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Article

"Resistance!": Collective Action Cues in Conspiracy Theory-Endorsing Facebook Groups

Lena Frischlich

Department of Communication, University of Münster, Germany; lena.frischlich@uni-muenster.de

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Abstract
Conspiracy theories on social media have been suspected of contributing to mobilization and radicalization. Yet, few studies have examined the prevalence of psychological variables that may serve to motivate normative and non-normative collective action in this material. Drawing from the "social identity model of collective action," the current study uses a mixed-methods approach to examine the prevalence of collective action cues in conspiracy theory-endorsing social media spaces. Towards this end, I examined four German Facebook groups (Covid-19-Skeptic, Far-Right, Chemtrail, and Political Affairs) during the first months of the Covid-19 pandemic. The results of qualitative content analysis (*N* = 828 posts), a hierarchical cluster analysis, and the examination of popularity cues showed that: (a) collective action cues were frequent; (b) most posts transmitted alternative views (Cluster 1) or absolutist ideologies (Cluster 2) with few collective action cues—yet, more than one-third of the posts were either mobilizing (Cluster 3) or wrathful (Cluster 4), entailing multiple collective action cues including cues theoretically linked to non-normative action; (c) mobilizing and wrathful posts were more engaging than alternative views and absolutist ideologies; (d) the types of posts and levels of engagement varied between the examined groups such that the Chemtrail and the Far-Right group disseminated more content with a higher mobilizing potential. The Far-Right group was also the most active in responding to its members. The results of this study are novel in that they demonstrate the prevalence of cues that have been linked to non-normative collective action in psychological research within conspiracy theory-endorsing Facebook groups.

Keywords
collective action; conspiracy theories; Facebook; Facebook groups; non-normative collective action; popularity cues; radicalization; virtual groups

Issue
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1. Introduction

To curb the spread of the novel Covid-19 disease (WHO, 2020), governments worldwide have implemented strict measures, including mask mandates and lockdowns, beginning in spring 2020. Shortly thereafter, protest movements against these measures emerged. In Germany, the context of the current study, these protests were rapidly associated with the self-declared "cross-thinker" (German: Querdenker) movement (Nachtwey et al., 2020; Virchow & Häusler, 2020). The Querdenken movement radicalized rapidly. In August 2020 protesters at a large Covid-19-sceptics demonstration attempted to storm the German parliament, and, in 2021, a young employee was shot to death merely for asking a customer to wear a face mask. Both incidents can be considered extreme cases of non-normative collective action. In this study, I employed the social identity model of collective action (van Zomeren et al., 2008) as a framework to examine the posts in public Facebook groups endorsing conspiracy theories and the digital ways in which members of these groups respond to the posted content. Ultimately, I sought to answer the following research questions:

RQ1: Do posts in conspiracy theory-endorsing Facebook groups include collective action cues?

RQ2: How prevalent are cues related to non-normative collective action in these groups?

RQ3: How do group members respond to different types of posts as judged by aggregated popularity cues?

2. Theoretical Background

2.1. Conspiracy theories

In its most basic form, a conspiracy theory proposes an explanation of events through hidden patterns that purportedly reveal the actions of a malicious group of conspirators who work in secret against the common good (Uscinski, 2017). Such conspiracies do exist and theories about conspiracies are not per se wrong. However, conspiracy theories in a narrower sense are often unwarranted (Keeley, 1999): They typically oppose common knowledge (counter-hegemonical) and are immune to counter-evidence. Baden and Sharon (2021) recently suggested that such unwarranted conspiracy theories assume an unrealistic pervasive potency among the conspirators (e.g., the ability to perfectly control information), rely on a non-falsifiable elusive epistemology through dogmatic reasoning, and espouse a Manichean us-versus-them worldview. Although the stories upon which conspiracy theories are based differ across time and space, Brotherton et al. (2013) identified five generic "story-lines" of conspiracy theories: (a) government malfeasance (e.g., routine criminal conspiracies within governments); (b) extraterrestrial cover-ups; (c) malevolent global conspiracies (e.g., the new world-order); (d) personal well-being (e.g., stories about mind control); and (e) information control (e.g., by the government or the media).

While some conspiracy beliefs are harmless, others can severely threaten well-being (Quandt et al., 2022). For instance, those who believe in conspiracy theories about Covid-19 are less likely to adhere to pandemic control measures (Imhoff & Lamberty, 2020; Pummerer et al., 2021). Conspiracy believers are also more likely to accept violence including political violence (Lamberty & Leiser, 2019, Study 1; Rottweiler & Gill, 2020). Yet, simply reading about a conspiracy theory does not increase one's acceptance of violence (Lamberty & Leiser, 2019, Study 3). Other factors such as high levels of anger (Jolley & Paterson, 2020) must also be present. In this study, I sought to examine the role of collective action cues in this context.

2.2. Collective Action and Media Content

Collective action describes actions taken on behalf of one's ingroup intended to improve the status quo for that ingroup (Wright et al., 1990). The social identity model of collective action (van Zomeren et al., 2008) assumes that individuals engage in collective action due to three distinct motivational factors: (a) their *social identity*—the degree to which they identify with the group; (b) perceptions of *injustice* regarding the conditions of this group; (c) peoples' perceived *efficacy* of their actions. Collective action is more likely when a social identity has been politicized (versus not), when perceived injustice is issue or situation-based (versus structural), and the injustice perception is affective (i.e., stimulates anger). Emotions related to efficacy perceptions, such as pride about prior successes (Tausch & Becker, 2013) or hope for the actions' outcome (Cohen-Chen & van Zomeren, 2018), can also motivate collective action. Collective action can be normative (e.g., signing a petition or protesting in a democracy) or non-normative (e.g., executing violence). Non-normative collective action is motivated by a lack of perceived efficacy (Becker & Tausch, 2015; Tausch et al., 2011). For instance, a sense of hopelessness can breed aggression over time (Demetropoulos Valencia et al., 2021).

Media content entailing collective action cues likely contributes to collective action (Jost et al., 2018). This assumption is highly compatible with framing theory (Entman, 1993). Framing theory postulates that media content can frame the same issue in different ways and thereby determines the salience of different aspects of the issue (e.g., Igartua et al., 2011; Lecheler & de Vreese, 2012). This salience in turn affects cognitions, emotions, and behavior. For instance, political frames reliably shape political attitudes (Amsalem & Zoizner, 2022) and covering themes that typically elicits distinct emotions in the media can provoke that emotion in the audience (Nabi, 1999, 2002).

2.3. Facebook Groups as Opportunity Structures

Albeit most Facebook groups are likely harmless, others are prominent arenas for conspiracy theories (Kim & Kim, 2021) and violent extremism. Amongst others, such groups can serve as echo chambers continually validating conspiracy beliefs (Quattrociocci et al., 2016), thereby potentially provoking an overestimation of the consensus for these worldviews among their members. One survey showed that the longer participants engaged in a neo-Nazi forum, the more they overestimated public consensus for far-right ideologies (Wojcieszak, 2008). Public consensus in turn can greatly influence the propensity to engage in non-normative collective actions (Tausch et al., 2011).

One mechanism by which Facebook groups can validate their users' worldviews is via so-called popularity cues. Facebook users can respond to others' posts by liking, sharing, or commenting on them. Clearly, these responses can be driven by various motivations (e.g., Gerlitz & Helmond, 2013) and can be related to different aspects of online content (Blassnig et al., 2021). However,

likes, shares, and comments do reflect different engagement intensities (e.g., a comment takes more time than a like) and thus express one's level of attention (Staender et al., 2019). Further, users and recommendation algorithms might interpret all likes for one's posts equally, failing to discriminate between an "honest" and a "satirical" like. Consequentially, the mere count of these interactions does to some extent express a distinct level of digital popularity.

Another support mechanism is the expression of consonant emotional responses. Facebook offers different emotion buttons (e.g., love, joy, anger; see also Jost, 2020), the selection of which is slightly more time-consuming than a simple like. Hence, these emojis are considered to be indicative of a purposeful expression of an emotion by the users (Eberl et al., 2017). From a collective action perspective, the expression of anger (as an indicator of shared injustice perceptions) and love (as an indicator of sympathy) is particularly relevant. Consequently, I examined the endorsement of different types of posts in conspiracy theory-endorsing Facebook groups through the lens of likes, shares, comments, and anger and love emojis.

3. Methods and Measurements

The current study employed a qualitative content analysis (Mayring, 2010) of posts published in four conspiracy-believing Facebook groups during roughly the first year of the Covid-19 pandemic (20th of January 2020–21st of January 2021). To ensure that only influential Facebook groups were chosen, I focused on public groups comprising more than 10,000 followers in April 2021. To capture the heterogeneity of conspiracy beliefs I selected groups representing a diverse range of generic "story-lines'' (Brotherton et al., 2013) and more mainstream (e.g., Covid-19 or politics) as well as more fringe topics (e.g., chemtrails, far-right). All groups were identified via keyword searches for different conspiracy theories (e.g., plandemic, great replacement, new world order). Three out of the four groups have since been deleted or became private, reflecting increased efforts to curb the spread of conspiracy theories on major platforms (Knaus, 2020).

The first group, labeled Covid-19-Skeptics, was founded in 2020 and positioned itself as a counter-public to the official pandemic response in Germany (see Table 1). Although the group was not officially affiliated with the Querdenken movement, it regularly advertised these protests on its Facebook page. Drawing on Brotherton et al. (2013), the group mainly conveyed generic conspiracy theories of malfeasant governments, malevolent global conspiracies, and information control. Most conspiracy theories were related to Covid-19. The second group, labeled Far-Right, positioned itself as a proponent of the "great replacement" myth, which postulates that white people would be "strategically replaced" by people of color, a racist speculation. The conspiracy theories promoted in this group generally concerned malfeasant governments and occasionally malevolent global conspiracies. The posts often referenced to far-right narratives and white supremacist ideologies. The third group, labeled Chemtrails, was hosted by a former climate activist and prominent chemtrail ideologue. Besides chemtrails, posts in this group also discussed other conspiracy theories about personal well-being, such as theories about an alleged mind control via a research institute in Alaska (High-Frequency Active Auroral Research Program). The fourth group mostly discussed general politics and thus was labeled as Political Affairs. Conspiracy theories in this group often described malevolent global conspiracies, such as the "new world order" or otherworldly activities by "Satan's daughter." Table 1 provides an overview of the selected groups.

I crawled all posts published in these groups between the 1st of January 2020 and the 21st of January 2021 (i.e, the initial months of the Covid-19 pandemic) using CrowdTangle. CrowdTangle is a public insights tool from Meta that provides access to public posts and aggregated user reactions to these posts on Facebook. This resulted in a total of N = 143,582 posts. For the manual coding, I randomly selected posts using the group name as a quota. Posts that were no longer available at the time of coding were resampled up to three times. This resulted in a final selection of N = 828 posts, equally distributed across groups $\chi^2(3) = 1.58$, $p = .66$.

3.1. Procedure

Each post was coded by one of 13 trained undergraduate students as part of a larger teaching project on emotions in social media. Coders were trained in two sessions: First, all coders and myself coded n = 40 posts that were not used to refine the category system nor included in the final coding to familiarize themselves with the

Table 1. Examined Facebook groups.

Group label	Typical Conspiracy Theories	*N* Members	*N* Posts	*n* Sample
Covid-19-Skeptics	Covid-19-related	20,317	32,839	209
Far-Right	Great replacement	12,178	8,336	212
Chemtrails	Chemtrails	24,433	53,672	190
Political Affairs	QAnon, Deep state, Satanism	18,875	48,735	211

Note: Member counts were obtained in April 2020.

material ("pilot phase"). In an extensive coding conference, disagreements between coders were resolved, and the coding instructions were refined. Second, another n = 40 Facebook posts were coded to familiarize with the new codebook ("pretest"). Finally, another n = 40 Facebook posts were coded to determine intercoder-reliability. The final category system is provided via the Open Science Framework (see Supplementary Material).

3.2. Codebook

A total of n = 36 subcategories were directly relevant to the research questions examined here (other categories included questions such as whether the post was a repost which were discussed in class only and are not in focal attention here). The included subcategories reflected ten constructs of interest: Whether the posts (1) referred to Covid-19 or measures taken to control the pandemic; (2) entailed a theory about conspiracies, i.e., assumed secret knowledge or described conspirators (Uscinski, 2017); (3) disseminated propaganda, i.e., an ideology that claimed absolute validity and threatened sanctions depending on adherence to this ideology (Frischlich, 2021; Merten, 2000); (4) endorsed violence.

To depict collective action cues, we coded whether the post (5) referred to social identities by referencing to an ingroup, an outgroup, or both (Harwood et al., 2005). We also coded whether a post entailed distinct emotions relevant to normative collective action, namely (6) anger (Stürmer & Simon, 2009), (7) pride (Tausch & Becker, 2013), (8) hope (Cohen-Chen & van Zomeren, 2018), and (9) hopelessness. For all emotions, we coded for typical themes triggering these emotions (Lazarus, 2001), such as injustice eliciting anger, as well as for direct displays of that emotion (e.g., the expression of anger). A similar approach was employed successfully in the context of self-transcending emotions (Dale et al., 2020). We also (10) coded for whether the posts directly called for collective action (e.g., advertised a demonstration).

To evaluate intercoder reliability, we used Brennan-Prediger's κ (Brennan & Prediger, 1981) calculated via the shinyapp (https://joone.shinyapps.io/icr_web) for the tidycomm package (Unkel, 2020). We selected this coefficient because I expected some of the categories of interest to be seldom (e.g., violence endorsement). If categories are seldom, popular intercoder-reliability coefficients, such as Krippendorf's α (Krippendorff, 2011), can lead to biased results (Quarfoot & Levine, 2016). Brennan-Prediger's κ has been found to be robust to skewed category distributions (Quarfoot & Levine, 2016). As for other reliability coefficients, values of zero indicate *no* and values of one *perfect agreement*.

3.3. Data Aggregation

Table 2 provides an overview of the constructs of interest. I excluded subcategories with $\kappa < .50$ from the analyses. Most of the categories were coded with a satisfying reliability, with κ being between .79 and 1. Yet, five of the categories of interest showed intercoder

Table 2. Category system.

Constructs	Content	Subcategories	Range of κ
Covid-19-related	Is Covid-19 addressed?		.59
Social identity	Do the posts make social identities salient?	In-/outgroup distinction, upgrading of the ingroup, victimization of the ingroup, downgrading of the outgroup	.80–.80
Negative emotions	Do the posts elicit negative emotions?	Anger, hopelessness	.79–.79
Positive emotions	Do the posts elicit positive emotions?	Pride, hope	.79–.79
Call for action	Do the posts call for action?		.80
Conspiracy-theoretical	Do the posts entail elements of a conspiracy theory?	Hidden patterns, conspirators, fictional group, superior knowledge, claims for absolute truth	.59–1
Propaganda	Do the posts entail elements of propagandist communication?	Calls for action, alternativeness, claims to absolute truth, moral discourse, positive sanctions, negative sanctions	.59–.80
Violence endorsement	Do the posts endorse violence?	Dealing with violence, endorsing violence, calling for violence, profanities	.59–.80

Notes: To enhance readability, I sorted the table along overarching constructs; all categories depicted in the "category" column were coded separately to guide the coders attention to different facets of the constructs of interest; the full category system, including reliability indicators is provided via the Open Science Framework (see Supplementary Material, Codebook).

reliabilities of κ = .59, indicating a moderate agreement following Landis and Koch (1977) but failing to match the standards suggested by Krippendorff (2004). The respective categories measured (a) whether the post dealt with the Covid-19, (b) used a moral argumentation, (c) propagated an absolute truth, (d) threatened negative sanctions, or (e) included profanity. I exclude Covid-19-relatedness and profanity. However, morality, absoluteness, and negative sanctions were all elements of the propaganda construct and were as such theoretically meaningful. Krippendorff argued that combining several variables into an index can reduce the effects of intercoder disagreements on the result (Krippendorff, 2004, p. 243) but warned that reliability should be averaged only when the distinct variables are considered to measure the same construct. As this was the case for these three variables, I included them in the formation of aggregated indicators of the constructs of interest.

I calculated the following indices. Posts were coded as entailing a *conspiracy theory* when they included (a) secret knowledge about hidden patterns of events or proclaimed the omniscience of the ingroup, and (b) mentioned conspirators, such as outgroup members, powerful individuals, or fictitious groups, κ_M = .90. A manual validation showed that this was a conservative approach as it did not capture posts that included snippets of distrust (e.g., the claim that "over 80% of PCR tests are negative") nor links to webpages in which a Q for QAnon was embedded in the title (e.g., Qblogspot). However, the approach did capture all generic conspiracy storylines described by Brotherton et al. (2013). Among others, we found conspiracy theories about (a) government malfeasance (e.g., Covid-19 as a "plandemic"), (b) otherworldly activities ("how Satan rules the world"), (c) global conspiracies (such as Bill Gates and microchips), (iv) personal well-being (e.g., vaccination causes autism or changes DNA), and (d) information control (e.g., celebrations about "brave" doctors who speak "the truth" about pandemic control measures). Nearly one-fifth of the posts involved such a conspiracy theory (*n* = 163, 19.69%).

Drawing from Merten (2000), I coded posts as *propaganda* when they transmitted an absolutist worldview (e.g., proclaimed an absolute truth, a lack of alternatives, or moral obligations) together with either positive or negative sanctions (κ_M = .68). For instance, one post demanded "Stop this mess!!! I will not be oppressed or re-educated! I will not be trained like a dog, and I will not be made a faceless monkey!!!" as a caption on an article presenting masks and hygienic behavior as part of a "dark agenda." Based on this logic, more than one-third of the posts (*n* = 286, 34.54%) disseminated propaganda.

To depict collective action cues, I captured whether a post referred to either the ingroup or an outgroup, thus potentially increasing the salience of one's *social identity* (κ_M = .80), *called for action* (κ = .80), or entailed themes or expressions of *anger* (κ_M = .90), *hopelessness* (κ = .80), *pride* (κ_M = .79), or *hope* (κ_M = .79). I coded posts as *violence endorsement* when they mentioned and justified violence or directly called for it (κ_M = .80). Only six posts fulfilled this criterion (.72%). All remaining analyses are based on these aggregated indices.

3.4. Popularity Indicators

I examined user reactions based on aggregated popularity indicators for each post provided by CrowdTangle. For this study, I focused on the following metrics: likes, shares, comments, and angry and love emojis.

4. Results

4.1. Collective Action Cues and the Prevalence of Non-Normative Collective Action Cues

RQ 1 asked for collective action cues. An inspection of the frequencies of codes showed that a substantial share of the posts referred to participants' social identity (*n* = 231, 27.90%). Calls for action were found in 18.32% of posts (*n* = 133). Regarding emotions, elicitors of anger were most frequent (*n* = 351, 42.39%), followed by posts conveying hopelessness (*n* = 106, 14.36%) and, to a much smaller extent, hope (*n* = 64, 7.73%) and pride (*n* = 46, 5.56%). Taken together, cues associated with collective action were frequently found in posts published in conspiracy theory-endorsing Facebook groups. All analysis scripts are provided open access via the Open Science Framework (see Supplementary Material, analysis scripts).

RQ 2 asked about the prevalence of potential elicitors of non-normative collective action. An inspection of the Bonferroni-corrected Pearson correlations (see Table 3) showed that posts that referred to social identities also often involved calls for action and included anger, hopelessness, and, to a lesser extent, pride. Furthermore, social identity references were often found alongside conspiracy theories and propaganda. Consequently, the examined posts often entailed a mixture of cues for psychological aspects that have been associated with non-normative collective action. In the next step, I sought to understand the types of messages within these groups in greater detail.

4.2. Types of Messages Within Conspiracy-Theory Endorsing Facebook Groups

To identify post types that were representative of the overall communication, I ran a hierarchical cluster analysis. Cluster analysis identifies subgroups of cases (or posts) representing the entire sample by grouping cases/posts that are similar to each other in the same cluster and maximizing the difference from posts in the other clusters. All aggregated variables served as cluster-forming variables.

Following Kaufman and Rousseeuw (2009) the selection of the appropriate cluster algorithm must consider the structure of the data, the balance of the examined

Table 3. Zero-order correlations.

		2	3	4	5	6	7	8	9
1	Hope	.23***	−.07	−.06	.08	.13*	−.01	.06	−.02
2	Pride		.01	−.04	.16***	.08	.12*	.12*	.04
3	Anger			.21***	.40***	.18***	.30***	.29***	.10
4	Hopelessness				.24***	.08	.11	.18***	−.04
5	Social identity					.23***	.40***	.37***	.04
6	Call for action						.12	.22***	.11
7	Conspiracy theory							.44***	.07
8	Propaganda								.06
9	Violence endorsement								

Notes: Bonferroni-corrected pairwise comparisons between dummy-coded aggregated variables. * $p < .05$, ** $p < .01$, *** $p < .001$.

characteristics and predefined criteria for a good solution. For this study, the mixed data structure with binary and ordinal variables and the imbalance of present versus absent content-analytical codes implied hierarchical clustering with a Gower dissimilarity matrix as the input. I compared two suitable algorithms: divisive clustering ("Diana"), which starts from one large cluster and then splits into smaller clusters; and agglomerative clustering ("Agnes"), which starts with small clusters and aggregates them into larger ones. I chose the final algorithm based on a visual inspection of the elbow plots, which indicate similarity within the clusters, and silhouette plots, which indicate distinctiveness between clusters (see Figure 1). I further consulted the Dunn index to evaluate the overall cluster quality and pursued a solution with comparable cluster sizes for subsequent analyses. Jointly, all criteria indicated that a four-cluster solution using agglomerative clustering would be desirable, *Dunn* = .89. Thus, I proceeded with this solution.

The largest cluster (Cluster 1, *alternative views*) included 44.4% of all posts. An inspection of the distribution across clusters showed that conspiracy theories and propaganda occurred seldomly in this cluster. However, this does not mean that the posts did not take a counter-hegemonic stance or spread misinformation. A substantial share promoted "counter-experts'' such as Dr. Sucharit Bhakdi, a retired infectiologist, who gained prominence for denying the dangers of Covid-19, or anti-vaccine activist Robert Kennedy Jr.. Other posts spread misinformation, such as viruses being an invention of "wickediologists" (instead of a natural phenomenon) or the German Science Foundation (DFG) being an invention by renowned virologist Dr. Christian Drosten (born many years after the foundation of the DFG). Although a substantial share of posts was comparably neutral "coverage," the selection of news stories was partially biased. For instance, reports about crimes ascribed to migrants (vs. to Germans without migration experience) were overrepresented. Posts in this cluster included comparably few cues associated with collective action. Only hope was overrepresented in this cluster.

The second cluster (Cluster 2, *absolutist ideologies*) included 18.2% of all posts (*n* = 151). Slightly more than one-third of them spread conspiracy theories. Nearly all were propaganda. Most of the conspiracy theories concerned a malfeasant government (e.g., declaring a law as an "empowerment act," or planning "forced vaccination"), but there were also conspiracy theories about a "stolen" election in the US or the "myth of climate crisis." The posts partly referred to facts, such as the European Union's budget, but framed them in a distrustful manner (e.g., as giving preferential treatment to refugees over the native population). Collective action cues were comparably seldom in this cluster.

The third cluster (Cluster 3, *mobilization*) included 18.6% of all posts (*n* = 154). Nearly one-half of the posts involved conspiracy theories, and more than two-thirds included propaganda. The conspiracy theories in these posts mostly referred to Covid-19 and/or dystopian concerns about total mass surveillance. Some posts also spread vitriol against migrants or propagated the white supremacist "great replacement" myth. Others warned about "eugenics and direction—the masterplan to slavery." The posts in this cluster entailed multiple collective action cues. Nearly all referred to social identities and fomented anger. One-half of the posts also promulgated the sense of hopelessness, and just as many called for direct action (e.g., "fellow citizens: It's enough ….What do you fear?….Defend yourselves! Go to the streets"). Two posts endorsed violence. Posts in this cluster incorporated several cues for hopelessness that might be associated with non-normative collective action.

The fourth cluster, (Cluster 4, *wrath*, *n* = 155, 18.7%), included fewer posts coded as propaganda than the other clusters. Conspiracy theories were found in roughly one-fifth of these posts. The disseminated conspiracy theories often had an intergroup component, spreading vitriol against religious minorities, e.g., by fueling antisemitic tropes about an alleged "senate Rothschild" or an infiltration through "political Islam." Other posts cultivated white supremacist ideations. Many posts attacked politicians such as former German chancellor Angela

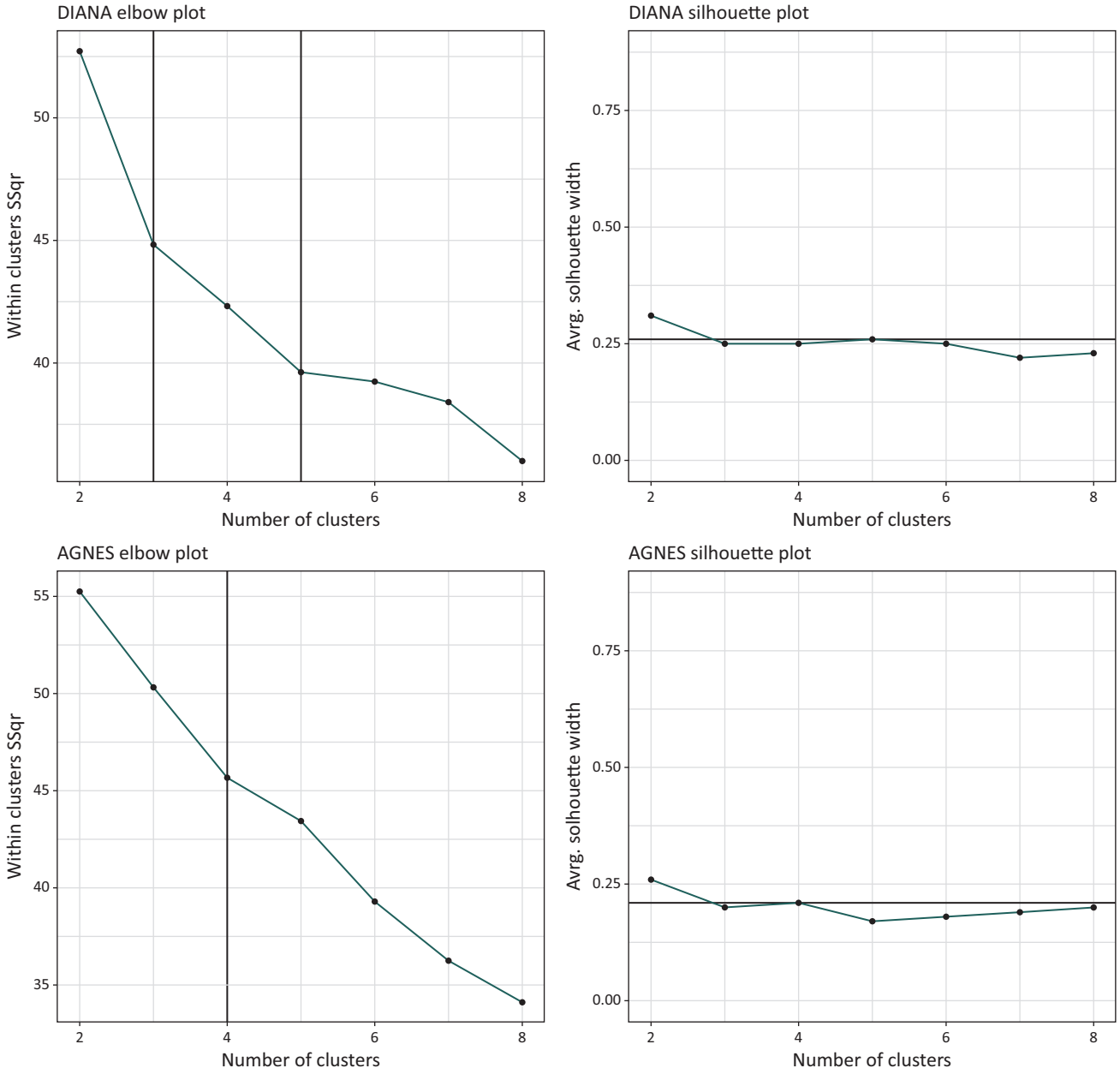

Figure 1. Ellbow and silhouette plots for identifying the optimal cluster solution based on the agglomerative and the divisive cluster algorithm Notes: Horizontal respective vertical lines mark the best cluster solutions; SSqr = Sum of squares; DIANA = divisive clustering algorithm; AGNES = agglomerative clustering algorithm.

Merkel or German politician Andrea Nahles. The tone of these posts was very derogatory, and nine out of 10 posts in this cluster fomented anger. Other emotions were nearly absent. Calls for action were found in one out of five posts in this cluster, and four posts openly endorsed violence. For instance, one post wrote, "As a reminder: WE have it in our hands!!!! We only need to unite for the so-called 'Storming of the Bastille'!!!!" Table 4 summarizes the prevalence of categories per cluster.

A series of χ^2 tests showed that the four clusters were not equally prevalent in all examined Facebook groups, $\chi^2(9) = 70$, $p < .001$. An inspection of the standardized residuals showed that within the Covid-19-Skeptic group, absolutist ideologies were overrepresented (Cluster 2, $z = 4.88$, $p < .001$), whereas wrath was underrepresented (Cluster 4, $z = -3.98$, $p < .001$). This pattern was reversed in the Far-Right group (wrathful, $z = 3.06$, $p < .01$, absolutist, $z = -4.11$, $p < .001$). Absolutist posts were also infrequent in the Chemtrail group ($z = -2.97$, $p < .01$), whereas mobilization was overrepresented (Cluster 3, $z = 2.63$, $p < .01$). Finally, posts in the Political Affairs group were more likely to transmit alternative views (Cluster 1, $z = 2.26$, $p < .05$) and absolutist ideologies ($z = 2.11$, $p < .05$) but less likely to entail mobilization ($z = -3.98$, $p < .001$). Taken together, content related to (non-)normative collective action was more prevalent in the Far-Right group and the Chemtrail group than in the other two groups.

Table 4. Prevalence of categories per cluster.

	Total		Alternative Views Cluster 1 (*n* = 368)		Absolutist Ideologies Cluster 2 (*n* =151)		Mobilization Cluster 3 (*n* = 154)		Wrath Cluster 4 (*n* = 155)	
Dummy coded	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Social identity	231	27.9	16	4.35	41	27.15	130[b]	84.42[b]	44[b]	28.39[b]
Anger	351	42.39	6	1.63	49	32.45	151[b]	98.05[b]	145[b]	93.55[b]
Hopelessness	106	12.8	10	2.72	15	9.93	80[b]	51.95[b]	1[a]	.65[a]
Pride	46	5.56	19	5.16	9	5.96	17[b]	11.04[b]	1[a]	.65[a]
Hope	64	7.73	40[b]	10.87[b]	9	5.96	15[b]	9.74[b]	0[a]	.00[a]
Call for action	133	16.06	19	5.16	24	15.89	56[b]	36.36[b]	34[b]	21.94[b]
Conspiracy theories	163	19.69	1[a]	.27[a]	52[b]	34.44[b]	74[b]	48.05[b]	36[b]	23.23[b]
Propaganda	286	34.54	9	2.45	147[b]	97.35[b]	115[b]	74.68[b]	15	9.68
Violence endorsement	6	.72	0[a]	.00[a]	0[a]	.00[a]	2[b]	1.30[b]	4[b]	2.58[b]

Notes: Based on *N* = 828 posts; percentages refer to all posts; a = categories that were represented in less than one percent of posts per cluster; b = categories overrepresented by more than one percent in a cluster compared to the share of all posts.

4.3. User Responses

RQ3 asked about which kinds of messages gained popularity in the examined groups. On average, posts received around 12 likes and shares and 10 comments (see Table 5). Angry reactions were more frequent than expressions of love. All distributions were strongly skewed, with most posts receiving no or only a few reactions. A series of Kruskal-Wallis tests showed that the clusters differed significantly regarding the number of likes ($\chi^2(3) = 8$, $p = .04$), comments ($\chi^2(3) = 20$, $p < .001$), shares ($\chi^2(3) = 11$, $p = .01$), and anger ($\chi^2(3) = 28$, $p < .001$; see Figure 2) but not regarding the number of love emojis ($\chi^2(3) = 5$, $p = .20$). As expressions of love were overall infrequent, I focused on the other four indicators in the following. A series of pairwise Wilcoxon tests found no statistically significant differences between the clusters concerning the number of likes once the α level was corrected using the Bonferroni method. Posts transmitting alternative views (Cluster 1) and radical ideologies (Cluster 2) were shared less often than mobilizing or wrathful posts (Clusters 3 and 4). Wrathful posts were also commented on more than posts spreading alternative views. Consistent with the assumption that anger-eliciting posts fueled anger in the audience, mobilizing and wrathful posts received more angry user reactions. All other single comparisons failed to reach statistical significance.

To understand the popularity of different messages in greater detail, I ran ordinal regression analyses via the ordinal package (Christensen, 2019). The popularity indicators that were found to vary between clusters served as a criterion, and the coded characteristics of the posts served as predictors (see Table 6). These analyses showed that post characteristics significantly contributed to the explanation of variance for likes ($\chi^2(9) = 21.1$, $p = .01$), shares ($\chi^2(9) = 27.2$, $p = .001$), comments ($\chi^2(9) = 22.6$, $p = .01$), and anger ($\chi^2(9) = 47.8$, $p < .001$). An inspection of the regression wights (see Table 6) showed that posts with social identity cues or which expressed pride received more likes. Posts with social identity cues or expressing anger were shared more often, whereas posts disseminating propaganda were shared less often. Posts expressing hope were commented on less often. Posts that included social identity cues or expressed anger received more angry emojis,

Table 5. Aggregated user responses.

	M	*SD*	*Md*	Min	Max
Likes	12.02	35.64	2	0	475
Shares	12.80	48.90	2	0	1,121
Comments	10.33	23.88	1	0	184
Angry	8.85	27.27	0	0	270
Love	.28	1.27	0	0	20

Note: Aggregated user responses were provided by CrowdTangle and merged with the manually coded data for this analysis.

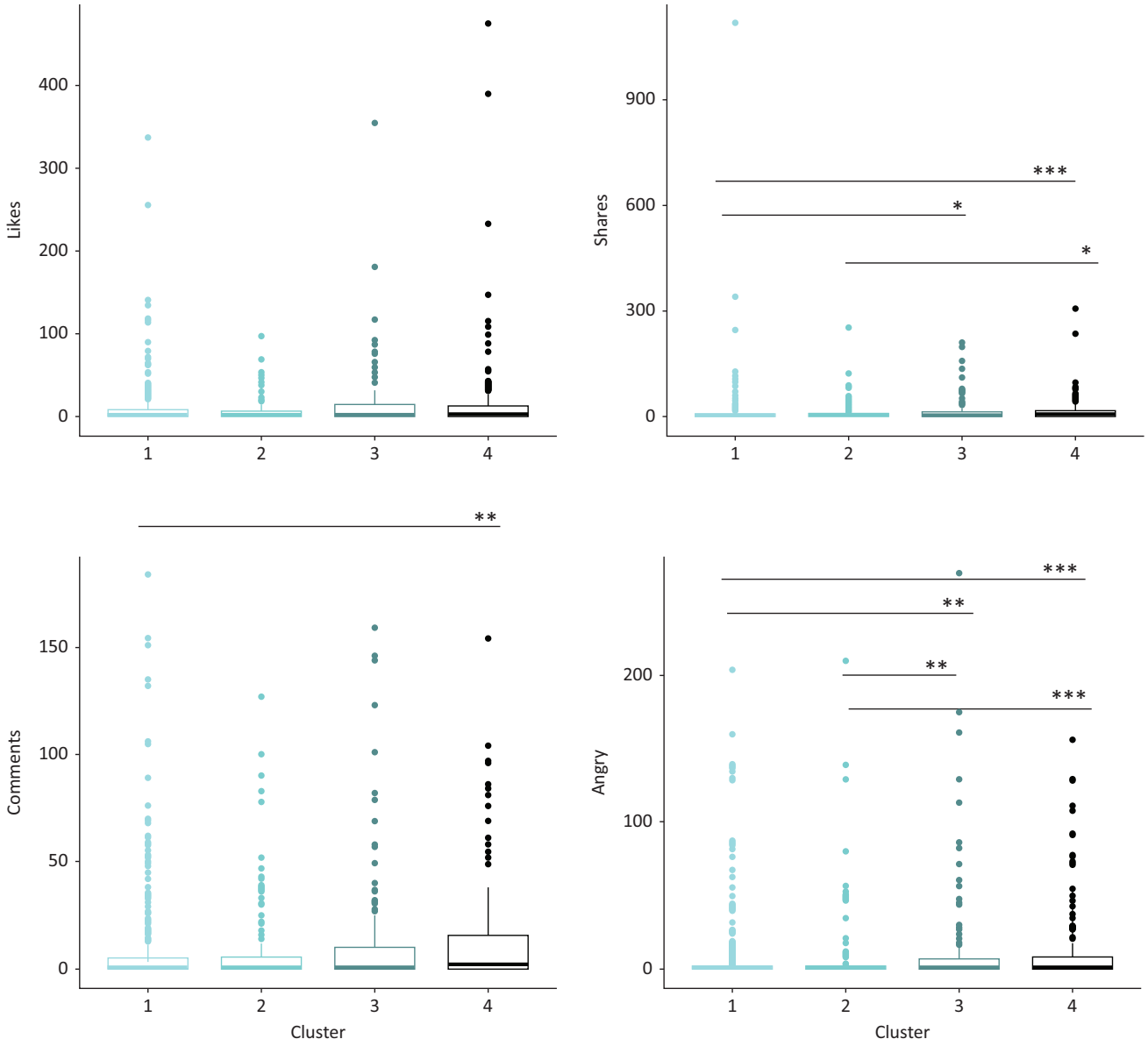

Figure 2. Engagement per cluster. Notes: The boxplots show the median and the interquartile range; the single dots visualize datapoints outside this area; Cluster 1 = alternative views; Cluster 2 = absolutist ideologies; Cluster 3 = mobilization; Cluster 4 = wrath; single comparisons are indicated via horizontal lines; *** $p < .001$, ** $p < .01$, * $p < .05$.

whereas posts that addressed pride and hope or called for action received fewer angry emojis. Consequently, the popularity cues validated references to social identity and anger but did not specifically endorse conspiracy theories or propaganda.

Finally, an examination of differences between the Facebook groups via Kruskal-Wallis tests found statistically significant differences between the groups regarding likes ($\chi^2(3) = 262$, $p < .001$), shares ($\chi^2(3) = 294$, $p < .001$), comments ($\chi^2(3) = 302$, $p < .001$), and anger ($\chi^2(3) = 212$, $p < .001$). These differences were driven by the hyperactive community in the Far-Right group which "outperformed" all other groups in terms of popularity cues (see Table 7).

5. Discussion

The current study examined the extent to which Facebook groups provide new opportunity structures for the mobilization of non-normative collective action in conspiracy theory-endorsing virtual communities. To account for the heterogeneity of conspiracy theories, I compared four groups with different foci and spreading different generic conspiracy-theoretical storylines: A Covid-19-Skeptic group that formed in response to the Covid-19 pandemic, a Far-Right group, an established Chemtrail community, and a Political Affairs group.

Drawing from research on the social identity model of collective action (van Zomeren et al., 2008), I used

Table 6. Regression analyses for popularity indicators.

	Likes				Shares				Comments				Angry emojis			
	b	*SE*	*OR*	*p*	*b*	*SE*	*OR*	*p*	*b*	*SE*	*OR*	*p*	*b*	*SE*	*OR*	*p*
Social identity	.4	.17	1.49	*	.46	.17	1.58	**	.28	.18	1.32		.51	.2	1.66	**
Anger	.19	.15	1.2		.44	.15	1.55	***	.29	.15	1.34		.72	.18	2.05	***
Hopelessness	−.18	.2	.84		−.09	.2	.92		−.24	.21	.79		−.05	.23	.95	
Pride	.86	.28	2.37	***	.33	.28	1.39		.1	.29	1.1		−.99	.46	.37	*
Hope	−.13	.24	.88		−.44	.25	.64		−.79	.28	.45	***	−.93	.4	.4	*
Call for action	−.02	.18	.98		−.18	.18	.84		−.16	.19	.85		−.61	.24	.54	**
Conspiracy theories	−.13	.18	.88		−.27	.18	.77		−.32	.19	.72		−.44	.23	.65	†
Propaganda	−.3	.15	.74	†	−.34	.16	.71	*	−.3	.16	.74		−.34	.19	.71	
Violence endorsement	.16	.64	1.17		–.5	.77	.61		.22	.71	1.25		.11	.9	1.11	

Notes: *OR* = Odds ratio; † $p = .05$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7. Engagement per group.

	Likes			Shares			Comments			Angry		
	Md	*Mad*	Range	*Md*	*Mad*	Range	*Md*	*Mad*	Range	*Md*	*Mad*	Range
Covid-19-Skeptics	1[a]	1.48	53	0[a]	.00	123	0[a]	.00	184	0[a]	0	126
Far-Right	12[b]	13.30	475	17[b]	17.80	1,121	16[b]	20.80	159	6.5[b]	9.64	270
Chemtrails	0[a]	.00	53	0[a]	.00	41	0[c]	.00	82	0[a]	0	91
Political Affairs	2[c]	2.97	115	1[c]	1.48	253	0[a]	.00	132	0[a]	0	76

Note: Values with distinct indices (a, b, c) per column differed significantly from each other in a series of Bonferroni corrected Wilcoxon tests.

manual content analysis to study the prevalence of posts that included social identity cues, calls for action, and elicitors of emotions relevant to collective action. More precisely, I examined the prevalence of *anger*, reflecting perceived injustice and motivating collective action (Stürmer & Simon, 2009), *pride*, and *hope* as indicators of perceived efficacy of collective action (Cohen-Chen & van Zomeren, 2018; Tausch & Becker, 2013), as well as *hopelessness* as an indicator of a lack of such efficacy perceptions and thus a potential elicitor of non-normative collective action (Becker & Tausch, 2015; Demetropoulos Valencia et al., 2021). Furthermore, I examined the dissemination of conspiracy theories, propaganda, and the open endorsement of violence in these communities.

RQ 1 asked whether conspiracy theory-endorsing Facebook groups entail collective action cues. The descriptive analysis showed that the examined posts did entail multiple collective action cues. Particularly, references to social identities via the demarcation of ingroup versus outgroup boundaries were frequent. Conspiracy theories were often interwoven with social identity cues, pronouncing the distinction between the community of the "enlightened ones" against the "sleeping sheep" that fail to see "behind the curtain." The posts also frequently included elicitors of anger, and a substantial share of them transmitted hopelessness. Direct calls for action were frequent.

RQ 2 asked about the prevalence of non-normative collective action cues. Although the direct endorsement of violence was seldom, psychological research suggests that a mixture of social identity salience, anger, and a lack of perceived efficacy such as that observed within the examined Facebook groups can motivate non-normative collective action (Becker & Tausch, 2015; Tausch et al., 2011; Wright et al., 1990). Although I did not test the motivating effects of these posts directly, the current study contributes to increasing efforts to understand how media content heightens the salience of factors relevant to collective action (see, for instance, Gulliver et al., 2021; Hawkins & Saleem, 2021) and thereby provides a meaningful point of departure for future research on the interplay between the "supply" of online content and (non-normative) collective action on- and offline.

A hierarchical cluster analysis identified four distinct types of posts. The first two had rather low mobilizing potential as judged by the prevalence of collective action cues: Cluster 1, alternative views, entailed posts with few collective action cues, conspiracy theories, or propaganda. The only emotion overrepresented in this cluster was hope. Research on collective action has shown that hope can reflect positive expectations for the period following collective action (Cohen-Chen & van Zomeren, 2018). However, hope can also temper collective action by reducing perceived urgency to act (van Zomeren et al., 2019). Likely, such a tempering effect was also present in the current study as posts in this cluster also seldomly expressed anger, the affective injustice perception that motivates collective action (Stürmer & Simon, 2009). "Alternative views" were typically found in the political affairs group.

Cluster 2, absolutist ideologies, entailed a significant amount of propaganda but only a moderate share of collective action cues. Fewer than one-third of the posts included social identity cues and anger, while only 15.89% called for action directly. The literature on radicalization often distinguishes between radical ideologies and violent extremism as the combination of radical ideologies and the endorsement of violence (Bak et al., 2019; Striegher, 2015). Drawing from this distinction, posts in this cluster transmitted counter-hegemonical and partially radical worldviews, but they did not endorse violent extremism. Plus, from the perspective of the social identity model of collective action, the mobilizing potential of these posts was only moderate. Posts in this cluster were typically found in the Covid-19-Skeptics and the Political Affairs group.

The remaining clusters had a higher mobilizing potential: Cluster 3, mobilization, spread multiple unwarranted conspiracy theories and entailed a high share of propaganda. Most relevant, this content was embedded in manifold collective action cues, including potential elicitors of non-normative collective action—namely hopelessness and violence endorsements (although the latter was very seldom). This cluster was particularly frequent in the Chemtrail group. Finally, Cluster 4, wrath, included posts that also spread conspiracy theories but mostly relied on social identity cues and capitalized on anger while calling for action and sometimes even endorsing violence. Posts in this cluster were typically posted in the Far-Right group. Thus, non-normative collective action cues were more prevalent in the Far-Right and Chemtrail groups compared to the Covid-19-Sceptics and the Political Affairs group. Future research should explore these nuances in greater detail to understand which conspiracy-theory endorsing communities mobilize for what kind of collective action.

RQ 3 asked how other users would respond to different types of posts. I relied on robust statistical tests of the distribution of popularity indicators (i.e., the number of likes, shares, comments, and anger and love emojis) to answer this question. Posts transmitting alternative views and absolutist ideologies were overall less engaging than mobilizing or wrathful posts. Although popularity indicators must be interpreted tentatively as they can express different motivations (Gerlitz & Helmond, 2013), this finding shows that clusters entailing more collective action cues were overall more engaging. Regression analyses showed that cues related to social identity as well as posts involving anger predicted engagement. Notably, liking or sharing such posts might already represent a form of collective action in the digital realm. Although digital participation is sometimes denigrated as "slacktivism," such digital engagement can also constitute one component of a repertoire of political participation (Dennis, 2019). Thus, future research on the interplay between digital engagement and actual collective action is needed. Notably, posts coded as propaganda were shared less often than posts without propaganda. This finding is highly compatible with studies showing that blatant propaganda triggers more cognitive defenses than subtle, covert propaganda (e.g., Taylor et al., 2015). This study shows that this inefficacy of propaganda holds true even within conspiracy theory-endorsing communities. It is noteworthy that members of the Far-Right group were substantially more active in responding to each other's posts than members of other groups. Several authors have outlined the intensive use of digital technologies by the far- or so-called "alt-right" (e.g., Marwick & Lewis, 2017), and the findings in this study contribute to the growing body of evidence that far-right actors embrace conspiracy theories to cultivate their intentions (Miller-Idriss, 2020).

Notwithstanding, this study had several limitations that must be considered. First, I focused only on Facebook and German conspiracy theories-endorsing Facebook groups. Thus, examining the articulation of conspiracy theories on different platforms and across countries is needed to further explore and assess the effects of such content. Second, I focused on a very specific time frame: the first year of an unprecedented global pandemic. Conspiracy theories flourish in times of crisis (van Prooijen & Douglas, 2017) and Germany has witnessed the increased radicalization of the Covid-19-skeptic Querdenken movement during this time. Nevertheless, future research on other time frames and a more detailed analysis of the communication within these groups before critical events occur (e.g., the attempted storming of the German Reichstag in August 2020) would provide deeper insights. Finally, for some of the coded categories, intercoder reliability was below the desirable threshold. Although I formed aggregated indices to enhance the reliability of the measurements, future research should invest additional efforts in detailing the respective categories before employing the codebook.

Nevertheless, the study provided initial insights into the intersection of conspiracy theories and collective action cues in virtual communities, showing how these communities provide new opportunity structures for

the mobilization of non-normative collective action. Furthermore, the results highlight the need for nuance when studying virtual communities and conspiracy theories as not all of the studied groups were equally likely to post content including non-normative collective action cues. As such, the study contributes multiple starting points for future research.

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Conflict of Interests

Currently, even though researchers can apply for CrowdTangle access, it is typically granted only to selected academics which inevitably creates an imbalance for the scholarly community and crucially limits the possibilities to share raw data. Yet, it is also important to note that access to CrowdTangle is provided free of any limitations relating to the agenda, methodology, or subject matter of research activities. Given the relevance of the examined topic, I consider it ethically justifiable to use this data here. Nevertheless, a greater access to social media data for future research and other researchers is desirable.

Supplementary Material

Supplementary material for this article is available online at: https://osf.io/4tkvc

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About the Author

Lena Frischlich (PhD) is a junior research group leader at the University of Münster, Germany. Her research focuses on online communication and the changing digital landscape. In particular, she studies the staging and effects of online propaganda and related phenomena (e.g., disinformation) as well as strategies for empowering media users against such manipulative attempts using quantitative, qualitative, and computational measures. Besides that, she is also interested in positive media effects more generally.