Supplementary Materials for

The science of fake news

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Supporting Materials

This section provides a brief overview of literature supporting each section of “The science of fake news.”

1. WHAT IS FAKE NEWS?

The term “fake news” has been in use for more than a century. An example of early use of the term appears in a piece in Harper’s weekly in 1925 titled “Fake News and the Public”, which bemoans the role that the newswires play in the rapid and uncritical dissemination of misinformation (1). For a more thorough and nuanced set of definitions regarding the various types of misinformation, see (2). We note that (3, 4) have advocated dropping the term “fake news” because of recent efforts by political figures to use it to discredit unsympathetic news stories. Such efforts are indeed a concern, and we have no intrinsic objection to the term “false news. However, for three reasons, we have elected to retain the term “fake news.” First, it has a useful scientific meaning (the intersection of misinformation and mimicry of traditional news media). Second, its very prominent recent misuse has a salutary side effect of focusing attention on the more general problem of misinformation. Third, while the term “false news” avoids the weaponization problem in the near-term, should the effort to shift the popular and scholarly nomenclature toward “false news” succeed, it would likely be subject to the same sort of weaponization that we have seen with “fake news.

2. THE HISTORICAL SETTING

For historical background on the rise of journalistic norms in the U.S. after World War I, see (5). Popular treatments of the geographic polarization of partisanship are offered by (6, 7); see (8) for a more detailed statistical analysis of geographic polarization of presidential voting behavior. Literature on the consequences of homogeneous social networks on tolerance, attitudinal polarization, uncritical acceptance of ideologically compatible news, and closure to new information includes (9–13). For a detailed review of social and political conditions giving rise to the spread of fake news, see Rand’s recent report on “truth decay” (14)

3. PREVALENCE AND IMPACT

Fake news has received substantial media attention in the last year; an example is (15), which examines examples of fake news stories that received widespread attention through sharing on Facebook. Qiu et al. (16) is a scholarly examination of virality of low-quality information online. There is empirical evidence that misinformation is as likely to go viral as reliable news on both Facebook (16) and Twitter (17), as well as be retweeted more frequently and more rapidly than true information, especially when the information involves politics (4); (18) discusses the spread
of emotional information. Once misinformation is believed to be true, it is difficult to correct (19).

The problem may be disproportionately attributable to the activities of a few hundred sites—330 by one conservative estimate (20).

The magnitude of the impact of fake news is currently uncertain. By way of analogy, there is an energetic debate in the political science literature on the role that campaigns play. Vavreck (21) highlights the role that messaging in political campaigns play and (22) catalyzed a large literature on the effectiveness of get-out-the-vote efforts. However, (23), in a meta-analysis, examines 49 field experiments, suggesting generally small to nonexistent persuasive effects from campaign contact.

Examples from the literature on the impact of media on cynicism, apathy, and encouraging extremism include (24–26).

4. EMPOWERING INDIVIDUALS

Foundational literature on the use of media consumption for “gratification” includes (27, 28). There is a vast literature on selective exposure and confirmation bias (29); examples that focus on news consumption are (30, 31).

The role of familiarity and fluency in cognition has been examined in (32, 33) for evidence that familiarity (via repetition) increases the perceived accuracy of fake news see (34). In terms of literature regarding fact-checking see (35, 36), and in a political context (37, 38). The possibility that presenting misinformation alongside the correction hinders is presented in (39, 40), while (41) suggests that repeating misinformation can enhance the cognitive impact of a retraction.

Examples of training of critical information skills in primary and secondary schools includes (42–45), while (46) highlights the possibility that emphasis on fake news risks undermining the credibility of real news outlets. The broader concept of media literacy is treated well in (47–49).

The role of incentives in confronting preconceptions is examined in (50). The importance of peers in cognition is explored in (51, 52).

5. PLATFORM-BASED DETECTION AND INTERVENTION: ALGORITHMS AND BOTS

Media reports on fake news that highlight the relatively low cost of producing fake news sites include (15, 53, 54). Markiness et al. (55) examines the monetization of fake news content through online ads and social media.
The role that algorithms play in determining the information we see is examined in (56, 57). There is a large emerging literature on the vulnerability of platforms to manipulation (58–63), including evidence of the role played by social bots in the spread of misinformation (17). The effects of social bots in the 2016 American presidential election are discussed in (64) and for the French presidential election in (65, 66).

Examples of posts by platforms about steps they have taken to counter fake news include (67–70). Levin (71) critically evaluates Facebook’s efforts in this domain. Jasny et al. (72) examines the challenges of industry-academic collaboration.

Critical examinations of the role that media oligopolies played in the 20th century include (73–75).

CONCLUSION

Exemplary post-World War II research on propaganda includes (76–78); subsequent research revealing media effects on agenda setting, framing, and priming includes (79–85).

We note that our call to create a focal point of research around solving the problem of fake news is consistent with Watts’s call for a solution-oriented social science (86) and Neblo et al.’s call for a translational science of democracy (87).
References


