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**Countering misinformation:
Strategies, challenges, and uncertainties**

**Falschinformationen entgegenwirken:
Strategien, Herausforderungen und Unsicherheiten**

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Fehlinformationen entgegenwirken: Strategien, Herausforderungen und Unsicherheiten

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1. Introduction

Misinformation has always been an inevitable part of human communication, but for several reasons it seems to have become increasingly problematic for democratic societies in recent years: First, the Internet and social media, in particular, make it easy to spread misinformation of any kind, be it deliberately or accidentally. Second, especially with the rise of right-wing populism in many places, political actors have never been so eager to call the news “fake,” which results in uncertainty among the public as to which sources and information can still be trusted. Third, and related to this, the increasing polarization of positions in society seems to make it almost impossible to share a “common truth.” In consequence, misinformation is more visible these days, and people seem to be more susceptible to it than ever before, which has led scholars and journalists to declare this an era of post-truth (e.g., Lewandowsky, Ecker, & Cook, 2017).

For communication scholars, these developments touch on the very basis of our discipline. Consequently, researchers all over the world have concerned themselves with the magnitude of misinformation and its manifestations such as fake news, conspiracy theories, or disinformation. Some have put forward conceptualizations of these different forms of misinformation (e.g., Egelhofer & Lecheler, 2019), and empirically, the research has mostly focused on the spread of misinformation in the course of specific events such as election campaigns (e.g., Allcott & Gentzkow, 2017).

Less attention has been paid to the question of how misinformation can be effectively countered. This special issue aims to shed light on the effectiveness of countering strategies in the context of misinformation and its various forms, and the articles it contains place the focus on how misinformation can be effectively combated from different perspectives. Before we introduce the contributions, we want to briefly revise what we mean by different forms of misinformation, why countering is important, and what the research on countering strategies has shown to date.

2. What is misinformation and why does it need countering?

When dealing with the question of how to counter misinformation, it is essential to define what kind of information actually needs countering. This might sound trivial, but it is important for at least two reasons: First, there are many terms and definitions that encompass the phenomenon of misinformation (including *fake news*, rumors, and conspiracy theories, to name a few), and they are not all necessarily in agreement. Second, countering strategies might be dependent on the type of misinformation we are looking at, for instance, its format, the communicative context, or the veracity of its content. At this point, we will not further engage in the more encompassing question of whether there actually is such a thing as true information, but we agree with Southwell, Thorson, and Sheble's (2018) understanding that misinformation is "a category of claim for which there is at least substantial disagreement (or even consensus rejection) when judged as to truth value among the widest feasible range of observers" (p. 3). Consequently, misinformation – and thus information that needs countering – is a message that can mislead receivers, at least relative to what they would have believed after being exposed to more accurate information (see also Stahl, 2006). In that sense, most definitions of misinformation incorporate both factually false as well as misleading information (e.g., Bakir & McStay, 2018; Egelhofer & Lecheler, 2019; Lewandowsky et al., 2017).

Most scholars agree on the definition of disinformation as intentionally shared misinformation either for political or economic reasons (e.g., click-baiting). On this basis, Egelhofer and Lecheler (2019) define *fake news* as a specific type of disinformation that mimics real journalistic content (see also Horne & Adali, 2017; Nelson & Taneja, 2018; Zimmermann & Kohring, 2018). Their three definitory aspects of fake news (low in facticity, intention to deceive, journalistic format) allow them to distinguish this information type from other forms of misinformation, for example, poor journalism or news satire.

When it comes to research on combating false information, misinformation as the most encompassing term for factually false or strongly misleading information has come into focus (e.g., Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012; Southwell et al., 2018). From a normative standpoint, the ultimate goal behind combating misinformation is to provide true, factual, and reliable information that citizens can base their decisions on, and to wipe out false or strongly misleading information that leads to incorrect beliefs. In that sense, the questions regarding whether misinformation is shared intentionally or not, whether it mimics journalistic content or not, and whether its goal is to deceive or not are of secondary importance. However, the specific type of misinformation might be of relevance when we look at specific countering strategies. For example, literacy programs may aim at people's ability to see through *fake news* and its specific characteristics. In addition, disinformation might be harder to correct because the source that deliberately spreads false information will most likely continue to do so even though he/she knows the information is false.

Finally, the question regarding whether the information is factually false or strongly misleading combined with its complexity influences correction success: Psychological research on debunking strategies has shown that corrections can be

ineffective when the accurate information is more complex than the false information, or when it has no “true” counterpart.

Lastly, and importantly, following Thorson, Sheble, and Southwell (2018), we want to stress the importance of distinguishing between false information, on the one hand, and false beliefs, on the other hand. As they point out, not all misinformation causes misperceptions and not all misperceptions are based on misinformation. Drawing from this distinction, we propose classifying correction attempts based on whether they aim at preventing misperceptions arising from contact with misinformation (*ex ante* strategies), or whether they try to reverse misperceptions that have already been formed based on misinformation (*ex post* strategies).

3. Why do we fall for misinformation?

When looking at ways to counter misinformation, inevitably, we need to look at why and under which circumstances people choose to accept information as true or false in the first place. One of the most decisive factors for determining whether information is judged to be reliable (and, consequently, whether later correction attempts may be successful or not) are individual characteristics and the motivations of the receiver. A key moderator in this context that has been identified by several studies is how well a message corresponds with one’s own beliefs (e.g., Kahne & Bowyer, 2017; Wyer, 1974). People tend to readily accept information that fits their world view or that confirms their preexisting attitudes, but are highly skeptical of contrasting information – a notion that has been explained by motivated reasoning and a reduction in cognitive dissonance (Jerit & Barabas, 2012; Hameleers in this special issue; Kahne & Bowyer, 2017; Taber & Lodge, 2006). In this regard, strong partisanship is particularly challenging when attempting to counter political misinformation.

Apart from these individual characteristics, message characteristics play an important role for accuracy perceptions. Especially message valence has been shown to be connected to perceived credibility, with negative information being judged as more credible than positive information is (e.g., Hilbig, 2012; Koch & Peter, 2017). Importantly, some studies have shown that fake news content is more negative than real news is and that it often targets negative emotions (Bakir & McStay, 2017; Horne & Adali, 2017; Zollo et al., 2015).

Moreover, the source of the misinformation can be decisive for its acceptance. Drawing from persuasion research, there are several factors that lead to more trust in a given source such as similarity, expertise, or attractiveness (Stiff & Mongeau, 2003). The perceived trustworthiness of a source, in turn, affects the perceived credibility of the message. Thus, when a message stems from a credible source, recipients tend to believe the message and the persuasiveness of the message increases (Hovland, Janis, & Kelley, 1953; Hovland & Weiss, 1951; Koch & Zerback, 2013). This is even more relevant as a lot of misinformation is disseminated through social media and might be shared by friends and peers.

Thus, even though different forms of misinformation are by no means a new phenomenon, modern media environments seem to have made it a more pressing problem for multiple reasons. First, information sources have multiplied and so has the

information load available to the individual. Consequently, the way in which people process information has changed and heuristics have become more important to gain and make sense of information (Horne & Adali, 2017; Metzger & Flanagin, 2013). Moreover, the Internet has challenged mainstream media's gatekeeping function by giving everybody the chance to spread information to a larger audience. Through the Internet in general and social media in particular, any information – accurate or not – can be disseminated easily, quickly, and cost-effectively (Allcott & Gentzkow, 2017). Personal opinions of individuals, cat videos, and *fake news* website posts appear in the Facebook timeline alongside classic news articles, which makes it increasingly difficult for recipients to distinguish between facts and false information (Tandoc, Lim, & Ling, 2018).

4. Countering misinformation: Potentials and pitfalls

As outlined above, much literature has dealt with the definition, spread, and normative implications of mis- and disinformation. Considerably less research has looked at how to effectively combat such false information. Generally, two strands of countering strategies can be distinguished, which we will further call *ex post* and *ex ante* strategies. *Ex post* debunking strategies via corrections come into play when “the damage is done,” meaning that research in this area has examined how misinformation can be effectively corrected *after* people have accepted it as true. Studies in this context have mostly concentrated on scientific or health myths (for an overview see Chan, Jones, Hall Jamieson, & Albarracín, 2017), but some authors have also explored counter-strategies to politically motivated misinformation (Southwell et al., 2018; Hameleers, in this special issue). Research on the subject has shown that correcting misinformation is a difficult task indeed, as some approaches seem to be not only ineffective but even detrimental (e.g., Nyhan & Reifler, 2010; Peter & Koch, 2016; Thorson, 2016).

Ex ante strategies, in contrast, deal with how people can be educated in such a way that they are able to detect misinformation when encountering it and thus can be shielded from its detrimental impact in the first place. Research in this area includes studies that focus on people's perception of what misinformation is or how its multiple forms manifest (e.g., Kleis Nielsen & Graves, 2017), what strategies they use to fact-check (see the contribution of Freiling in this special issue), and how awareness of misinformation can be raised via prevention strategies such as pre-bunking and media literacy (Boudewyns et al., 2018; Cook, Lewandowsky, & Ecker, 2017).

4.1 *Ex post* debunking via corrections

Research has shown that debunking misinformation *ex post* is a complex process that depends on several factors and researchers do not yet entirely understand the underlying psychological mechanisms involved (Chan et al., 2017; Ecker, Lewandowsky, & Apai, 2011; Lewandowsky et al., 2012; Radechovsky, Berger, and Wolling in this special issue). Many debunking strategies seem to be rather ineffective and some can even backfire and strengthen the belief in the original misin-

formation (Lewandowsky et al., 2017; Sanna, Schwarz, & Stocker, 2002). However, researchers have tested different techniques and identified various factors that moderate these effects.

The main challenge when it comes to correcting misinformation is its persistence in the memory. Once a piece of false information is acquired and encoded, its influence continues, even if it has been corrected. A well-known example of the difficulty in correcting erroneous information concerns the measles, mumps, and rubella (MMR) vaccine and autism controversy (e.g., Poland & Spier, 2010; Ratzan, 2010): In 1998, *The Lancet* published a case series study that erroneously claimed to have found a link between the MMR vaccination and autism. Although the study turned out to be fraudulent and improperly conducted, and the research carried out after this publication did not find any indications that linked autism to the vaccination, many parents continued to believe that MMR vaccines could cause autism (Poland & Spier, 2010). This erroneous belief persisted even though many disclaimer campaigns were launched that tried to debunk the false claim. The consequences of this failed debunking turned out to be rather severe: The controversy led to a decrease in MMR vaccine uptake and, in turn, to an increase in mumps and measles infections, leading to preventable diseases and deaths (Hargreaves, Lewis, & Speers, 2003; Nyhan, Reifler, Richey, & Freed, 2014; Poland & Spier, 2010). Studies also revealed negative spillovers onto other vaccines (Chang, 2018). The case impressively shows the fatal consequences when misinformation spreads and also illustrates the “societal cost of misinformation”: the money spent on follow-up studies and information campaigns to debunk information that is factually incorrect (Lewandowsky et al., 2012, p. 107).

Although more than 20 years have passed since the paper erroneously linking the MMR vaccination to autism was published, the effects of this piece of misinformation still affect vaccine discussions today (Chang, 2018). In particular, research shows that information initially presumed to be correct that later turns out to be incorrect continues to influence recipients’ reasoning and later judgments, even after the misinformation has been corrected (Ecker, Lewandowsky, & Tang, 2010; Johnson & Seifert, 1994; Seifert, 2002). This phenomenon is known as the *continued influence effect* and it is one of the main reasons why corrections fail to work: Even if misleading or false information is corrected, people have been shown to still use this misinformation during later reasoning (Johnson & Seifert, 1994). This effect is also observed when people understand and remember the retraction.

Research has come up with different explanations for the *continued influence effect* (Connor Desai, 2018). First, it might be based on false memory recall and recognition: People remember the original (wrong) information and not its correction and, therefore, continue to believe the misinformation. Second, people are motivated to ignore a correction (and continue to believe the misinformation) when the correction is inconsistent with their own beliefs and personal ideology or when the source of the correction is perceived as not trustworthy. Third, the corrective message might be perceived as inconclusive and not convincing (Connor Desai, 2018).

While the continued influence effect explains why debunking misinformation is often ineffective, efforts to correct misinformation can even backfire and reinforce recipients' beliefs in the original false information (Skurnik, Yoon, Park, & Schwarz, 2005). These *backfire effects* can be explained by two different mechanisms. The first is based on familiarity: Attempts to correct misinformation often pick up the original false statement, present it to the reader, and debunk it afterwards (Lewandowsky et al., 2012; Nyhan & Reifler, 2010). This procedure, however, repeats the misinformation, which increases its processing fluency; that is, it is easier for recipients to process this piece of information. This, in turn, leads to a feeling of familiarity and recipients tend to misattribute this feeling to the credibility of the statement (also known as the *illusion of truth effect*, Bornstein, 1989; Reber & Schwarz, 1999). In short, the repeated presentation of misinformation enhances its credibility – even when it has been clearly debunked. A second cognitive process that can cause backfire effects is triggered when rectifications are made by using the false claim with a negation (e.g., “MMR vaccines do not cause autism”). Here, people sometimes just remember some specific core elements of this sentence (e.g., “MMR vaccines” and “autism”) that are later put together incorrectly (via the omission of the negation) in the memory (Nyhan & Reifler, 2012). Thus, recipients sometimes just remember the false statement and forget about the rectification (Peter & Koch, 2016).

Although the above summary paints a rather pessimistic picture of *ex post* debunking strategies, there are also some techniques that have proven to be quite successful. Cook and Lewandowsky (2011, p. 1) point out that effective debunking requires at least three major elements:

“First, the refutation must focus on core facts rather than the myth to avoid the misinformation becoming more familiar. Second, any mention of a myth should be preceded by explicit warnings to notify the reader that the upcoming information is false. Finally, the refutation should include an alternative explanation that accounts for important qualities in the original misinformation.”

4.2 *Ex ante* prevention strategies

As the previous section has shown, it is fairly hard to correct misinformation once an individual has accepted it as true. Consequently, another branch of research has looked at intervention strategies that are targeted at how people can be prevented from forming their judgments based on false claims in the first place. In addition, detecting misinformation when encountering it can prevent individuals from spreading false information further. Most of the research in the area is concerned with raising people's awareness of a) the fact that they may encounter potential false or misleading information, especially online, and b) specific characteristics that that type of misinformation may possess and how to detect it. Some intervention strategies have also been employed directly by social media platforms: Facebook, for instance, tested (and dropped) several strategies and features to combat misinformation that mostly targeted the user's ability to recognize misinformation at the time of the encounter such as employing warning la-

bels (Mena, 2019) and a related article function that should provide the user with further information on a topic (Bode & Varga, 2015).

To gain insight into what people actually understand to be misinformation and the aligned concepts, Kleis Nielsen and Graves (2017) conducted focus groups to assess people's understanding of the term *fake news*. While most of their participants agreed that the term had been weaponized to discredit the news media, they also connected it to poor or biased journalism. In addition, some expressed how they understood *fake news* as news that they personally held no trust in. Both notions seem to be an expression of people's growing frustration with and distrust in the mainstream media, and of an increasingly flexible or at least subjective understanding of truth. These results are important as they may provide insights into why journalistic fact-checking and corrections through mainstream media sources may be ineffective, at least for some sections of society: "Decreased trust could then create a vicious cycle in which people resist corrections issued from those same institutions" (Thorson et al., 2018, p. 290). Therefore, one way of countering misinformation on a macro level is certainly to strengthen trust in institutions whose role is to provide reliable information in the first place (e.g., science and journalism).

Furthermore, the results underline the importance of carefully defining and differentiating between different types of misinformation and analyzing their specifics in order to build literacy programs based on these characteristics. Horne and Adali (2017) compared the language and style of different information types and found that fake news clearly differed from real news in several ways. Most importantly, fake news presents its main claim in the title, allowing the reader to grasp its content without reading the actual article, which resonates well with heuristic information processing in social networks. In contrast, it seems that actual news does the opposite and adopts click-baiting behavior to raise the readers' interest in the news article (Kuiken, Schuth, Spitters, & Marx, 2017).

Continuous research on what misinformation and its various forms look like and on who spreads it is especially important as groundwork for building intervention strategies that will help individuals to identify misinformation. One avenue of research has looked at the effects of what has been labeled "inoculation" or "pre-bunking" (Cook et al., 2017; Compton & Pfau, 2005). Inoculation theory is rooted in persuasion research and posits that individuals can be made resistant against specific messages by warning them about potential persuasive attacks and providing them with information on what these attacks will look like (e.g., what arguments will be used, what sources will be cited; McGuire & Papageorgis, 1961). A meta-analysis has found inoculation messages to be more effective than messages that only convey accurate information (Banas & Rain, 2010). In addition, Cook and colleagues (2017) found inoculation about misinformation regarding global warming to be effective in neutralizing its effects.

In a more encompassing way, media literacy programs are targeted at educating citizens about media and communication practices, media use and content, and media effects (Potter, 2018). Several initiatives such as the news literacy project (newslit.org) work with journalists as well as platforms to develop and constantly update such programs. Indeed, Kahne and Bowyer (2017) were able to

show that while political knowledge among adolescents actually increased motivated reasoning and thus the acceptance of misinformation that aligned with their prior political beliefs, media literacy led to more resistance to misinformation and more acceptance of evidence-based information.

Certainly, one important avenue in combating misinformation is to stop it from being disseminated in the first place – a strategy that goes beyond the scope of our special issue. In this context, Twitter has lately gained public attention by banning political advertising altogether, with its founder Jack Dorsey reasoning that its mission to combat misinformation would be ludicrous if political actors could simply buy their way in to target specific users with whatever message they choose (jack, 2019 October 30).

5. The present special issue

Even though misinformation may not be a new phenomenon, it has certainly gained traction both in society as well as among scientists: Changes in media environments and the way we encounter, consume, and interpret information have made it a more prevalent problem because it is easier to spread misinformation in its various forms, but also because it is more dangerous to fall for it. As elaborated above, there might not only be one solution for effectively countering misinformation and countering strategies need to be tailored to the specific content that needs correction. Most importantly, both *ex ante* and *ex post* strategies need to be combined in order to maximize the impact of countering. The contributions to this special issue shed light on this topic from both perspectives.

The first paper by Jan P. Kluck, Leonie Rösner, and Nicole C. Krämer focuses on ex-post debunking strategies. The authors examine the effects of numerical user representations and user comments on the credibility of false news posts on social media. They report the results of an online experiment using a 3 × 3 between-subjects design. They tested how a numerical credibility rating (implemented as a star rating that depicts the average value of other users' evaluations) and user comments on the credibility of the article affected the participants' perceived credibility of a news story on social media as well as their willingness to share it publicly or privately. Both factors were either presented with a positive or negative valence (or were absent in the control condition). The experiment shows that user comments doubting the credibility of an article affect its perceived credibility and thus indirectly reduce the willingness to share it. However, comments that confirmed the credibility of the news post did not affect these perceptions. Thus, the study indicates that user comments that express concerns regarding an article's credibility affect the recipients' reasoning more than positive comments do. Moreover, the study revealed that the numerical credibility rating did not affect the perceived credibility of the news post and the willingness to share it. Thus, the paper underlines what we discussed above: Countering misinformation is a complex process that depends on several factors – and we do not know and understand these factors entirely.

In the context of *ex ante* countering, Isabelle Freiling investigates users' strategies to detect misinformation in online social networks. Through 15 qualitative

interviews, she provides valuable insights into how users evaluate the information they encounter in social networks and under which circumstances they might be prone to misinformation. Participants were asked to think aloud while evaluating the accuracy of information provided by Facebook posts, and they were additionally asked to reflect on their behavior retrospectively. First, the participants scrolled through their personal timelines to ensure that relevant cues were present such as their relationship with the person who had shared the post. After this, they were provided with five additional posts, three of which contained false information. Even though the setting represents scenarios where users actively question the validity of information, the results help us to understand which strategies they apply to reach a conclusion and which cues are important. Overall, Freiling identifies three major strategies: (1) *searching for more*, which was applied when the topic was interesting or important; (2) *knowledge carries weight*, meaning that a message is deemed true when it fits prior knowledge or the source is well known; and (3) *every detail needs to fit*, which describes a thorough consideration of every aspect of the post.

Johanna Radechovsky, Priscila Berger, and Jens Wolling contribute to the special issue with a paper on the effectiveness of journalists' attempts to correct recipients' misperceptions of different issues. Using an online survey, the authors examined the effectiveness of six different clarifications. Thus, in addition to the experimental approach of the first study and the qualitative interviews in the second paper, this contribution offers a third methodological perspective to examine the countering of misinformation. The participants read short statements on a specific topic (two of them were correct, while the other four were at least partially false). The participants were then asked to assess the accuracy of the six statements. Afterwards, the authors presented each participant with a rectification of one of the incorrect statements that was initially assessed as being true by the participant (or that the participant was indecisive about). The study shows that participants adjusted their assessment of the accuracy of the statements (in five out of six cases) in line with the rectification. In doing so, this paper also focuses on *ex post* strategies and highlights the potential of rectifications to correct misinformation.

In his contribution, Michael Hameleers tests the effectiveness of fact-checks for refuting different kinds of online misinformation *ex post*. He collected data from both the US and the Netherlands and took partisanship into account. Importantly, he looks at different forms of misinformation and compares messages that use fraudulent empirical evidence with those that rely on personal testimony. This is novel insofar as most prior studies have tested different types of corrections but have not systematically varied the content of the presented misinformation. Hameleers finds that both types of misinformation were judged as equally credible prior to debunking, which he ties to recent trends in post-factual relativism, meaning that evidence-based information might no longer be judged as more credible than anecdotal evidence is. On a more positive note, he finds fact-checking to be effective in countering both types of misinformation, adding to evidence that *ex post* strategies are not as ineffective as the early research might have suggested. His findings further suggest including national contexts in research on

countering, as he found fact-checking to be more effective in the Netherlands than in the USA.

Finally, a research report by Philipp Müller and Anne Schulz completes this special issue. Using a quota sample of German Internet users, they shed light on people's perceptions of Fakebook's role in the context of *fake news* and the aligned debate. The results indicate that the evaluation of Facebook as a reliable news source is not linked to the overall amount of *fake news* that users report having encountered, but to where they think this stems from: Individuals who see traditional news media as the main source of *fake news* evaluate Facebook more positively, whereas users who relate them to alternative sources are more skeptical of Facebook as a news source and report engaging in verification behaviors more frequently. Müller and Schulz discuss their findings against the backdrop of audience polarization, which suggests that people who distrust information provided by traditional news outlets are more drawn to alternative sources and are less skeptical of information provided through intermediaries such as Facebook.

Taken together, the contributions of this special issue expand the research on countering misinformation, both in the areas of *ex ante* and *ex post* strategies. Particularly, they highlight the importance of tackling the topic from different perspectives and with different methodological approaches.

References

- Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, 31, 211–236. <https://doi.org/10.1257/jep.31.2.211>
- Bakir, V., & McStay, A. (2018). Fake News and The Economy of Emotions. *Digital Journalism*, 6, 154–175. <https://doi.org/10.1080/21670811.2017.1345645>
- Banas, J. A., & Rains, S. A. (2010). A meta-analysis of research on inoculation theory. *Communication Monographs*, 77, 281–311. <https://doi.org/10.1080/03637751003758193>
- Bode, L., & Varga, E. K. (2015). In related news, that was wrong: The correction of misinformation through related stories functionality in social media. *Journal of Communication*, 65, 619–638. <https://doi.org/10.1111/jcom.12166>
- Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968–1987. *Psychological Bulletin*, 106, 265–289.
- Boudewyns, V., Southwell, B. G., Betts, K. R., Gupta, C. S., Paquin, R. S., O'Donoghue, A. C., & Vaszquez, N. (2018). Awareness of misinformation in health-related advertising. In B. Southwell, E. A. Thorson, & L. Sheble (Eds.), *Misinformation and mass audiences* (pp. 35–50). Austin: University of Texas Press.
- Chan, M.S., Jones, C.R., Hall Jamieson, K., & Albarraçin, D. (2017). Debunking: A meta-analysis of the psychological efficacy of messages countering misinformation. *Psychological Science*, 28, 1531–1546. <https://doi.org/10.1177/0956797617714579>
- Chang, L. V. (2018). Information, education, and health behaviors: Evidence from the MMR vaccine autism controversy. *Health Economics*, 27(7), 1043–1062. <https://doi.org/10.1002/hec.3645>
- Compton, J. A., & Pfau, M. (2005). Inoculation theory of resistance to influence at maturity: Recent progress in theory development and application and suggestions for future

- research. *Annals of the International Communication Association*, 29, 97-146. <https://doi.org/10.1080/23808985.2005.11679045>
- Cook, J., & Lewandowsky, S. (2011). The Debunking Handbook. Retrieved from https://skepticalscience.com/docs/Debunking_Handbook.pdf
- Cook J., Lewandowsky, S., & Ecker, U. K. H. (2017). Neutralizing misinformation through inoculation: Exposing misleading argumentation techniques reduces their influence. *PloS One*, 12, 1-21. <https://doi.org/10.1371/journal.pone.0175799>
- Connor Desai, S. (2018). (Dis)continuing the continued influence effect of misinformation. Doctoral thesis, University of London. Retrieved from <http://openaccess.city.ac.uk/id/eprint/21551/1/Connor%20Desai%2C%20Saoirse.pdf>
- Ecker, U. K. H., Lewandowsky, S., & Apai, J. (2011). Terrorists brought down the plane! —No, actually it was a technical fault: Processing corrections of emotive information. *Quarterly Journal of Experimental Psychology*, 64, 283–310.
- 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, 1087–1100.
- Egelhofer, J.L. & Lecheler, S. (2019). Fake news as a two-dimensional phenomenon: a framework and research agenda. *Annals of the International Communication Association*, 43, 97–116. <https://doi.org/10.1080/23808985.2019.1602782>
- Hargreaves, I., Lewis, J., & Speers, T. (2003). *Towards a better map: Science, the public and the media*. London, UK: Economic and Social Research Council.
- Hilbig, B. E. (2012). How framing statistical statements affects subjective veracity: Validation and application of a multinomial model for judgments of truth. *Cognition* 125, 37–48. <https://doi.org/10.1016/j.cognition.2012.06.009>
- Horne, B. D., & Adali, S. (2017). This just in: Fake news packs a lot in title, uses simpler, repetitive content in text body, more similar to satire than real news. Retrieved from <https://arxiv.org/abs/1703.09398>
- Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion. Psychological studies of opinion change*. New Haven, CT: Yale University Press.
- Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly*, 15, 635–650. <https://doi.org/10.1086/266350>
- jack. (2019, October 30). For instance, it's not credible for us to say: "We're working hard to stop people from gaming our systems to spread misleading info, buuut if someone pays us to target and force people to see their political ad...well...they can say whatever they want! 😊" [Tweet]. Retrieved from: <https://twitter.com/jack/status/1189634371407380480>
- Jerit, J., & Barabas, J. (2012). Partisan perceptual bias and the information environment. *The Journal of Politics*, 74, 672–684. <https://doi.org/10.1017/S0022381612000187>.
- 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, 1420–1436. <https://doi.org/10.1037/0278-7393.20.6.1420>
- 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, 3–34. <https://doi.org/10.3102/0002831216679817>
- Kleis Nielsen, R., & Graves, L. (2017). "News you don't believe": Audience perspectives on fake news. Retrieved from https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2017-10/Nielsen%26Graves_factsheet_1710v3_FINAL_download.pdf

- Koch, T., & Peter, C. (2017). Effects of equivalence framing on the perceived truth of political messages and the trustworthiness of politicians. *Public Opinion Quarterly*, *81*, 847–865. <https://doi.org/10.1093/poq/nfx019>
- Koch, T., & Zerback, T. (2013). Helpful or harmful. How frequent repetition affects perceived statement credibility. *Journal of Communication*, *63*(6), 993–1010. <https://doi.org/10.1111/jcom.12063>
- Kuiken, J., Schuth, A., Spitters, M., & Marx, M. (2017). Effective headlines of newspaper articles in a digital environment. *Digital Journalism*, *5*, 1300–1314. <https://doi.org/10.1080/21670811.2017.1279978>
- Lewandowsky, S., Ecker, U. K., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the “post-truth” era. *Journal of Applied Research in Memory and Cognition*, *6*, 353–369. <https://doi.org/10.1016/j.jarmac.2017.07.008>
- 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*, 106–131. <https://doi.org/10.1177/1529100612451018>
- McGuire, W. J., & Papageorgis, D. (1961). The relative efficacy of various types of prior belief-defense in producing immunity against persuasion. *The Journal of Abnormal and Social Psychology*, *62*, 327–337.
- Mena, P. (2019). Cleaning up social media: The effect of warning labels on likelihood of sharing false news on Facebook. *Policy & Internet*, Advance Online Publication. <https://doi.org/10.1002/poi3.214>
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, *59*, 210–220. <https://doi.org/10.1016/j.pragma.2013.07.012>
- Nelson, J. L., & Taneja, H. (2018). The small, disloyal fake news audience: The role of audience availability in fake news consumption. *New Media & Society*, *20*, 3720–3737. <https://doi.org/10.1177/1461444818758715>
- Nyhan, B., & Reifler, J. (2010). When corrections fail: The persistence of political misperceptions. *Political Behavior*, *32*, 303–330. <https://doi.org/10.1007/s11109-010-9112-2>
- Nyhan, B., & Reifler, J. (2012). *Misinformation and fact-checking: Research findings from social science*. Retrieved from https://www.dartmouth.edu/~nyhan/Misinformation_and_Fact-checking.pdf
- Nyhan, B., Reifler, J., Richey, S., & Freed, G. L. (2014). Effective messages in vaccine promotion: A randomized trial. *Pediatrics*, *133*, 835–842. <https://doi.org/10.1016/j.pediatrics.2011.11.112>
- 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*, 3–25. <https://doi.org/10.1177/1075547015613523>
- Poland, G. A., & Spier, R. (2010). Fear, misinformation, and innumerates: How the Wakefield paper, the press, and advocacy groups damaged the public health. *Vaccine*, *28*, 2361–2362. <https://doi.org/10.1016/j.vaccine.2010.02.052>
- Potter, W. J. (2018). *Media literacy*. London, UK: Sage Publications.
- Ratzan, S. C. (2010). Editorial: Setting the record straight: Vaccines, autism, and The Lancet. *Journal of Health Communication*, *15*, 237–239. <https://doi.org/10.1080/10810731003780714>

- Reber, R., & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition*, 8, 338–342. <https://doi.org/10.1006/ccog.1999.0386>
- Sanna, L. J., Schwarz, N., & Stocker, S. L. (2002). When debiasing backfires: Accessible content and accessibility experiences in debiasing hindsight. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 28, 497–502. <https://doi.org/10.1037/0278-7393.28.3.497>
- Seifert, C. M. (2002). The continued influence of misinformation in memory: What makes a correction effective? *Psychology of Learning and Motivation*, 41, 265–292. [https://doi.org/10.1016/S0079-7421\(02\)80009-3](https://doi.org/10.1016/S0079-7421(02)80009-3)
- Skurnik, I., Yoon, C., Park, D. C., & Schwarz, N. (2005). How warnings about false claims become recommendations. *Journal of Consumer Research*, 31, 713–724. <https://doi.org/10.1086/426605>
- Southwell, B., Thorson, E. A., & Sheble L. (2018). Introduction: Misinformation among mass audiences as a focus for inquiry. In B. Southwell, E. A. Thorson, & L. Sheble (Eds.), *Misinformation and mass audiences* (pp. 1–11). Austin: University of Texas Press.
- Stahl, B. C. (2006). On the difference or equality of information, misinformation, and disinformation: A critical research perspective. *Informing Science Journal*, 9, 83–69.
- Stiff, J. B., & Mongeau, P. A. (2003). *Persuasive communication*. New York: Guilford Press.
- Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, 50, 755–769. <https://doi.org/10.1111/j.1540-5907.2006.00214.x>
- Tandoc, E. C. J., Lim, Z. W., & Ling, R. (2018). Defining “fake news”. *Digital Journalism*, 6, 137–153. <https://doi.org/10.1080/21670811.2017.1360143>
- Thorson, E. (2016). Belief echoes: The persistent effects of corrected misinformation. *Political Communication*, 33, 460–480. <https://doi.org/10.1080/10584609.2015.1102187>
- Thorson, E. A., Sheble, L., & Southwell, B. (2018). Conclusion: An agenda for misinformation research. In B. Southwell, E. A. Thorson, & L. Sheble (Eds.), *Misinformation and mass audiences* (pp. 1289–293). Austin: University of Texas Press.
- Wyer, R. S. (1974). *Cognitive organization and change: An information processing approach*. Hillsdale, NJ: Erlbaum.
- Zimmermann, F., & Kohring, M. (2018). „Fake News“ als aktuelle Desinformation. Systematische Bestimmung eines heterogenen Begriffs [“Fake news” as current disinformation. Systematic definition of a heterogenous concept]. *Medien & Kommunikationswissenschaft*, 66, 526–541.
- Zollo, F., Novak, P. K., Del Vicario, M., Bessi, A., Mozetic, I., Scala, A., Caldarelli, G., & Quattrociocchi, W. (2015). Emotional dynamics in the age of misinformation. *PLoS ONE*, 10. <https://doi.org/10.1371/journal.pone.0138740>