING MISINFORMATION. *PSYCHOLOGICAL SCIENCE*, 28(11), 1531–1546. [HTTPS://DOI.ORG/10.1177/0956797617714579](https://doi.org/10.1177/0956797617714579)

Key words: Misinformation, correction, fact-checking

Approach: Meta-analysis of previous experimental studies

Main Findings: People who generate arguments supporting misinformation as less likely to later question and change their initial beliefs. Debunking is more successful when it provides detailed information that enables recipients to update the mental model justifying the misinformation, however, this does not necessarily reduce misinformation persistence.

Recommendations:

- Media & authorities should report on misinformation in ways that reduce detailed thoughts in support of misinformation and should correct misinformation with new detailed information.
- Public mechanisms and educational initiatives should induce healthy skepticism.
- Policymakers should be aware of the persistence of misinformation using alert systems (ex. Factcheck.org; Snopes.com; retractionwatch.com).

ECKER, U. K. H., LEWANDOWSKY, S., SWIRE, B., & CHANG, D. (2011). CORRECTING FALSE INFORMATION IN MEMORY: MANIPULATING THE STRENGTH OF MISINFORMATION ENCODING AND ITS RETRACTION. *PSYCHONOMIC BULLETIN & REVIEW*, 18(3), 570–578. [HTTPS://DOI.ORG/10.3758/S13423-011-0065-1](https://doi.org/10.3758/S13423-011-0065-1)

Key words: Australia, correction, continued influence, cognitive load

Approach: Controlled experiment

Main findings: stronger retractions are effective in reducing the continued influence effects associated with strong misinformation encoding, but that even strong retractions fail to eliminate continued influence effects associated with relatively weak encoding. The continued influence effect seems to defy most attempts to eliminate it.

ECKER, U. K. H., & ANG, L. C. (2019). POLITICAL ATTITUDES AND THE PROCESSING OF MISINFORMATION CORRECTIONS. *POLITICAL PSYCHOLOGY*, 40(2), 241–260.

[HTTPS://DOI.ORG/10.1111/POPS.12494](https://doi.org/10.1111/POPS.12494)

Key words: Australia, continued influence effect, motivated reasoning, retraction, backfire effect

Approach: Controlled experiments

Main findings: Partisan attitudes have an impact on the processing of retractions, in particular (1) if the misinformation relates to a general assertion rather than just a specific singular event and (2) if the misinformation is congruent with a conservative partisanship.

GOLDFARB, J. L., & KRINER, D. L. (2017). BUILDING PUBLIC SUPPORT FOR SCIENCE SPENDING: MISINFORMATION, MOTIVATED REASONING, AND THE POWER OF CORRECTIONS. *SCIENCE COMMUNICATION*, 39(1), 77–100. [HTTPS://DOI.ORG/10.1177/1075547016688325](https://doi.org/10.1177/1075547016688325)

Key words: America, science budget, motivated reasoning, trust, public opinion, information deficit model

Approach: Survey experiment

Main Findings: Most Americans significantly overestimate the share of the federal budget allocated to scientific research. Correcting this misperception significantly increases support for additional science spending. Information about the low level of existing funding increased support for investment in science across partisan and ideological divides.

JOHNSON, H. M., & SEIFERT, C. M. (1994). SOURCES OF THE CONTINUED INFLUENCE EFFECT: WHEN MISINFORMATION IN MEMORY AFFECTS LATER INFERENCES. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: LEARNING, MEMORY, AND COGNITION*, 20(6), 1420–1436.

[HTTPS://DOI.ORG/10.1037/0278-7393.20.6.1420](https://doi.org/10.1037/0278-7393.20.6.1420)

Key words: America, continued influence effect, availability, corrections

Approach: Controlled experiments

Main findings: Participants who had received an immediate correction made as many inferences based on misinformation as participants who had received the correction later in the account. Participants continued to make inferences involving discredited information when it afforded causal structure, but not when only incidentally mentioned. Providing a plausible causal alternative, rather than simply negating misinformation, mitigated the effect.

LAWRENCE, E. K., & ESTOW, S. (2017). RESPONDING TO MISINFORMATION ABOUT CLIMATE CHANGE. *APPLIED ENVIRONMENTAL EDUCATION & COMMUNICATION*, 16(2), 117–128.

[HTTPS://DOI.ORG/10.1080/1533015X.2017.1305920](https://doi.org/10.1080/1533015X.2017.1305920)

Key words: America, Facebook, corrections, science communication, deficit model, issue framing

Approach: Control experiment

Main findings: Providing information was the most common response among our participants, especially among those who disagree with the view expressed, in line with the deficit model. Corrections fell along political lines and corrections led one to solidify already existing beliefs, which is consistent with research on motivated reasoning. Collaboration is a promising approach to counter misinformation.

LEWANDOWSKY, S., ECKER, U. K. H., SEIFERT, C. M., SCHWARZ, N., & COOK, J. (2012). MISINFORMATION AND ITS CORRECTION: CONTINUED INFLUENCE AND SUCCESSFUL DEBIASING. *PSYCHOLOGICAL SCIENCE IN THE PUBLIC INTEREST*, 13(3), 106–131. [HTTPS://DOI.ORG/10.1177/1529100612451018](https://doi.org/10.1177/1529100612451018)

Key words: Misinformation, debiasing, media fragmentation, cognitive biases, source credibility, social consensus, continued influence effect, fluency

Approach: Review paper

Main Findings: Misinformation originates from rumours, government and politicians, vested interests and the media. Social and cognitive biases impact an individual's willingness to accept misinformation and resistance to debunking or fact-checking. Simply retracting a piece of information will not stop its influence. Individuals are likely to reject a correction if it challenges their worldview. Pre-exposure warnings, repeated retractions and providing an alternative narrative can increase the effectiveness of retractions.

SEIFERT, C. M. (2002). THE CONTINUED INFLUENCE OF MISINFORMATION IN MEMORY: WHAT MAKES A CORRECTION EFFECTIVE? IN *PSYCHOLOGY OF LEARNING AND MOTIVATION* (VOL. 41, PP. 265–292). ELSEVIER. [HTTPS://DOI.ORG/10.1016/S0079-7421\(02\)80009-3](https://doi.org/10.1016/S0079-7421(02)80009-3)

Key words: Continued influence effect, accessibility, corrections

Approach: Narrative review

Main findings: The most powerful correction includes an alternative account to replace the misinformation. The alternative appears to be most effective when it can account for the causal features in the story that are left unexplained when omitting the misinformation. Corrections that explain why misinformation was presented may release subjects from expecting the original assertion to be informative and relevant. When contradiction is expected, or when there are low expectations for information quality, misinformation may not influence later reasoning.

SMITH, C. N., & SEITZ, H. H. (2019). CORRECTING MISINFORMATION ABOUT NEUROSCIENCE VIA SOCIAL MEDIA. *SCIENCE COMMUNICATION*, 41(6), 790–819. [HTTPS://DOI.ORG/10.1177/1075547019890073](https://doi.org/10.1177/1075547019890073)

Key words: America, Facebook, motivated reasoning, correction, fact-checking, continued influence effect

Approach: Online survey experiment and simulated Facebook feed

Main Findings: Beliefs in myth were reduced when subjects were presented with corrective “related articles” immediately following the myth. Social media platforms can be used to address the correction of scientific

misinformation. There was limited evidence that readers evaluate articles more positively when they are consistent with pre-existing views.

SMITH, P., BANSAL-TRAVERS, M., O'CONNOR, R., BROWN, A., BANTHIN, C., GUARDINO-COLKET, S., & CUMMINGS, K. M. (2011). CORRECTING OVER 50 YEARS OF TOBACCO INDUSTRY MISINFORMATION. *AMERICAN JOURNAL OF PREVENTIVE MEDICINE*, 40(6), 690–698.
[HTTPS://DOI.ORG/10.1016/J.AMEPRE.2011.01.020](https://doi.org/10.1016/j.amepre.2011.01.020)

Key words: America, tobacco, disinformation campaign, corrective message

Approach: Experiment, testing different corrective messages

Main Findings: All corrective statements resulted in increased level of knowledge and corrected misperceptions about smoking. However, the effects were not large and diminished back toward baseline levels within one week. Source credibility and emotional messages were more persuasive. Sustained impact will likely require repeated exposure to corrective messages.

VAN DER MEER, T. G. L. A., & JIN, Y. (2020). SEEKING FORMULA FOR MISINFORMATION TREATMENT IN PUBLIC HEALTH CRISES: THE EFFECTS OF CORRECTIVE INFORMATION TYPE AND SOURCE. *HEALTH COMMUNICATION*, 35(5), 560–575.
[HTTPS://DOI.ORG/10.1080/10410236.2019.1573295](https://doi.org/10.1080/10410236.2019.1573295)

Key words: America, Facebook, corrections, emotion, health communication, source credibility

Approach: Online experiment

Main findings: If corrective information is present rather than absent, incorrect beliefs based on misinformation are debunked and the exposure to factual elaboration, compared to simple rebuttal, stimulates intentions to take protective actions. Government agencies and news media sources are found to be more successful in improving belief accuracy compared to social peers. The observed mediating role of crisis emotions reveals the mechanism underlying the effects of corrective information.

VRAGA, E. K., KIM, S. C., & COOK, J. (2019). TESTING LOGIC-BASED AND HUMOR-BASED CORRECTIONS FOR SCIENCE, HEALTH, AND POLITICAL MISINFORMATION ON SOCIAL MEDIA. *JOURNAL OF BROADCASTING & ELECTRONIC MEDIA*, 63(3), 393–414.
[HTTPS://DOI.ORG/10.1080/08838151.2019.1653102](https://doi.org/10.1080/08838151.2019.1653102)

Key words: Twitter, inoculation, correction, observational correction, source credibility

Approach: Online survey experiment

Main Findings: Corrections using a critical thinking approach (logic-based or humour-based) can function as a form of observational correction on social media, leading people to update their attitudes on controversial issues. The effectiveness of corrections varies across topics (climate change, gun control, and HPV vaccinations), and pre-existing misperceptions on the issue.

WALTER, N., & MURPHY, S. T. (2018). HOW TO UNRING THE BELL: A META-ANALYTIC APPROACH TO CORRECTION OF MISINFORMATION. *COMMUNICATION MONOGRAPHS*, 85(3), 423–441. [HTTPS://DOI.ORG/10.1080/03637751.2018.1467564](https://doi.org/10.1080/03637751.2018.1467564)

Key words: America, debunking, fact-checking, appeals to consensus, source credibility, debiasing

Approach: Meta-analysis of approaches to corrections

Main Findings: Corrective messages have a moderate influence on belief in misinformation. It is more difficult to correct misinformation in the context of politics and marketing than health. Effective techniques to debunk misinformation are rebuttals (more than forewarnings), appeals to coherence, integrating alternative explanations.

WALTER, N., & TUKACHINSKY, R. (2020). A META-ANALYTIC EXAMINATION OF THE CONTINUED INFLUENCE OF MISINFORMATION IN THE FACE OF CORRECTION: HOW POWERFUL IS IT, WHY DOES IT HAPPEN, AND HOW TO STOP IT? *COMMUNICATION RESEARCH*, 47(2), 155–177. [HTTPS://DOI.ORG/10.1177/0093650219854600](https://doi.org/10.1177/0093650219854600)

Key words: Continued influence effect, corrections, fluency, familiarity, source credibility, negativity bias

Approach: Meta-analysis

Main Findings: Misinformation continues to have a significant effect after corrections. Corrective messages are more successful when they are coherent, consistent with the audience's worldview, and delivered by the source of the misinformation. Corrections are less effective if the information was attributed to a credible source, the misinformation has been repeated multiple times prior to correction, or when there was a time lag between the misinformation and correction.

ZOLLO, F., BESSI, A., DEL VICARIO, M., SCALA, A., CALDARELLI, G., SHEKHTMAN, L., HAVLIN, S., & QUATTROCIOCHI, W. (2017). DEBUNKING IN A WORLD OF TRIBES. *PLOS ONE*, 12(7), E0181821. [HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0181821](https://doi.org/10.1371/JOURNAL.PONE.0181821)

Key words: America, Facebook, correction, science, conspiracy belief, echo chamber, media literacy, confirmation bias

Approach: Quantitative analysis of 54 million users from Jan 2010 to Dec 2014

Main findings: Sentiment analysis reveals a dominant negativity in the comments to debunking posts. Debunking posts remain mainly confined to the scientific echo chamber. Only few conspiracy users engage with corrections and their liking and commenting rates on conspiracy posts increases after the interaction.

BACKFIRE EFFECT

ECKER, U. K. H. (2017). WHY REBUTTALS MAY NOT WORK: THE PSYCHOLOGY OF MISINFORMATION. *MEDIA ASIA*, 44(2), 79–87.

[HTTPS://DOI.ORG/10.1080/01296612.2017.1384145](https://doi.org/10.1080/01296612.2017.1384145)

Key words: Fact-checking, heuristics, confirmation bias, information deficit model, backfire effect

Approach: Commentary and review

Main Findings: To properly debunk misinformation, explain why the myth is wrong, where it comes from; warn people that there is a myth to follow, repeat myth only in order to refute it, provides a credible fact source, supports factual statements with data and take people’s worldview into account.

Recommendations: Improve education to identify misinformation; automate fact-checking; revise algorithms to break filter bubbles and echo chambers; improve offline societal contributing factors.

GLAESER, E., & SUNSTEIN, C. R. (2014). DOES MORE SPEECH CORRECT FALSEHOODS? *THE JOURNAL OF LEGAL STUDIES*, 43(1), 65–93. [HTTPS://DOI.ORG/10.1086/675247](https://doi.org/10.1086/675247)

Key words: Continued influence effect, corrections, backfire effect, polarization, source credibility

Approach: Review

Main findings: The same information can have diametrically opposite effects if those who receive it have opposing antecedent convictions. The same information can activate radically different memories and associated convictions, thus producing polarized responses to that information, “memory boomerang”.

NYHAN, B., & REIFLER, J. (2010). WHEN CORRECTIONS FAIL: THE PERSISTENCE OF POLITICAL MISPERCEPTIONS. *POLITICAL BEHAVIOR*, 32(2), 303–330. [HTTPS://DOI.ORG/10.1007/S11109-010-9112-2](https://doi.org/10.1007/s11109-010-9112-2)

Key words: America, fact-checking, backfire effect, misinformation, motivated reasoning

Approach: Controlled experiment

Main Findings: Responses to corrections in mock news articles differ according to subjects’ ideological views. Ideological subgroups failed to update their beliefs when presented with corrective information that runs counter to their beliefs. Instances of a backfire effect occurred in which corrections strengthened misperceptions among a targeted group.

PETER, C., & KOCH, T. (2016). WHEN DEBUNKING SCIENTIFIC MYTHS FAILS (AND WHEN IT DOES NOT): THE BACKFIRE EFFECT IN THE CONTEXT OF JOURNALISTIC COVERAGE AND IMMEDIATE JUDGMENTS AS PREVENTION STRATEGY. *SCIENCE COMMUNICATION*, 38(1), 3–25. [HTTPS://DOI.ORG/10.1177/1075547015613523](https://doi.org/10.1177/1075547015613523)

Key words: Germany, science communication, familiarity, backfire effect

Approach: Web-based experiment

Main findings: Evidence for a systematic backfire effect occurs after a few minutes and strengthens after five days. Results show that forming judgments immediately during reception (in contrast to memory-based) can reduce backfire effects and prevent erroneous memory from affecting participants' attitudes.

PLUVIANO, S., WATT, C., RAGAZZINI, G., & DELLA SALA, S. (2019). PARENTS' BELIEFS IN MISINFORMATION ABOUT VACCINES ARE STRENGTHENED BY PRO-VACCINE CAMPAIGNS. *COGNITIVE PROCESSING*, 20(3), 325–331. [HTTPS://DOI.ORG/10.1007/S10339-019-00919-W](https://doi.org/10.1007/s10339-019-00919-w)

Key words: Italy, fact-checking, debunking, backfire effect, familiarity, motivated reasoning

Approach: Controlled experiment

Main Findings: The myth vs. fact format of presenting corrective information produced a backfire effect. Parents exposed to this message had stronger misconceptions over time. Repeating myths may increase their acceptance due to perceived familiarity. Corrective messages should emphasize scientific consensus on vaccines and consider factors affecting the parents' decision-making (social norms, structural barriers, potential financial cost). Improved science and media education is needed to improve trust in medicine and science.

WOOD, T., & PORTER, E. (2019). THE ELUSIVE BACKFIRE EFFECT: MASS ATTITUDES' STEADFAST FACTUAL ADHERENCE. *POLITICAL BEHAVIOR*, 41(1), 135–163. [HTTPS://DOI.ORG/10.1007/S11109-018-9443-Y](https://doi.org/10.1007/s11109-018-9443-y)

Key words: America, corrections, backfire effect, motivated reasoning

Approach: Controlled experiments

Main findings: There were no corrections capable of triggering backfire, despite testing precisely the kinds of polarized issues where backfire should be expected. Evidence of factual backfire is far more tenuous than prior research suggests. By and large, citizens heed factual information, even when such information challenges their ideological commitments.

INOCULATION EFFECT

AMAZEEN, M. A., & BUCY, E. P. (2019). CONFERRING RESISTANCE TO DIGITAL DISINFORMATION: THE INOCULATING INFLUENCE OF PROCEDURAL NEWS KNOWLEDGE. *JOURNAL OF BROADCASTING & ELECTRONIC MEDIA*, 63(3), 415–432. [HTTPS://DOI.ORG/10.1080/08838151.2019.1653101](https://doi.org/10.1080/08838151.2019.1653101)

Key words: America, inoculation effect, media literacy

Approach: Survey experiment

Main findings: Possessing working knowledge of how the news media operate aids in the identification and effects of fabricated news and native advertising. This was particularly true in political contexts. What divides individuals recognizing legitimate journalism from fabricated news and commercialized content is an understanding of how the news media operate.

COOK, J., LEWANDOWSKY, S., & ECKER, U. K. H. (2017). NEUTRALIZING MISINFORMATION THROUGH INOCULATION: EXPOSING MISLEADING ARGUMENTATION TECHNIQUES REDUCES THEIR INFLUENCE. *PLOS ONE*, 12(5), E0175799.

[HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0175799](https://doi.org/10.1371/journal.pone.0175799)

Key words: Climate change, trust, science, journalistic balance

Approach: Two survey experiments

Main Findings: False-balance media coverage (giving contrarian views equal voice with climate scientists) lowered perception of scientific consensus among readers. Corrections to misinformation that challenge individuals' worldview are ineffective and may backfire. Inoculating messages that 1) explain the flawed argumentation technique used in the misinformation or that 2) highlight the scientific consensus on climate change were effective in neutralizing the adversarial effects of misinformation. Climate communication messages should include pre-emptive inoculation messages.

ECKER, U. K. H., LEWANDOWSKY, S., & TANG, D. T. W. (2010). EXPLICIT WARNINGS REDUCE BUT DO NOT ELIMINATE THE CONTINUED INFLUENCE OF MISINFORMATION. *MEMORY & COGNITION*, 38(8), 1087–1100. [HTTPS://DOI.ORG/10.3758/MC.38.8.1087](https://doi.org/10.3758/MC.38.8.1087)

Key words: Australia, continued influence effect, correction

Approach: Controlled experiments

Main findings: A specific warning giving detailed information about the continued influence effect succeeded in reducing the continued reliance on outdated information but did not eliminate it. A more general warning reminding people that facts are not always properly checked was even less effective. A specific warning combined with the provision of a plausible alternative explanation further reduced the influence but still failed to eliminate it altogether.

ROOZENBEEK, J., & LINDEN, S. VAN DER. (2019). THE FAKE NEWS GAME: ACTIVELY INOCULATING AGAINST THE RISK OF MISINFORMATION. *JOURNAL OF RISK RESEARCH*, 22(5), 570–580. [HTTPS://DOI.ORG/10.1080/13669877.2018.1443491](https://doi.org/10.1080/13669877.2018.1443491)

Key words: Netherlands, inoculation, education, youth, students

Approach: they created an educational game and had high school students play it

Main Findings: Participants using the game were trained to recognize fake news tactics by actively rehearsing different roles/ sides of the argument. Playing the game reduced the perceived reliability and persuasiveness

of fake news stories. Educational games may be a vehicle to inoculate the public against fake news. Early media education may have stronger inoculation effects.

VAN DER LINDEN, S., LEISEROWITZ, A., ROSENTHAL, S., & MAIBACH, E. (2017). INOCULATING THE PUBLIC AGAINST MISINFORMATION ABOUT CLIMATE CHANGE. *GLOBAL CHALLENGES*, 1(2), 1600008. [HTTPS://DOI.ORG/10.1002/GCH2.201600008](https://doi.org/10.1002/GCH2.201600008)

Key words: America, scientific consensus, climate change, polarization, disinformation campaigns, public opinion, science communication, attitudinal inoculation

Approach: Two experiment

Main Findings: Public attitudes about climate change can be effectively inoculated against misinformation, across the political spectrum. Strong support for the efficacy of communicating the scientific consensus on human-caused climate change. The positive influence of consensus messaging is negated when presented alongside misinformation.

DETECTION TECHNOLOGY

CIAMPAGLIA, G. L. (2018). FIGHTING FAKE NEWS: A ROLE FOR COMPUTATIONAL SOCIAL SCIENCE IN THE FIGHT AGAINST DIGITAL MISINFORMATION. *JOURNAL OF COMPUTATIONAL SOCIAL SCIENCE*, 1(1), 147–153. [HTTPS://DOI.ORG/10.1007/S42001-017-0005-6](https://doi.org/10.1007/S42001-017-0005-6)

Key words: Algorithmic bias, fact-checking, fragmentation, crowdsourcing

Approach: Review

Main findings: Computational social scientists could play a twofold role in the fight against fake news: 1) they could elucidate the fundamental mechanisms that make us vulnerable to misinformation online and 2) they could devise effective strategies to counteract misinformation. The computational social science community could contribute in a unique fashion to the debate on the cyber-balkanization of social media by bridging the divide between social simulation models and empirical observation

CONROY, N. K., RUBIN, V. L., & CHEN, Y. (2015). AUTOMATIC DECEPTION DETECTION: METHODS FOR FINDING FAKE NEWS. *PROCEEDINGS OF THE ASSOCIATION FOR INFORMATION SCIENCE AND TECHNOLOGY*, 52(1), 1–4. [HTTPS://DOI.ORG/10.1002/PRA2.2015.145052010082](https://doi.org/10.1002/PRA2.2015.145052010082)

Key words: Fake news detection, fact-checking, trust, authentication, deception analysis

Approach: Review of existing approaches

Main Findings: Fake news detection should adopt a hybrid approach which combines linguistic cues and machine learning approaches with network analysis approach. Linguistics processing should be built on multiple layers from lexical analysis to highest discourse-level analysis for maximum performance. Network

behavior should be combined with content-based approaches to incorporate trust by identifying credible sources. Tools should augment human judgement, not replace it.

FERNANDEZ, M., & ALANI, H. (2018). ONLINE MISINFORMATION: CHALLENGES AND FUTURE DIRECTIONS. *COMPANION PROCEEDINGS OF THE WEB CONFERENCE 2018*, 595–602.

[HTTPS://DOI.ORG/10.1145/3184558.3188730](https://doi.org/10.1145/3184558.3188730)

Key words: Algorithms, technology development, misperception, human-centered computing, social media

Approach: Review

Main Findings: Current technological developments focus on misinformation content detection; misinformation dynamics; content validation and fact-checking; and misinformation management. Future technology should empower individuals against misinformation; engage networks and cross-communication between users; educate users in advance of misinformation; and encourage all users to play a role.

GARIMELLA, K., & ECKLES, D. (2020). IMAGES AND MISINFORMATION IN POLITICAL GROUPS: EVIDENCE FROM WHATSAPP IN INDIA. *HARVARD KENNEDY SCHOOL MISINFORMATION REVIEW*. [HTTPS://DOI.ORG/10.37016/MR-2020-030](https://doi.org/10.37016/MR-2020-030)

Key words: India, WhatsApp, detection, automation

Approach: Collected a large dataset of WhatsApp images

Main findings: Image misinformation is highly prevalent on WhatsApp public groups, making up 13% of all images shared on these groups. Three main types of image misinformation include images taken out of context, photoshopped images, and memes. While results from machine learning models to detect misinformation are promising, these models are not robust to changes over time.

GHENAI, A., & MEJOVA, Y. (2017). CATCHING ZIKA FEVER: APPLICATION OF CROWDSOURCING AND MACHINE LEARNING FOR TRACKING HEALTH MISINFORMATION ON TWITTER. *ARXIV:1707.03778 [CS]*. [HTTP://ARXIV.ORG/ABS/1707.03778](http://arxiv.org/abs/1707.03778)

Key words: Twitter, fact-checking, detection, automation, rumours, crowdsourcing

Approach: Collect more than 13 million tweets, spanning the initial reports in February 2016 and the Summer Olympics

Main findings: Tracking health misinformation in social media is not trivial and requires some expert supervision. This can then be augmented by “crowd” workers in order to provide additional annotation of the captured rumour related tweets. We show the bursty and varied nature of the Zika rumors, some provoked by known advocacy groups, others propagated due to their affordance for humor or light banter

GHENAI, A., & MEJOVA, Y. (2018). FAKE CURES: USER-CENTRIC MODELING OF HEALTH MISINFORMATION IN SOCIAL MEDIA. *PROCEEDINGS OF THE ACM ON HUMAN-COMPUTER INTERACTION*, 2(CSCW), 1–20. [HTTPS://DOI.ORG/10.1145/3274327](https://doi.org/10.1145/3274327)

Key words: Twitter, cancer treatment, rumours, personalization, detection, automation

Approach: Study 4,212 Twitter users who have posted about ineffective treatments

Main findings: Considering features capturing user attributes, writing style, and sentiment, users prone to propagating treatment misinformation can be detected at an accuracy of over 90%, providing a potential tool for public health officials to identify such individuals for preventive intervention.

JANG, S. M., GENG, T., QUEENIE LI, J.-Y., XIA, R., HUANG, C.-T., KIM, H., & TANG, J. (2018). A COMPUTATIONAL APPROACH FOR EXAMINING THE ROOTS AND SPREADING PATTERNS OF FAKE NEWS: EVOLUTION TREE ANALYSIS. *COMPUTERS IN HUMAN BEHAVIOR*, 84, 103–113. [HTTPS://DOI.ORG/10.1016/J.CHB.2018.02.032](https://doi.org/10.1016/j.chb.2018.02.032)

Key words: Twitter, America, election, evolution tree, network, flow

Approach: Evolution tree analysis of over 300,000 tweets about real and fake news

Main Findings: Root tweets about fake news were mostly generated by accounts from ordinary users but often include a link to non-credible news websites. Tweets about real news showed wider breadth and shorter depth than tweets about fake news. Tweets about fake news underwent a greater number of modifications in content over the spreading process.

Recommendations: social media algorithms should be designed to disrupt the flow of misinformation, including by decreasing its visibility; digital literacy education is needed

PENNYCOOK, G., & RAND, D. G. (2019). FIGHTING MISINFORMATION ON SOCIAL MEDIA USING CROWDSOURCED JUDGMENTS OF NEWS SOURCE QUALITY. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 116(7), 2521–2526. [HTTPS://DOI.ORG/10.1073/PNAS.1806781116](https://doi.org/10.1073/pnas.1806781116)

Key words: American, trust, crowdsource, source credibility, social media, trustworthiness, mainstream media

Approach: Two survey experiments

Main Findings: In an experiment to test user-generated/ crowdsourced trustworthiness, laypeople across the political spectrum rated mainstream sources as far more trustworthy than hyper-partisan or fake news sources. Democrats were better at assessing the trustworthiness of sources than Republicans. Excluding ratings from participants who were not familiar with a given news source dramatically reduced the effectiveness of the crowd.

PRICE, K. R., PRIISALU, J., & NOMM, S. (2019). ANALYSIS OF THE IMPACT OF POISONED DATA WITHIN TWITTER CLASSIFICATION MODELS. *IFAC-PAPERSONLINE*, 52(19), 175–180. [HTTPS://DOI.ORG/10.1016/J.IFACOL.2019.12.170](https://doi.org/10.1016/j.ifacol.2019.12.170)

Key words: Social bots, machine learning algorithm, detection, data manipulation, data poisoning

Approach: Experiment

Main Findings: Bot-detection models are very vulnerable to data poisoning attacks (manipulating data used to train a detection algorithm).

RUBIN, V. L., CHEN, Y., & CONROY, N. K. (2015). DECEPTION DETECTION FOR NEWS: THREE TYPES OF FAKES. *PROCEEDINGS OF THE ASSOCIATION FOR INFORMATION SCIENCE AND TECHNOLOGY*, 52(1), 1–4. [HTTPS://DOI.ORG/10.1002/PRA2.2015.145052010083](https://doi.org/10.1002/pra2.2015.145052010083)

Key words: Fake news detection, automation, natural language processing

Approach: Review

Main Findings: There are three types of fake news: 1) serious fabrications, exposed fraudulent journalistic writing; 2) large-scale hoaxes; and 3) humorous fakes, humorous intent. Thus, fake news detection has three distinct sub-tasks: fabrication detection; hoax detection; and satire detection.

ZHANG, C., GUPTA, A., KAUTEN, C., DEOKAR, A. V., & QIN, X. (2019). DETECTING FAKE NEWS FOR REDUCING MISINFORMATION RISKS USING ANALYTICS APPROACHES. *EUROPEAN JOURNAL OF OPERATIONAL RESEARCH*, 279(3), 1036–1052. [HTTPS://DOI.ORG/10.1016/J.EJOR.2019.06.022](https://doi.org/10.1016/j.ejor.2019.06.022)

Key words: Credibility, fake news clusters, classification, Fake News Detection, America, election, algorithms

Approach: Develop analytical model for establishing credibility of a news article using algorithms

Main Findings: There are currently two main approaches to detecting fake news: using natural language processing or using existing knowledge networks to check facts. Authors propose a two-phase model for detecting fake news by identifying first fake topics then fake events. They categorize events from legitimate news and categorize into topic clusters and measure credibility by comparing news items to the verified topic cluster.

NUDGING

PENNYCOOK, G., MCPHETRES, J., ZHANG, Y., LU, J. G., & RAND, D. G. (2020). FIGHTING COVID-19 MISINFORMATION ON SOCIAL MEDIA: EXPERIMENTAL EVIDENCE FOR A SCALABLE ACCURACY-NUDGE INTERVENTION. *PSYCHOLOGICAL SCIENCE*, 31(7), 770–780. [HTTPS://DOI.ORG/10.1177/0956797620939054](https://doi.org/10.1177/0956797620939054)

Key words: America, COVID-19, infodemic, health communication, selective sharing, nudging

Approach: Controlled experiment

Main findings: people share false claims about COVID-19 partly because they simply fail to think sufficiently about whether or not the content is accurate when deciding what to share. Greater cognitive reflection and science knowledge were associated with stronger discernment of truth. A simple accuracy reminder at the beginning of the study nearly tripled the level of truth discernment in participants' subsequent sharing intentions. Nudging people to think about accuracy is a simple way to improve choices about what to share on social media.

COMMUNICATION STRATEGIES

CAULFIELD, T., MARCON, A. R., MURDOCH, B., BROWN, J. M., PERRAULT, S. T., JARRY, J., SNYDER, J., ANTHONY, S. J., BROOKS, S., MASTER, Z., RACHUL, C., OGBOGU, U., GREENBERG, J., ZARZECZNY, A., & HYDE-LAY, R. (2019). HEALTH MISINFORMATION AND THE POWER OF NARRATIVE MESSAGING IN THE PUBLIC SPHERE. *CANADIAN JOURNAL OF BIOETHICS*, 2(2), 52–60. [HTTPS://DOI.ORG/10.7202/1060911AR](https://doi.org/10.7202/1060911AR)

Key words: Canada, science communication, narrative, homophily, bias

Approach: Narrative review

Main findings: As traditional methods of communication have in many ways failed the public, changes in approach are required, including the creative use of narratives. Narratives can serve as a vehicle not only to communicate science and relevant science informed policy in a more engaging and digestible manner but to foster an understanding around the process and credibility of scientific reasoning

DAHLSTROM, M. F. (2019). THE NARRATIVE TRUTH ABOUT SCIENTIFIC MISINFORMATION. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3497784](https://doi.org/10.2139/ssrn.3497784)

Key words: America, narrative, education, science communication

Approach: Narrative review

Main findings: The underlying purpose of both science and narrative seek to make sense of the world and find our place within it. While narrative can indeed lead to scientific misinformation, narrative can also help science counter misinformation by providing meaning to reality that incorporates accurate science knowledge into human experience.

DIXON, G. N., & CLARKE, C. E. (2013). HEIGHTENING UNCERTAINTY AROUND CERTAIN SCIENCE: MEDIA COVERAGE, FALSE BALANCE, AND THE AUTISM-VACCINE CONTROVERSY. *SCIENCE COMMUNICATION*, 35(3), 358–382. [HTTPS://DOI.ORG/10.1177/1075547012458290](https://doi.org/10.1177/1075547012458290)

Key words: America, vaccines, journalistic balance, scientific consensus

Approach: Controlled experiment

Main findings: Readers in the balanced condition were less certain that vaccines did not cause autism and more likely to believe experts were divided on the issue. The relationship between exposure to balanced coverage and certainty was mediated by the belief that medical experts are divided about a potential autism-vaccine link.

DIXON, G. N., MCKEEVER, B. W., HOLTON, A. E., CLARKE, C., & EOSCO, G. (2015). THE POWER OF A PICTURE: OVERCOMING SCIENTIFIC MISINFORMATION BY COMMUNICATING WEIGHT-OF-EVIDENCE INFORMATION WITH VISUAL EXEMPLARS. *JOURNAL OF COMMUNICATION*, 65(4), 639–659. [HTTPS://DOI.ORG/10.1111/JCOM.12159](https://doi.org/10.1111/jcom.12159)

Key words: Vaccine, journalistic balance, science communication, exemplification effect

Approach: Online survey experiment

Main Findings: Journalistic balance is a form of misinformation when it makes people believe there is no scientific consensus. Weight-of-evidence articles were likely to cause greater belief in the scientific consensus. Including a photograph of a single scientist or a group of scientists had a stronger effect convincing readers of scientific consensus than text only evidence.

Recommendations: Journalists should identify weight-of-evidence between conflicting scientific views and should include visuals to demonstrate this

DUDO, A., & BESLEY, J. C. (2016). SCIENTISTS' PRIORITIZATION OF COMMUNICATION OBJECTIVES FOR PUBLIC ENGAGEMENT. *PLOS ONE*, 11(2), E0148867. [HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0148867](https://doi.org/10.1371/journal.pone.0148867)

Key words: America, science communication, public engagement, planned behavior, deliberative democracy, trust

Approach: Interview: members from the American Association for the Advancement of Science

Main Findings: Defending science against misinformation was scientists' highest priority for engaging in online science communication. Scientists with greater perceived internal efficacy and who felt skilled at defending

science were more likely to prioritize defending science. Scientists were more likely to prioritize specific online communication objectives when they believed that their colleagues also prioritized the same objective.

ERKU, D. A., BELACHEW, S. A., ABRHA, S., SINNOLLAREDDY, M., THOMAS, J., STEADMAN, K. J., & TESFAYE, W. H. (2020). WHEN FEAR AND MISINFORMATION GO VIRAL: PHARMACISTS' ROLE IN DETERRING MEDICATION MISINFORMATION DURING THE "INFODEMIC" SURROUNDING COVID-19. *RESEARCH IN SOCIAL AND ADMINISTRATIVE PHARMACY*, S1551741120304551. [HTTPS://DOI.ORG/10.1016/J.SAPHARM.2020.04.032](https://doi.org/10.1016/j.sapharm.2020.04.032)

Key words: COVID-19, health misinformation, infodemic, education, source credibility

Approach: Commentary and review

Main findings: Pharmacists can be a relevant source of accurate and reliable information to the public or other fellow health professionals by providing accurate and reliable information based on recommendations given by relevant health authorities and professional associations to make sure the community understand the importance of the message and thus minimize the detrimental consequences of the pandemic.

FARRELL, J., MCCONNELL, K., & BRULLE, R. (2019). EVIDENCE-BASED STRATEGIES TO COMBAT SCIENTIFIC MISINFORMATION. *NATURE CLIMATE CHANGE*, 9(3), 191–195. [HTTPS://DOI.ORG/10.1038/S41558-018-0368-6](https://doi.org/10.1038/s41558-018-0368-6)

Key words: America, climate science, disinformation, misinformation campaigns, inoculation, cultural cognition

Approach: Review paper

Main findings: The public can be inoculated against misinformation by drawing specific attention to the financial motivations behind bad-faith actors. Future research is needed on how inoculation can be implemented beyond experimental settings. Approaches to combat misinformation should consider legal strategies, political mechanisms, and financial transparency as well.

IYENGAR, S., & MASSEY, D. S. (2019). SCIENTIFIC COMMUNICATION IN A POST-TRUTH SOCIETY. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES*, 116(16), 7656–7661. [HTTPS://DOI.ORG/10.1073/PNAS.1805868115](https://doi.org/10.1073/pnas.1805868115)

Key words: Science communication, disinformation, bots, algorithmic bias, partisanship

Approach: Narrative review

Main findings: Distrust in science and misperceptions of scientific knowledge increasingly stem less from problems of communication and more from widespread dissemination of misleading and biased information. In addition to clarifying their communications, scientists must also develop online strategies to counteract campaigns of misinformation and disinformation.

LANDRUM, A. R., HALLMAN, W. K., & JAMIESON, K. H. (2019). EXAMINING THE IMPACT OF EXPERT VOICES: COMMUNICATING THE SCIENTIFIC CONSENSUS ON GENETICALLY MODIFIED ORGANISMS. *ENVIRONMENTAL COMMUNICATION*, 13(1), 51–70.

[HTTPS://DOI.ORG/10.1080/17524032.2018.1502201](https://doi.org/10.1080/17524032.2018.1502201)

Key words: America, science communication, motivated reasoning, GMOs, public opinion, consensus, information deficit, diffusion, source credibility, gateway cognition

Approach: Online survey experiment

Main Findings: Pro-consensus messages made stronger arguments and were likely to be more representative of the scientific community's attitudes, however those messages did not abate participants' concern about GMOs. Participants' original attitude towards GMOs was the strongest predictor. Thus, rejection of scientific consensus occurs for preexisting ideological reasons not because people are not informed.

NYHAN, B., & REIFLER, J. (2019). THE ROLES OF INFORMATION DEFICITS AND IDENTITY THREAT IN THE PREVALENCE OF MISPERCEPTIONS. *JOURNAL OF ELECTIONS, PUBLIC OPINION AND PARTIES*, 29(2), 222–244. [HTTPS://DOI.ORG/10.1080/17457289.2018.1465061](https://doi.org/10.1080/17457289.2018.1465061)

Key words: America, images, motivated reasoning, confirmation bias, information deficit

Approach: Three experiments

Main Findings: Providing information in image form reduces misperceptions, more than textual information. Misperceptions are not just an information deficit problem; the threatening nature of certain facts may also inhibit people from acknowledging the truth.

Recommendations: Presenting corrective information in convenient and accessible formats should reduce misperceptions

SANGALANG, A., OPHIR, Y., & CAPPELLA, J. N. (2019). THE POTENTIAL FOR NARRATIVE CORRECTIVES TO COMBAT MISINFORMATION. *JOURNAL OF COMMUNICATION*, 69(3), 298–319. [HTTPS://DOI.ORG/10.1093/JOC/JQZ014](https://doi.org/10.1093/joc/jqz014)

Key words: America, belief echoes, affective perseverance, continued influence effect, corrections, emotion, tobacco, health

Approach: Two experiments

Main Findings: Narrative corrections, with or without emotional endings can be effective at reducing misinformation beliefs and intentions. Narratives consisting of emotional corrective endings are better at correcting attitudes than a simple corrective. Combined fear and anger emotional language reduced all misinformation outcomes.

STEFFENS, M. S., DUNN, A. G., WILEY, K. E., & LEASK, J. (2019). HOW ORGANISATIONS PROMOTING VACCINATION RESPOND TO MISINFORMATION ON SOCIAL MEDIA: A QUALITATIVE INVESTIGATION. *BMC PUBLIC HEALTH*, 19(1), 1348. [HTTPS://DOI.ORG/10.1186/S12889-019-7659-3](https://doi.org/10.1186/s12889-019-7659-3)

Key words: Australia, vaccines, risk communication, science communication

Approach: Semi-structured in-depth interviews with communications professionals

Main findings: Organizations promoting vaccination face challenges on social media, including misinformation, anti-science sentiment, a complex vaccination narrative and anti-vaccine activists. Response strategies include communicating with openness in an evidence-informed way; creating safe spaces to encourage audience dialogue; fostering community partnerships; and countering misinformation with care.

Recommendations:

- Authorities should directly counter misinformation.
- Refutations should be straightforward, succinct and avoid emphasizing misinformation.
- Scientific evidence should be paired with stories that speak to audience beliefs and values.
- Organizations should enhance vaccine promotion and their own credibility on social media by forming strong links with organizations sharing similar values and goals.

VRAGA, E. K., & BODE, L. (2017). USING EXPERT SOURCES TO CORRECT HEALTH MISINFORMATION IN SOCIAL MEDIA. *SCIENCE COMMUNICATION*, 39(5), 621–645. [HTTPS://DOI.ORG/10.1177/1075547017731776](https://doi.org/10.1177/1075547017731776)

Key words: America, Zika pandemic, Twitter, scientific consensus, source credibility, health, science communication, social cues, backfire effect, observational correction

Approach: Online survey experiment, simulated Twitter feed

Main Findings: A single correction from the CDC was effective for reducing misperceptions while a single tweet from another user was not. Organizational credibility was not reduced when correcting misinformation. However, an individual user adding a correction after the CDC has already refuted misinformation can produce a backfire effect.

Recommendation: Expert organizations should immediately and personally rebut misinformation about health issues on social media. Users should also refute online misinformation, even if another user has already posted a correction.

EDUCATION AND MEDIA LITERACY

BEDFORD, D. (2010). AGNOTOLOGY AS A TEACHING TOOL: LEARNING CLIMATE SCIENCE BY STUDYING MISINFORMATION. *JOURNAL OF GEOGRAPHY*, 109(4), 159–165.

[HTTPS://DOI.ORG/10.1080/00221341.2010.498121](https://doi.org/10.1080/00221341.2010.498121)

Key words: Agnotology, misinformation, global warming, climate change, source credibility

Approach: Review

Main Findings: Disinformation campaigns (organized campaigns intended to create doubt and confusion in the public mind) are a major factor in the disconnect between the scientific consensus and American public opinion on climate change. Campaigns misuse experts and rely on the public's weak understanding of the scientific process.

Recommendations: Strengthen critical thinking and understanding of the scientific process

JANG, S. M., & KIM, J. K. (2018). THIRD PERSON EFFECTS OF FAKE NEWS: FAKE NEWS REGULATION AND MEDIA LITERACY INTERVENTIONS. *COMPUTERS IN HUMAN BEHAVIOR*, 80, 295–302. [HTTPS://DOI.ORG/10.1016/J.CHB.2017.11.034](https://doi.org/10.1016/j.chb.2017.11.034)

Key words: America, election, media literacy, partisanship, regulation

Approach: Survey

Main findings: Individuals believed that fake news would have greater effects on out-group members than themselves or in-group members. Partisan identity, social undesirability of content, and external political efficacy were positive predictors of the third-person perception. Those with a greater level of third-person perception were more likely to support the media literacy approach but less likely to support the media regulation approach.

MELRO, A., & PEREIRA, S. (2019). FAKE OR NOT FAKE? PERCEPTIONS OF UNDERGRADUATES ON (DIS)INFORMATION AND CRITICAL THINKING. *MEDIJSKE STUDIJE*, 10(19), 46–67.

[HTTPS://DOI.ORG/10.20901/MS.10.19.3](https://doi.org/10.20901/MS.10.19.3)

Key words: Portugal, youth, news media, news literacy

Approach: Experiment and survey

Main findings: Although most students report limited critical analysis of information, they do reveal concerns about disinformation in their lives, suggesting a set of actions in order to combat fake news spread. These findings reinforce the need for news and media literacy that concerns a post-fact culture.

MIHAILIDIS, P., & VIOTTY, S. (2017). SPREADABLE SPECTACLE IN DIGITAL CULTURE: CIVIC EXPRESSION, FAKE NEWS, AND THE ROLE OF MEDIA LITERACIES IN “POST-FACT” SOCIETY. *AMERICAN BEHAVIORAL SCIENTIST*, 61(4), 441–454.

[HTTPS://DOI.ORG/10.1177/0002764217701217](https://doi.org/10.1177/0002764217701217)

Key words: America, election, polarization, social media, civic engagement, partisan media

Approach: Review

Main findings: Media literacies, as a popular response mechanism to help cultivate more critical consumers of media, must be repositioned to respond to an era of partisanship and distrust. Literacies should be repositioned to focus on critique and creation of media in support of a common good that can respond meaningfully in an era of spreadability, connectivity, and spectacle.

REPEATED COVID-19 PANDEMIC-RELATED MEDIA CONSUMPTION: MINIMIZING SHARING OF NONSENSICAL MISINFORMATION THROUGH HEALTH LITERACY AND CRITICAL THINKING. (2020). *LINGUISTIC AND PHILOSOPHICAL INVESTIGATIONS*, 19(0), 107.

[HTTPS://DOI.ORG/10.22381/LPI1920207](https://doi.org/10.22381/LPI1920207)

Key words: America, COVID-19, health misinformation, anxiety, source credibility, social media

Approach: Surveys

Main findings: Heightened, and perpetual media exposure to the COVID-19 crisis may influence viewers to inadequately anticipate the seriousness to their families and friends, generating amplified anxiety, intense stress reactions that may generate long-term consequences on health, and disorganized health-protective and help-seeking behaviors, congesting medical care facilities and putting pressure on available resources.

VRAGA, E. K., TULLY, M., & BODE, L. (2020). EMPOWERING USERS TO RESPOND TO MISINFORMATION ABOUT COVID-19. *MEDIA AND COMMUNICATION*, 8(2), 475–479.

[HTTPS://DOI.ORG/10.17645/MAC.V8I2.3200](https://doi.org/10.17645/MAC.V8I2.3200)

Key words: Global South, COVID-19, infodemic, news literacy, science literacy, corrections

Approach: Narrative review

Main findings: Fostering news and science literacy provides a flexible solution that can help people distinguish quality information about COVID-19 and empower more active curation of their social media feeds to protect themselves and others from misinformation. To be effective, we must consider global implementation, starting with an improved understanding of diverse contexts and existing science.

LAW AND POLICY

BURSHTEIN, S. (2017). THE TRUE STORY ON FAKE NEWS. *INTELLECTUAL PROPERTY JOURNAL*, 29(3), 397–446.

Key words: Canada, America, UK, Australia, Europe, fake news, democracy, regulations

Approach: Cross-country comparison

Main findings: Although there has been significant discussion about what can be done to eliminate, or at least reduce, the volume and impact of fake news, there is no specific Internet legislation to address online fake news in the United States, the United Kingdom, Australia, Europe or Canada. Except in limited situations, there may be no legal basis on which to restrain most online fake news.

HELBERGER, N. (2020). THE POLITICAL POWER OF PLATFORMS: HOW CURRENT ATTEMPTS TO REGULATE MISINFORMATION AMPLIFY OPINION POWER. *DIGITAL JOURNALISM*, 0(0), 1–13. [HTTPS://DOI.ORG/10.1080/21670811.2020.1773888](https://doi.org/10.1080/21670811.2020.1773888)

Key words: Europe, Facebook, regulatory approach, laws, democracy

Approach: Review

Main findings: The governance of social media as ‘non-media’ continues to follow an evolving e-commerce logic. Making some social media platforms the central locus of the governance of online communication and enforcers of public value standards, not only enhances their public accountability but also strengthens their grip on the very process of democratic opinion formation.

KLEIN, D., & WUELLER, J. (2017). FAKE NEWS: A LEGAL PERSPECTIVE. *JOURNAL OF INTERNET LAW*, 10(10), 5–13. [HTTPS://SSRN.COM/ABSTRACT=2958790](https://ssrn.com/abstract=2958790)

Key words: America, defamation, cyberbullying, social media, free speech, regulation

Approach: Review

Main findings: Fake news publications are intentionally or knowingly false. As media attention and public condemnation of fake news continues to intensify, authors predict that more lawmakers, regulators, courts, and private citizens will explore legal and regulatory solutions that balance the societal importance of truth-seeking with the constitutional right to speak freely.

LOVARI, A. (2020). SPREADING (DIS)TRUST: COVID-19 MISINFORMATION AND GOVERNMENT INTERVENTION IN ITALY. *MEDIA AND COMMUNICATION*, 8(2), 458–461. [HTTPS://DOI.ORG/10.17645/MAC.V8I2.3219](https://doi.org/10.17645/mac.v8i2.3219)

Key words: Italy, COVID-19, health information, corrections

Approach: Editorial

Main findings: In this first social media pandemic, the Italian Ministry of Health has adopted specific digital communication strategies to face the COVID-19 emergency, devoting intense efforts to keeping the citizen constantly informed and to reducing misinformation, using data and visuals to make the messages easily understood, partnering with social media platforms and supporting fact-checking efforts.

MARSDEN, C., MEYER, T., & BROWN, I. (2020). PLATFORM VALUES AND DEMOCRATIC ELECTIONS: HOW CAN THE LAW REGULATE DIGITAL DISINFORMATION? *COMPUTER LAW & SECURITY REVIEW*, 36, 105373. [HTTPS://DOI.ORG/10.1016/J.CLSR.2019.105373](https://doi.org/10.1016/j.clsr.2019.105373)

Key words: European Union, regulation, social media, election

Approach: Review

Main findings: The apparent significance of the threat has led many governments to legislate despite this lack of evidence, with over 40 national laws to combat disinformation chronicled by March 2019. Platforms should be regulated through co-regulation: companies develop mechanisms to regulate their own users, which are approved by democratically legitimate state regulators or legislatures, who also monitor their effectiveness.

PERL, A., HOWLETT, M., & RAMESH, M. (2018). POLICY-MAKING AND TRUTHINESS: CAN EXISTING POLICY MODELS COPE WITH POLITICIZED EVIDENCE AND WILLFUL IGNORANCE IN A "POST-FACT" WORLD? *POLICY SCIENCES*, 51(4), 581–600. [HTTPS://DOI.ORG/10.1007/S11077-018-9334-4](https://doi.org/10.1007/S11077-018-9334-4)

Key words: Policy frameworks, decision-making, evidence-based policy-making, truth

Approach: Review of policy analysis models/ conceptual framework

Main Findings: The increase of willful ignorance from social media makes it harder for policy-makers to control their agendas, increases polarization, and makes the policy-making system less adaptable, able to learn from experience, and effective at problem-solving.

Recommendations: Government should:

- Improve education;
- Increase accessibility to knowledge/ true information;
- Expose corrupt practices; and
- Enhance accountability and transparency mechanisms (including freedom of information legislation).

WHAT ARE THE THREATS AND RISKS OF MISINFORMATION?

Online misinformation can pose a range of threats. The following references cover the risk of misinformation to public health and safety, and risks of eroding trust in scientific and democratic institutions and structures. Finally, sources in this section discuss the threat of misinformation at an individual level to critical reasoning skills and internal political efficacy.

HEALTH AND SAFETY

BARUA, Z., BARUA, S., AKTAR, S., KABIR, N., & LI, M. (2020). EFFECTS OF MISINFORMATION ON COVID-19 INDIVIDUAL RESPONSES AND RECOMMENDATIONS FOR RESILIENCE OF DISASTROUS CONSEQUENCES OF MISINFORMATION. *PROGRESS IN DISASTER SCIENCE*, 100119.

[HTTPS://DOI.ORG/10.1016/J.PDISAS.2020.100119](https://doi.org/10.1016/j.pdisas.2020.100119)

Key words: Bangladesh, Coronavirus, Misinformation, Credibility evaluation, Social media

Approach: Survey

Main Findings: The propagation of misinformation on social media undermines the COVID-19 individual responses. Evaluating the credibility of information on social media positively influences COVID-19 responses; so, health authorities should encourage users to evaluate the credibility of information on social media before they make health-related decisions.

CUAN-BALTAZAR, J. Y., MUÑOZ-PEREZ, M. J., ROBLEDO-VEGA, C., PÉREZ-ZEPEDA, M. F., & SOTO-VEGA, E. (2020). MISINFORMATION OF COVID-19 ON THE INTERNET: INFODEMOLOGY STUDY. *JMIR PUBLIC HEALTH AND SURVEILLANCE*, 6(2), E18444.

[HTTPS://DOI.ORG/10.2196/18444](https://doi.org/10.2196/18444)

Key words: COVID-19, search engine, Google

Approach: Collected web search results

Main findings: By February 6, 2020, no quality information was available on the internet about COVID-19. The Wuhan coronavirus health crisis misinformation was produced by the media, and the misinformation was obtained by users from the internet. The use of the internet has a risk to public health, and, in cases like this, the governments should be developing strategies to regulate health information on the internet without censoring the population.

GREENE, C., & MURPHY, G. (2020). *CAN FAKE NEWS REALLY CHANGE BEHAVIOUR? EVIDENCE FROM A STUDY OF COVID-19 MISINFORMATION*. [PREPRINT]. PSYARXIV.

[HTTPS://DOI.ORG/10.31234/OSF.IO/QFNM3](https://doi.org/10.31234/osf.io/qfnm3)

Key words: Ireland, COVID-19, infodemic, health information, corrections, misinformation warnings

Approach: Controlled experiment

Main findings: Exposure to misinformation was associated with small but significant changes to two of the four critical health behaviours assessed. Participants who believed stories promoting a particular behaviour (e.g. drinking coffee or eating spicy food) tended to report stronger intentions to engage in that behaviour. There was no change in misinformation acceptance or behavioural intention following exposure to a warning.

GROSHEK, J., KATZ, J. E., ANDERSEN, B., CUTINO, C., & ZHONG, Q. (2018). *MEDIA USE AND ANTIMICROBIAL RESISTANCE MISINFORMATION AND MISUSE: SURVEY EVIDENCE OF INFORMATION CHANNELS AND FATALISM IN AUGMENTING A GLOBAL HEALTH THREAT*. *COGENT MEDICINE*, 5(1). [HTTPS://DOI.ORG/10.1080/2331205X.2018.1460898](https://doi.org/10.1080/2331205X.2018.1460898)

Key words: America, health information, social media, science communication

Approach: Survey

Main findings: Increased consumption of traditional media (television, newspaper, radio) is linked to a greater likelihood of antimicrobial misinformation and misuse. Social media creation was also shown to be a potent factor in increasing AMR misinformation, whereas the consumption of online media actually was related to a decrease in that outcome.

LI, H. O.-Y., BAILEY, A., HUYNH, D., & CHAN, J. (2020). *YOUTUBE AS A SOURCE OF INFORMATION ON COVID-19: A PANDEMIC OF MISINFORMATION?* *BMJ GLOBAL HEALTH*, 5(5), E002604. [HTTPS://DOI.ORG/10.1136/BMJGH-2020-002604](https://doi.org/10.1136/bmjgh-2020-002604)

Key words: COVID-19, YouTube, health information

Approach: Content analysis of collected YouTube videos

Main findings: Over one-quarter of the most viewed YouTube videos on COVID-19 contained misleading information, reaching millions of viewers worldwide. As the current COVID-19 pandemic worsens, public health agencies must better use YouTube to deliver timely and accurate information and to minimize the spread of misinformation.

R, J., D, B., & WARAN, K. (2020). *SOCIAL MEDIA REIGNED BY INFORMATION OR MISINFORMATION ABOUT COVID-19: A PHENOMENOLOGICAL STUDY*. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3596058](https://doi.org/10.2139/ssrn.3596058)

Key words: India, COVID-19, social media, news media, reliable sources

Approach: Interviews with social media users

Main findings: The unprecedented information at our fingertips is a double-edged sword which can influence real-time smart decisions as well as create an anxious environment with uncertain outcomes. Common people believe the false information and fall prey to such news. Government helplines, websites, news applications and news channel websites should be accessed for any updates in situations like this

SALLAM, M., DABABSEH, D., YASEEN, A., AL-HAIDAR, A., TAIM, D., EID, H., ABABNEH, N. A., BAKRI, F. G., & MAHAFAZAH, A. (2020). COVID-19 MISINFORMATION: MERE HARMLESS DELUSIONS OR MUCH MORE? A KNOWLEDGE AND ATTITUDE CROSS-SECTIONAL STUDY AMONG THE GENERAL PUBLIC RESIDING IN JORDAN [PREPRINT]. *INFECTIOUS DISEASES (EXCEPT HIV/AIDS)*. [HTTPS://DOI.ORG/10.1101/2020.07.13.20152694](https://doi.org/10.1101/2020.07.13.20152694)

Key words: Jordan, COVID-19, anxiety, misperceptions

Approach: Survey

Main findings: Variables that were associated with a higher anxiety level during the pandemic included: lower monthly income and educational level, residence outside the capital (Amman) and history of smoking. Misinformation about the origin of the pandemic (being part of a conspiracy, biological warfare and the 5G networks role) was also associated with higher anxiety and lower knowledge about the disease.

SWIRE-THOMPSON, B., & LAZER, D. (2020). PUBLIC HEALTH AND ONLINE MISINFORMATION: CHALLENGES AND RECOMMENDATIONS. *ANNUAL REVIEW OF PUBLIC HEALTH*, 41(1), 433–451. [HTTPS://DOI.ORG/10.1146/ANNUREV-PUBLHEALTH-040119-094127](https://doi.org/10.1146/annurev-publhealth-040119-094127)

Key words: Health information, search engines, user-generated content, echo chambers, literacy, disinformation

Approach: Review

Main findings: Individuals do not have the cognitive capacity, motivation, or time to evaluate all the information that we encounter online. Motivation increases for research regarding our own health condition. Even under these circumstances, the assessment of source reputability and the veracity of information is an extremely difficult task.

VELÁSQUEZ, N., LEAHY, R., RESTREPO, N. J., LUPU, Y., SEAR, R., GABRIEL, N., JHA, O., GOLDBERG, B., & JOHNSON, N. F. (2020). HATE MULTIVERSE SPREADS MALICIOUS COVID-19 CONTENT ONLINE BEYOND INDIVIDUAL PLATFORM CONTROL. *ARXIV:2004.00673 [NLIN, PHYSICS:PHYSICS]*. [HTTP://ARXIV.ORG/ABS/2004.00673](http://arxiv.org/abs/2004.00673)

Key words: COVID-19, health information, hate speech, social media

Approach: Machine learning topic analysis

Main findings: Malicious COVID-19 content, including hate speech, disinformation, and misinformation, exploits online hate networks to spread quickly beyond the control of any individual social media platform.

Controlling the spread of COVID-19 misinformation and its weaponization against certain demographics by the online hate community of neo-Nazis and extremists is an urgent problem.

WANG, Y., MCKEE, M., TORBICA, A., & STUCKLER, D. (2019). SYSTEMATIC LITERATURE REVIEW ON THE SPREAD OF HEALTH-RELATED MISINFORMATION ON SOCIAL MEDIA. *SOCIAL SCIENCE & MEDICINE*, 240, 112552. [HTTPS://DOI.ORG/10.1016/J.SOCSCIMED.2019.112552](https://doi.org/10.1016/j.socscimed.2019.112552)

Key words: Science communication, health communication, source credibility

Approach: Systematic literature review

Main Findings: Misinformation is abundant on the internet and is often more popular than accurate information. The most extensively studied health topics are vaccines, Ebola, and Zika virus. Future research should examine susceptibility of different socio demographic groups to misinformation and understand the role of belief systems on the intention to spread misinformation. Further interdisciplinary research is needed to identify effective and tailored interventions to counter the spread of health-related misinformation online.

Recommendations: Improve health and media literacy, cultivate critical thinking; policy efforts should be aimed at reducing selective exposure and polarization.

TRUST IN SCIENCE

GUPTA, L., GASPARYAN, A. Y., MISRA, D. P., AGARWAL, V., ZIMBA, O., & YESSIRKEPOV, M. (2020). INFORMATION AND MISINFORMATION ON COVID-19: A CROSS-SECTIONAL SURVEY STUDY. *JOURNAL OF KOREAN MEDICAL SCIENCE*, 35(27), E256. [HTTPS://DOI.ORG/10.3346/JKMS.2020.35.E256](https://doi.org/10.3346/jkms.2020.35.E256)

Key words: COVID-19, source credibility, academic publications, social media

Approach: Survey

Main findings: COVID-19 has led to a large volume of publications, non-reviewed preprints and retractions in a short amount of time. While identifying social media as a potential source of misinformation, and a perceived high risk of plagiarism, more stringent peer review and skilled post-publication promotion are advisable. Journal editors should play a more active role in streamlining publication and promotion of trustworthy information on COVID-19.

JAAFAR, Z., & GIAM, X. (2012). MISINFORMATION AND OMISSION IN SCIENCE JOURNALISM. *TROPICAL CONSERVATION SCIENCE*, 5(2), 142–149. [HTTPS://DOI.ORG/10.1177/194008291200500204](https://doi.org/10.1177/194008291200500204)

Key words: Pakistan, news media, science communication, environmental conservation

Approach: Collected online news reports

Main findings: Most of the reports were compromised by misinformation and by lack of discussion on conservation issues. There was no statistical relationship between type of media (traditional versus new) and the likelihood of a report being factually accurate. Scientists can take proactive roles in communicating corrections to misinformation in published articles.

TRUST IN DEMOCRATIC INSTITUTIONS

BENNETT, W. L., & LIVINGSTON, S. (2018). THE DISINFORMATION ORDER: DISRUPTIVE COMMUNICATION AND THE DECLINE OF DEMOCRATIC INSTITUTIONS. *EUROPEAN JOURNAL OF COMMUNICATION*, 33(2), 122–139. [HTTPS://DOI.ORG/10.1177/0267323118760317](https://doi.org/10.1177/0267323118760317)

Key words: Disinformation, fake news, democracy, legitimacy, confidence, radical right, alt-right, populism, amplifier effect

Approach: Review

Main Findings: Disinformation is defined as intentional falsehoods spread as news stories or simulated documentary formats to advance political goals. Increasing disinformation, particularly from the alt-right and foreign interests, stems from disruptions to traditional information authorities. The result is the breakdown of trust in democratic institutions of press, politics, and educational and civil society institutions.

BROWN, É. (2018). PROPAGANDA, MISINFORMATION, AND THE EPISTEMIC VALUE OF DEMOCRACY. *CRITICAL REVIEW*, 30(3–4), 194–218. [HTTPS://DOI.ORG/10.1080/08913811.2018.1575007](https://doi.org/10.1080/08913811.2018.1575007)

Key words: Democracy, deliberation, propaganda, citizenship, misinformation, collective decision-making

Approach: Review

Main findings: Misinformation impairs citizens' ability to make collective decisions based on factual beliefs. Although some cases of misinformation are deliberate, cases of inadvertent misinformation are just as problematic in affecting the beliefs and behavior of democratic citizens. This is a serious issue that cannot entirely be addressed by means of deliberation.

GARRETT, R. K. (2011). TROUBLING CONSEQUENCES OF ONLINE POLITICAL RUMORING. *HUMAN COMMUNICATION RESEARCH*, 37(2), 255–274. [HTTPS://DOI.ORG/10.1111/J.1468-2958.2010.01401.X](https://doi.org/10.1111/j.1468-2958.2010.01401.x)

Key words: American, election, rumors, email, rebuttal, debunk

Approach: National telephone survey

Main Findings: Aggregate Internet use promotes exposure to rumors and their rebuttals, but the total effect of rumor belief is negligible. The social dynamics driving how people use email in particular intensify ideological

divisions and partisan bias by facilitating a recursive process of accepting and disseminating partisan rumours. Rumors emailed to family and friends are more likely to be believed and shared with others.

JASANOFF, S., & SIMMET, H. R. (2017). NO FUNERAL BELLS: PUBLIC REASON IN A 'POST-TRUTH' AGE. *SOCIAL STUDIES OF SCIENCE*, 47(5), 751–770.

[HTTPS://DOI.ORG/10.1177/0306312717731936](https://doi.org/10.1177/0306312717731936)

Key words: Post-truth, enlightened government, public facts, social meaning, deliberation, democracy

Approach: Review

Main findings: The framing of a 'post-truth' era is flawed. Debates about public facts are necessarily debates about social meanings. To restore their place in democracy, governments should be held accountable for explaining who generated public facts, in response to which sets of concerns, and with what opportunities for deliberation and closure.

JIANG, S., & FANG, W. (2019). MISINFORMATION AND DISINFORMATION IN SCIENCE: EXAMINING THE SOCIAL DIFFUSION OF RUMOURS ABOUT GMOS. *CULTURES OF SCIENCE*, 2(4), 327–340. [HTTPS://DOI.ORG/10.1177/209660831900200407](https://doi.org/10.1177/209660831900200407)

Key words: China, Weibo, GMOs, science communication, trust, conspiracy theory

Approach: Collected rumor content on Weibo

Main findings: Weibo users expressed anxiety and panic while stressing social injustice and reflecting conflict between social classes, and they exhibited little trust in scientists and the government. 'Evidence' to support the rumor was added and rumours were 'assimilated' into people's perception through the stigmatization of GMOs and through conspiracy theories.

LEWANDOWSKY, S., STRITZKE, W. G. K., FREUND, A. M., OBERAUER, K., & KRUEGER, J. I. (2013). MISINFORMATION, DISINFORMATION, AND VIOLENT CONFLICT: FROM IRAQ AND THE "WAR ON TERROR" TO FUTURE THREATS TO PEACE. *AMERICAN PSYCHOLOGIST*, 68(7), 487–501. [HTTPS://DOI.ORG/10.1037/A0034515](https://doi.org/10.1037/A0034515)

Key words: America, backfire effect, debiasing, conflict, climate change, scientific consensus

Approach: Case studies and review

Main findings: Continued reliance on misinformation is not only a matter of individual cognition, but it is also relevant to society at large. The persistence of misinformation in society can contribute to violent conflicts that might otherwise be preventable. The field of psychology can help inoculate people against misinformation and disinformation, and to build resilience against narratives that frame conflicts in antagonistic, dehumanizing ways, or that contribute to future conflict.

TSFATI, Y. (2010). ONLINE NEWS EXPOSURE AND TRUST IN THE MAINSTREAM MEDIA: EXPLORING POSSIBLE ASSOCIATIONS. *AMERICAN BEHAVIORAL SCIENTIST*, 54(1), 22–42. [HTTPS://DOI.ORG/10.1177/0002764210376309](https://doi.org/10.1177/0002764210376309)

Key words: Israel, trust, news media, selective exposure

Approach: Survey

Main findings: Exposure to online news is generally associated with mistrust of mainstream news. Whereas mainstream exposure is related to trust in media, exposure to non-mainstream sites is related to media skepticism.

CRITICAL REASONING

ECKER, U. K. H., LEWANDOWSKY, S., CHANG, E. P., & PILLAI, R. (2014). THE EFFECTS OF SUBTLE MISINFORMATION IN NEWS HEADLINES. *JOURNAL OF EXPERIMENTAL PSYCHOLOGY: APPLIED*, 20(4), 323–335. [HTTPS://DOI.ORG/10.1037/XAP0000028](https://doi.org/10.1037/xap0000028)

Key words: Australia, news media, media literacy, corrections, continued influence effect

Approach: Experiment

Main findings: Misleading headlines affect readers' memory, their inferential reasoning and behavioral intentions, and the impressions people form of faces. These effects arise not only because headlines constrain further information processing, biasing readers toward a specific interpretation, but also because readers struggle to update their memory in order to correct initial misconceptions.

HOW HAVE CANADIANS ALREADY BEEN IMPACTED?

The following references cover research conducted into the impact of misinformation specific to the Canadian context. These include effects on the veracity of information relating to COVID-19 pandemic, health and vaccinations, climate change and the environment and politics and elections. These sources also discuss potential threats to security and to the erosion of trust in institutions.

As the Canadian social, political and media landscapes are unique, Canada faces unique challenges regarding online misinformation. Research aimed at understanding misinformation in the Canadian context will support effective and equitable evidence-based policies in Canada to combat misinformation. It also will help to equip the Canadian public against misinformation. Peer-reviewed misinformation research specific to the Canadian context is somewhat limited as compared to other sections, so reports, policy briefs and other non-peer reviewed sources were included in this section.

HEALTH

BRIDGMAN, A., MERKLEY, E., LOEWEN, P. J., OWEN, T., RUTHS, D., TEICHMANN, L., & ZHILIN, O. (2020). THE CAUSES AND CONSEQUENCES OF COVID-19 MISPERCEPTIONS: UNDERSTANDING THE ROLE OF NEWS AND SOCIAL MEDIA. *HARVARD KENNEDY SCHOOL MISINFORMATION REVIEW*. [HTTPS://DOI.ORG/10.37016/MR-2020-028](https://doi.org/10.37016/MR-2020-028)

Key words: Canada, Twitter, COVID-19, misinformation, health communication

Approach: Collected tweets from March 19 to April 6, 2020

Main findings: Comparatively more misinformation circulates on Twitter, while news media tends to reinforce public health recommendations like social distancing. Exposure to social media is associated with misperceptions regarding basic facts about COVID-19. These misperceptions are in turn associated with lower compliance with social distancing measures.

GRUZD, A., & MAI, P. (2020A). INOCULATING AGAINST AN INFODEMIC: A CANADA-WIDE COVID-19 NEWS, SOCIAL MEDIA, AND MISINFORMATION SURVEY. *SSRN ELECTRONIC JOURNAL*. [HTTPS://DOI.ORG/10.2139/SSRN.3597462](https://doi.org/10.2139/SSRN.3597462)

Key words: Canada, COVID-19, infodemic, source credibility

Approach: National survey

Main findings: Most Canadians trust the accuracy of Covid-19 news from official information sources such as the public service and government ministries. Facebook and Reddit are the two most popular social media

sites for information on COVID-19. TikTok is growing in popularity. COVID-19 misinformation was reported on all social media and messaging platforms.

KATA, A. (2010). A POSTMODERN PANDORA'S BOX: ANTI-VACCINATION MISINFORMATION ON THE INTERNET. *VACCINE*, 28(7), 1709–1716.

[HTTPS://DOI.ORG/10.1016/J.VACCINE.2009.12.022](https://doi.org/10.1016/j.vaccine.2009.12.022)

Key words: Canada, America, vaccination, conspiracy theory, education, health communication

Approach: Content analysis of anti-vaccination websites

Main findings: Every website studied except one contained arguments against vaccination that could be considered disingenuous, including drawing false conclusions from research, using sources untruthfully, and describing data selectively. As education has not been effective, more consideration must be given to social discourses underlying anti-vaccine sentiment.

MACDONALD, N. E., & DUBÉ, E. (2020). PROMOTING IMMUNIZATION RESILIENCY IN THE DIGITAL INFORMATION AGE. *CANADA COMMUNICABLE DISEASE REPORT*, 46(1), 20–24.

[HTTPS://DOI.ORG/10.14745/CCDR.V46I01A04](https://doi.org/10.14745/ccdr.v46i01a04)

Key words: Canada, vaccine, education, health communication, public health

Approach: Literature review

Main findings: Seven evidence-based strategies can help combat vaccine misinformation: 1) listen to patients and parents; 2) recognize and alert others to anti-immunization tactics; 3) avoid unproductive debates and be respectful; 4) consider developing an attractive, easily searchable online presence; 5) alter social media platforms to misinformation online; 6) prompt immunization and science literacy curriculum in schools; and 7) work with community leaders to tailor programs to specific communities.

POLITICS AND INSTITUTIONS

CIAMPAGLIA, G. L., MANTZARLIS, A., MAUS, G., & MENCZER, F. (2018). RESEARCH CHALLENGES OF DIGITAL MISINFORMATION: TOWARD A TRUSTWORTHY WEB. *AI MAGAZINE*, 39(1), 65–74.

[HTTPS://DOI.ORG/10.1609/AIMAG.V39I1.2783](https://doi.org/10.1609/aimag.v39i1.2783)

Key words: Canada, conspiracy theory, fake news, social bots, detection, cognitive bias, social bias, technological bias, algorithms

Approach: Review

Main findings: AI is increasingly being exploited to manipulate public opinion while also playing an important role in defending us from attacks against the integrity of the information space. Combatting misinformation requires collaboration between various sectors including industry, academia, journalism, and civil society.

Support from both private foundations and federal agencies is key for future collaboration on research, education, and policymaking.

COMMUNICATION SECURITY ESTABLISHMENT. (2018). *CYBER THREATS TO CANADA'S DEMOCRATIC PROCESS*. [HTTPS://CYBER.GC.CA/EN/CYBER-THREATS-AND-DEMOCRACY](https://cyber.gc.ca/en/cyber-threats-and-democracy)

Key words: Canada, democracy, cyber security, election, voters

Approach: Government report

Main findings: Voters rely on the Internet, including social media, as a key source of information. False and misleading information online can be difficult to distinguish from trustworthy and reliable information. Cyber threat actors perceive that targeting voters is low-cost and low-risk.

DAOUST, J.-F., & BASTIEN, F. (2020). *THE QUALITY OF ONLINE NEWS AND CITIZENS' PERCEPTIONS OF PRE-ELECTION POLLS* (DIGITAL ECOSYSTEM RESEARCH CHALLENGE). [HTTPS://WWW.DIGITALECOSYSTEM.CA/REPORT](https://www.digitalecosystem.ca/report)

Key words: Canada, election, polls, source credibility, literacy

Approach: Survey

Main findings: A clear majority of respondents believed that the poll was reliable. Although there was no party that had a statistically significant lead in the poll, about 80% of the sample thought one party was leading, suggesting a need to improve news literacy. Although surveyed Canadians found the information reliable, about 60% of them agreed that they should be banned in the last week of the campaign.

DONOVAN, J., FRIEDBERG, B., LEAVER, N., & PENNEY, J. (2019) *MEDIA MANIPULATION, MEMETIC CAMPAIGNS, AND THE 2019 CANADIAN ELECTIONS* (DIGITAL ECOSYSTEM RESEARCH CHALLENGE). [HTTPS://WWW.DIGITALECOSYSTEM.CA/REPORT](https://www.digitalecosystem.ca/report)

Key words: Canada, election, memes, YouTube

Approach: Researchers tracked the life cycle of three media manipulation campaigns

Main findings: Particular polarizing issues, including immigration and racism, provoked strong reactions in this election cycle. A small number of influential online actors were able to amplify, drive, and set mainstream media agendas on specific wedge issues. There was no evidence that any manipulation campaign impacted the election's integrity or produced unexpected electoral results. Canadian reporters were attuned to the threat of amplifying falsehoods and were strategically silent on some potentially viral stories.

ELMER, G., TUTORS, M., BURTON, A., DEVRIES, M., LANGLOIS, G., NEVILLE, S., & WARD-KIMOLA, S. (2019). *FRINGE POLITICS: THE DEEP WEB'S IMPACT ON THE 2019 CANADIAN ELECTION* (DIGITAL ECOSYSTEM RESEARCH CHALLENGE).

[HTTPS://WWW.DIGITALECOSYSTEM.CA/REPORT](https://www.digitalecosystem.ca/report)

Key words: Canada, election, memes, Reddit, Facebook, GoFundMe, extremist content

Approach: Collected content from multiple social media sites

Main findings: Alt-right movements employ site-specific communication strategies to recruit participants and strengthen their existing micro-communities. Alt-right discourse online generally presents a sense of socio-economic betrayal from the state. Alt-right members on mainstream and fringe social media sites enclose themselves within a negative worldview.

PÉTRY, F., & DUVAL, D. (2017). WHEN HEURISTICS GO BAD: CITIZENS' MIS EVALUATIONS OF CAMPAIGN PLEDGE FULFILMENT. *ELECTORAL STUDIES*, 50, 116–127.

[HTTPS://DOI.ORG/10.1016/J.ELECTSTUD.2017.09.010](https://doi.org/10.1016/j.electstud.2017.09.010)

Key words: Canada, Quebec, election, motivated reasoning, political knowledge

Approach: Post-election survey: 14,327 respondents

Main findings: Stereotypic cues such as party ID, political trust, gender and language lead to accurate evaluations of pledge fulfilment when politicians' performance conform to the expected stereotype but lead to inaccurate evaluations when politicians' performance does not conform to the stereotype. Misleading stereotypes have a strong and systematic statistical impact on Quebec citizens' evaluations of pledge fulfilment.

WILNER, A. S. (2018). CYBERSECURITY AND ITS DISCONTENTS: ARTIFICIAL INTELLIGENCE, THE INTERNET OF THINGS, AND DIGITAL MISINFORMATION. *INTERNATIONAL JOURNAL: CANADA'S JOURNAL OF GLOBAL POLICY ANALYSIS*, 73(2), 308–316.

[HTTPS://DOI.ORG/10.1177/0020702018782496](https://doi.org/10.1177/0020702018782496)

Key words: Canada, artificial intelligence, algorithms, cyber security, Internet of Things

Approach: Policy brief

Main findings: Digital information, propaganda, and strategic misinformation are used to weaken democracies, embarrass governments and politicians, scuttle diplomacy, or justify conflict. Cybersecurity is not only about protecting infrastructure or safeguarding information; it also involves protecting what we know and how we know it.