Bridging the Gap of Polarization in Public Opinion on Misinformed Topics

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Abstract. This research combines public opinion and social media data from German-speaking countries on polarizing topics from the same respondents. We analyze the survey data from a sociological perspective and the social media data from a computer science perspective. Results show that, e.g., Twitter users are less likely to believe in and tweet about non-natural origins of COVID-19 than the overall sample.

Keywords: Interdisciplinary · Survey Research · NLP · Polarization

1 Introduction and Motivation

Research has shown that the spread of misinformation is linked to a high level of polarization in social media [5]. Polarization, a shift of one's opinion towards extreme positions [9,15], is also a main predictor for the extent to which misinformation spreads [8]. Moreover, misinformation tends to spread in social media even on topics that reached scientific consensus [18].

A large body of research on polarization in social media uses digital behavioral data, social media content or network analysis to study polarization online [1,6,10,2,4,3,7]. For an overview of the field see Tucker et al. [16], and Garimella [11].

However, analyzing public opinion considering only social media platforms has the shortcoming that social media users might not be representative of the population as a whole. In this vein, Sloan showed that there is a disconnect between Twitter users and the general public in terms of demographics [14]. Furthermore, there might be a discrepancy between the positions humans express online and offline [13]. This paves the way for our research: we combine social media data with traditional survey data to study polarization in public opinion. With our project, we aim to stimulate new insights about polarization dynamics and human responses to polarizing topics.

2 Approach and Data

We conducted a survey in the German-speaking DACH region on views about COVID-19 and climate change. Both topics are highly polarized in public opinion [12,17] and carry the risk of misinformation. We also asked the participants

about their social media usage behavior and ask them to share their public social media information (i.e., their account name and permission to collect their publicly available information) on Twitter or Facebook. Given their permission, we collected the associated social media data for our analyses.

Survey Data. The data was collected in August 2020 in Germany, Austria, and Switzerland as a representative quota sample and comprises 2560 respondents. The survey consists of four sections; two polarizing topics (COVID-19 and climate change), social media use (including private Twitter handles), and socio-demographics. This allows the linkage of the survey data and social media data and makes it possible to draw conclusions about how well social media users reflect the public opinion of the overall population.

Social Media Data. For the social media analysis, we categorize the tweets of the user accounts, who gave us permission to collect their data using textual features (i.e., hashtags) and contrast them with the survey data. Additionally, we include the tweets of related users (i.e., their follower and following relationships) into our analysis.

3   Preliminary Results and Outlook

Given our survey results, we find that opinions on the COVID-19 pandemic are more polarized than on climate change, which is why, in the following, we focus on the former. Almost 30% of the sample believe that the virus was deliberately created by humans in a laboratory, whereas 2% of the participants think that the virus does not even exist. 54% of the sample believe in a natural transmission from animals to humans, and the remaining 16% could not tell. Further analyses show that participants with a Twitter account more often believe in a natural origin of the virus than participants without a Twitter account, and are less likely to believe in the human-made version from the lab or that the virus does not exist.

The results of the social media analysis using Twitter reflect this tendency. In our sample, #COVID-19 is the most discussed hashtag in the immediate network of all accounts. However, only a single tweet from an account associated with a participant expressing beliefs in the lab theory used the Hashtag #Corona (out of 47,465 German tweets). Please note that #Corona is the most popular German hashtag related to COVID-19 (n = 33). In the interest of conciseness, we do not report the results in greater detail. A detailed report will be made available at a later point.

We expect the results of our ongoing project to lead to a better understanding of how the opinions of people in the offline world differ from their respective online user behavior and how this affects polarization. As a next step, we will incorporate topic choice and expressed emotions into our analyses and compare the user behavior in greater detail. For future work, we want to explore novel approaches on how to mitigate the formation of polarization and, in turn, challenge the spread of misinformation.

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