Reliable Sources?

Correcting Misinformation in Polarized Media Environments

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Abstract

Various pressing issues at the center of today's politics–such as immigration, climate change, or the recent coronavirus pandemic–are imbued with misinformation. A growing body of research therefore explores the potential impact of providing corrective information. However, while such interventions appear to reduce people's factual misperceptions, they have little to no effect on their underlying attitudes. This study examines how the impact of corrective information on beliefs and attitudes is moderated by media choice. In our survey experiment, participants are asked to read a news article published by Fox News or MSNBC, each highlighting the positive economic impact of legal immigration in the United States. While the news content is held constant across sources, our treatment manipulates whether participants are allowed to freely choose a media outlet or are randomly assigned to one of them. Our results illustrate how people's media choice moderates the effectiveness of corrective information: While factual misperceptions are easily corrected regardless of how people gained access to the information, subsequent opinion change is conditional on people's prior willingness to seek out alternative sources. As such, encouraging people to broaden their media diet may be more effective to combat misinformation than disseminating fact-checks alone.

Citizens in western democracies hold wide-ranging and systematic misperceptions about immigrants to their home countries. For example, people usually overestimate the total number of immigrants or the proportion of immigrants that are dependent on social welfare (e.g., Alesina, Miano, and Stantcheva 2019). Given this extensive spread of misinformation, various studies examined how corrective information may affect people's underlying attitudes towards immigration, albeit with limited success. Although corrective information may alleviate factual misperceptions, it rarely affects people's underlying attitudes (see for example Hopkins, Sides, and Citrin 2019).

A possible explanation for this apparent disconnect could be that factual information is simply irrelevant for attitude formation and—if anything—serves as a mere justification for people to rationalize their existing predispositions towards immigrant populations. However, the extent to which people engage such motivated reasoning is not without limits—as people have been shown to update their prior beliefs after reaching a "tipping point" of counter-attitudinal information (Redlawsk, Civettini, and Emmerson 2010). Furthermore, recent research on immigration attitudes demonstrate the persuasiveness of certain interventions such as canvassing (Kalla and Broockman 2020).

Why do researchers frequently fail to find evidence of attitude change after providing respondents with corrective information? We argue that most experimental designs in this area are inconclusive because they omit a crucial mechanism: people's discretion over whether to engage with a given information source or not. Specifically, studies usually employ simple random assignment of informational treatments without considering people's selective exposure. Unfortunately, such a set-up does not allow us to estimate the quantity of interest that is ultimately of key interest: the effect of misinformation corrections among *people who would have chosen to access the information in the first place* (see also De Benedictis-Kessner et al. 2019; Knox et al. 2019).

We address these shortcomings of previous research by implementing an experimental design that varies both, the source of misinformation corrections as well as the process through which people access the information. Specifically, we conduct an online survey experiment on the effectiveness of corrective information about immigration. Depending on the experimental condition, participants are either able to freely choose–or are assigned to–an article published by different news channels (Fox News vs. MSNBC), which discusses the economic impact of legal immigration. Crucially, our

design allows us to differentiate how the information treatment impacts factual beliefs, how they are interpreted, as well as broader attitudes towards immigration. The results indicate that while the correction of factual misperceptions is does not depend on media choice, subsequent attitude change is conditional on people's willingness to seek out alternative sources.

Taking into account endogenous information search in studies of misinformation corrections is crucial in our rapidly changing media environment where people have unprecedented control over their information diets (see also Iyengar and Hahn 2009). While people can access an ever-growing set of news outlets of varying quality, we only have a limited understanding how these systemic changes in information channels moderate the effectiveness of corrective information itself. Past research mostly focused on the effect of different *types* of misinformation corrections. This study contributes to the literature by shifting the focus to the question of *how* and *from where* corrective information reaches people.

Why misinformation corrections (often) fail

To the extent that people rely on inaccurate factual beliefs to form their opinions, misinformation can severely impede democratic representation by inducing collective preferences that systematically diverge from a more informed public (Kuklinski et al. 2000). For instance, earlier studies focusing on aggregate opinion estimated that increasing individual information levels results in altered preferences of the electorate (e.g., Bartels 1996; Althaus 1998). Experimental studies examining change in individual attitudes, however, only found scant evidence for information treatments impacting peoples underlying opinions (see Flynn, Nyhan, and Reifler 2017 for an overview).

Focusing on misinformation in the context of immigration, Hopkins, Sides, and Citrin (2019) conducted multiple survey experiments informing participants about the size of the foreign-born population in the US—a statistic that is systematically overestimated by people in the absence of corrective information. In other words, many Americans are systematically misinformed, and this misinformation is associated with attitudes towards minority groups. Across seven separate survey experiments, the authors find that "accurate information does little to affect attitudes toward immigration, even though it does reduce the perceived size of the foreign-born population. [...]

Misperceptions about the size of minority groups may be a consequence, rather than a cause, of attitudes toward those groups" (Hopkins, Sides, and Citrin 2019, 315). The authors therefore suggest that attitudes towards immigration resist change because they are grounded in more fundamental predispositions that are independent of the factual premise (see also Hainmueller and Hopkins 2014).

In sum, changing people's minds by providing corrective information is far from easy—especially when it comes to deeply held beliefs that are connected to people's identities (Nyhan et al. 2019). However, this does not imply that new facts are bound to have no attitudinal consequences whatsoever. Although people engage in motivated reasoning and resist counter-attitudinal evidence (Taber and Lodge 2006), there is some evidence that they are not completely immune to it (Redlawsk, Civettini, and Emmerson 2010). Before turning our discussion to a potential mechanism that may facilitate such attitude change, we need to begin by developing a clear conceptualization of different types of updating that may result from exposure to corrective information.

Differentiating factual beliefs, interpretations, and opinions

Building on a framework developed in Gaines et al. (2007), we define factual *beliefs* as assessments of the state of the world that are (at least in principle) intersubjectively observable and can therefore be either true or false. For example, the statement "Immigrant-owned businesses employed almost 8 million American workers in 2019" describes a factual belief that is objectively verifiable and–importantly–completely void of evaluative components. As we will further discuss below, it turns out that people are systematically misinformed about the number of workers employed by immigrant-owned businesses in the sense that they consistently underestimate this statistic. Corrective information in this example would simply consist of an accurate estimate, which, given previous evidence using similar designs (e.g., Hopkins, Sides, and Citrin 2019), should be fairly effective in reducing (factual) misperceptions.

Incorrect factual beliefs only impede democratic representation to the extent that they affect peoples preferences (Kuklinski et al. 2000). As such, it seems insufficient to consider the effect of misinformation corrections on factual beliefs alone. Rather, we need to examine how they influence

subsequent evaluations. We define the step of adding immediate evaluative components to factual beliefs as *interpretations*. Continuing our previous example, a possible interpretation could be the following statement: "Immigrants improve the U.S. economy by creating additional jobs." This statement is still grounded in knowable facts such as the number of people employed by immigrant-owned businesses, but it contains evaluative components that are driven by implicit premises about potential economic "downsides" of immigration. Holding everything else constant, corrective information about the actual number of workers employed by immigrant-owned businesses should lead to a more positive assessment of the economic benefits of immigration. However, there is substantial leeway for people to interpret the same facts differently depending on their political predispositions (e.g., Gaines et al. 2007).

Lastly, we define *opinions* as evaluative judgments that are formed about the state of the world, but that are not necessarily based on verifiable facts. An example for an opinion in our context would be the statement "The number of immigrants from foreign countries should be increased." Of course, this statement might be informed by objective facts about the economic impact of immigrant-owned business, but it certainly does not have to be. As such, corrective information can only be expected to have limited effects on opinions as these are largely driven by more fundamental predispositions.

How does this conceptualization of beliefs, interpretations, and opinions help us understand potential impact of corrective information? Gaines et al. (2007) uses this framework to differentiate four different types of updating as a response to a changing state of the world:

1. **Complete Updating:** reality $\rightarrow$ beliefs $\rightarrow$ interpretations $\rightarrow$ opinions
2. **Fact Avoidance:** reality $\mid\mid$ beliefs $\rightarrow$ interpretations $\rightarrow$ opinions
3. **Meaning Avoidance:** reality $\rightarrow$ beliefs $\mid\mid$ interpretations $\rightarrow$ opinions
4. **Opinion Avoidance:** reality $\rightarrow$ beliefs $\rightarrow$ interpretations $\mid\mid$ opinions

Under complete updating, new factual information directly shapes beliefs about the state of the world, which in turn affects relevant interpretations, and ultimately results in opinion change. Consequently, incomplete updating despite new information could be due to a lack of belief updating (fact avoidance), interpretations that resist altered beliefs (meaning avoidance), or opinions driven by predispositions alone (opinion avoidance). Within this framework and considering the arguments

outlined above, we can state the first hypothesis regarding the effectiveness of misinformation as follows:

> *Hypothesis 1:* Misinformation corrections have stronger effects on people's factual **beliefs** than their related **interpretations** or **opinions**.

In other words, while complete fact avoidance is relatively rare when people encounter corrective information, meaning avoidance and (especially) opinion avoidance is more common. Unfortunately, since few studies on misinformation corrections rely on an explicit distinction between these types of incomplete updating, surprisingly little is known about the determinants that make one type more likely than another. In the following section, we are going to argue that the source of corrective information is a crucial moderator in this context.

The role of selective exposure and source credibility

Here, we explore an alternative explanation for the lack of evidence that corrective information shifts people's attitudes.

Media environment is much more diverse than it used to be, we need to take into account the role of selective exposure.

- Leeper (2020)
- De Benedictis-Kessner et al. (2019)

There has been an additional methodological argument in the literature. Including endogenous search manipulation is necessary to have the comparison between randomly allocating and letting you choose vs. giving friendly or not friendly source.

Ultimately, this manipulation allows us to study how people react to information—most give random info and look at effects. Big diff in info environment is that you choose info you're exposed to—think about contribution in terms of looking at whether information choice changes effect of information you're given. Fake news literature? Assumption that as soon they are given info by anyone they are suspicious of it?

Hypothesis 2: Misinformation corrections have stronger effects if people are able to **choose** their information source. These differences are more pronounced for opinions and interpretations than for beliefs.

Meaning avoidance and opinion avoidance is less common if people have discretion over what information to access

Notwithstanding the large existing body of literature on the importance of source cues (e.g., Goren, Federico, and Kittilson 2009; Ladd 2010), prior studies on misinformation corrections rarely consider the potential role of source credibility.

1. Media environment is biased
2. Source credibility differs by source
3. News reports contain interpretations, and these interpretations are more dependent on source credibility.

- Dalton, Beck, and Huckfeldt (1998): perception of news is shaped by a person's political views
- Little (2019): Individuals with strong partisan beliefs are more skeptical that "neutral" media reports with accuracy and believe the media as biased against their beliefs
- Kuklinski and Hurley (1994): The idea of source credibility extends to the individual political actor; connected the use of ideological heuristics and source cues. They argued that by focusing their attention on the individual political actor, citizens make quick judgments of the information presented to them based largely on the reputation of the speaker. Experimental subjects presented with a message evaluated that message based largely on their opinion of the speaker. In this way the messenger overwhelms the message
- Lupia and McCubbins (1998): Source credibility profoundly affects social interpretations of information

Sources that are deemed credible are more influential than sources with low credibility. Credibility includes both expertise and trustworthiness and studies have found that source credibility impacts whether individuals will correct misinformation (Guillory and Geraci 2013). One would assume that non-partisan authorities would be a trusted source of information. However, in a time when

partisanship colors how people perceive new information, even neutral sources might be less credible than is often presumed (see Berinsky 2018). Neutral sources such as the AMA and the AARP lack authority at time because they are overridden by politicized ones. It is rare for Republicans and Democrats to find a independent source therefore many sources of information lack credibly. This partisan lens extends to how individuals process fake news. Error correction of fake news is mostly likely to be effective when coming from a co-partisan w/ whom one might expect to agree (Berinsky 2017).

> *Hypothesis 3:* Misinformation corrections have stronger effects if the information source is **consistent** with people's media preferences. These differences are more pronounced for opinions and interpretations than for beliefs.

Classic source cue argument: Meaning avoidance and opinion avoidance is less common if people are exposed to news organizations they prefer

But is it theoretically something different? This is ultimately an empirical question! Is choosing substantively diff than mech of friendly vs unfriendly source. Is it about control over choosing itself? Big mech is whether you trust info source or not. If it's the same, need to rethink whether our contribution to the literature is going beyond what the source cue lit has done.

- Does the ability to **choose** always imply **consistent** exposure?
- If choice $\neq$ consistency, how do their effects differ?

Research Design

Previous research examining the effectiveness of corrective information showed that it does not always lead to attitude change even if misperceptions are reduced (Hopkins, Sides, and Citrin 2019; Swire-Thompson et al. 2019). However, others find that media exposure can persuade people to change their attitudes under certain conditions (e.g., De Benedictis-Kessner et al. 2019). Our study explores how the way people access corrective information influences the likelihood of its success in reducing misperceptions. In general, we expect that those who were able to choose a news agency are more likely to pick a source similar to their usual media diet. Additionally, we

expect those who read a news story from a trusted news source (and who are able to pick the news agency) are more inclined to evaluate the article positively and change their attitudes in the direction of the news article.

Overview

Our study builds on the Preference-Incorporating Choice and Assignment Design proposed by De Benedictis-Kessner et al. (2019) and Knox et al. (2019). Participants are randomly assigned to a free choice treatment condition, a forced exposure treatment condition, or a control group. Participants in the free choice condition are asked to choose whether they want to see a recent breaking news tweet from either FoxNews or MSNBC. After viewing the tweet, which links to a news story focusing on immigrant-owned businesses in the US, participants are asked to read the corresponding article. In the forced exposure condition, participants do not have the option to choose a news organization (FoxNews or MSNBC), but are randomly assigned to one or the other. In either condition, the content of the news article is held constant across sources. By holding the content constant, our design has the additional advantage of more clearly differenting the effects of the choice vs assigned group by ensuring that the differences are not a result of the structure, content, or tone of different stories. Finally, participants who are randomly assigned to the control group skip the tweet and article entirely and move directly from the pre-treatment battery (questions on media usage, stereotyping, and political attitudes/behavior) to the post-treatment battery (questions on attitudes toward immigrantion and trust in different media sources). For more details on the design, see Figure 1 below as well as the full questionnaire, including all treatment conditions, in our pre-registered analysis on EGAP.

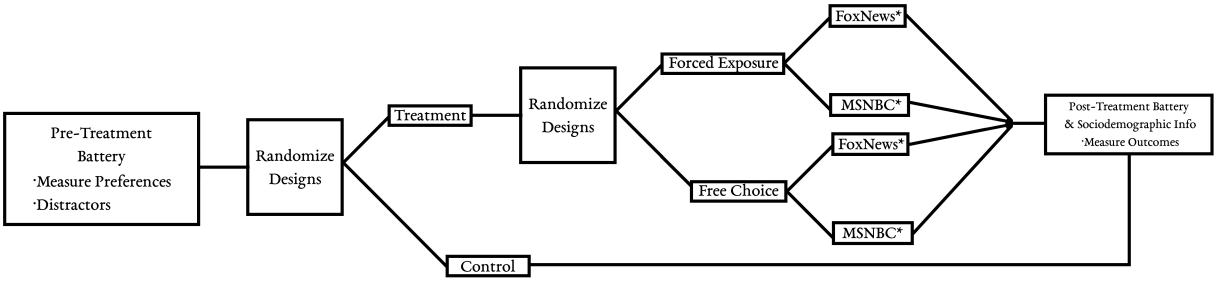

Figure 1: Survey Flow

Information Treatment

- In the following section, we are going to show you a random tweet drawn from the accounts of [two/several] large news organizations. **You can choose from which Twitter account the random tweet will be drawn.** Afterwards, we are going to ask you some questions about the content of the news story.

Figure 2: Test

Measuring Belief, Interpretation, and Opinion

Results

Table 1: This is the table caption

Belief	Interpretation	Opinion
Across the United States, how many workers–immigrant and US-born–do you think are employed by immigrant-owned businesses?	On average, would you say that people who come to live here from other countries will take jobs away from people already here or add to the economy by creating additional jobs?	Do you think the number of immigrants from foreign countries who are permitted to come to the United States to live should be [increased/left the same/decreased]
Taking your best guess, what was the total amount of sales revenue of immigrant-owned businesses in the last year?	Most people who come to live in the U.S. work and pay taxes. They also use health and social services. On balance, do you think people who come here take out more than they put in or put in more than they take out?	

Free Choice Enables Opinion Change

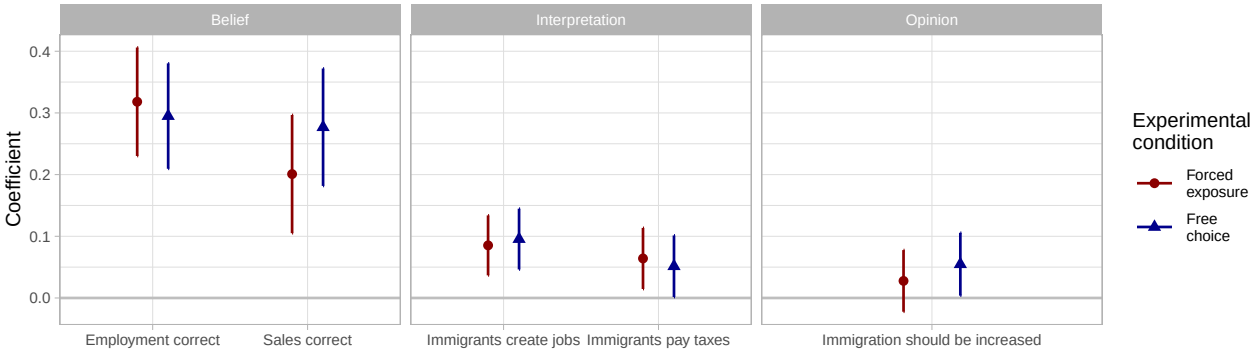

Figure 3: Treatment effects of forced exposure and free choice manipulation (vs. control). Coefficients are based on linear regression models controlling for pre-treatment immigration attitudes, political predispositions, and sociodemographics. Positive coefficients indicate larger probability of correct responses (Belief) or more liberal immigration attitudes (Interpretation & Opinion). 95% confidence intervals based on robust standard errors. Full model results included in the appendix.

Opinion Change is Driven by Voluntary Exposure to Inconsistent Sources

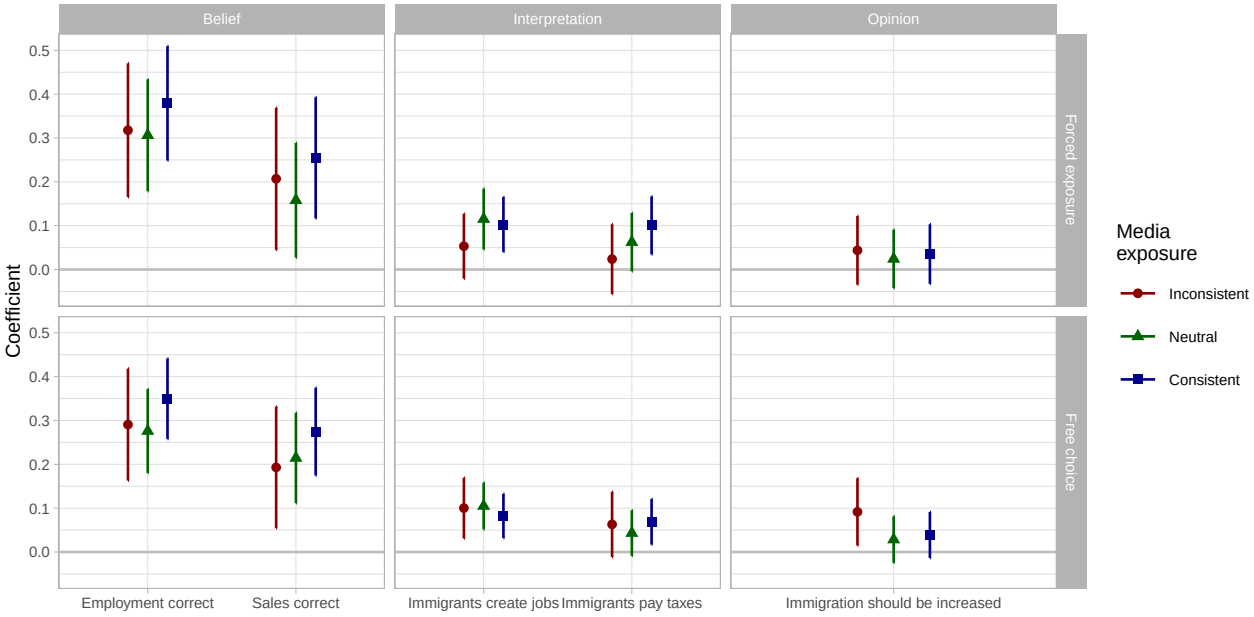

Figure 4: Treatment effects of forced exposure and free choice manipulation (vs. control) conditional on consistency between media preference and information source. Coefficients are based on linear regression models controlling for pre-treatment immigration attitudes, political predispositions, and sociodemographics. Positive coefficients indicate larger probability of correct responses (Belief) or more liberal immigration attitudes (Interpretation & Opinion). 95% confidence intervals based on robust standard errors. Full model results included in the appendix.

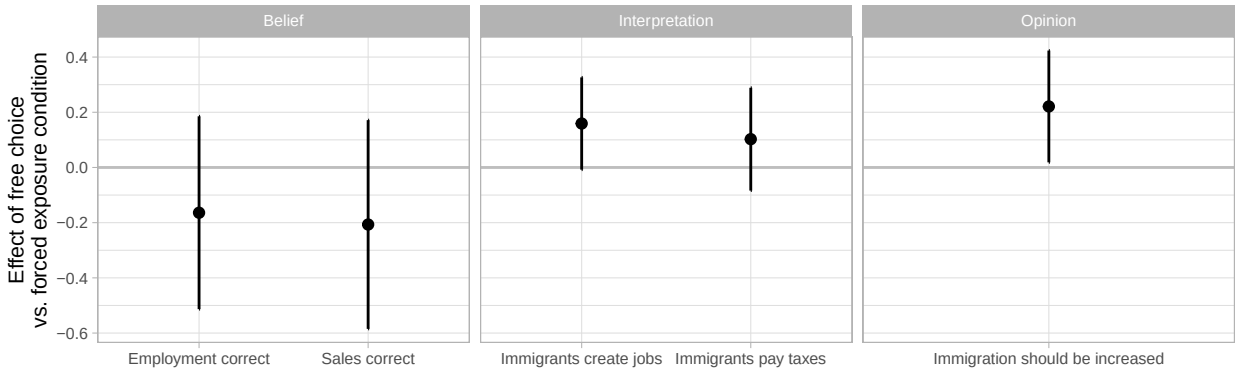

Figure 5: Difference in treatment effects of forced exposure and free choice manipulation conditional on exposure to information source that is inconsistent with media preference. Coefficients are based on linear regression models controlling for pre-treatment immigration attitudes, political predispositions, and sociodemographics. Positive coefficients indicate larger treatment effect for voluntary (vs. involuntary) exposure to inconsistent source. 95% confidence intervals based on robust standard errors. Full model results included in the appendix.

Discussion and Conclusion

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