The Interplay of Online Network Homogeneity, Populist Attitudes and Conspiratorial Beliefs

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Abstract

Social networking sites are suspected to impede the communication between members of different political camps and thereby increase network homogeneity, particularly in some rather extreme groups. This homogeneity can be a result of humans' tendency to process information in biased, confirmatory ways – a characteristic which is also ascribed to populist citizens and those who hold conspiratorial beliefs. It is hypothesized that populist views and conspiratorial beliefs are associated to higher exposure to like-minded information within Facebook and that conspiratorial beliefs fuel this association. An online survey ($N = 469$) revealed that populist attitudes are positively associated to conspiratorial beliefs but negatively to homogeneity, while conspiratorial beliefs are unrelated to homogeneity. Findings are discussed in the light of extant research.

Keywords: Political like-mindedness, social network homogeneity, populism, conspiracy theories, political ideology

Social networking sites (SNS) have become vital sources of information to large parts of the population. In 2018, more than 70% of the German population was using at least one SNS and this number of users has more than doubled since 2014 (Kaczinski et al., 2019). While the use of SNS carries innumerable opportunities, as for instance, the formation of social support networks and possibilities of low-threshold political participation, SNS use has also been associated to serious risks. Online network homogeneity and ‘echo chambers’, i.e. the notion of a predominance of like-minded information and virtual contacts in online networks, has been linked to societal fragmentation and democratic downfall (Sunstein, 2017). Moreover, it has been suspected that SNS propel the spread of populism and conspiracy theories (CTs). In fact, the societal threats posed by political fragmentation, populism and misinformation are by many considered among the most urging challenges of societies and research (Taylor et al., 2018). Moreover, it is likely that online network homogeneity, populist attitudes and conspiratorial beliefs are interwoven as suggested by network analytical studies (Törnberg & Wahlström, 2018; Yiannakoulis et al., 2019). More specifically, those who hold populist attitudes and conspiratorial beliefs may be particularly prone to actively render their online networks politically homogeneous. Additionally, the fact that populist agitators spread misinformation and doubt (Marwick & Lewis, 2017) may increase conspiratorial beliefs and suspicions toward those who think differently. Despite of this, the interplay between online network homogeneity, populist attitudes and conspiratorial beliefs has been scarcely addressed by research so far. With a focus on Facebook, the present study intends to draw theoretical and empirical links between online network homogeneity, populist attitudes and conspiratorial beliefs. Thereby, this study aims on drawing attention to mechanisms which make certain groups of users particularly vulnerable to detrimental social media use.

Online Network Homogeneity and Informational Selectivity

Democracies depend on the controversial political exchange between citizens. According to deliberative ideals, the fundamental principle of a democratic societies is that political decisions mark the endpoint of consensus-building processes in which different opinions on an issue are controversially discussed, eventually leading to compromise (Habermas, 2007). As a consequence, a society in which members of different political camps do not communicate with each other and instead ‘flock together’ in like-minded groups might foster polarization and intolerance instead of consensus building (Dahlberg, 2007). It was suggested that online environments such as SNS are particularly prone to such ‘echo chambers’ as SNS afford selective and algorithmic personalization of the social and informational environment (Sunstein, 2017). In the context of this study, online network

homogeneity describes the degree to which users are more likely exposed to like-minded compared to non-like-minded political information within their online networks. On the one hand, a number of studies has addressed this notion and they largely suggest that, for the majority of users, online networks are not more homogeneous than offline environments (Cargnino & Neubaum, 2019; Dubois & Blank, 2018; Flaxman et al., 2016; Gentzkow & Shapiro, 2010). To the contrary, the potential of SNS to incidentally expose users to cross-cutting political views they may not have come across offline has been highlighted (Lu & Lee, 2018). However, it appears that there are subgroups of users (e.g., at the political extremes) which are more susceptible to form homogeneous online networks (Bakshy et al., 2015; Boutyline & Willer, 2017). To understand, why some users are more likely to be surrounded by like-mindedness it necessary to shed light on the causes of homogeneity.

Research identified the human preference for like-minded individuals already decades ago (Byrne, 1961; McCroskey et al., 1975; McPherson et al., 2001). In recent times, a number of studies has addressed users' preference for like-minded political online content in terms of selective exposure as a driver of online network homogeneity (Cargnino et al., 2019; Dvir-Gvirsman, 2017). Selective exposure describes the human tendency to selectively search and attend to information that is congruent with own preferences, while avoiding incongruencies (Zillmann & Bryant, 1985). Different explanations for selective exposure effect were offered, ranging from traditional cognitive dissonance reduction accounts to biased evaluations of information credibility (motivated reasoning) and social in-group favoritism (Dvir-Gvirsman, 2018; Festinger, 1957; Fischer et al., 2005; Taber & Lodge, 2006). According to these accounts, individuals attend to like-minded information in order to avoid or reduce a negative affective state caused by dissonant cognition, or, because they perceive like-minded information as more accurate, or, because they prefer information stemming from their (political) in-group members. When users select information on SNS, a mixture of these and potential further factors may be at work though. Similar to the variability found with regard to online network homogeneity and the prevalence of echo chambers, research has identified a range of factors that moderate selective exposure effects. For instance, it was found that both, political online network homogeneity and selective exposure to like-mindedness are higher for individuals with more extreme political views and those with right-wing political orientations (Boutyline & Willer, 2017; Cargnino et al., 2019; Hart et al., 2009). In the following, we argue that such antecedents of online network homogeneity in some parts parallel processes linked to populist attitudes and the belief in conspiracy theories.

Populism and Conspiracy Theories

There are few doubts that populism and disinformation are among the most serious challenges which societies are facing at present. In this regard, SNS play an important role when it comes to the spread of populist and conspiratorial contents. In the following, we elaborate on this and argue that the susceptibility to populism, the adoption of conspiratorial beliefs and politically homogeneous online networks may be based on similar psychological groundings.

Psychological Aspects of Populism

The worldwide rise and strengthening of populist movements has been evoking concerns among citizens and the established political systems. Consequently, a growing number of scientific publications seeks to describe and explain the emergence of populism and populist attitudes (Marchlewska et al., 2018; Marwick & Lewis, 2017; Schulz et al., 2018). According to Schulz and colleagues (2018), populist attitudes can be defined by three main characteristics: anti-elitism, perceptions of a homogeneous people and the perception of people's demand for sovereignty. When it comes to right-wing populism, the exclusion of other social groups (particularly societal minorities) has been characterized as a further characteristic (Engesser et al., 2017). With anti-elitism and the narrative of a people deprived from sovereignty, populist communication often uses a negative tone, e.g., the dramatization of the political situation, emotionality and a colloquial, sometimes vulgar language (Ernst et al., 2019). Besides traditional societal institutions, as for example the political system, its representatives and science, populists commonly categorize traditional media as the 'distrusted elite' (Schulz et al., 2018). One consequence of this is that 'alternative media' and social networking platforms have become popular channels for populist communication (Engesser et al., 2017). For populist politicians, social media represent ideal platforms to disseminate their messages as they facilitate the reach to large audiences by simultaneously avoiding traditional media gatekeeping (Ernst et al., 2019).

The populist distinction of "the (righteous) people" on the one hand and "the (corrupt) elites" on the other hand divides society into opposing social groups, which is likely to foster the formation of stereotypes, hostility and closed-mindedness toward out-groups (Crawford et al., 2011; Marchlewska et al., 2018). Accordingly, relative in-group deprivation (i.e., the feeling that one's group is disadvantaged compared to other groups) and national collective narcissism (i.e., the belief in the superiority of one's national in-group) have been identified as precursors of the support for populist parties (Marchlewska et al., 2018). Thus, due to an increased intergroup bias (i.e., the preference for the in-group and devaluation of out-groups),

individuals that hold populist attitudes may be more selective in terms of a preference for individuals who share their populist views and in terms of the information that those individuals spread within their online networks. Besides that, populists' belief in a homogeneous people can increase the perception that own views represent the macro-level societal opinion-climate (false consensus effect, Schulz et al., 2018). Consequently, when confronted with opinions held by an alleged minority, these opinions may rather be neglected or perceived as less credible than considered a legitimate alternative view on political issues. Furthermore, specific personality traits which are more common among supporters of populist politics might increase political selectivity and the preference for like-mindedness. For instance, Obschonka and colleagues (2018) found positive relationships between the support for Donald Trump, Brexit policies and neuroticism (particularly anxiety and depression). Such personality traits may make the perception of threat by political out-groups even more likely and increase avoidance of the latter (Janoff-Bulman et al., 2008).

In accord with this reasoning, SNS users who hold populist attitudes may be more selective toward like-minded information (e.g., partisan news) and therefore be more likely to form homogeneous online environments. Results from network analytical studies which find more homogeneous networks in supporters of populist politicians corroborate this idea on a descriptive level (Boutyline & Willer, 2017; Törnberg & Wahlström, 2018). Accordingly, we hypothesize:

H1: Populist attitudes are positively associated to the perceived homogeneity of political information exposure on Facebook.

Additionally, given the positive relationship between extreme political views and a one-sided consumption of belief-consistent information (Boutyline & Willer, 2017; Stroud, 2010; Wojcieszak & Garrett, 2018), populist attitudes should be more strongly linked to homogeneous information exposure when at higher levels of ideological extremity.

H2: The association between populist attitudes and political homogeneity is moderated by ideological extremity. The more extreme the political ideology of a user, the stronger the association between populist attitudes and political homogeneity.

When it comes to the distinction of right-wing and left-wing populism, the devaluation and exclusion of particular societal (minority) groups has been identified as a distinguishing element of right-wing populism (Engesser et al., 2017). As a result, political intolerance and a preference for the own group may be stronger among those who simultaneously hold populist and rightist views. A number of studies suggests that individuals with rightist and conservative political orientations tend to have more homogeneous online networks (Barberá

et al., 2015; Boutyline & Willer, 2017). It is oftentimes argued that this is due to a more pronounced proclivity for motivated reasoning among rightists (Jost et al., 2003; Rothmund & Arzheimer, 2015). For instance, when evaluating scientific evidence on climate change, individuals with a conservative ideology were found to perceive evidence supporting a human causation of climate change as more ambiguous than countering evidence (Feygina et al., 2010). A popular (and empirically well-proven) theoretical account presumes that conservatives differ from individuals with other political orientations psychologically, e.g., in terms of higher closed-mindedness toward belief-inconsistent information and avoidance of unpredictable situations (Jost et al., 2003, 2009). Somewhat in contrast to this line of research, others found that leftists perceive their online networks as politically more like-minded (Cargnino & Neubaum, 2019) and avoid uncongenial online contacts (Bode, 2016) to a greater extent than individuals from the right. Therefore, we propose the following research question:

RQ1: Is the association between populist attitudes and political homogeneity moderated by political orientation?

The Belief in Conspiracy Theories

Besides the potential threats originating from echo chambers and populism, the high interactivity and the efficient spread of content via online networks carries the risk of misinformation and falsehoods to be disseminated to large audiences. Unlike other types of falsehoods, conspiracy theories may be particularly persistent as they can be composed of a mixture of facts, suspicions and falsehoods which is oftentimes hard to debunk and, in some cases, adopted by vast amounts of people (Hollander, 2018). For instance, in 2004, half of New York's population believed that government officials knew about the 9/11 attacks in advance (Sunstein & Vermeule, 2009), while in a representative US sample from 2012, it was still about 40 % of Americans who held this belief (Hollander, 2018). According to Sunstein and Vermeule (2009) a conspiracy theory is "an effort to explain some event or practice by reference to the machinations of powerful people, who attempt to conceal their role (at least until their aims are accomplished)" (p. 205). The belief in CTs has been linked to elevated levels of distrust in mainstream media (Tucker et al., 2018) which may partly explain the popularity of CTs within SNS. Social media platforms such as Facebook and YouTube have become popular venues for the sharing and consumption of conspiratorial ideas and countering this development is among the main challenges of social media research and society as a whole (Taylor et al., 2018). While the detrimental potential of conspiracy theories is oftentimes self-evident (e.g. the belief that climate change was made up by the political

elite, which may prevent individuals from environment protection and foster distrust in the political system), CTs also have been considered beneficial and part of an adaptive evolutionary mechanism which makes individuals capable of questioning and debunking dominant social orders and thus allow for social change (Swami & Coles, 2010; van Prooijen & van Vugt, 2018). There is few evidence suggesting a nominal increase in the number of CTs or their believers over time, but yet, conspiratorial content is likely to spread faster and reach larger audiences when increasingly disseminated through online networks (Douglas et al., 2019). For instance, in their analysis of anti-vaccine videos on YouTube, Yiannakoulis and colleagues (2019) found that these videos are prevalent and receive more positive user reactions (i.e., likes) than pro-vaccine videos.

While earlier work has focused on origins and the perception of specific CTs, in recent years more attention has been drawn on the general characteristics of individuals who belief in conspiracies, as well as correlates of such beliefs (Swami & Coles, 2010). In a nutshell, research on correlates of conspiratorial beliefs suggests that these may be similar to those of online network homogeneity and populist attitudes. In the following, we will elaborate on this in more detail.

Although believers and non-believers of CTs may not differ from each other with regard to basic personality traits (for a meta-analysis see Goreis & Voracek, 2019), a number of factors which make the belief in conspiracies (and its persistence) more likely have been identified. A reoccurring finding is that conspiratorial beliefs are persistent, which may be (1) due to the limited falsifiability of CTs, (2) because counter-conspiratorial information is commonly seen as a further proof for the existence of a conspiracy by believers, and, (3) because CTs are usually shared within rather isolated networks in which high amounts of one-sidedly conspiracy reinforcing content is shared between individuals (Sunstein & Vermeule, 2009; Swami & Coles, 2010). Accordingly, it seems that adopters of CTs are prone to biased information processing, particularly motivated reasoning and selective exposure (i.e., a more positive evaluation of and selectivity toward information that supports the conspiracy, Frey, 1986; Taber & Lodge, 2006). This is plausible as conspiratorial beliefs are associated with less analytical and more intuitive thinking and a relatively low need for empirical proof to underscore own beliefs (Garrett & Weeks, 2017; Swami et al., 2014). Besides this, believers of CTs may be more susceptible to confirmation bias as they are more skeptical toward others, which may foster a limited willingness to interact with non-like-minded individuals: They exhibit lower levels of social trust, higher levels of hostility and consider truth as something that can be construed rather than something independent of subjective evaluations

(Abalakina-Paap et al., 1999; Garrett & Weeks, 2017). Taken together, these characteristics may foster the formation of homogenous informational environments among adopters of conspiratorial beliefs. In support of this, Smith and Graham (2019) analyzed conspiratorial Facebook pages (i.e., anti-vaccination groups) and detected communication characteristics common to conspiracy believers, i.e. moral outrage and skepticism toward public institutions and media. They also found evidence pointing to the homogeneity of the Facebook anti-vaccination community, i.e. a high degree of connectedness between anti-vaccination endorsers. Accordingly, we hypothesize:

H3: The belief in conspiracy theories is positively associated to the perceived homogeneity of political information exposure on Facebook.

Although there are findings suggesting that conspiratorial beliefs are commonly directed against political adversaries, independently of the ideological orientation (van Prooijen et al., 2015), some shows that the popularity of CTs varies between different political camps. More specifically, it was found that conspiratorial beliefs are more common within the political extremes, particularly among rightists (see Douglas et al., 2019, Hollander, 2018). Similarly, the exposure to news media that convey populist views (e.g., Fox News) was found to be positively associated to the belief in falsehoods and CTs (e.g., ‘Former president Obama was born outside the US’) while the exposure to online news in general was not (Hollander, 2018). These findings may point to similarities between (right-wing) populism and conspiratorial beliefs on deeper levels. For instance, both, conspiratorial beliefs and populist attitudes seem to be linked to politically more homogeneous online environments (Boutyline & Willer, 2017; Smith & Graham, 2019; Törnberg & Wahlström, 2018). This may be rooted in structural similarities between populist attitudes and conspiratorial beliefs, e.g., the distrust in ‘ideological’ opponents and confirmatory-intuitive reasoning, which may foster selective exposure to political online content. The belief in conspiracies also may be seen as a moderating, enhancing factor in the link between populist attitudes and online network homogeneity. Intergroup bias, which is enhanced in those holding populist attitudes can foster a more uncritical adoption of beliefs conveyed by representatives of the in-group – a circumstance which is actively used by populist politicians (Marwick & Lewis, 2017). Hence, conspiratorial beliefs will be more readily adopted and, in turn, increase suspicions and dislike toward (political) out-groups and the political views held by them. Based on this reasoning, we pose the following hypotheses:

H4: Belief in conspiracy theories is positively associated to populist attitudes.

H5: The association between populist attitudes and political homogeneity is moderated by the belief in conspiracy theories. The stronger the belief in conspiracy theories the stronger the association between populist attitudes and political homogeneity.

Method

To investigate on our assumptions, we recruited participants from a renowned German speaking survey panel. Participants were assessed via online questionnaires. All data originates from a larger survey on perceived online network homogeneity. The study was approved by the local IRB on 17 April 2019.

Sample

Data were collected between 17 July and 12 September 2019. To participate, subjects were required to be regular adult users of Facebook (min age: 18 years). After excluding subjects who indicated not being users of Facebook ($n = 10$) or who did not complete the questionnaire ($n = 97$), a final sample of $N = 469$ resulted. Participants were on average 41.26 years old ($SD = 14.57$). 301 (64.2 %) indicated female and 168 (35.8 %) male gender. Education levels were somewhat higher compared to the general population. 6.8 % had a PhD, 51.6 % a university degree, 26.2 % a high school degree, 10.7 % a middle school degree and 0.2 % no degree. Within our sample, 49 % indicated to be employee, 17.3 % student, 11.3 % entrepreneur, 7 % official, 2.6 % unemployed, 0.9 % trainee and 0.6 % pupil. 11.3 % indicated a different employment status.

Measures¹

Political homogeneity of Facebook information. To assess the degree of homogeneity (like-mindedness) of contents to which participants are exposed to on Facebook, two items were used (Dubois & Blank, 2018). Participants were asked, how frequently they encounter content on Facebook which is in line with their (1) opinions and (2) political orientation (1 = very rarely, 7 = very often). The two items were collapsed into a single score of online network homogeneity ($M = 4.24$, $SD = 1.43$, $r_{SB} = .96$). For exploratory purposes, two further items assessed the frequency with which participants actively lead discussions with like-minded users on Facebook (1 = very rarely, 7 = very often; $M = 2.19$, $SD = 1.56$, $r_{SB} = .97$).

Conspiratorial beliefs². Participants' general belief in CTs was assessed by nine items (Schultz et al., 2017). Participants were asked on their perceived likelihood of nine CTs (e.g., "The Americans never landed on the moon", "The 9/11 attacks were planned by the US government", "The uncontrolled immigration of refugees is a new strategy to abolish the German people"; 1 = surely wrong, 7 = surely true). Answers were collapsed into a single score of conspiratorial beliefs ($M = 2.06$, $SD = 0.95$, Cronbach's $\alpha = .88$).

*Populist attitudes*². Populist attitudes were assessed using an adapted measure by Schulz et al. (2018). Six items asked participants on their agreement with statements representing the populist dimensions of anti-elitism (e.g., “The political representatives are increasingly loosing contact to the people”), people’s demand for sovereignty (e.g., “The people and not the politicians should make the most important political decisions”) and belief in a homogeneous and virtuous people (e.g., “The simple people all pull together”; 1 = completely disagree, 5 = completely agree). Responses were collapsed into a single score of populist attitudes ($M = 2.80$, $SD = 0.75$, Cronbach’s $\alpha = .77$).

Political orientation. Political orientation was assessed via participants’ ideological self-assessment (Rattinger, 2012). They were asked to rate their political views on a 11-point scale (1 = left, 11 = right, $M = 4.59$, $SD = 1.86$).

Political extremity. To determine political extremity, the political orientation measure was transformed by means of scale folding, i.e. deviations from the neutral scale midpoint (6) in either direction indicated the degree of extremity ($min = 0$, $max = 5$, $M = 1.63$, $SD = 1.43$).

Controls & descriptive measures. ‘Intensity of social media use’ was assessed by the frequency of use of seven popular social media platforms (1 = never, 2 = less than once a month, 3 = once a month to once a week, 4 = several times a week, 5 = zero to one hour every day, 6 = more than one hour every day; Facebook use: $M = 4.57$, $SD = 1.06$). ‘Political social media use’ was measured by two items (Pew, 2012) asking participants on the importance social media have for them for “keeping up with political news” and “discussing political issues with others” (1 = very unimportant, 7 = very important, $M = 3.14$, $SD = 1.56$, $r_{SB} = .75$). ‘Political interest’ (Otto & Bacherle, 2011) was assessed by three statements: “I often think intensively about a political issue”, “I follow political affairs with much curiosity”, “In general, I am very interested in politics” (1 = completely disagree, 7 = completely agree, $M = 4.70$, $SD = 1.47$, Cronbach’s $\alpha = .91$). Lastly, ‘party preference’ was assessed by asking participants, which party they would vote for, if the German federal elections were to happen in the coming week (CDU/CSU, conservatives: $n = 57$ [12.2 %]; SPD, social democrats: $n = 36$ [7.7 %]; Bündnis 90/Die Grünen, greens: $n = 179$ [38.2 %]; FDP, liberals: $n = 33$ [7 %]; AfD, right-wing populists: $n = 11$ [2.3 %]; Die Linke, socialists: $n = 44$ [9.4 %]; Others: $n = 78$ [16.6 %]).

Results

To address H1 which predicted that populist attitudes are positively associated to political homogeneity of information exposure on Facebook, a hierarchical regression analysis with populist attitudes as predictor, political homogeneity as criterion and

demographics as controls was run (for bivariate correlations, see Table 1). A significant small effect of populist attitudes ($b = -0.36$, $\beta = -.19$, $p < .001$, $R^2 = .04$) indicated that stronger populist attitudes were related to lower levels of political homogeneity. H1 was therefore not supported.

Table 1

Correlations between main variables.

	(1)	(2)	(3)	(4)	(5)
Political homogeneity (1)	-				
Conspiracist ideation (2)	-.16**	-			
Populist attitudes (3)	-.19***	.49***	-		
Ideological extremity (4)	.29***	-.22***	-.13**	-	
Political orientation (5)	-.28***	.28***	.23***	-.71***	-

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

H2 assumed that the association between populist attitudes and political homogeneity is moderated by political extremity, with high levels of extremity increasing the association. In a first step, controls, ideological extremity and populist attitudes were entered as predictors of political homogeneity in a hierarchical regression analysis. To test the moderation, the mean-centered product of political extremity and populist attitudes was entered in the next step. Entering political extremity to the model rendered populist attitudes non-significant ($p = .096$), while extremity by itself moderately predicted political homogeneity ($b = 0.26$, $\beta = .27$, $p < .001$, $R^2 = .04$). Adding the moderation term to the model led to a small incremental effect ($b = 0.18$, $\beta = .15$, $p = .003$, $\Delta R^2 = .02$). Contrary to our expectation, an analysis of simple slopes revealed that the moderation effect was explained by a higher negative association between populist attitudes and homogeneity at low levels of political extremity ($-1SD$), $b = -0.42$, $p = .001$.

RQ1 asked, whether a positive association between populist attitudes on homogeneity is only observed in individuals with a right-wing political orientation. A hierarchical regression with populist attitudes and political orientation as predictors, political homogeneity as criterion and political orientation as moderator revealed a moderate negative effect of political orientation on homogeneity ($b = -0.19$, $\beta = -.25$, $p < .001$, $R^2 = .10$) indicating that a more left-wing orientation is linked to higher levels of political homogeneity. The moderation term was not significant ($b = 0.02$, $\beta = .02$, $p = .722$, $\Delta R^2 = 0$). To additionally check, whether different results are obtained when using party preference as indicator for populism (indicated by the intention to vote for the populist party *AfD*), an analysis of variance was conducted

(ANOVA) with party preference as single factor and political homogeneity as dependent variable. The resulting small effect, $F(7, 421) = 2.88, p = .006, \eta_p^2 = .05$, was fully explained by higher levels of political homogeneity for individuals who intend to vote for the greens ($M = 4.53, SD = 1.39$), compared to those who intend to vote for the liberals ($M = 3.65, SD = 1.44$). To further explore on our research question, we used frequency of like-minded discussions as dependent variable, which resulted in a small effect, $F(7, 406) = 3.70, p = .001, \eta_p^2 = .06$. This effect was fully accounted for by a higher frequency of like-minded Facebook discussions of individuals who intend to vote for the *AfD*, $M = 3.70, SD = 2.28$, compared to individuals who intend to vote for any other party (see Figure 1).

Figure 1. Like-mindedness of discussions on Facebook. Different from the homogeneity of information exposure on Facebook, like-mindedness of active Facebook discussions is highest for those who intend to vote for the right-wing populist party *AfD*. Error bars indicate standard deviations. Dotted line shows the overall mean. CDU ('Christlich Demokratische Union'); SPD ('Sozialdemokratische Partei Deutschlands'); FDP ('Freie Demokratische Partei'); AfD ('Alternative für Deutschland').

We hence addressed H3 (positive association between the belief in conspiracy theories and homogeneity) by performing a hierarchical regression analysis with conspiracist ideation as predictor, political homogeneity as criterion and demographics as controls. A small negative effect of conspiracist ideation ($b = -0.24, \beta = -.16, p = .001, R^2 = .03$) indicated that lower levels of belief in CTs are related to somewhat higher levels of homogeneity. Hence, H3 was not supported.

H4 which proposed that the belief in conspiracy theories is positively associated to populist attitudes was corroborated by a strong correlation between the two ($r = .49, p < .001$).

Lastly, H5 predicted that the belief in conspiracy theories moderates the association between populist attitudes and political homogeneity. A regression analysis (see H3) which additionally included the interactive effect of populist attitudes and conspiracist ideation on homogeneity did not reveal a significant effect ($b = -0.01, \beta = -.02, p = .922, \Delta R^2 = 0$, see Table 2). Accordingly, H5 was not supported.

Table 2

Hierarchical regression analysis.

	<i>b</i> (<i>SE_b</i>)	β	<i>t</i>	<i>p</i>	ΔR^2
Step 1 (controls)					0
Age	-0.01 (.01)	-.06	-1.24	.214	
Gender (1 = male)	0.09 (.14)	.03	0.66	.507	
Step 2 (predictors)					.04
Populist attitudes	-0.29 (.10)	-.15	-2.88	.004	
Conspiratorial beliefs	-0.12 (.08)	-.08	-1.48	.139	
Step 3 (moderator)					0
Populist attitudes x Conspiratorial beliefs	-0.01 (.09)	-.02	-0.10	.922	
Total R^2					.05

Note. Step 1: $F(2,455) = 0.87, p = .419$; Step 2: $F(4,453) = 5.40, p < .001$; Step 3: $F(5,452) = 4.31, p = .001$.

Discussion

Contrary to our assumption, populist attitudes were negatively associated to the perception of an opinion-based and ideologically homogeneous informational environment on Facebook. At first sight, this may seem surprising as related work suggests that individuals with populist attitudes over-estimate the number of individuals in society who share their views (Schulz et al., 2018). However, our finding may provide a more fine-grained view in that consensus is perceived on a societal level, while the private (online) environment is perceived as rather ‘hostile’ and non-like-minded. In accord with this, prior research found that individuals who perceive their (mediated) environments as hostile and one-sided may deliberately expose themselves to and participate in communication of the other side in an attempt to ‘correct’ allegedly distorted opinion climates (Rojas, 2010). Interestingly, though,

while populist voting intentions were unrelated to informational homogeneity, they were positively related to the preference to discuss with like-minded users on Facebook. This may imply that the pronounced homogeneity of online communication networks priorly found (Boutyline & Willer, 2017; Törnberg & Wahlström, 2018) is not rooted in the content of populist attitudes (dispositional cause), but in other characteristics shared between populist voters (e.g., the adoption of narratives propagated by populist media). It emphasizes the importance for research not to limit itself on dispositional accounts of populism and related correlates, but instead additionally take the role of situational variables (e.g., populist communication strategies and social media dynamics) into account.

Furthermore, the association between populist attitudes and homogeneity was not contingent on a rightist political orientation. Instead, homogeneity was perceived higher by more leftist participants. Different from what conservatism research suggests (Jost et al., 2009), some studies showed that those with a rather leftist orientation are more susceptible to one-sided communication with like-minded users on SNS, e.g., Heatherly and colleagues (2017) who found that supporters of the US Republicans engage in more cross-cutting communication on SNS compared to liberals. At the same time, these studies did not address the motivations which underlay the increased cross-cutting exposure, which may range from curiosity and willingness to change one's perspective to debunking and internally distancing oneself from the other side (Taber & Lodge, 2006; Weeks et al., 2017). Consequently, the increased cross-cutting exposure of rightists sometimes found may be an attempt to decrease states of dissonance and uncertainty usually found to be higher in individuals with rightist political orientations (Jost et al., 2003). Our findings complement research on ideological differences, particularly regarding users' proneness to homogeneous online environments and point to the need to address specific motivations underlying online interactions across ideological lines.

We moreover found no positive but a negative relationship between conspiratorial beliefs and homogeneity. At the same time, this effect vanished when populist attitudes were statistically controlled for, which suggests that the association between the former two is only spurious. In light of earlier findings which suggest a pronouncedly homogeneous communication and motivated reasoning among conspiracy believers (Garrett & Weeks, 2017; Smith & Graham, 2019), we argue that these tendencies may be limited to information on the specific conspiracy at hand rather than to generalize to other issues. More specifically, CT adopters may flock together on SNS to communicate and exchange information on their shared interest, i.e. the conspiracy, while they, at the same time, do not differ from other users

when it comes to the heterogeneity of other (political) information. At the same time, a number of studies suggest that homogeneity is generalized, e.g. on the level of political camps (e.g., Bakshy et al., 2015; Boutyline & Willer, 2017). Generalization, in turn, may largely depend on the (ideological) similarity and the perceived importance of the issues at hand (e.g., when they relate to the same moral principles or important political social identities). For instance, prior work suggests that like-minded selectivity toward online news is higher when individuals identify with an ideological camp (Dvir-Gvirsman, 2018). In the context of this study this could mean that, to most individuals CTs adopters, conspiratorial beliefs are not very important (as they are, e.g., not linked to fundamental aspects of their self-concepts). For research on CTs, this might imply that, although conspiratorial beliefs are persistent and disseminated within isolated social media ‘cocoons’, their believers may not evade societal deliberation and controversial exchange, at least on the level of communication via Facebook.

As expected, populist attitudes were positively associated to conspiratorial beliefs. This supports the claim that both share structural properties (e.g., distrust in elites) and therefore may represent a vulnerability to each other, i.e., individuals with populist attitudes may be more prone to believe in CTs and vice versa. Following a different line of argument, this finding might also underscore the proneness of populist politicians and partisan media to spread conspiracies and misinformation which are consequently adopted by individuals (Marwick & Lewis, 2017). One very recent example of this is a CT on the corona virus which was propagated by the rightist radio commentator Rush Limbaugh who claimed that the corona virus was created by the Chinese in order to “bring down Donald Trump” (Media Matters Staff, 2020).

Limitations and Recommendations for Future Research

It is important to highlight that these results need to be interpreted in the light of limitations posed by characteristics of the sample and research design. Participants had a somewhat higher education and were politically more leftist compared to the general German population (GESIS, 2019). For instance, voting intentions toward the right-wing populist party *AfD* were likely under-represented. It is also likely, though, that participants were reluctant in expressing populist voting intentions due to social desirability effects. Furthermore, as we were interested in behavior on Facebook, our sample only included Facebook users, which impedes generalization on the (small) population of non-users. Moreover, conspiratorial beliefs are held by a minority within the general population (Zick, Küpper, & Berghan, 2019) and they were even less prevalent among study participants (although in this case, social desirability may as well have played a part). This lack of

variance may have distorted associations between variables which therefore need to be interpreted with some caution. Importantly, the reliance on cross-sectional survey data is always linked to limited possibilities to draw causal inferences on associations between variables. Future research is therefore called to complement our findings with experimental and longitudinal data. This would, for instance, enable us to better understand the ways in which populist attitudes and conspiratorial beliefs interact. Furthermore, it should be systematically addressed, why populist attitudes are linked to lower levels of informational homogeneity on Facebook. The study into populists' motives of SNS use and specific correlates of cross-cutting exposure (e.g., 'corrective actions') would be particularly interesting in this regard.

Conclusion

Drawing on a wide range of pertinent findings, this study addressed links between one-sided, homogeneous information consumption on Facebook, populist attitudes and the adoption of conspiratorial beliefs, thereby connecting three highly relevant fields of current research into political SNS use and its implications. Despite of criticisms regarding the societal threats by SNS, our results suggest a more optimistic perspective and provide evidence that, overall, neither online network homogeneity, nor populist attitudes and conspiratorial beliefs are particularly prevalent among Facebook users. Most importantly, this study points out that connections between the former can be counter-intuitive and are more complex than suggested by previous research. This calls for further research efforts that take nuanced theoretical perspectives and multi-method approaches in order to determine the circumstances and correlates of beneficial social media use.

References

- Abalakina-Paap, M., Stephan, W. G., Craig, T., & Gregory, W. L. (1999). Beliefs in Conspiracies. *Political Psychology*, 20(3), 637–647. <https://doi.org/10.1111/0162-895X.00160>
- Bakshy, E., Messing, S., & Adamic, L. A. (2015). Exposure to ideologically diverse news and opinion on Facebook. *Science*, 348(6239), 1130–1132. <https://doi.org/10.1126/science.aaa1160>
- Barberá, P., Jost, J. T., Nagler, J., Tucker, J. A., & Bonneau, R. (2015). Tweeting From Left to Right: Is Online Political Communication More Than an Echo Chamber? *Psychological Science*, 26(10), 1531–1542. <https://doi.org/10.1177/0956797615594620>
- Bode, L. (2016). Pruning the news feed: Unfriending and unfollowing political content on social media. *Research & Politics*, 3(3), 205316801666187. <https://doi.org/10.1177/2053168016661873>
- Boutyline, A., & Willer, R. (2017). The Social Structure of Political Echo Chambers: Variation in Ideological Homophily in Online Networks: Political Echo Chambers. *Political Psychology*, 38(3), 551–569. <https://doi.org/10.1111/pops.12337>
- Byrne, D. (1961). Interpersonal attraction and attitude similarity. *The Journal of Abnormal and Social Psychology*, 62(3), 713–715. <https://doi.org/10.1037/h0044721>
- Cargnino, M., & Neubaum, G. (2019). *Homogeneity on social networking sites: Evaluating users' perceptions*. Germany: University of Duisburg-Essen. https://www.uni-due.de/imperia/md/images/dicint/cargnino_neubaum_2019_research_report_homogeneity.pdf
- Cargnino, M., Neubaum, G., & Winter, S. (2019). *We're a good match: Opinion Congruence as a Motive of Friending in Social Networking Sites*. Annual conference of the International Communication Association (ICA), Washington, D.C., 24 - 28 May 2019.
- Crawford, J. T., Jussim, L., Madon, S., Cain, T. R., & Stevens, S. T. (2011). The Use of Stereotypes and Individuating Information in Political Person Perception. *Personality and Social Psychology Bulletin*, 37(4), 529–542. <https://doi.org/10.1177/0146167211399473>
- Dahlberg, L. (2007). Rethinking the fragmentation of the cyberpublic: From consensus to contestation. *New Media & Society*, 9(5), 827–847. <https://doi.org/10.1177/1461444807081228>
- Douglas, K. M., Uscinski, J. E., Sutton, R. M., Cichocka, A., Nefes, T., Ang, C. S., & Deravi, F. (2019). Understanding Conspiracy Theories. *Political Psychology*, 40(1), 3–35. <https://doi.org/10.1111/pops.12568>
- Dubois, E., & Blank, G. (2018). The echo chamber is overstated: The moderating effect of political interest and diverse media. *Information, Communication & Society*, 21(5), 729–745. <https://doi.org/10.1080/1369118X.2018.1428656>
- Dvir-Gvirzman, S. (2017). Media audience homophily: Partisan websites, audience identity and polarization processes. *New Media & Society*, 19(7), 1072–1091. <https://doi.org/10.1177/1461444815625945>
- Dvir-Gvirzman, S. (2018). Political social identity and selective exposure. *Media Psychology*, 1–23. <https://doi.org/10.1080/15213269.2018.1554493>
- Engesser, S., Ernst, N., Esser, F., & Büchel, F. (2017). Populism and social media: How politicians spread a fragmented ideology. *Information, Communication & Society*, 20(8), 1109–1126. <https://doi.org/10.1080/1369118X.2016.1207697>
- Ernst, N., Blassnig, S., Engesser, S., Büchel, F., & Esser, F. (2019). Populists Prefer Social Media Over Talk Shows: An Analysis of Populist Messages and Stylistic Elements

- Across Six Countries. *Social Media + Society*, 5(1), 205630511882335.
<https://doi.org/10.1177/2056305118823358>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
- Feygina, I., Jost, J. T., & Goldsmith, R. E. (2010). System Justification, the Denial of Global Warming, and the Possibility of “System-Sanctioned Change.” *Personality and Social Psychology Bulletin*, 36(3), 326–338. <https://doi.org/10.1177/0146167209351435>
- Fischer, P., Jonas, E., Frey, D., & Schulz-Hardt, S. (2005). Selective exposure to information: The impact of information limits. *European Journal of Social Psychology*, 35(4), 469–492. <https://doi.org/10.1002/ejsp.264>
- Flaxman, S., Goel, S., & Rao, J. M. (2016). Filter Bubbles, Echo Chambers, and Online News Consumption. *Public Opinion Quarterly*, 80(S1), 298–320.
<https://doi.org/10.1093/poq/nfw006>
- Frey, D. (1986). Recent Research on Selective Exposure to Information. In *Advances in Experimental Social Psychology* (Vol. 19, pp. 41–80). Elsevier.
[https://doi.org/10.1016/S0065-2601\(08\)60212-9](https://doi.org/10.1016/S0065-2601(08)60212-9)
- Garrett, R. K., & Weeks, B. E. (2017). Epistemic beliefs’ role in promoting misperceptions and conspiracist ideation. *PLOS ONE*, 12(9), e0184733.
<https://doi.org/10.1371/journal.pone.0184733>
- Gentzkow, M. A., & Shapiro, J. M. (2010). Ideological Segregation Online and Offline. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1588920>
- GESIS-Leibniz-Institut Für Sozialwissenschaften. (2019). *ALLBUS/GGSS 2018 (Allgemeine Bevölkerungsumfrage der Sozialwissenschaften/German General Social Survey 2018) Allgemeine Bevölkerungsumfrage der Sozialwissenschaften ALLBUS 2018* [Data set]. GESIS Data Archive. <https://doi.org/10.4232/1.13250>
- Habermas, J. (2007). Kommunikative Rationalität und grenzüberschreitende Politik: Eine Replik. In P. Niesen & B. Herborth (Eds.), *Anarchie der kommunikativen Freiheit. Jürgen Habermas und die Theorie der internationalen Politik*. (p. 431). Suhrkamp.
- Hart, W., Albarracín, D., Eagly, A. H., Brechan, I., Lindberg, M. J., & Merrill, L. (2009). Feeling validated versus being correct: A meta-analysis of selective exposure to information. *Psychological Bulletin*, 135(4), 555–588.
<https://doi.org/10.1037/a0015701>
- Heatherly, K. A., Lu, Y., & Lee, J. K. (2017). Filtering out the other side? Cross-cutting and like-minded discussions on social networking sites. *New Media & Society*, 19(8), 1271–1289. <https://doi.org/10.1177/1461444816634677>
- Hollander, B. A. (2018). Partisanship, Individual Differences, and News Media Exposure as Predictors of Conspiracy Beliefs. *Journalism & Mass Communication Quarterly*, 95(3), 691–713. <https://doi.org/10.1177/1077699017728919>
- Janoff-Bulman, R., Sheikh, S., & Baldacci, K. G. (2008). Mapping moral motives: Approach, avoidance, and political orientation. *Journal of Experimental Social Psychology*, 44(4), 1091–1099. <https://doi.org/10.1016/j.jesp.2007.11.003>
- Jost, J. T., Federico, C. M., & Napier, J. L. (2009). Political Ideology: Its Structure, Functions, and Elective Affinities. *Annual Review of Psychology*, 60(1), 307–337.
<https://doi.org/10.1146/annurev.psych.60.110707.163600>
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129(3), 339–375.
<https://doi.org/10.1037/0033-2909.129.3.339>

- Kaczinski, A., Henning-Thurau, T., & Sattler, H. (2019). *Social Media-Society Report 2019. Wie Deutschland soziale Medien nutzt und was das für unsere Gesellschaft bedeutet*. https://www.marketingcenter.de/sites/mcm/files/downloads/research/Imm/literature/kaczinski_hennig-thurau_sattler_social_media_and_society_report_2019.pdf
- Lu, Y., & Lee, J. K. (2018). Stumbling upon the other side: Incidental learning of counter-attitudinal political information on Facebook. *New Media & Society*, 21(1), 248-265. <https://doi.org/10.1177/1461444818793421>
- Marchlewska, M., Cichocka, A., Panayiotou, O., Castellanos, K., & Batayneh, J. (2018). Populism as Identity Politics: Perceived In-Group Disadvantage, Collective Narcissism, and Support for Populism. *Social Psychological and Personality Science*, 9(2), 151–162. <https://doi.org/10.1177/1948550617732393>
- Marwick, A., & Lewis, B. (2017). *Media Manipulation and Disinformation Online*. Data & Society Research Institute. <https://datasociety.net/output/media-manipulation-and-disinfo-online/>
- McCroskey, J. C., Richmond, V. P., & Daly, J. A. (1975). The Development of a Measure of Perceived Homophily in Interpersonal Communication. *Human Communication Research*, 1(4), 323–332. <https://doi.org/10.1111/j.1468-2958.1975.tb00281.x>
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a Feather: Homophily in Social Networks. *Annual Review of Sociology*, 27(1), 415–444. <https://doi.org/10.1146/annurev.soc.27.1.415>
- Media Matters Staff (2020). *Rush Limbaugh: “The coronavirus is an effort to get Trump.”* <https://www.mediamatters.org/rush-limbaugh/rush-limbaugh-coronavirus-effort-get-trump>
- Obschonka, M., Stuetzer, M., Rentfrow, P. J., Lee, N., Potter, J., & Gosling, S. D. (2018). Fear, Populism, and the Geopolitical Landscape: The “Sleeping Effect” of Neurotic Personality Traits on Regional Voting Behavior in the 2016 Brexit and Trump Elections. *Social Psychological and Personality Science*, 9(3), 285–298. <https://doi.org/10.1177/1948550618755874>
- Rojas, H. (2010). “Corrective” Actions in the Public Sphere: How Perceptions of Media and Media Effects Shape Political Behaviors. *International Journal of Public Opinion Research*, 22(3), 343–363. <https://doi.org/10.1093/ijpor/edq018>
- Rothmund, T., & Arzheimer, K. (2015). Politische Ideologien. In S. Zmerli & O. Feldman (Eds.), *Politische Psychologie. Handbuch für Studium und Wissenschaft*. Nomos.
- Schultz, T., Jakob, N., Ziegele, M., Quiring, O., & Schemer, C. (2017). Erosion des Vertrauens zwischen Medien und Publikum? *Media Perspektiven*, 5, 246–259.
- Schulz, A., Müller, P., Schemer, C., Wirz, D. S., Wettstein, M., & Wirth, W. (2018). Measuring Populist Attitudes on Three Dimensions. *International Journal of Public Opinion Research*, 30(2), 316–326. <https://doi.org/10.1093/ijpor/edw037>
- Schulz, A., Wirth, W., & Müller, P. (2018). We Are the People and You Are Fake News: A Social Identity Approach to Populist Citizens’ False Consensus and Hostile Media Perceptions. *Communication Research*, 1-26. <https://doi.org/10.1177/0093650218794854>
- Smith, N., & Graham, T. (2019). Mapping the anti-vaccination movement on Facebook. *Information, Communication & Society*, 22(9), 1310–1327. <https://doi.org/10.1080/1369118X.2017.1418406>
- Stroud, N. J. (2010). Polarization and Partisan Selective Exposure. *Journal of Communication*, 60(3), 556–576. <https://doi.org/10.1111/j.1460-2466.2010.01497.x>
- Sunstein, C. R. (2017). *#Republic: Divided democracy in the age of social media*. Princeton University Press.

- Sunstein, C. R., & Vermeule, A. (2009). Conspiracy Theories: Causes and Cures*. *Journal of Political Philosophy*, 17(2), 202–227. <https://doi.org/10.1111/j.1467-9760.2008.00325.x>
- Swami, V., & Coles, R. (2010). The truth is out there. *The Psychologist*, 23, 560–563.
- Swami, Viren, Voracek, M., Stieger, S., Tran, U. S., & Furnham, A. (2014). Analytic thinking reduces belief in conspiracy theories. *Cognition*, 133(3), 572–585. <https://doi.org/10.1016/j.cognition.2014.08.006>
- Taber, C. S., & Lodge, M. (2006). Motivated Skepticism in the Evaluation of Political Beliefs. *American Journal of Political Science*, 50(3), 755–769. <https://doi.org/10.1111/j.1540-5907.2006.00214.x>
- Taylor, S., Pickering, B., Grace, P., Boniface, M., Bakir, V., boyd, danah, Engesser, S., Epstein, R., Fawzi, N., Fernbach, P., Fisher, D., Gardner, B. G., Jacobs, K., Jacobson, S., Krämer, B., Kucharski, A., McStay, A., Mercier, H., Metzger, M., ... Zubiaga, A. (2018). *Opinion Forming in the Digital Age*. Zenodo. <https://doi.org/10.5281/zenodo.1468575>
- Törnberg, A., & Wahlström, M. (2018). Unveiling the radical right online Exploring framing and identity in an online anti-immigrant discussion group. *Sociologisk Forskning*, 55(2-3), 267–292.
- Tucker, J., Guess, A., Barbera, P., Vaccari, C., Siegel, A., Sanovich, S., Stukal, D., & Nyhan, B. (2018). Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3144139>
- van Prooijen, J.-W., Krouwel, A. P. M., & Pollet, T. V. (2015). Political Extremism Predicts Belief in Conspiracy Theories. *Social Psychological and Personality Science*, 6(5), 570–578. <https://doi.org/10.1177/1948550614567356>
- van Prooijen, J.-W., & van Vugt, M. (2018). Conspiracy Theories: Evolved Functions and Psychological Mechanisms. *Perspectives on Psychological Science*, 13(6), 770–788. <https://doi.org/10.1177/1745691618774270>
- Weeks, B. E., Lane, D. S., Kim, D. H., Lee, S. S., & Kwak, N. (2017). Incidental Exposure, Selective Exposure, and Political Information Sharing: Integrating Online Exposure Patterns and Expression on Social Media. *Journal of Computer-Mediated Communication*, 22(6), 363–379. <https://doi.org/10.1111/jcc4.12199>
- Wojcieszak, M., & Garrett, R. K. (2018). Social Identity, Selective Exposure, and Affective Polarization: How Priming National Identity Shapes Attitudes Toward Immigrants Via News Selection. *Human Communication Research*, 44(3), 247–273. <https://doi.org/10.1093/hcr/hqx010>
- Yiannakoulias, N., Slavik, C. E., & Chase, M. (2019). Expressions of pro- and anti-vaccine sentiment on YouTube. *Vaccine*, 37(15), 2057–2064. <https://doi.org/10.1016/j.vaccine.2019.03.001>
- Zick, A., Küpper, B., Berghan, W., & Verlag J. H. W. Dietz Nachf. (2019). *Verlorene Mitte-Feindselige Zustände: Rechtsextreme Einstellungen in Deutschland 2018*. <https://www.fes.de/index.php?eID=dumpFile&t=f&f=39657&token=b68b8efe1d66a60e980987e6f07fb1d5e3b01de3>
- Zillmann, D., & Bryant, J. (Eds.). (1985). *Selective exposure to communication*. L. Erlbaum Associates.

Notes

1 Psychometric values of all measures can be found within the [OSF project](#).

2 A detailed description of the scale can be found [here](#).

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