Digital Media and the Proliferation of Public Opinion Cues Online: Biases and Vulnerabilities in the New Attention Economy

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Abstract

Perceptions of public opinion can influence attitudes and behaviour. Studies based on experiments show that when people encounter aggregate cues, such as opinion polls, and exemplar cues, such as 'vox pop' interviews, they gain a sense of public consensus about policy issues and political actors, even if the cues are not representative of public opinion. Social media have given rise to new public opinion cues, such as 'likes,' shares, and comments, and these have even weaker links with real public opinion. However, these new cues activate powerful social endorsement affordances and, as a result, may influence perceptions of public opinion. We trace the effects of these new cues in the hybrid media system and explain how they constrain professional journalism's role as mediator of the public's attitudes. Social media cues can influence audiences' perceptions of news and politics. Journalists' use of social media cues in their reporting can also influence audience perceptions of politics and of journalism itself. The production and circulation of cues can be skewed by disinformation campaigns based on orchestrated botnets and commenting sock puppets. Due to their influence, fabricated public opinion cues on social media can render social media users, news audiences, and journalists more vulnerable to manipulation and deception.

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People's perceptions of the state of public opinion can influence important democratic decisions, including their likelihood of voting (Sudman, 1986) and donating to a campaign (Mutz, 1998), their choice of candidate (Ceci and Kain, 1982; Marsh, 1985), and their propensity to voice political opinions (Noelle-Neumann, 1974). Traditionally, professional journalists have played a privileged role in molding perceptions of public opinion, particularly by including in their coverage cues such as opinion polls or "vox pop" interviews. Research on the impact of these traditional cues has found they can affect audiences' perceptions of public consensus about policy issues and political actors (e.g., Brosius and Bathelt, 1994; Zerback, Koch and Krämer, 2015).

Crucially, technological change in newsrooms over the past decade, in particular the integration of social media logics into journalists' sourcing practices, has decentralized the production and circulation of public opinion cues. Many non-journalists or hybrid, not-quite-journalistic actors of various kinds now produce and circulate cues that reach wide audiences. Ordinary social media users, through their commenting, "liking," and sharing activity on platforms and news sites, leave traces of public sentiment that other social media users encounter. Platforms' algorithmic prioritization means that messages heavily laden with public opinion cues are more likely to surface in social media users' feeds (Twitter, no date; Bucher, 2012; Backstrom, 2013; Facebook, 2014, 2016; Westerwick, Johnson and Knobloch-Westerwick, 2017; Owen, 2019; Ho, 2020; Keller *et al.*, 2020). Professional journalists themselves often embed popularity cues from social media into their stories because such messages signal the popularity of political ideas, policies, and public figures (Chadwick, 2011a, 2011b; McGregor and Molyneux, 2020).

Although such cues may be unrepresentative of public opinion, being exposed to quantitative signals of popularity and the personal opinions of others – what have become known as "exemplar cues" – may have just as significant an impact on people's perceptions of public opinion as opinion polls and vox pops in journalistic content. In recent years, some researchers have started to investigate how the production and circulation of these social signals can be skewed, either by well-organized activists, or, more troublingly, by malicious actors, such as orchestrated botnets, purchased fake accounts, sock-puppet activity in online commenting, and disinformation campaigns by hostile foreign states (Woolley and Howard, 2018).

In this chapter, we explore these changes and discuss some of the challenges they present for the future of citizenship and democracy. We focus, in particular, on some newly emerging limits to professional journalism's privileged position as a mediator of the public's attitudes. We discuss what social scientists know about how people respond to opinion cues, the impact of cues on people's perceptions, and how these processes can expose citizens to manipulation and deception. Our approach here is mostly grounded in what researchers who use experimental methods have discovered about the effects of public opinion cues and how this knowledge is expanding in the new media environment in which public opinion is constructed and circulated.

Public Opinion Cues, News Organizations, and Editorial Gatekeeping

When broadcast and print media were dominant, news organizations were the main interpreters of the public's views on public affairs, and journalists had considerable control over the opinion cues to which audiences were exposed.

Straw polls began to feature in US newspapers in the early nineteenth century) (Crespi, 1980). From the 1930s onwards, newspapers developed closer relationships with emerging

polling companies, such as Gallup, through arrangements such as syndicated polls. Newspapers also developed "media sponsored polls" and, later on, "in-house polls" produced by papers' own polling teams (Brettschneider, 2012).

Media organizations have traditionally enjoyed considerable power over polling companies' output (Crespi, 1980). Polls funded by news outlets have been subject to editorial influence regarding topic and timing of publication. This means that audiences, too, have historically been dependent on news organizations' editorial gatekeeping decisions regarding the public opinion cues derived from polls.

Vox pops – defined here as interviews with non-expert citizens who have no direct link to the story at hand and who appear in news reports as expressions of opinion – have a long history, but have been a growing part of journalistic practice since the 1990s (Kleemans, Schaap and Hermans, 2017; Beckers, Walgrave and Van den Bulck, 2018). Vox pops are usually employed in line with commercial incentives and are not perceived by news editors as important for the democratic education of citizens. Indeed, the growing use of vox pops has been linked to the "tabloidization" of news caused by the increasing commercial pressures on newsrooms (Lefevere, de Swert and Walgrave, 2012, p. 14; Skovsgaard and van Dalen, 2013; Beckers, Walgrave and Van den Bulck, 2018, p. 2). Vox pops are not typically seen by editors as legitimate representations of public opinion. Instead, they usually serve a selective logic of tokenistic illustration rather than a more inclusive logic of the news as a vehicle for widespread public concerns (Lefevere, de Swert and Walgrave, 2012, p.14; Kleemans, Schaap and Hermans, 2017, p. 447).

Why Public Opinion Cues Matter

Public opinion cues matter because they are known to influence citizens' political decision-making. Noelle-Neumann's (1974) theory of the "spiral of silence" posited that people try to avoid the social ostracism they believe will arise if they speak out against the majority. People try to monitor the sentiment of public opinion and develop a "quasi-statistical sense" of prevailing consensus, but this sense relies heavily on media cues.

Polls

When individuals perceive recalled information to be applicable in a given situation, they rely upon that information when coming to judgements. This is the case for statistical information (Bar-Hillel, 1980), particularly polls in news about politics. For example, voters accurately recall political polls reported by news media (McAllister and Studlar, 1991)

Moreover, polls can have a direct impact on participants' perceptions of public opinion. For instance, Sonck and Loosveldt's experimental study (2010) found that participants exposed to polling information changed their estimates of public opinion in consistency with the polls they were shown. These changes could be observed both immediately after exposure and three weeks later.

Similar results have been found when polls are presented within a news article. (Zerback, Koch and Krämer, 2015) selectively exposed participants to polling information embedded within a fictional newspaper report on the development of a regional railway. The results indicated that participants' estimates of current public opinion during an immediate post-test were significantly impacted by the poll data (Zerback, Koch and Krämer, 2015, p. 9).

There is also evidence of so-called "bandwagon" and "underdog" effects. The bandwagon effect is when a voter's perception that public opinion is favourable toward a candidate or position leads that voter to add their support. The underdog effect entails the opposite situation, when a voter increases support for a candidate or position that polls portray as losing (Ceci and Kain, 1982; McAllister and Studlar, 1991). There are numerous hypotheses about the mechanisms underlying these influences. These include affective mechanisms that require low-information processing, such as self-satisfaction, social conformity, and a consensus heuristic (Lau and Redlawsk, 2001). Other proposed mechanisms are cognitive in nature and require higher levels of information processing effort, such as cognitive response theory and self-interest (for an overview see Hardmeier, 2008).

Vox Pops

When it comes to vox pops, research has pointed to an "exemplification effect": the pervasive tendency for news audiences to generalize the characteristics associated with a few "exemplars" to bigger populations. In the context of vox pops, the views of a handful of people – a tiny, unrepresentative sample – can shape how news consumers perceive broader public opinion. A number of mechanisms are thought to underlie this impact. For instance, cognitive processing shortcuts, known as "heuristics," may play a role, such as the "availability" heuristic, the "representativeness" heuristic, and the "similarity" heuristic (see Zillmann, 1999, pp. 70-71; Zerback and Fawzi, 2017, p. 5).

There is also some evidence that vox pops are even more influential on perceptions of public opinion than polls (Daschmann, 2000). Some researchers argue that the comparatively vivid nature of vox pop content and the illusion of random sampling such coverage conveys have a subconscious impact on one's propensity to generalize about larger groups (Lefevere, de Swert and Walgrave, 2012, p.13; Brosius and Peter, 2017). Some studies have found that vox pops featuring members of the public expressing their opinions, rather than personal testimony, have a greater influence on audience perceptions (e.g., Beckers, 2019). Other research suggests that the impact of vox pops on perceptions of public opinion is comparatively stronger among viewers who already hold populist attitudes (Peter, 2019).

Several studies have found striking links between the ratio of pro-issue to anti-issue exemplars presented in a report and audiences' perceived level of public support for an issue, and these findings are consistent across different media types (Brosius and Bathelt, 1994; Gan *et al.*, 1996; Perry and Gonzenbach, 1997).

These studies suggest that news organizations' frequent reliance on polls and vox pops can shape how citizens perceive the state of public opinion. The findings about vox pops are particularly worrying, when one considers their inevitably unrepresentative nature and the fact that journalists often employ them superficially as a way to add "color" to stories (Beckers, 2018; Cushion, 2018).

Technological Change and the Proliferation of Public Opinion Cues Online

Changes in media systems over the last decade have caused significant shifts in how public opinion cues are produced, circulated, and consumed. Elite control over newsmaking has loosened, as political activists, major and minor celebrities, informal news organizations, fact-checkers, and ordinary citizens use social media to routinely share information, debunk news stories, broadcast opinions, and act as reporters on the ground during crises and political events.

At the same time, professional journalists frequently integrate the information produced by these new actors into their regular reporting beats (Chadwick, 2011a, 2011b, 2017).

This process of decentralization has generated significant challenges for news organizations. There are trade-offs between the convenience of rapid connectivity and information abundance on the one hand, and the reduction in elite gatekeeping power, on the other. Social media have enabled journalists to source information and opinion faster and, at least occasionally, from previously marginalized voices. At the same time, through mass platforms such as Facebook, Instagram, and YouTube, users are exposed to the opinions of others through statuses, posts, and comments as well as apparent indicators of popularity expressed as quantitative indicators such as "likes" and numerical sharing metrics. All of this potentially renders audiences less dependent on professional journalism for gauging public opinion.

But what is the evidence that these media-systemic changes make a difference to people's perceptions of public opinion?

Assessing the Impact of Online Public Opinion Cues on Public Opinion

A number of studies have focused on user comments on social media platforms. Zerback and Fawzi (2017) exposed participants to a mocked-up Facebook page with a video depicting an immigrant acting violently towards a native German, accompanied by different proportions of comments supporting or opposing eviction of violent immigrants. In an immediate post-test, participants' estimates of the levels of support for the eviction of violent immigrants among the German population changed according to the ratio of positive and negative comments they had seen.

Similarly, Neubaum and Krämer (2017) gauged the effects of public opinion cues around a mocked-up Facebook newsfeed that contained a post about the legalization of euthanasia or the introduction of adoption rights for same-sex couples. Depending on the experimental condition, the post was either in favor of the issue or opposed it, featured very high or very low numbers of likes, and was accompanied by four comments which were either all supportive, all opposed, or mixed in tone. The tone of the comments had a significant impact on perceptions of public opinion, but the number of likes on the post had no impact. A different study (with a similar design) of attitudes toward vaccination also found that likes did not make a difference (Peter, Rossmann and Keyling, 2014).

Leong and Ho (2020) also investigated the impact of Facebook comments, as well as aggregate "emoji reactions," on perceptions of public support for nuclear energy. In one condition the researchers employed a Facebook post with 676 "like" and "love" emojis reactions and in another condition, the same post had 676 "sad" and "angry" emojis reactions. They found that this manipulation had a significant impact on perceptions of public opinion. Leong and Ho (2020) suggest that, compared to employing high and low numbers of likes, using reaction emojis affords individuals greater affective information, in a manner similar to the positive and negative affective experience of viewing pro-issue and anti-issue comments. However, it should be noted that the effects of the emoji reactions were less strong than those elicited by comments, and also less strong than when comments were accompanied by emoji reactions. There was no significant difference between the impact of comments and the impact of comments accompanied by emoji reactions. Additionally, to date, Facebook has been unique in providing the ability to aggregate varying emotional reactions to content. Twitter and Instagram, for

example, have only permitted the use of positive-valence "like" or "love" when it comes to aggregate indicators of this kind.

Social media platforms are an important context for the new public opinion cues, but so too are the complex interdependencies among different media. Over the last decade it has become commonplace for social media users to engage in dual screening: Real-time commentary on social media about events covered by broadcast media, particularly television (Vaccari, Chadwick and O'Loughlin, 2015; Chadwick, O'Loughlin and Vaccari, 2017). In one experimental study (Cameron and Geidner, 2014) participants were shown a video of a US congressional debate about the Violence Against Women Act, accompanied by a ticker that displayed tweets underneath. The experiment varied whether the tone of the tweets was positive or negative toward the speaker in the video. Subjects' perceptions of how convincing other people would find the speech were significantly influenced by the negative tweets; positive tweets made no difference.

In summary, the presentation of social media comments and emojis attached to policy-related content on social media can act as opinion cues and influence users' perceptions of public opinion. To date, the evidence about the impact of aggregate cues such as likes counts is weaker.

We now consider the evidence that these and similar public opinion cues influence people's perceptions of news and journalism.

Assessing the Impact of Online Public Opinion Cues on Perceptions of News and Journalism

The first point here is that there is good descriptive evidence that when a social media user posts comments about, or endorsements of, news articles this behavior influences levels of attention to, and favorability toward, those news articles among that user's followers (e.g., Messing and Westwood, 2014; Anspach, 2017).

These effects can be explained by the "bandwagon heuristic." Early studies of the web by media psychologists found that people tended to say they value and rate as more credible news that has been prioritized by "other users" of the internet, rather than news editors (e.g., Sundar and Nass, 2001). For example, audiences may see the lists of most-shared or most-read news articles, featured in almost all online news sites, as a more authentic measure of credibility than selection by a news editor. At a minimum, therefore, we should expect people's perceptions of public opinion about news and journalism to be influenced by cues posted by social media users.

There is indeed evidence that this is the case. Lee and Jang (2010) found that participants who read online news articles featuring user comments that contest a journalist's stance tend to estimate lower levels of public support for the arguments put forward by the journalist. Their study also showed that when participants viewed the same article with no comments but an aggregate ratio of the likes and dislikes made by other users, no significant differences in estimated support for the journalist's stance were found. This adds to a trend that suggests aggregate metrics alone are less powerful influences on audience perceptions than comments.

There is also evidence that the presence of negative tweets below a news "teaser" headline can result in people downrating both an article's credibility and the issue's importance (Waddell, 2020). Such a bandwagon effect is stronger when comments are perceived as more vivid and valuable by the audience, and the effect was sustained across policy, international, health, and sports news. Similar to Cameron and Geidner's (2014) dual screening study discussed above, positive comments had no effects.

In a similar vein, but extending the line of research to misinformation, Kluck, Schaewitz and Krämer (2019) investigated what happens when a Facebook post acting as a teaser for a false news story is accompanied either by comments, or by an aggregated 1-5 star "credibility rating" metric the researchers added to the experiment, which they told audience members had been determined by the ratings of 132 people. The results revealed that negative comments significantly reduced the perceived credibility of the post compared with a control condition in which the comments were blurred out. The negative comments also had the significant indirect effect of reducing people's willingness to share the news teaser post publicly or privately, through the mediating variable of reduced perceived credibility. Positive comments had no direct effect on perceived credibility nor any indirect effect on sharing intentions. Additionally, a positive or a negative aggregate rating, as indicated by the aggregated article credibility ratings used in the experiment, had no direct impact on perceptions of credibility, and no indirect effects on individuals' willingness to share the story. This provides further evidence of the particularly powerful impact of negative comment posts as exemplar cues, which some social psychologists have argued reflects a broader "negativity bias" in information processing and attitude formation (see Baumeister *et al.*, 2001). In this case, negative comments reduced individuals' propensity to believe and to share a false news story, perhaps indicating that negativity can be useful in encouraging people to mentally flag problematic information for closer scrutiny.

Overall, the evidence suggests that perceptions of other users' opinions about news articles can influence the credibility of journalism, particularly when other users' opinions are expressed as negative comments. This also carries over to people's broader perceptions about levels of public support for an issue discussed in a news article. Thus, overall, negative comments on social media may undermine the authority of journalists but they may also have some positive consequences if the quality of the news is poor and audiences exercise greater scrutiny as a result of being exposed to negative commentary. Additionally, the evidence to date suggests that negativity expressed through substantive language use in comments is more influential on perceptions than simple numerical metrics. In one respect, this is a heartening outcome, because substantive human communication through language is more difficult to fake through automation. Disinformation campaigns that rely only on manipulating social media metrics through automated methods such as botnets are less likely to be influential on public perceptions.

That being said, as we discuss in the remainder of this chapter, human, responsive (i.e., not automated) online interventions have been a feature of disinformation campaigns, and deep, underlying shifts in news organizations' sourcing practices also give grounds for concern.

New Biases and Vulnerabilities

During the 2010s, many news organizations started to routinely include online public opinion cues in their reports and this quickly became the norm. These cues feature as proxies for public opinion, particularly during important events such as televised political debates. Journalists observe "trending topics" to make inferences – however flawed – about public responses (Chadwick, 2011a, 2011b; Broersma and Graham, 2012; Anstead and O'Loughlin, 2015). They also frequently employ social media monitoring tools such as Dataminr and CrowdTangle to provide automated alerts about newsworthy activity on social media and to find relevant posts associated with news events (McGregor, 2019). Infographics, charts, and other artefacts from such services are often embedded in news articles.

The wealth of opinion shared on Twitter enables journalists to cherry-pick quotes in vox pop style to include in their articles (Beckers and Harder, 2016). The majority of Twitter content is shared publicly and is easily navigable via search strings and hashtags (Beckers and Harder, 2016). Journalists can freely and quickly embed tweets in online news articles without negotiating with sources and while also displaying an aura of source transparency (Broersma and Graham, 2013, p. 461). When it launched, Twitter quickly became seen as an arena to "break" news. This further incentivizes the use of tweets as vox pops because it can enhance audience perceptions that journalists are well-informed and quickly reacting to unfolding events (Gearhart and Kang, 2014).

Research is beginning to investigate the impact at the individual level of tweet exemplars in news articles. Ross and Dumitrescu (2019) found that, across two experiments with topics of varying national salience, the ratio of pro-issue to anti-issue vox pop tweets embedded in news articles can influence perceptions of public opinion and attitudes on the issues covered in the news. Journalists' ability to control the ratio of negative to positive vox pop tweets in reports thus enables them to influence audiences' perceptions of public opinion on political issues. However, it has recently become evident that using online cues to infer public opinion can have significant disadvantages for the quality of public discourse.

First, online public opinion cues are rarely representative of public opinion. The demographic characteristics of Twitter and Facebook users differ from those of the population (Mellon and Prosser, 2017). Moreover, those who discuss politics on Twitter tend to be much more politically interested and engaged than the general public (Vaccari *et al.*, 2015).

A second problem concerns the authenticity of political expression on social media. Early research on online political action discussed digital "astroturfing": The methods used by organizations and groups to inflate perceived grassroots support for a cause, through fake comments, ratings, and reviews (Howard, 2003). But in recent years it has become clear that widespread online disinformation campaigns routinely involve social media bot and troll activity. By liking, sharing, and repeating particular messages, disinformation campaigns use bots and botnets to try to manipulate public opinion cues encountered by social media users, journalists, and other elite actors (Forelle *et al.*, 2015; Kollanyi, Howard and Woolley, 2016).

To date, there is almost no research on these developments that demonstrates effects on individuals' perceptions of public opinion (cf. Zerback, Töpfl and Knöpfle, 2020) but there is good evidence that state-sponsored Russian trolls have engaged in a variety of disinformation activities. For instance, in the US 2016 presidential campaign, they mainly shared conservative viewpoints in support of Donald Trump (Golovchenko *et al.*, 2020). There are two levels to this problem. First, there are direct and deliberate attempts to deceive others through impersonation. Second, the acts of impersonation also involve coordinated, networked attempts to skew likes and shares – the aggregate signals that convey the popularity of a particular idea or commentary.

Journalists themselves have fallen victim to manipulation of online public opinion cues. A large amount of Russian troll tweets have been included as vox pops in political coverage across many US outlets (Lukito *et al.*, 2020). The reasons for this are complex and an important avenue of future research. As well as the longstanding practice of using vox pops in articles, intense competition to break stories and provide vividness has created incentives for newsrooms to quickly embed social media posts in articles. Journalists' assumption that there is no need to obtain approval from vox pop sources before embedding posts within articles enhances the appeal of this approach, but it means that source verification may be neglected in the clamor for fresh content. Posts that "go viral" during events such as natural disasters, political crises, or

public health emergencies such as the global COVID-19 pandemic of 2020 are particular candidates for inclusion by journalists during fast-moving events, even if the original posts and their metrics might be fabricated.

Conclusion: Avenues for Future Research

In this article, we have explored the influence of online public opinion cues on perceptions of both public opinion and news. We have shown how the elite grip on public opinion cues has loosened and how new online cues have appeared on social media platforms. Researchers to date have found that comments – particularly negative ones – have considerable influence over perceived public support for political issues and the credibility of journalistic content. There is weaker evidence for the direct impact of aggregate cues such as "like" and "share" counts on audience perceptions. That being said, engagement metrics affect the extent to which social media algorithms prioritize messages in users' feeds: Posts with more likes and shares are more likely to feature in news feeds. So, the inauthentic manipulation of these cues still matters because it may affect the probability that social media users encounter content in their feeds in the first place.

Further research is needed on this and on the mechanisms that make online exemplars more directly influential than aggregate popularity cues on social media. The specifics of language use, arguments, and other deceptive communication strategies ought to be a major focus (Zerback, Töpfl and Knöpfle, 2020). Moreover, further work on the construction of exemplar argumentation – along the lines of Beckers' research (2019) – and work investigating the differential effects of public opinion cues across citizens with different political views (e.g., Peter, 2019) may enrich our understanding of the conditions under which exemplars exert greater or lesser influence over audiences.

The need for greater understanding of these phenomena is paramount in light of citizens' vulnerability, when so many of us make inferences about public opinion from the cues we see in social media posts in our daily lives. Not only are these cues unrepresentative of public opinion, they can also be subject to widespread, orchestrated manipulation that research has shown can shape perceptions. That posts by state-sponsored propaganda trolls have successfully infiltrated articles on trusted news websites adds a further layer of complication to the fight against online disinformation. Liberal democracies will need to grapple with the threat of systematic and inauthentic manipulation of online public opinion cues for the foreseeable future.

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