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Abstract	This research report provides an in-depth analysis of the dissemination and impact of harmful content, specifically focusing on disinformation and conspiracy theories, across various social media platforms including the Daily Mail forum, Telegram messenger, and YouTube. Utilizing a range of analytical techniques including network analysis, natural language processing (NLP), and sentiment analysis, the report unveils the prevalent themes, emotional tones, and moral foundations underpinning the discussions around conspiracy theories. The findings highlight a significant spike in disinformation activities during the Covid-19 pandemic. The report reveals a complex web of interconnected conspiracy narratives, indicating a global scale of theory proliferation. It also identifies key platforms and channels that serve as hubs for disseminating conspiracy theories, providing insights into the structural dynamics of online disinformation networks. The analysis of sentiments and moral foundations further elucidates the psychological appeal of conspiracy theories, underscoring the role of emotional and moral framing in their proliferation.
Key Words	Social media, harmful content, disinformation, conspiracy theories, online radicalisation, social networks, semantic networks, natural language processing, sentiment analysis, moral foundations theory

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1. Summary

This progress report describes an in-depth exploration of harmful content propagation across social media platforms, specifically focusing on disinformation and conspiracy theories in the context of online radicalization. The research leverages an extensive dataset derived from three major online sources: the Daily Mail forum, Telegram messenger, and YouTube, to dissect and understand the mechanics and impact of such content on public opinion and societal discourse.

The methodology adopted in this research is multifaceted, integrating different analytical techniques to dissect the vast amount of data collected from the chosen platforms. The analysis begins with a network analysis to map out the intricate web of interactions and connections among users and between different content pieces, aiming to expose the structural dynamics of how harmful narratives are shared and disseminated. This phase involved identifying key influencers, channels, and nodes that play pivotal roles in the spread of conspiracy theories and disinformation.

Following the structural analysis, the research employed natural language processing (NLP) techniques and machine learning models to probe deeper into the semantic properties of the content shared across these platforms. This approach facilitated a granular examination of the themes, sentiments, and moral foundations that underpin discussions within these digital spaces. By employing word embeddings and sentiment analysis, the study aims to capture a comprehensive snapshot of the dominant narratives and the emotional tones that resonate with the users, providing insights into the appeal of harmful content.

A specific aspect of the research is its focus on identifying the moral values, foundations, and violations invoked by the online discourse surrounding conspiracy theories and disinformation. This is achieved by developing and applying machine learning models trained on annotated datasets to classify and interpret the complex moral sentiment expressed in the content. This approach allows us to quantify the moral dimensions embedded within the narratives, offering a new lens through which to understand the potency and persistence of certain harmful themes.

This report presents the preliminary results of the propagation channels' examination, thematic concentration, and moral underpinnings of harmful content on social media. Through a combination of network analysis, NLP, and machine learning, the research offers a comprehensive view of the landscape of online disinformation and conspiracy theories.

2. Introduction and Research Questions

Harmful content, such as disinformation, viral deceptions, conspiracy theories, and online extremism, poses a major threat to democracies. Apart from the significant harm it can inflict on individuals, it also intensifies the scepticism towards politics, science, and media, a sentiment increasingly prevalent in a "post-truth" environment (Harsin, 2015). This scepticism is fuelled by a variety of factors, including political corruption, the ineffective communication of political measures, and the diminishing credibility of editorial media in the age of digitalization and social media. This mistrust is taken by populist and extremist politicians, political parties, or movements to gain political power, legitimacy, and financial resources (Thielmann et al., 2023).

The spread of harmful content can be viewed as a step in the process of radicalization, which can vary in its extent and consequences. Specific societal, group-related, and individual factors interact and trigger processes of radicalization in social actors (van Eerten et al., 2017, chapter 4.1.2). The spread of disinformation, hate speech, or belief in conspiracy theories must be understood as elements of these radicalization processes, and there are specific reasons for their impact on social actors. On the one hand, individuals share harmful content as a way to connect with or gain acceptance and/or status in a specific social (peer) group, aiming to avoid social isolation. This often makes it challenging to combat belief in harmful content at a "pedagogical" level, such as through educational and enlightenment efforts, because these do not change the influence of the peer group (Harris et al., 2014). On the other hand, harmful content addresses deeply (i.e., unconsciously) rooted moral sentiments and grievances in social actors, which in some cases can assume the magnitude of traumas. Efforts to combat harmful content through response and correction ("counter messaging") are important and correct but often do not address these moral injuries and, instead, may even lead to the entrenchment of attitudes caused by the harmful content, as well as to further polarization (Williamson et al., 2022). These two elements, the in-group/out-group effect and the moral dimension of harmful narratives, are central starting points for our research project. Understandably, in the processes depicted, there are not only victims. Individuals inflict significant harm upon others through the online dissemination of disinformation, hate speech, online extremism, cyberbullying, etc. These can lead to radicalization and acts of violence in the offline world and, as mentioned, are exploited by populist or extremist political movements or politicians for their own power ends.

Against this background, our analysis of harmful content occurs on two levels: that of social and semantic structures. Overall, it aims to better understand how it spreads on social media and what makes it appealing in terms of the themes and moral values it conveys. An initial review of the data we have collected shows that conspiracy theories play a significant role in the messages, comments, and postings. Elements of disinformation, hate speech, and online extremism are increasingly embedded in narratives that focus on conspiracies, thus becoming more frequently the subject of scientific studies (Van Prooijen et al., 2018). Conspiracy theories ominously address people's needs for social belonging and explanations for moral violation, complex current developments and conditions, and they are particularly suited for political mobilization like few other narratives. For this reason, they also form a focal point of our analysis.

Given this context, we pose the following questions.

1. What **theoretical models** exist to explain the spread of harmful online content in the context of radicalization processes, and which one is particularly well-suited as a basis for our network and semantic analysis?

2. What is the **prevalence of disinformation and conspiracy theories** across three critical online environments, both news and social media platforms (Telegram messenger, the Daily Mail online platform, and YouTube), and how do these findings inform our understanding of harmful content's distribution mechanisms on social media and online platforms?

3. How do **Social Network Analysis** and **Natural Language Processing (NLP)** techniques, such as word embeddings, key term analysis, topic modelling, and sentiment analysis, contribute to a deeper understanding of the structural and semantic properties of this harmful online content?

4. How can the networks emerging from the **sharing and liking behavior** of users across the three platforms be described, and what does this contribute to our understanding of the dissemination of such content?

5. What **themes and topics** are predominantly addressed through conspiracy theories, and how are these themes interconnected both structurally and semantically? What are the implications of the identified topics and themes within user-generated content for understanding the thematic concentration and variability of disinformation and conspiracy theories?

6. Which **emotions and sentiments** are expressed in the messages and comments where various topics of disinformation and conspiracy theories are discussed, and how do these emotional and sentiment patterns contribute to understanding the content and context of these discussions?

7. Which **moral values and attitudes**, as well as moral transgressions and violations, are addressed in the messages and comments related to disinformation and conspiracy theories and should therefore be addressed by potential "counter" interventions? To what extent is the concept of Moral Foundations by social psychologist Jonathan Haidt (Haidt, 2013) suitable for operationalizing this and discovering the underlying moral dimensions in these discussions?

8. What **differences** exist between different online platforms in terms of the extent of disinformation and conspiracy theories, the level of emotional expression, and the addressing of Moral Foundations?

9. Which platforms and channels in our dataset can be classified as "radical" in terms of greater semantic proximity to conspiracy theories, how are these connected with "less radical" platforms and channels which could therefore serve as **structural entry points** for interventions? What other topics are discussed in the context of "radical" channels and platforms and could therefore serve as **semantic entry points** for interventions?

10. What **recommendations** emerge from the findings in terms of developing and implementing potential interventions, both within and beyond online platforms?

Our analysis focuses on datasets since 2020. This report primarily describes the theoretical model for explaining the spread of harmful online content, the network and semantic analysis tools used, the datasets, their collection and processing, as well as preliminary results.

3. Theoretical Framework

In the following section, we describe the theoretical concepts that we use to contextualize and better understand the material that we analyse network-analytically and semantically. We view the dissemination of harmful content as one of many possible behaviours in a process in which societal, group and individual factors interact, and which may or may not lead to radicalization. We explain why we focus on conspiracy theories and why we draw on social psychologist Jonathan Haidt's Moral Foundations Theory to better understand their power and impact.

3.1. The Process of (Online) Radicalization

Engaging with harmful online content sometimes plays a specific role within a process of radicalisation, that can vary in its extent and consequences (Pastuovic et al., 2020, pp. 30f.). Doosje et al., 2016, have formulated a three-stage model of radicalization, which can be applied to instances of online radicalization and even sharing harmful content. This model establishes a foundational framework, enabling a more nuanced interpretation and comprehension of the network structures and content encountered throughout the course of our analytical endeavours.

This concept of online radicalization comprises three distinct stages: (1) the Sensitivity phase, the (2) Group Membership phase, and the Action phase (Figure 1; van Eerten et al., 2017, p. 32).

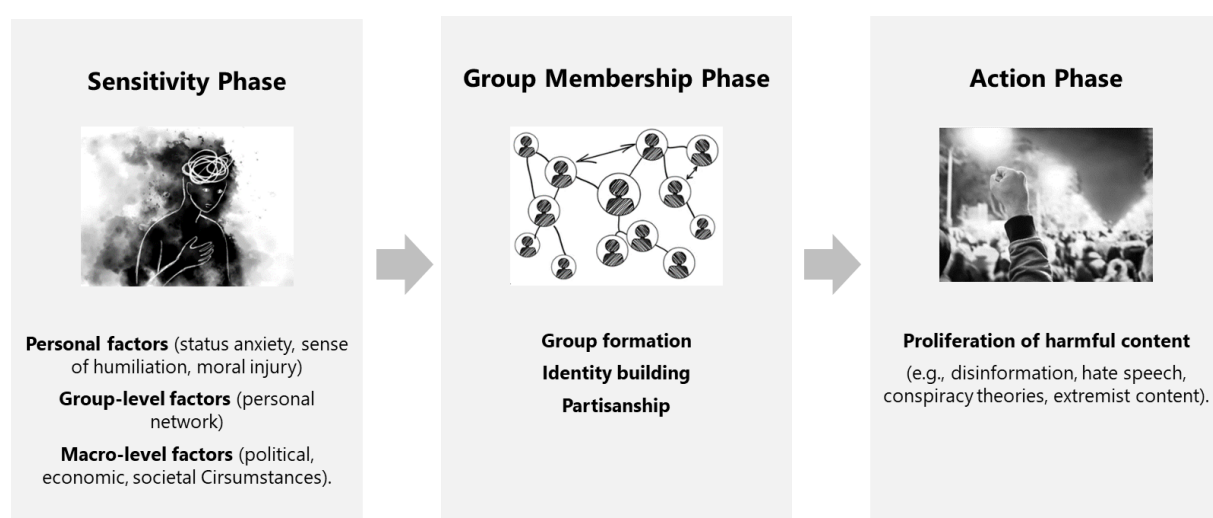| Sensitivity Phase	Group Membership Phase	Action Phase
Personal factors (status anxiety, sense of humiliation, moral injury) **Group-level factors** (personal network) **Macro-level factors** (political, economic, societal Cirsumstances).	**Group formation** **Identity building** **Partisanship**	**Proliferation of harmful content** (e.g., disinformation, hate speech, conspiracy theories, extremist content).

Figure 1 – Stages of radicalization (based on Doosje et al., 2016, and van Eerten et al., 2017).

The **Sensitivity phase** describes the process of individuals becoming vulnerable to radicalization due to – in the broadest sense – feelings of insignificance because of factors such as status

anxiety, a strong sense of humiliation, and moral injury, which are categorized as **micro-level or personal factors**. Furthermore, there exist **meso-level factors**, which refer to the group level and social environment of the individuals (family members, friendship, and other groups) and address, for example, the feeling that the social group to which the individuals belong is disadvantaged. Finally, there are **macro factors** that relate to what may be difficult economic, political, or societal circumstances (Doosje et al. 2016, p. 81).

During the **Group Membership phase**, individuals engage in a proactive pursuit of social groups that align with their intrinsic opinions and values, thereby facilitating the cultivation of a sense of identity, safety, and belonging. These groups emerge as pivotal entities, serving as catalysts in reinforcing shared beliefs and fostering a sense of cohesive community. Through the establishment of mutual understanding and collective identity, these groups significantly contribute to the amplification and intensification of the radicalization process, shaping the social dynamics and psychological underpinnings of individual members within the group context (ibid.).

Upon entering the **Action phase**, individuals, in their pursuit to maintain alignment with their respective groups, exhibit behaviours that are indicative of radicalization. These behaviours include sharing misinformation, spreading fake news, subscribing to conspiracy theories, and employing hate speech. In some instances, we assume, the adherence to such behaviours is not necessarily anchored in the content or the beliefs themselves. Rather, individuals engage in these activities to preserve their membership within the group, underscoring the significance of group dynamics in the radicalization process (Doosje et al. 2016, p. 82).

When we invoke this model, our primary objective is not to provide a comprehensive characterization of the radicalization process. Instead, our focus is on emphasizing the significance and implications of the dissemination of harmful content, which is invariably associated with specific societal preconditions and factors related to group formation and identity. What appears important for our analysis is the understanding that the dissemination of harmful content (including disinformation, conspiracy theories, hate speech, extremist content etc.) manifests in at least two distinct dimensions: (1) the **semantic dimension**, which pertains to the content of the harmful material itself, probing into its inherent appeal and the mechanisms underlying its widespread propagation; and (2) the **socio-structural dimension**, which underscores the notion that the spread of harmful content is intrinsically linked to the formation of social and peer groups, the establishment of group identities, and the dynamics of group affiliation.

3.1.1. Sensitivity Phase

At the time of writing this report (end of 2023, beginning of 2024), the prevailing conditions must, to put it mildly, be perceived as challenging. Fundamentally, there is talk of a "**polycrisis**," referring to a period characterized by the simultaneous existence of multiple distinct crises that mutually exacerbate each other.[1] **Russia's invasion of Ukraine** and its aggressive behaviour towards NATO and EU members along its western border appear increasingly likely to lead to a wider war in Europe, given the weakening of Western democracies by right-wing

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[1] World Economic Forum: The Global Risks Report 2023, 18th Edition, p. 4.

populist and right-extremist movements, which it has also massively promoted through cyberwarfare, and the possibility of Donald Trump being re-elected as US President in 2025. Furthermore, Russia's assault has triggered an **energy crisis** in Europe, which, combined with the precarious economic situation, has led to rising **inflation** and cost escalations. This economic strain disproportionately affects the impoverished and those at risk of poverty. The **ecological crisis** is notably marked by a significant surge in extreme weather events and an unexpectedly strong rise in temperatures due to **climate change** and a profound threat to **biodiversity**. Climate change and worsening environmental conditions are undermining living standards in numerous regions worldwide, and in conjunction with other factors, is instigating **new migration flows (Czaika et al., 2022)**. These flows, in turn, lead to socio-political conflicts in the destination countries. Furthermore, we are in a **post-pandemic era** – while the Covid-19 pandemic has concluded, its repercussions persist. These repercussions predominantly include a markedly increased **distrust** towards economic and political decision-makers, traditional editorial media (especially public broadcasting), as well as science and research (also associated with the term "Post-truth Era" as early as 2004[2]). This has resulted in further societal **fragmentation** and **polarization**, complicating societal negotiation, decision-making processes, and problem solving. This outlines the macro factors that increase vulnerability to social conflict and radicalization processes.

These and other circumstances (particularly the comprehensive process of deindustrialization and the associated risk of loss of status; Raphael, 2023) amplify the personal-level factors leading to vulnerability towards radicalization. From the perspective of many individuals, modern societies can (if they ever could) no longer fulfill the meritocratic promise (status based on merits, skills, and achievements), resulting in fears of decline as well as feelings of humiliation and worthlessness (Bude, 2017). Digitization and the introduction of artificial intelligence in both creative and knowledge-based sectors intensify these processes. Additionally, it has been observed that political conflicts are increasingly waged on symbolic or moral grounds, or inversely, moral conflicts are politicized and carried out in a more polarized or emotional manner ("identity politics"; Kurzwelly et al., 2023). The business models and operation of social media platforms play a pivotal role in this (Goldenberg et al., 2023). Regardless of one's position in these conflicts, it is evident that they induce moral conflicts, affronts, and injuries in many individuals, which must also be counted as factors contributing to vulnerability to radicalization (Barker, 2022; Williamson et al., 2023). Lastly, the societal phenomenon of "aggrieved freedom" or libertarian authoritarianism, which spread notably during the Covid-19 pandemic, is attributed to a social milieu whose members are characterized by a strong desire for (negative) freedom and reject state or institutional interventions (like vaccine or mask mandates during the pandemic), which they consider a moral attack on their freedom, whereas they rather do not present group-based ("solidarity-driven") political demands (Amlinger et al., 2022; Zick, 2023). They constitute a significant portion of individuals whose online behaviour is the focus of our analysis.

Finally, at the meso-level, radicalization is influenced by one's social milieu, encompassing friends, family, and affiliative groups. A key determinant here is fraternal relative deprivation—

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[2] Keyes, 2004.

a sense of injustice felt when one's affiliated group is perceived as receiving inferior treatment compared to another group. For instance, European Muslims perceive disparities in housing, educational opportunities, and employment, coupled with media bias and discrimination. Conversely, right-wing factions feel native citizens are disadvantaged relative to immigrants or even replaced by them, respectively. Furthermore, the influence of close relationships cannot be underestimated with respect to group formation around specific topics or issues. Extremist groups provide a profound sense of belonging, satisfying a fundamental human need, and juxtapose it against a vilified out-group, fostering a potent intergroup tension (Doosje et al., 2016, p. 81). Here as well, the processes are greatly intensified by social media, which disseminate (dis)information about all major and minor conflicts existing globally at any given time in real-time.

3.1.2. Group Membership Phase

Therefore, the proliferation of harmful content online, encompassing disinformation, hate speech, conspiracy theories, and extremist content, is intricately linked to the dynamics of group formation, belonging, and identity. Sharing such content often serves as a mechanism for individuals to signal allegiance to specific groups or ideologies, reinforcing their sense of belonging and group identity. As individuals encounter and engage with harmful content that resonates with their pre-existing beliefs or grievances, they are more likely to align themselves with online communities or groups that echo these sentiments. This alignment not only strengthens their group identity but also deepens the chasm between them and those outside their group, exacerbating partisanship. In essence, the act of disseminating and consuming harmful content becomes both a consequence and a reinforcement of one's group identity and partisanship, creating a feedback loop that further entrenches individuals in their beliefs and affiliations. This symbiotic relationship between harmful content and group dynamics underscores the challenges in mitigating the spread of such content, as it is not merely a matter of content and an information issue but also a deeply rooted social and psychological process (Van Bavel et al., 2018).

3.1.3. Action Phase

We refer to sharing different kinds of harmful content as one of many possible activities that can happen in the action phase of radicalization. Different types of harmful content are distinguished. For (online) radicalization, we consider types of hate and harassment as well as of ideological harm particularly important (Banko 2020, p. 129):

1. **Hate speech** encompasses expressions that vilify, marginalize, or incite violence or prejudice against individuals or groups based on attributes such as race, religion, ethnicity, gender, or sexual orientation. For instance, a comment on a forum that promotes harm towards a particular ethnic group, rooted in prejudiced beliefs, would be classified as hate speech. Such content not only harms the targeted individuals but also undermines social cohesion and can escalate to real-world violence.

2. **Misinformation** refers to the unintentional spread of false or inaccurate information, stemming from an individual's lack of knowledge or understanding. For example, a person might share a social media post containing incorrect health advice, genuinely believing it to be true, thereby contributing to misinformation.

3. **Disinformation**, on the other hand, involves the deliberate creation and dissemination of false or manipulated information with the intent to deceive and mislead. An example of disinformation would be a fabricated news article designed to sway political opinions, spread by individuals or entities aware of its falsity but intending to achieve specific objectives, such as influencing elections.

4. **Malinformation** pertains to the sharing of truthful information with harmful intent, often to damage reputations or violate privacy. An example of malinformation could be the intentional leak of private emails or documents to discredit an individual or organization. While the content is based on factual information, the act of sharing it is intended to cause harm.

5. **Extremist content** refers to materials that advocate for radical ideologies, often promoting violence, intolerance, or rebellion against established systems or governance. An example might be a video that glorifies acts of terrorism or encourages viewers to partake in violent uprisings against certain populations or governments. This content poses threats to societal stability and can act as a catalyst for radicalization.

6. **Conspiracy theories** are unsubstantiated narratives or beliefs suggesting that hidden, often malevolent, forces are responsible for specific events or situations, contradicting the prevailing or mainstream explanations. An example might be a claim that a significant global event was orchestrated by a secret elite group for nefarious purposes, despite a lack of concrete evidence. Such theories can distort public understanding, create mistrust, and lead to misguided actions.

7. **Deepfakes** involve digitally manipulated videos or audio recordings that create a hyper-realistic, yet entirely fabricated representation of reality. For example, a video might be altered to depict a political leader making statements they never actually made, with the intent to deceive viewers. The sophistication of deepfakes makes them particularly concerning, as they blur the lines between reality and fabrication, potentially influencing public opinion or causing harm.

Other types of harmful content include cyberbullying and online harassment, child exploitation material, graphic violence, self-harm and suicidal content, and scams and phishing.

In summary, we believe that in times of increasing uncertainty during crises, two distinct dimensions of motivations should be considered at the individual level to understand what drives individuals to spread harmful content, hold misinformation as truth, and/or believe in conspiracies:

1. Social-Structural Dimension: Individuals engage in these behaviours not only to avoid isolation amidst uncertainties and fears but also to become part of a group or to maintain their belongingness and status within their peer group. In this context, the content being shared may not be as crucial as the sense of group affiliation derived from sharing.

2. Semantic Dimension: Disinformation and conspiracy theories purposefully defend certain values and address moral concerns that many individuals perceive as challenged or confronted by societal changes. This is what makes harmful content appealing to people *on a content level* in specific situations.

In essence, individuals' motivations for engaging with harmful content are driven by a combination of social dynamics and the defence of specific values in response to societal changes and moral dilemmas.

In the realm of political discourse and communication, the cognitive linguist George Lakoff introduced a valuable distinction between "issues" and "values" (Lakoff 2009). **Issues** encompass concrete and specific policy matters and practical challenges that form the core of political debates. These can range from healthcare reform and environmental regulations to tax policies and immigration. Issues represent the tangible problems that policymakers seek to address. **Values**, on the other hand, are foundational and abstract principles that guide individuals' moral and ethical outlook. These include values like freedom, justice, equality, compassion, and fairness. Values serve as the moral compass that shapes one's worldview and deeply held beliefs. The connection between issues and values is pivotal, as values significantly influence people's stances on various issues. For instance, individuals who prioritize social justice as a value are likely to focus on issues related to income inequality or civil rights. Understanding this interplay is essential, especially when studying the spread of harmful content online, including conspiracy theories. Harmful content, such as conspiracy theories, often gains traction by tapping into people's values and moral dimensions. To better comprehend why certain topics resonate within these communities, it is crucial to analyse the values underpinning the discourse. While solving practical problems is undoubtedly important, delving into the moral dimension of these discussions is equally vital. By examining the values that attract individuals to harmful content and conspiracy theories, we can gain deeper insights into the emotional and cognitive factors that drive the spread of such content.

3.2. Conspiracy theories

Conspiracy theories are among the most powerful and consequential types of harmful content because they largely undermine the - minimal - social consensus that is the indispensable prerequisite for a functioning democracy. The tendency to believe in them or to share corresponding information is seen as one of many behaviours with which certain people react to specific social, group-related and individual circumstances. Conspiracy theories are commonly characterized as interpretative beliefs regarding a group of individuals who covertly conspire to achieve nefarious objectives (Van Prooijen et al., 2018, p. 897). In the realm of understanding conspiracy beliefs, various motivational factors have been identified in the research literature that drive individuals towards these beliefs. **Epistemic motives** play a crucial role, as people have an inherent need to comprehend their environment and seek certainty. Fear is a significant factor in this regard. Conspiracy theories often provide simplistic, albeit frequently incorrect, explanations for intricate events, thereby satisfying an individual's quest for knowledge and certainty (Goreis et al., 2019, p. 5). **Existential motives** also contribute significantly. Conspiracy beliefs can offer a sense of control or security to individuals who feel disempowered. This sense of possessing 'inside knowledge' that others lack can be psychologically comforting (Goreis et al., 2019, p. 6). Furthermore, **social motives** are influential in reinforcing belief in conspiracy theories. The need to belong to a group and sharing a common belief in a conspiracy can strengthen community bonds (Van Bavel et al., 2019). In many instances, it is less about

the content of the belief and more about aligning with the beliefs of one's peer group, as social status usually hinges on the peer group's judgment. For the dissemination of conspiracy theories and their trust-destroying effect, it is not necessary for people to believe in every component of them. Research has shown that people who believe in a particular conspiracy theory also tend to do so in relation to others, even if they contradict each other (Goertzel 1994). The concepts of **anomie and powerlessness** are also integral. When individuals feel disconnected from society or incapable of influencing their circumstances, they may gravitate towards conspiracy theories to rationalize their disenfranchisement (Abalakina-Paap, 1999). This phenomenon is linked to status anxiety and the crisis of meritocracy, where the promise of achieving social status through individual effort is questioned. **Confirmation bias** is another pivotal aspect. This bias leads individuals to seek, interpret, favour, and remember information that aligns with their preexisting beliefs. Consequently, those who believe in conspiracy theories are more inclined to engage with and disseminate information that supports these theories (Van Prooijen et al., 2018). **Cognitive dissonance** also plays a role. When individuals encounter information that contradicts their existing beliefs, they experience psychological discomfort. To alleviate this discomfort, they may dismiss conflicting information and embrace conspiracy theories that align with their beliefs (Leman et al., 2013). **Political orientation**, particularly right-wing ideologies, often correlates with conspiracy beliefs. These ideologies typically emphasize maintaining traditional social hierarchies (authoritarianism) and demonstrate heightened sensitivity to perceived threats from outgroups. They often view change as destabilizing, aligning with conspiracy narratives that depict such changes as the result of deliberate, malevolent schemes (Imhoff et al., 2022). **Libertarian authoritarianism**, as seen in movements like the "Querdenker" (lateral thinkers) in Germany and Austria during the coronavirus pandemic and afterwards, is another concept linked to political orientation. These groups are considered libertarian due to their radical rejection of state intervention, which they perceive as a product of a conspiracy, and authoritarian because of their difficulty in accepting opinions differing from their own (Amlinger 2022). **Moral violations** are also a factor in belief in conspiracy theories. When individuals perceive actions as violating their sense of right and wrong, they may turn to conspiracy theories that provide explanations for such actions. These theories offer a framework that identifies clear perpetrators and motives behind complex societal issues, thus reinforcing their moral frameworks and providing a sense of justice or potential retribution (Nejat et al., 2023). The **Moral Foundations Theory**, developed by social psychologist Jonathan Haidt (Haidt, 2013), posits that individuals' moral perspectives are built upon several innate psychological systems. Conspiracy theories can be analysed through the lens of moral foundations, as they often intersect with moral values conceptualized as care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, sanctity/degradation, and liberty/oppression (Nejat et al., 2023). This analysis provides a deeper understanding of the appeal and resonance of these theories among different individuals.

Our aim here is not to provide a sufficient or even exhaustive list of factors for susceptibility to conspiracy theories. We should only point out that conspiracy beliefs are the product of a complex process made up of a variety of interrelated variables, and depending on the line of research, one or the other factors will be emphasized more. The overall point is that the current political, economic, social, peer group-related and individual factors are leading more and more people to believe that the decisions that have the greatest impact on their lives are

actually being made "behind the scenes" by a small, elite group that is concerned not with the needs of the people but with global domination. The reaction to this - in contrast to class struggle or the demand for political change - is in many cases anger, protest and/or retreat. It is not primarily about political action, but about the possession of "exclusive knowledge", about the demand for purely negative freedom (from all predetermined rules), about a fundamental mistrust of rational explanations and solutions as well as of scientific, political, and economic decision-makers (Amlinger 2022).

According to the French Sociologist Pierre Bourdieu, the social processes that determine the status of social actors have indeed to be disguised in order to function (Bourdieu, 1988) and actually take place "behind the scenes" or are, as Bourdieu puts it, "veiled", except that they are not determined by a small, conspiratorial, all-powerful elite, but by complex status struggles which depend on the ownership of different forms of capital (Bourdieu, 2021). The problem is that there are political forces that address distrust and conspiracy belief with populist, authoritarian, and anti-democratic political action, thus gaining political legitimacy and power as well as economic resources. These forces are a major threat to democracies, not only in the European Union, and thus to our ability to meet current and future challenges and crises. Bourdieu (2014) defines the state as the social field that endows its associated political actors (including not only politicians but also civil servants, scientists, economic decision-makers, lobbyists, journalists, etc.) with symbolic capital (legitimacy) to establish a particular societal perspective as the (within the national territory) universally accepted one. The distrust and refusal to recognize the legitimacy of this process of generalizing perspectives, triggered or intensified – among other factors – by conspiracy theories, can also be interpreted as a crisis in the state's function to mediate between different societal perspectives and manage social conflicts. This threat is what makes the crisis of trust so dangerous. In this context, one can also speak of an authority crisis, i.e., a crisis of what Max Weber referred to as "legitimacy" or Pierre Bourdieu as "symbolic capital" of societal elites and decision-makers. The literature discusses an elite failure regarding the resolution of societal problems (e.g., Hayes 2012). Poorly communicated and sometimes incorrect political decisions during the COVID-19 pandemic (lockdowns, school closures, vaccine mandates[3]) are likely to have significantly intensified this crisis of trust. This crisis of authority is making it increasingly difficult to reach a consensus as well as political negotiation, decision-making and problem-solving processes in many different policy areas. The spread of conspiracy theories is an important component of this crisis of authority.

The problem is that the conspiracy frame can be applied to any topic, whether it causes major or minor irritation (Van Prooijen et al., 2018). The recommendation to wear a bicycle helmet then becomes as significant a moral violation as mandatory vaccination, which indeed constitutes an infringement on physical integrity that must be democratically legitimized. Thus, the

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[3] Austria was the only EU country that introduced a mandatory vaccination requirement for the entire adult population against the COVID-19 pandemic. It was decided in January 2022 but ultimately not implemented (https://de.wikipedia.org/wiki/COVID-19-Impfpflicht_in_Österreich; last accessed 2023/01/09). According to a study commissioned by the Austrian government, before the introduction of the mandatory vaccination, there was only a topic-related polarization, but afterward, there was also a group-related polarization (between two societal groups strongly divided by aversion) (Bogner 2023). To this day, the issue of COVID-19 vaccination mandates serves as a political mobilization tool, especially by the right-wing populist party FPÖ, as we will show later.

discourse can be sustained because, ultimately, for those who exploit this, it is not about solving societal problems but about fuelling the pain and moral injury, which can subsequently be instrumentalized for political purposes again and again. For example, the topic of Covid continues to play an important role in the political communication of the FPÖ in Austria or the AfD in Germany. The attempted, ultimately not implemented, Covid vaccination mandate in Austria is referred to as a betrayal of the political elite against the common people by leading representatives of the FPÖ and their followers and is labelled with the slogan "never forget - never forgive"[4].

The internet and social media platforms, providing perpetual real-time access to information about news and events, are ideally suited for the dissemination of conspiracy theories (Enders et al., 2023). The monopoly once held by established media over reporting and their filtering role in selecting and framing news and information is diminished, amplifying the spread of false or inadequately contextualized knowledge. The diversity of media offerings not only heightens demands for transparency but also fuels growing distrust towards specific sources of knowledge.

Finally, it must be added that geopolitical actors such as Russia and China are deliberately promoting the spread of harmful content, including conspiracy theories, in order to weaken European (and Western) democracies. The impact of these activities cannot yet be quantified, but it should not be overestimated.

3.3. Moral Foundations

One approach to take the content of conspiracy narratives seriously and to find out why they are so attractive to specific groups of people, is to analyse which "moral foundations" are appealed to by conspiracy theories. Studying conspiracy theories through the lens of Jonathan Haidt's Moral Foundations Theory (Haidt, 2013) is insightful because it allows us to understand how these theories may resonate with the core moral values that guide individuals' judgments and behaviours. It posits that human morality is underpinned by several innate and universal psychological subsystems, each corresponding to specific adaptive challenges of social life, guiding individuals in making moral judgments.

(1) **Care vs. Harm**: This foundation is related to our evolutionary need to care for our young and empathize with others. It triggers a sensitivity to suffering and a desire to alleviate it, often manifesting as kindness and compassion.
(2) **Fairness vs. Cheating**: Concerned with justice, reciprocal altruism, and fairness, this foundation underpins notions of rights, equality, and proportionality. It drives individuals to seek equitable outcomes and resist being taken advantage of.
(3) **Loyalty vs. Betrayal**: This foundation stems from our history as tribal creatures, relying on solidarity and allegiance to the group. It emphasizes patriotism and self-sacrifice for the collective, while punishing betrayal to maintain group cohesion.

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[4] https://www.fpoe.at/freiheit-durch-selbstbestimmung/eingriffe-waehrend-covid-krise, last accessed 2024/02/15.

(4) **Authority vs. Subversion**: Evolving in hierarchical social systems, this foundation values respect for tradition and legitimate authority. It fosters order and stability by encouraging deference to leadership and punishing those who undermine it.

(5) **Sanctity vs. Degradation**: This foundation arises from the human psychology of disgust and contamination. It underlies religious and cultural notions of purity, driving people to live in a way that is considered spiritually clean and not degraded by immoral acts.

In the context of analysing conspiracy theories, this theory provides a framework for understanding how such narratives might resonate with fundamental moral instincts, thereby explaining their persuasive power and the fervour with which they are often disseminated and defended (Gkinopoulos, 2022, p. 3). By tapping into deep-seated moral concerns, conspiracy theories can effectively mobilize individuals and groups, fostering cohesive yet polarized communities bound by shared moral narratives.

Haidt (2013, pp. 155ff.) has posited that conservatives often have an advantage because they address the moral foundations in a way that resonates broadly with intuitive moral instincts. Conservatives traditionally appeal to all six moral foundations effectively, particularly emphasizing loyalty/betrayal, authority/subversion, and sanctity/degradation, which are rather group- than individual-related and resonate strongly with conservative voters. They often craft messages that speak to group solidarity, respect for tradition and authority, and the sanctity of certain institutions or ways of life. In contrast, liberals or left-oriented political movements have tended to focus more on the care/harm and fairness/cheating foundations, championing social justice, welfare, and equality. While these issues are deeply important to their base, Haidt suggests that by not engaging as fully with the full spectrum of moral foundations, liberals may not appeal as broadly to the moral intuitions of most of the people.

In our view, these findings can be applied to the challenge of countering disinformation and conspiracy theories. "Educational" measures such as correcting fake news are essential, but often too much based on a rational and cognitive level, but not enough on a moral, emotional, and physical level, which is where the harmful content's effectiveness and success should primarily be located. We hope that knowing which moral foundations are addressed by disinformation and conspiracy theories can help to develop more effective "countering" approaches. It probably only fuels the discourse if the counter measures address the same topics as the conspiracy theories, which leads to further polarization and reinforcement of what is actually being combated. It may be more about developing and promoting alternative topics that are important to conspiracy theorists, but which address the very moral foundations to which the conspiracy theories refer.

For these reasons, the investigation of our text material about moral values and foundations will be an important focus of our semantic analysis. By applying Moral Foundations Theory to the study of the messages and comments, we hope to gain a deeper understanding of how these beliefs are communicated, which moral values they address and why they can be so deeply held and resistant to change.

Conspiracy theories, according to Leone et al. 2019, pp. 6ff., gain traction when aligning with an individual's or group's moral priorities, such as fairness or in-group protection. These theories provide clear moral narratives, with distinct villains and victims, offering simplicity in

contrast to the ambiguous moral landscape of political and social life. Leone et al. (2019) suggest that individuals who prioritize the so called "binding" moral foundations (loyalty, authority, sanctity), which typically correlate with conservative positions, are more inclined to endorse conspiracy beliefs than those favouring individualistic foundations (care, fairness) associated with liberal attitudes. Conspiracy theories often adopt an "us-versus-them" mentality, rooted more in group than individual deprivation, and are closely linked to a high degree of uncertainty and anxiety, as seen in dangerous world beliefs. This correlation suggests that believers in conspiracy theories are more likely to adopt a moral absolutist stance, leading to binary oppositions in intergroup relations—a benevolent in-group versus a malevolent out-group. In contrast, according to Leone et al. (2019), individualizing foundations, which promote moral relativism and emphasize personal moral standards, do not align as closely with conspiracy narratives. These narratives typically reflect a pessimistic binding moral sensibility rather than an optimistic individualizing outlook. The belief in conspiracy theories seems to positively correlate with group-oriented moral values and negatively with individualistic moral values, suggesting a rather "anti-modern" stance that focuses on group-oriented freedom. But, some conspiracy theories, such as those related to Covid-19, emphasize individual freedom, while others, like the "Great Replacement," are oriented towards group-oriented freedom. This complexity indicates the varied ways in which conspiracy theories can intersect with different moral foundations and societal attitudes.

The Moral Foundations Theory has evolved into a significant concept extensively applied across numerous empirical studies. However, it has faced criticism, notably by Curry et al. (2019), particularly regarding its lack of integration into an anthropological theory of cooperation. Additionally, empirical evidence suggests that the dimensions of Care/Fairness and Loyalty/Authority/Sanctity often correlate with each other, suggesting a model more accurately described by a two-category schema rather than the proposed five-category framework (referring to the individualistic and binding foundations). Despite these critiques, we believe the benefits of the concept outweigh its limitations, as it serves as an exceptionally useful heuristic tool for describing the moral frameworks through which issues are communicated.

4. Methodology

Apart from the common statistical evaluation and visualization methods, we primarily employ the methods of Social Network Analysis and Semantic Content Analysis to examine the data collected and generated in the context of our project.

4.1. Social Network Analysis

Social Network Analysis (SNA) has its roots in early small group research and has evolved to become a vital methodology for understanding the intricate patterns of relationships in various social structures (Wasserman, Faust, 2012). Its inception dates back to the work of early psychologists and sociologists in the 20th century (K. Lewin, J.L. Moreno, F. Heider), who aimed to quantify and map social relationships to link these data with their qualitative characteristics (e.g. distribution of positive and negative relationships, balance structures, referential

attachment). Methodologically, SNA is grounded in graph theory and matrix algebra, providing a sophisticated framework to dissect and analyse relational data.

In the realm of social media data analysis, SNA is particularly adept at uncovering and analysing the complex web of relationships between various entities (Sloan, Quan-Haase, 2018). These entities are not limited to social actors alone but extend to any elements among which relationships can be established. For instance, in semantic networks, SNA helps in understanding how different concepts or themes are interconnected. Applying SNA to social media involves dissecting both social and semantic structures. In terms of social structures, SNA can identify and analyse the networks formed by platforms and channels, mapping out how they interact, share information, and influence each other. This analysis is crucial in understanding the spread of information, trends, and influence within social media platforms. Regarding semantic structures, SNA is employed to explore the relationships between different themes or topics discussed on social media. By analysing how certain topics are interconnected, SNA can provide insights into the prevalent narratives, their evolution, and how they relate to the broader social discourse.

SNA offers a wide range of network analytic metrics that enable the description of networks at the levels of actors, relationships, communities and of the overall structure. A key aspect is its emphasis on advanced mapping and visualization techniques which reveal complex network structures and relationships that are not readily apparent with standard visualization approaches. Such visualizations are crucial for uncovering hidden patterns and identifying central actors, links, and communities within networks, thereby providing essential insights into the dynamics of social relationships.

4.2. Semantic Content Analysis

Semantic Content Analysis employs Natural Language Processing (NLP) to systematically evaluate the textual data from online content (websites, social media, news platforms etc.) (Farzindar, Inkpen 2020). NLP is an interdisciplinary field that combines techniques from computer science, linguistics, and artificial intelligence to enable computers to understand and interpret human language. NLP involves developing algorithms and systems that can read and analyse text or speech, deciphering its meaning and recognizing the structure and nuances of language. A key aspect of NLP in text analytics is its ability to process large volumes of text efficiently, extracting valuable information such as themes, patterns, and relationships within the data, which are essential for in-depth textual analysis. Furthermore, NLP enables the extraction of linguistic features and the identification of sentiment, a process crucial for delineating public sentiment and emotions from textual data. Within NLP, sentiment analysis applies computational linguistics and text analytics to categorize the polarity of content, thus quantifying affective states and subjective information.

In the workflow of semantic analysis, information retrieval is indispensable, serving as a mechanism to query and retrieve pertinent information from vast datasets. It underpins text mining processes, which involve the conversion of unstructured textual material into structured data suitable for further analytical procedures. Text mining encapsulates a variety of techniques,

such as topic modelling, which employs algorithms like Latent Dirichlet Allocation (LDA) to detect abstract topics within a document corpus, and content analysis, which systematically codes and interprets textual elements into numerical values for pattern recognition. Lexical analysis complements these methods by providing a granular examination of the text through morphological segmentation, part-of-speech tagging, and parsing to discern syntactic structure and word usage frequencies. This is particularly pertinent for semantic content analysis, where the data's volume necessitates robust big data analytics. These analytics are designed to handle the data's size and variety to detect patterns and glean actionable insights.

Finally, the results of semantic content analysis are operationalized through data visualization techniques. These techniques transform multidimensional data sets into more accessible graphical representations, such as word clouds, trend lines, or network graphs, which elucidate the semantic relationships and distributions for a more intuitive understanding of the underlying data.

5. Data Base and Corpus Construction

Harmful online content is a moving target. The current primary platforms exerting the most significant impact are analysed and described in WP3 and in T4.3 of WP4. However, within these platforms, it is challenging to gain a comprehensive overview of the multitude of sources and channels, as well as the constantly exploding volume of posted messages, images, memes, videos, and links. Our data selection did not aim to provide an exhaustive overview of the harmful content, which is, after all, changing at every moment (numerous public and civil society organizations are addressing this and play an essential role in this regard). Instead, our focus was on analysing data – indeed, in large volumes – that are particularly relevant to our research questions, aiming to identify the social and semantic structures that are typical for harmful content and responsible for its immense influence.

Initially, our plan was also to utilize Twitter (now "X") data for our analysis, given its prominence as a pivotal source for academic research and its capability to offer insights into real-time human behaviour. However, with the policy alterations under Elon Musk's leadership in early 2023, accessing Twitter's (X's) API, which was until then freely available and esteemed for data collection, became financially prohibitive[5]. The introduction of paid tiers and the cessation of free access have substantially impeded academic research. This change in policy, combined with the challenges the academic community faces in adapting to these new conditions, necessitated a re-evaluation of our data sources for the analysis. Instead of Platform X, we will now evaluate data from the messaging service Telegram.

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[5] https://en.wikipedia.org/wiki/Twitter_under_Elon_Musk#API_access_and_developer_agreements, last accessed 2024/02/15.

Our research will evaluate three types of data:

1. User comments on **Daily Mail** articles as an example of a platform that appeals to a wide audience, bridging mainstream and non-mainstream, in some cases radical perspectives.
2. Messages from **Telegram** as an example for a so called "fringe platform", an online media channel or social network hosting non-mainstream content, often unmoderated, and catering to niche, sometimes extreme, audiences (Schulze et al. 2022).
3. Metadata and user comments on **YouTube** videos as an example of user engagement where, similar to Daily Mail articles, the focus is more on reacting to content rather than disseminating it as is typical on platforms like Telegram.

This selection of these platforms is rooted in the specific characteristics and user engagement models presented by each platform, offering a comprehensive view of the mechanisms and dynamics behind the spread of harmful content. Telegram channels, being largely unmoderated and encrypted, serve as a fertile ground for rather closed online communities, promoting more insular and intense discourses without external checks. Daily Mail forums, through moderated discussions attached to news articles, provide insight into public reactions within a controlled, reactive environment, thus reflecting a broad spectrum of opinions including immediate responses to current events. YouTube comments, linked to video content, highlight the role of multimedia in propagating information and disinformation, with its complex content moderation dynamics and the significant influence of visual cues on viewer perception. By selecting YouTube videos referenced in Telegram channels, we can investigate connections between "more mainstream" and "less mainstream" media. Conducting our study across these three platforms allows us to investigate the multifaceted nature of online harmful content, providing a richer understanding of how disinformation and conspiracy theories flourish and persist. It stands as a foundation for developing more nuanced and effective strategies to address these issues, tailored to the specific dynamics of each platform.

5.1. The Daily Mail Dataset

Daily Mail, the British daily newspaper and online news platform, was (in the printed version) founded in 1896 and is one of the UK's most widely read tabloids. The paper is known for its conservative stance, often supporting right-wing policies and viewpoints. Over the years, it has been both praised for its investigative journalism and criticized for its sensationalist reporting. The Daily Mail's online platform, MailOnline, is one of the most visited English-language news websites worldwide.[6] Its extensive reporting on many different and popular topics, its vast readership and active comment sections make it a rich source for the analysis of agenda setting, opinion formation, the emotionalization of topics and the sentiments of the reactions to these topics.

In the construction of the Daily Mail dataset, a Python-based web scraping program was developed to systematically collect data from the publication's online platform. The initial phase

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[6] https://en.wikipedia.org/wiki/Daily_Mail#, last accessed 2024/01/03.

of data collection focused on articles from the year 2021, with the plan to extend the archival retrieval to encompass articles published in 2023 in subsequent iterations. The dataset encapsulates a comprehensive array of metadata for each article, including a unique identifier (article ID), the headline, the date of publication, the designated topic category as per the website's classification, and the aggregate number of user interactions in the form of comments. To capture audience engagement, the scraper was configured to retrieve the most recent comments, up to a predefined limit per article, ensuring a uniform data structure for analytical purposes. For each comment, the dataset records pertinent details that provide insights into user engagement metrics and interaction dynamics. This includes the comment text, a user ID, the timestamp of the comment (date of creation), and a quantification of community feedback measured by the number of positive (likes) and negative votes (dislikes). Additionally, the total vote count and the association with the article's topic category are included.

Originally, a total of 225,265 articles including comments were downloaded. After data cleansing (limitation to 2021, removal of duplicates), a total number of 224,981 articles remained as raw data. These are divided into different categories as follows:
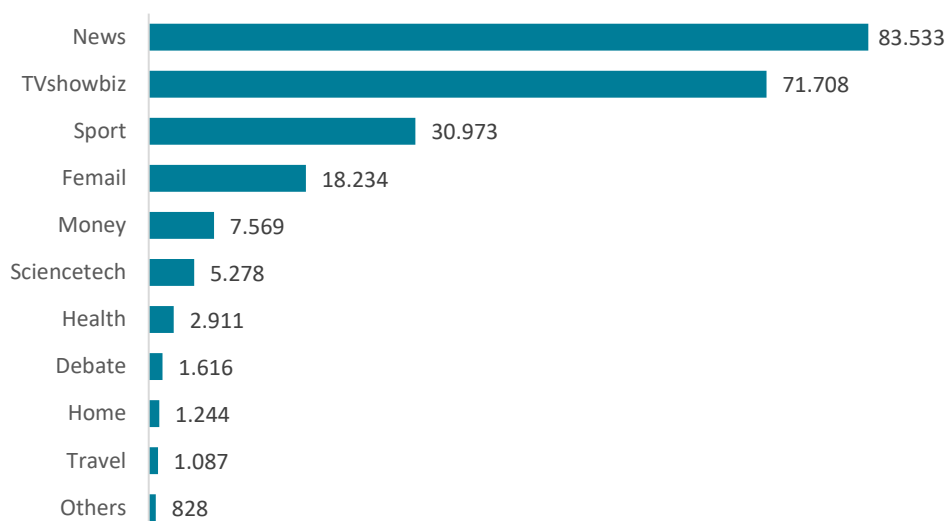
Figure 2 – Number of Daily Mail articles in 2021 by category (based on dailymail.co.uk classification). N = 224,981.

A total of 60,161,527 comments were linked to these articles at the time of download (March 2023), of which 41,797,198, i.e. 69.5%, were downloaded. Due to the inherent technical complexities associated with accessing data from the Daily Mail's digital environment and the specific methodologies employed in our data retrieval process, we were able to secure a substantial yet partial dataset, encompassing 69.5% of the total comments linked to the selected articles as of March 2023. This subset primarily includes the most recent comments, reflecting the limitations encountered within the scope of our data collection efforts.

5.2. The Telegram Dataset

In recent years, Telegram, founded by Nikolai and Pavel Durov in Russia in 2013, has emerged as a pivotal platform for the dissemination of harmful and extremist online content (Urman and Katz, 2022). Its end-to-end encryption, commitment to user privacy, and resistance to external censorship have rendered it an attractive refuge for extremist groups and individuals (Schulze et al., 2022). While these features were conceived to safeguard user privacy and uphold freedom of expression, they inadvertently foster an environment conducive to the spread of extremist ideologies, hate speech, and incitements to violence. The platform's channel-based structure facilitates the swift and extensive distribution of content, often sidestepping the conventional gatekeeping mechanisms present on more mainstream social media platforms. As a result, Telegram's distinctive blend of privacy, security, and broadcasting capabilities has established it as a favoured platform for those intent on disseminating harmful and/or extremist content without immediate consequences. Due to the significance of Telegram in the dissemination of harmful content, we have selected the messaging service as one data source for our study.

Telegram offers different ways for data extraction. Firstly, the Telegram API provides direct access to public messages, groups, and channels, requiring registration and an API token for utilization. Secondly, Telegram bots can be developed and integrated into groups or channels to monitor and gather messages; however, user consent and transparency about the bot's purpose are paramount. Thirdly, third-party tools and libraries, such as Telethon or TgCrypto for Python, 'telegram' for R, or Communalytic and 4CAT, have been developed to facilitate data scraping from Telegram, streamlining the interaction with the platform's API. Furthermore, manual collection serves as an alternative for specific case studies or smaller datasets, where researchers can join public groups or channels and record messages of interest. These channels are particularly useful for collecting data on current events focused on specific (public) channels and groups, and we will return to these opportunities. Finally, there are online accessible and downloadable Telegram datasets, the largest of which is the "TGDataset" with more than 120,000 channels and over 400 million messages, which we will subsequently use for our analysis.

The TGDataset[7] was constructed by a research team from the Sapienzia University of Rome (La Morgia et al., 2022) using a snowball approach, starting with seed channels from various topics and expanding by including the source channels of forwarded messages. Initial seed channels were identified using Tgstat, a service that indexes over 150,000 Telegram channels. From Tgstat's top 100 channels by subscriber count, 18 categories were identified, and the ten most popular channels from each category were selected as seed channels, resulting in 180 seed channels. Data from these channels was downloaded using the Telethon APIs, an open-source Python tool for Telegram. Messages were downloaded at intervals to avoid overloading Telegram's service. While media files were excluded to prevent storing copyrighted or illegal content, details like file format, title, author, and ID were retained. The dataset was expanded by parsing messages to identify forwarded content and its original authors. If the author was a new channel, it was added to the dataset. This iterative process continued until July 31, 2022.

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[7] The following paragraph refers to La Morgia et al., 2022, section 3.

For each channel in the dataset, comprehensive details, including title, verification status, subscriber count, description, username, ID, and creation date, were stored. For messages, the dataset retained the author, timestamp, and for forwarded messages, the original posting date and channel.

The TGDataset provides a current snapshot of channels without capturing all historical changes. While it includes some historical data like creation dates and message timestamps, it doesn't track changes in channel names, descriptions, or subscriber counts over time. Additionally, the dataset doesn't include user comments on messages or reaction emojis. Finally, the TGDataset contains only publicly accessible channels as of July 2022. Newer channels are not included, which means that Telegram activities related to later or even current events are not present (e.g., the Hamas attack on Israel and its consequences in October 2023) or are only included from their onset (Russia's attack on Ukraine in February 2022). Nevertheless, the TGDataset is a comprehensive collection of Telegram channels, which currently makes it the largest known dataset of Telegram channels. It was constructed to provide a broad snapshot of the Telegram ecosystem, capturing channels across various languages and topics. Notably, it includes channels that discuss a range of subjects, from legitimate topics to controversial and harmful ones. Given the Telegram platform's increasing popularity and its use for both benign and malicious purposes, the TGDataset is well suited for our research questions regarding the analysis of harmful content like disinformation, hate speech, and conspiracy theories. To identify and select channels within this comprehensive dataset that potentially contain an above-average proportion of harmful content, especially conspiracy theories, we proceeded as follows.

For our analysis, we opted to focus on German and English language channels. Utilizing the Compact Language Detector 2 Library for Python, we identified 10,781,584 German and 48,578,425 English messages within the dataset. This approach ensured that our analysis was grounded in channels and content that our team could comprehensively understand and evaluate. We computed embeddings for the two datasets of German and English-language messages using the Huggingface Library, specifically employing the "T-Systems-onsite/cross-en-de-roberta-sentence-transformer" model[8]. Embeddings are numerical representations of text data as vectors with 1,536 dimensions, capturing the semantic meaning of words or sentences in a multi-dimensional space, allowing for more efficient and nuanced analysis of textual content. Then, we formulated statements (see Appendix) that represent the content of conspiracy theories across 20 different topics and calculated the embeddings for these statements. In the next step, we computed the cosine similarities between the messages in the dataset and the formulated conspiracy theory propositions. Cosine similarity measures the cosine of the angle between two vectors in a multi-dimensional space, indicating how similar two pieces of text are by comparing the direction of their vector representations (without considering their size) (Singhal, 2001). From this, we filtered out and retained only those messages where the similarity with at least one of the conspiracy theory propositions was 0.2 or higher (within a range between -1 and +1). For the English language subset, we selected Telegram channels that had a minimum of 50 messages meeting this similarity threshold. In contrast, for the German

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[8] See https://huggingface.co/T-Systems-onsite/cross-en-de-roberta-sentence-transformer, last accessed 2023/10/13.

language subset, we chose channels with at least 5 messages that satisfied the condition. The size differential was motivated by the difference in number of subscribers and message volume. Based on the cosine similarities of the messages we calculated an overall semantic similarity value of the Telegram channels with a normalized maximum which was set to 10.

This process resulted in the identification of 2,607 English-language Telegram channels and 4,012 German-language Telegram channels with a total amount of 16,816,121 and 11,850,140 messages respectively. The following diagram represents the number of selected channels by creating year:
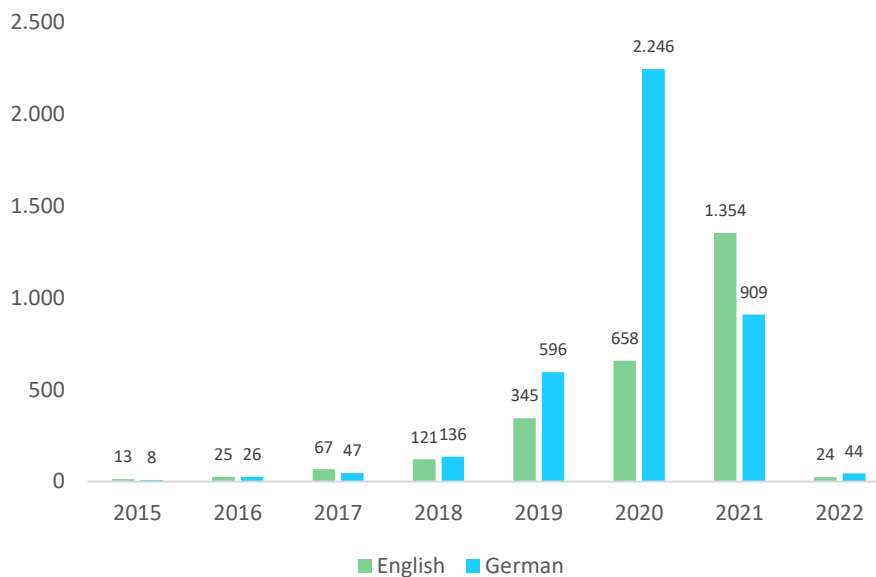
Figure 3 – Number of selected Telegram channels extracted from the TGDatset by creating year (n = 2,607 English/4,012 German).

Most German-language channels were founded in 2020, while for English-language channels, most date from 2021. As stated, these are Telegram channels with an above-average share of messages containing conspiracy topics. The establishment of a large part of them coincides with the Covid pandemic (from January 2020 on).

Without knowing more precisely what topics are being spread in these channels, we can already observe a temporal alignment between the pandemic on one hand and the multiplication of Telegram channels with conspiracy-theoretical content on the other.

The following data and key figures are provided by the TGDataset for each channel:

1. **channel_id**: unique identification number of channel.
2. **username**: name of the user who has created the channel.
3. **name**: official name of the channel.
4. **description:** self-description of the channel.
5. **message**: messages in text format.
6. **creation date**: creation date of the channel.
7. **message_id**: unique identification number of message.
8. **text_messages:** number of messages at the time of download.
9. **generic_media:** number of generic media within the messages.
10. **date**: creation date of messages.
11. **is_forwarded**: information that the message was forwarded by another channel.
12. **forwarded_from_id**: if of the forwarding channel.
13. **forwarded_message_date**: creation date of forwarded message.
14. **url_domain:** urls of links to other channels or websites included in the message.
15. **Semantic similarity**: Overall semantic similarity value with respect to conspiracy propositions.

5.3. The YouTube Dataset

To compile an initial list of YouTube channels and videos, we first extracted the Telegram messages from 2022, amounting to 16,816,121 in English and 11,850,140 in German. Using an R script, we identified all web addresses (URLs) within these messages, along with the respective Telegram channel. We saved both the complete URLs and their corresponding domains (e.g., "youtube.com" for YouTube videos). This allows us later to analyse references to external platforms and linkages between Telegram channels. For the YouTube dataset, we extracted and compiled URLs and domains related to YouTube. This resulted in a dataset of 3,033 Telegram channels and 116,078 YouTube links for German channels, and 2,008 Telegram channels with 154,318 YouTube links for English channels. The next steps for the final report involve selecting YouTube videos and channels relevant to our analysis, using metadata from both Telegram channels (like subscriber numbers) and YouTube (views, likes, etc.), and based on network and semantic analysis results from the Telegram data.

6. Analysis of the Telegram Data

Let us now turn to the preliminary results of the analysis of the Telegram messages. We have already determined that the Telegram channels we identified based on messages with conspiracy theory content were largely established in the years 2020 and 2021, coinciding with the first two years of the Covid pandemic. The following diagram illustrates the number of messages in these channels by year.
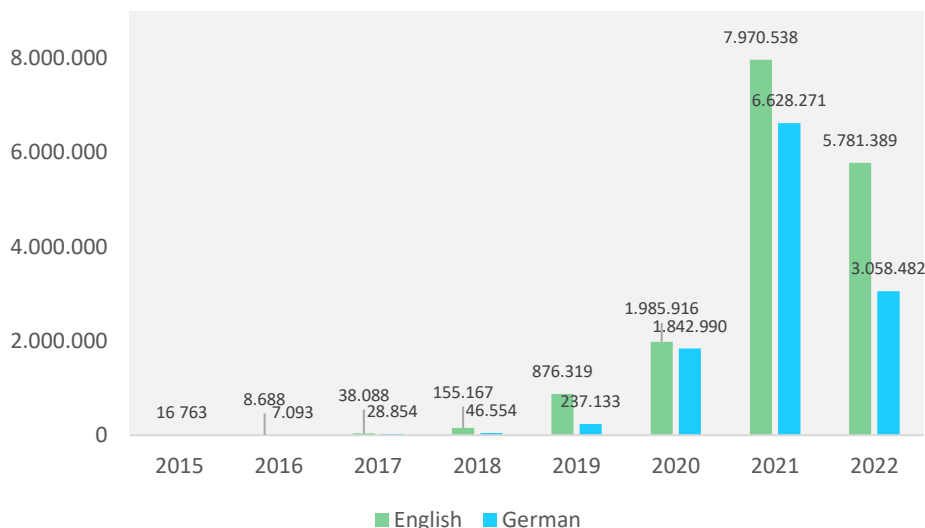
Figure 4 – Number of messages within selected channels (N = 16,816,121 English, 11,850,140 German).

In both the German and English-speaking channels, there was a significant increase in message activity in the year 2021 compared to the previous year.

Figure 5 refers to the number of messages between January 2019 and July 2022. It demonstrates a clear overall upward trend in the number of messages over time. The precise reasons behind the decrease in message volume after January 2022 cannot be definitively explained. It's possible that Telegram's increased moderation of content breaching its policies played a role, or that users shifted their discussions to other platforms or more private modes of communication. The heightened activity observed in the winter of 2021-2022 definitely reflects the intense engagement due to the COVID-19 pandemic. This focus appears to have waned over time, only to be rekindled by Russia's invasion in Ukraine, which seems to have once again galvanized conversations within these channels.
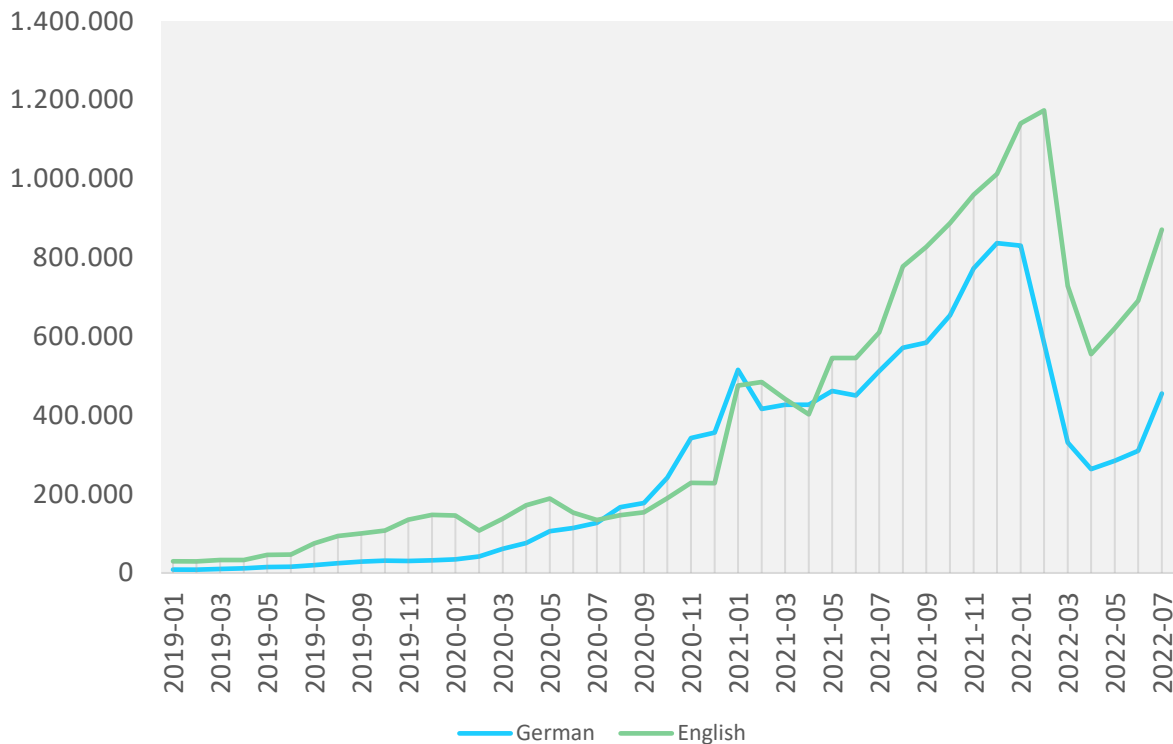
Figure 5 – Number of messages per month (January 2019 – July 2022) (N = 16,816,121 English, 11,850,140 German).

All in all, the trend indicates a massively growing user engagement on the Telegram channels which have been identified in the context of conspiracy theories, reflecting an increasing reliance on digital communication platforms in this period. If we assume that this increase is also (but not solely) related to the Covid-19 pandemic ("infodemic"), then we can observe a certain time lag, a period of about one and a half years after the outbreak of the pandemic, within which events are responded to with increased, conspiracy-related communication activity within the selected channels.

6.1. The German-Language Telegram Channels and Messages

6.1.1. Key Figures of the Channels

The German-language Telegram dataset consists of 4,012 channels with a total of 11,850,140 messages. The spectrum of Telegram channels included is notably diverse, encompassing a wide range of entities. This spans from large news platforms, which are not included in the selection due to the dissemination of disinformation, but rather because the pertinent topics are present in their broadcasts, to specific groups that explicitly propagate harmful content, including conspiracy theories, and that are more or less popular. The number of subscribers ranges from 0 to 318,619 at the time when the TGDataset was generated. The number of messages broadcast by the German-language groups varies between 9 and 85,050.
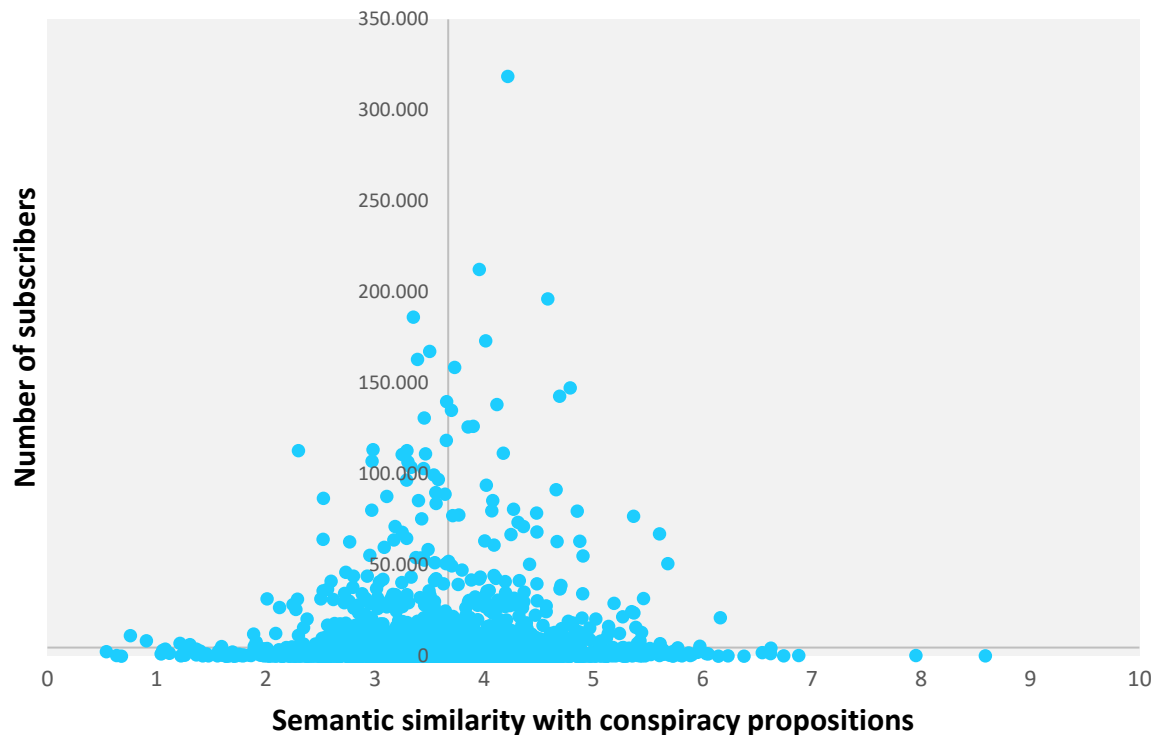
Figure 6 – German-language Telegram channels by number of subscribers and average similarity to conspiracy statements.

Figure 6 delineates German-speaking Telegram channels based on their average similarity to conspiracy theory statements, as well as their subscriber count. The distribution closely resembles a bell curve, indicating that channels with either very low or very high similarity tend to have a relatively smaller number of subscribers. Conversely, the channels boasting the highest subscriber counts exhibit an - comparatively (!) - average level of similarity. Later, we will focus on analysing the channels located in the upper right quadrant, meaning those with an above-average number of subscribers and an above-average level of semantic similarity with conspiracy statements.
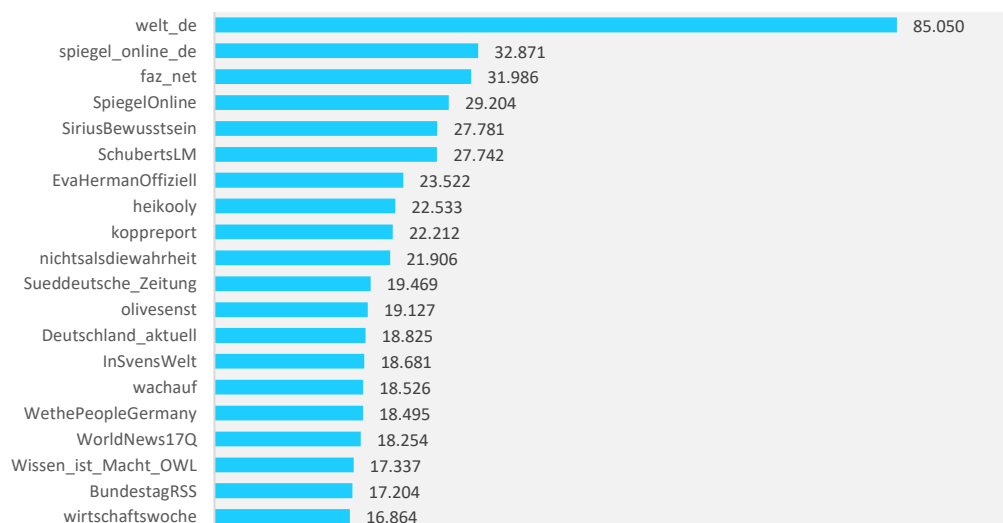
Figure 7 – Top-20 German-speaking Telegram channels by number of messages.

The channels with the highest message volumes (Figure 7) primarily belong to major German-speaking media platforms such as "Die Welt," "Der Spiegel," and "Frankfurter Allgemeine Zeitung (FAZ)." On the other hand, the remaining channels fall into categories such as spiritual or esoteric groups ("SiriusBewusstsein"), information channels from the right-wing spectrum claiming to disseminate the truth in contrast to what they call "established media" ("nichtsalsdiewahrheit", "InSvensWelt", "wachauf"), as well as authors and publicists who are relatively well-known in Germany and also align with the right-wing spectrum and/or the conspiracy milieu (Eva Herman, Stefan Schubert).

Channel	Subscribers
reitschusterde	318.619
EvaHermanOffiziell	212.560
auf1tv	196.421
jetztgemeinsamstark	186.286
FreieMedienTV	173.230
AllesAusserMainstream	167.421
ReinerFuellmich	163.117
oliverjanich	158.661
freiesachsen	147.446
kenjebsen	142.880
LIONMediaTelegram	139.861
MICHAELWENDLEROFFICIAL	138.204
fufmedia	135.084
aerztefueraufklaerungoffiziell	130.808
fragunsdoch_WWG1WGA	126.242
Q74You	125.880
apolut	118.603
samueleckert	113.551
rechtsanwaeltin_beate_bahner	113.016
Corona_Ausschuss	112.875

Figure 8 - Top-20 English-speaking Telegram channels by number of subscribers.

The ranking of Telegram channels with the most subscribers makes it even clearer that we have selected channels that are suitable for our analysis in terms of their user's attitude. Boris Reitschuster (channel "reitschuster.de") is a German journalist, blogger, and non-fiction author. He is considered an expert on Russia and served as the head of the Moscow office for Focus from 1999 until August 2015. He is the author of two bestsellers about Vladimir Putin's regime in Russia. Since 2015, he has been running a YouTube channel and a blog, which several media outlets have categorized as right-wing or conservative. His blog is among the most shared "alternative media" platforms that have disseminated misinformation about the COVID-19 pandemic.[9] Eva Herman (Eva Bischoff) is a German author and former television presenter. She was a news anchor in German public broadcasting until 2007. Now, as a publicist, she appears through right-wing populist and conspiracy-theory theses.[10] AUF1 ("Alternatives Unabhängiges Fernsehen, Kanal 1") is a website based in Linz, Austria, founded by Stefan Magnet, who also acts as editor-in-chief, and in existence since May 2021. AUF1 disseminates far-right content and primarily targets Covid deniers, climate change deniers, conspiracy theorists, as well as Putin supporters.[11] Similar characteristics also apply to all other channels listed in the diagram.

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[9] https://de.wikipedia.org/wiki/Boris_Reitschuster, last accessed 2023/10/25.
[10] https://de.wikipedia.org/wiki/Eva_Herman, last accessed 2023/10/25.
[11] https://de.wikipedia.org/wiki/AUF1, last accessed 2023/10/25.

6.1.2. Semantic Key Clusters

6.1.2.1. Data preparation

After gaining an initial insight into the key figures of the selected Telegram channels, we turn to the question of what content is being discussed in their messages. The goal is to get an overview of the topics among a huge number of messages; by no means do all of them contain harmful content. The question is which conspiracy related topics show up in the messages and what content appears in the environment of disinformation and conspiracy narratives.

Before we describe the specific methodologies and preliminary findings of this step, it is necessary to refer to the data cleaning and analysis process. The TGDataset is, as mentioned, a comprehensive collection of Telegram channels and messages, capturing a wide array of topics and discussions. To effectively analyse this dataset, it was imperative to implement a data cleaning and selection process. This process aimed to refine the dataset by removing irrelevant or non-essential information and focusing on the content most relevant to our task to gain an overview of the existing topics and content. The data cleaning was carried out in several stages, each addressing different aspects of the dataset to ensure a comprehensive and targeted approach.

To get a first insight into the data, messages from 2020 - 2022 were taken (German channels: 11,529,743 messages). The consideration here was that these data include both the topic of the Covid pandemic and that of Russia's invasion of Ukraine, which began on February 24, 2022 - both topics that were and are of particular relevance for the spread of disinformation and conspiracy theories.

Selection of relevant channels: To manage the large volume of data and focus on the most relevant content, further reduction was necessary. Channels with an above-average semantic similarity to conspiracy theory propositions and above-average size were selected for in-depth analysis (German-language: 326 out of 4,012 channels).

Further cleaning and selection of messages: A Python script was implemented to process the raw data with the messages. The script performed several cleaning operations, including:

- **Emoji Removal**: Messages consisting solely of emojis were identified and removed. This was achieved using a regular expression (regex) pattern matching various emoji ranges in Unicode.
- **Link Removal**: Messages containing links were eliminated to focus purely on text-based content. The script identified various link formats, including standard HTTP/HTTPS links, domain-specific formats (.com, .net, .org), and popular social media platforms (YouTube, Facebook).
- **Message Length Restriction**: Messages shorter than 10 words were removed to ensure a substantial amount of textual content for analysis.

These steps resulted in a data corpus of 54,347 messages between 2020 and 2022 belonging to the selected 326 German-language channels.

6.1.2.2. Computation of embeddings

To identify and describe the key topics of the messages, we used the method of calculating the embeddings of the messages. Embeddings, particularly those generated using OpenAI's models like the GPT (Generative Pre-trained Transformer) series, are advanced numeric representations of text data that capture the underlying semantic and syntactic nuances of language. These embeddings are a central component of deep text analysis in natural language processing (NLP):

High-Dimensional Vectors: Embeddings are high-dimensional vectors where each dimension represents a latent feature of the text. Essentially, they are numerical representations that capture the essence of words, phrases, or entire text segments.

Contextual Understanding: Unlike simpler bag-of-words models that treat words independently, GPT embeddings understand context. They capture not just the individual meanings of words but also how those meanings change in different linguistic contexts. This is achieved through the transformer architecture used in GPT, which processes text in a way that accounts for the interplay of words within a sentence or a passage.

Deep Learning and Pre-training: GPT embeddings are the result of deep learning models that have been pre-trained on vast amounts of text data. During this training, the model learns to predict parts of the text, thereby gaining an understanding of language patterns, grammar, and even subtler aspects like sentiment and irony.

Transfer Learning: The pre-trained GPT model can be fine-tuned for specific tasks, which means that the general understanding of language it has learned can be adapted to more specialized applications. In the context of our study, we use these embeddings as is, leveraging their pre-trained understanding of language for our analysis.

Embeddings allow for a deep semantic understanding of the text by capturing contextual relationships and nuances that are often missed in simpler text representations. By representing text as vectors, embeddings enable us to perform mathematical operations such as calculating similarities or clustering of topics. With the vast amount of textual data in our datasets, embeddings provide an efficient way to process and analyse this information at scale.

For our study, we used OpenAI's text embeddings model "text-embedding-ada-002"[12]. This model is known for generating high-quality embeddings that capture a wide range of linguistic features[13]. The process involved the following steps:

    a. **Script Implementation**: A Python script was developed to interface with OpenAI's API and process the text data from our datasets. This script was designed to handle large volumes of data efficiently.

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[12] https://huggingface.co/Xenova/text-embedding-ada-002, last accessed 2023/12/04.

[13] The performance of text embedding models is evaluated through benchmarks in different domains. For text search the model performance on the BEIR benchmark was 53.5, for code search on the CodeSearchNet benchmark 86.8, for sentence similarity on the SentEval benchmark it was 81.5, and for text classification on the SentEval it was 90.1. See: https://openai.com/blog/new-and-improved-embedding-model, last accesssed 2024/02/20.

b. **Batch Processing**: Due to the size of our datasets, texts were processed in batches. This approach optimized the use of computational resources and API requests.

c. **Threaded Execution**: To expedite the processing, the script employed multi-threading, where multiple batches of texts were processed simultaneously. This method significantly reduced the processing time.

d. **Error Handling and Retry Logic**: The script included error handling mechanisms and a retry logic to ensure robustness in data processing, particularly important given the scale of our datasets and the reliance on external API services.

e. **Dataframe Integration**: The embeddings generated by the API were integrated back into our original pandas DataFrame, ensuring that each text's embeddings were correctly aligned with its corresponding metadata.

The embeddings obtained through this process were central to our subsequent analysis, enabling techniques like hierarchical clustering and similarity calculations. By converting our textual data into a structured and quantifiable format, we laid the groundwork for a detailed exploration of the thematic and semantic patterns within our datasets.

6.1.2.3. Hierarchical clustering

To detect semantic clusters (i.e., clusters of messages with similar content and topics), we applied the method of hierarchical clustering to the word embeddings, the numeric representations of the messages. Hierarchical clustering is a method of cluster analysis which seeks to build a hierarchy of clusters. The process involves the following steps:

a. **Creating Distance Matrix**: Initially, a distance matrix is computed, capturing the dissimilarity between each pair of embeddings in our dataset. This matrix forms the basis for identifying which text embeddings (and therefore, text entries) are similar to each other.

b. **Agglomerative Approach**: Our study employs an agglomerative, or bottom-up, approach. This means each data point starts in its own cluster, and pairs of clusters are merged as one moves up the hierarchy.

c. **Merging Clusters**: At each iteration, the two clusters that are most similar are combined into a single new cluster. This process is repeated iteratively, reducing the number of clusters at each step.

d. **Ward's Method**: We chose Ward's method for our hierarchical clustering (Ward, 1963). This method minimizes the total within-cluster variance. At each step, the pair of clusters with the minimum between-cluster distance are merged.

e. **Dendrogram Creation**: The results of hierarchical clustering can be represented in a dendrogram, a tree-like diagram that records the sequences of merges and shows the arrangement of clusters formed.
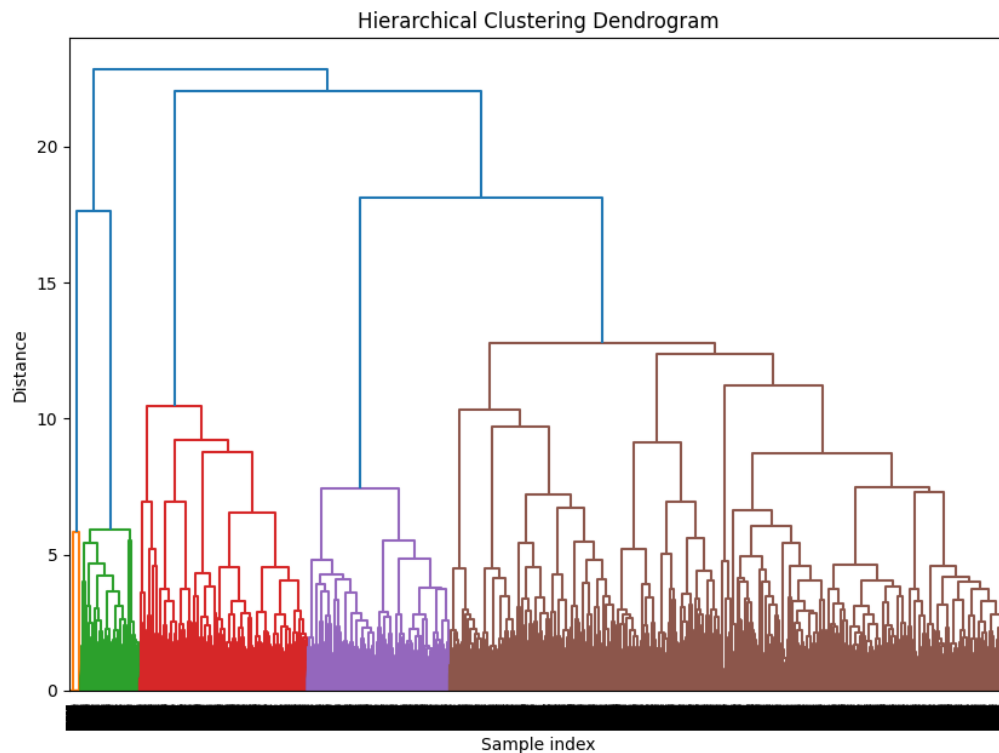
Figure 9 - Hierarchical clustering dendrogram for the selected German-language Telegram messages.

The diagram shows the process of building the hierarchical clusters. Whenever two clusters are merged, they are linked by a connection on the dendrogram. Choosing the right cut-off distance determines the number of distinct clusters.

6.1.2.4. Determining number of clusters

The next step is determining the optimal number of clusters. To achieve this, we investigated how the distribution of messages varied across different cluster solutions. This process consists of three steps:

a. **Uniformity Calculation**: To approximate the uniformity across different cluster sizes, we employed Shannon entropy. This method quantifies the evenness with which messages are distributed among clusters. Specifically, Shannon entropy is determined by calculating the negative sum of each cluster's proportion of messages multiplied by the natural logarithm of this proportion. This calculation is performed for all clusters, thereby providing a measure of distribution uniformity. A higher entropy value signifies a more uniform or even distribution of messages across the clusters. **Rate of Increase in Uniformity**: We examined the change in entropy as the cluster size increased, specifically the rate of increase between consecutive cluster sizes.

b. **Identification of Optimal Cluster Number**: The optimal cluster number was identified at the point where the increase in entropy started to level off, indicating that further increases in cluster size would not significantly enhance the uniformity of the distribution.

The uniformity analysis for the German dataset indicated that the rate of increase in entropy was most substantial when transitioning to 15 clusters. To get a reasonable number of cluster solutions we considered between 5 – 25 clusters. This suggested that a cluster size of 15 was optimal, providing a balanced and meaningful grouping of messages.
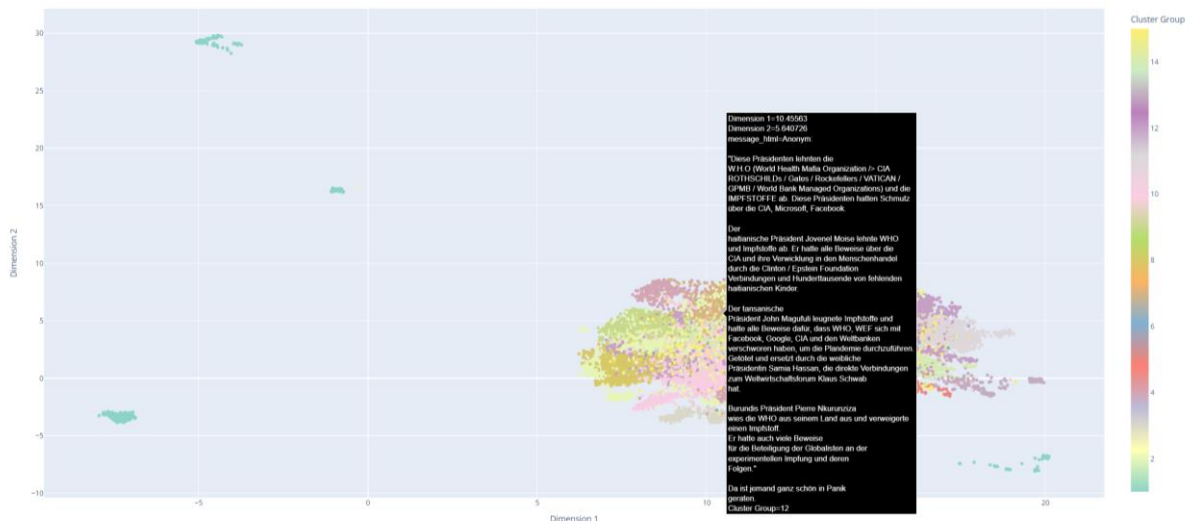
Figure 10 – Interactive UMAP visualization of the clustered German-language Telegram messages (screenshot, N = 54,347)

Figure 10 illustrates a UMAP (Uniform Manifold Approximation and Projection) visualization, which serves as an advanced technique for reducing the dimensionality of complex data sets. Here, the UMAP algorithm is employed to transform the clustered text messages into a two-dimensional representation based on their semantic similarities, derived from the text embeddings. The visualization employs a color-coded scheme to demarcate the distinct cluster groups, where the spatial contiguity of points within the plane reflects the semantic congruence of the messages. This method not only elucidates the intrinsic clustering patterns inherent in the data but also acts as a validation tool for the clustering algorithm itself, confirming its efficacy when dots corresponding to the same cluster group are observed in proximity. The respective HTML is interactive in the sense that the data points can be clicked on with the mouse and the respective messages displayed.

6.1.2.5. Cluster description

The process of hierarchical clustering has yielded 15 distinct clusters within the German-language dataset. These clusters represent thematic concentrations of messages, each characterized by specific keywords, topics, and underlying motivations. The descriptions of these clusters provide insights into the prevalent viewpoints circulating within the selected Telegram channels. The clusters identified through our analysis reflect a diverse range of themes, from political discourse and conspiracy theories to spiritual musings and socio-political commentary. Each cluster is defined not only by the thematic content of the messages but also by the tone and intent behind them.

To get an initial overview of the content of the messages in the 15 clusters, a **key term analysis** was carried out. This consisted of a systematic text mining approach to extract and examine

the most prevalent terms within the 15 clusters of messages. The process commenced with the random selection of 250 messages from each cluster, ensuring a representative sample while maintaining reproducibility of results through a fixed seed in the random number generator. Subsequently, a tailored list of stopwords, comprising common words irrelevant to the thematic content, was employed. This list included words such as different kinds of pronouns (ich, er sie, es, sein, ihr…), conjunctions (und, dass, weil etc.), definite and indefinite articles (der/die/das, einer/eine/eines), prepositions (zu, für, am) and many more.

The core of the procedure involved processing the text data from each cluster to identify the top terms. This was achieved by:

- Converting all text to lowercase to ensure uniformity.
- Removing punctuation, numbers, and the defined stopwords to isolate meaningful words.
- Constructing a term-document matrix, which quantified the frequency of each word across all messages within a cluster.
- Extracting the 150 most frequently occurring terms from each cluster, providing an overview of the key themes and topics prevalent in the messages.

Upon application of this methodology to each cluster, the results were compiled into a structured format. Each cluster was associated with its respective top terms, effectively summarizing the dominant thematic content within. The outcome of this process was a matrix containing the most frequent terms for each of the 15 clusters:

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
can't	world	heute	menschen	liebe	liebe	menschen	ukraine
channel	people	energie	zeit	morgen	immer	impfung	russland
displayed	one	mitte	heute	guten	leben	impfpflicht	putin
violated	just	leben	welt	immer	menschen	corona	nato
laws	military	tag	vitamin	lieben	zeit	immer	russische
local	like	uhr	körper	heute	erde	virus	krieg
service	trump	sonne	immer	danke	licht	geht	russischen
telegrams	news	aktuell	licht	wünsche	welt	bitte	menschen
terms	can	tagesenergie	leben	menschen	tag	covid	ukrainischen
N/A	new	erde	wasser	tag	wirklich	pandemie	ukrainische
N/A	covid	heutige	große	licht	seele	impfen	usa
N/A	now	immer	liebe	grüße	herzen	geimpften	heute
N/A	state	sun	pflanzen	zeit	geht	deutschland	wladimir
N/A	days	kate	erde	jahr	kraft	zeit	soldaten
N/A	real	dabei	dabei	nacht	frieden	leben	immer
N/A	deep	atmosphären	kommen	leben	angst	wochen	waffen
N/A	time	tagesenergie	natur	kraft	tun	gehen	sagte
N/A	president	mayakalender	haut	gut	macht	heute	kiew
N/A	ukraine	neue	germanen	neue	heute	ärzte	präsident
N/A	see	kraft	wirkung	dank	gott	geimpft	land
N/A	biden	erkennen	vielen	bitte	gut	jahren	medien
N/A	china	zeit	geht	seelen	gehen	medien	welt
N/A	way	geht	wirklich	gute	bedeutet	impfstoff	westen
N/A	never	update	nacht	wundervollen	wahrheit	impfungen	truppen
N/A	know	schumi	ost	herzen	energie	freiheit	länder
N/A	"	kommen	gott	schönen	einfach	zwei	deutschland
N/A	get	goldenagenetwo	deutschen	welt	erkennen	tmekenjebsen	kiewer
N/A	much	ladungen	sonne	arbeit	herz	kinder	donbass
N/A	back	gehen	glutamat	wahrheit	hast	geimpfte	militär
N/A	day	starken	weiber	abend	wichtig	tragen	jahren

Cluster 9	Cluster 10	Cluster 11	Cluster 12	Cluster 13	Cluster 14	Cluster 15
trump	immer	uhr	polizei	bitte	menschen	menschen
biden	welt	sachsen	menschen	schatzkammer	wahrheit	immer
präsident	russland	bürger	deutschland	wissens	immer	heute
joe	menschen	menschen	demonstranten	tmevivoterra	rockt	leben
wahl	danke	polizei	regierung	vivoterra	frieden	deutsche
donald	deutschland	folgt	immer	menschen	offiziellen	dabei
menschen	heute	telegram	polizisten	freunde	bitte	gut
usa	medien	heute	wegen	liebe	heute	sagt
sagt	zeit	spaziergang	bürger	immer	einfach	geht
sagte	geld	freiesachsen	epstein	vivoterra	geht	land
demokraten	china	berlin	gestern	hohen	widerstand	lives
arizona	euro	straße	heute	aufmerksamkeit	sofort	matter
präsidenten	jahr	markt	leben	energie	wäre	kinder
staaten	system	freiheit	australien	gut	tmekenjebsen	deutschland
immer	überschwemmun	immer	worden	nächsten	zeit	zeit
wahlbetrug	jahren	demo	macht	lange	trump	neue
wissen	telegram	kretschmer	maxwell	sozialisten	gut	welt
news	tag	tag	usa	vertrauen	bekommt	sieht
stimmen	einfach	geht	news	wichtig	infos	ende
nie	trump	platz	grenze	beiträge	anons	sagen
amerika	ukraine	marktplatz	unzensiertv	empfehlen	uhr	wegen
vereinigten	gerade	montags	italien	frequenzenschlaf	leben	darf
heute	land	rathaus	letzten	schlafen	deutschland	deutschen
passiert	beben	protest	deutsche	vivoterrawir	news	fall
januar	europa	gehen	freiheit	angstfrequenzbe	welt	plan
medien	ende	bitte	land	beginnen	wissen	wohl
clinton	neuen	uhrmarkt	taliban	bereiche	liebe	gerade
gerade	regierung	kundgebung	millionen	entziehst	neue	unzensiertv
county	bürger	montag	covid	herzfrequenzber	bilden	video
wegen	wissen	steht	polen	investierst	gruppen	news

Figure 11 – Top 30 most frequent terms per cluster, random sample of 3,750 messages (250 for each cluster) 2020 – 2022 of 326 selected German Telegram channels.

This list is based exclusively on frequencies within the clusters; there was no pre-selection of content. In other words, this table reflects the keywords and thus the central topics that occur in the message sample.

We used a combination of three methods to identify and describe thematic clusters within our data set.

1) First, we analysed the frequency of keywords derived from the key term analysis. This method helped us pinpoint the most common and significant terms in our data, providing a straightforward view of the main topics.
2) Next, we incorporated the GPT-4 API to conduct a thematic analysis on a sample of the messages. This step involved using the AI's language processing capabilities to identify deeper themes and patterns that might not be immediately obvious from keyword frequency alone.
3) Finally, we conducted a manual review of the messages. This involved reading through the data to understand the context and motivations behind the themes identified earlier. This step allowed us to create more detailed and contextually informed descriptions of the thematic clusters.

By combining these three methods — keyword term analysis, AI-assisted thematic analysis, and manual review — we aimed to achieve a preliminary understanding of the key themes and concepts of the 15 clusters:

Cluster 1 – Messages removed by Telegram

Cluster 1 consists of removed messages which violated (even) Telegram's terms of service or local laws respectively and therefore cannot be analysed.

Cluster 2 – English-language messages

Cluster 2 is the English-language cluster. As can be seen in the overall network of German and English-speaking Telegram channels based on mutual links (see chapter 6.3), some of these channels serve as brokers between the German-language and the English-language Telegram network. There is wide variety of topics being discussed in the messages including US politics, the Covid-19 pandemic, and the war of Russia against the Ukraine (keywords: military, Trump, Covid, president, Ukraine, China etc.).

Cluster 3 – Esoteric cluster 1: Cosmos and Energy

This cluster contains messages on "cosmic activities", "energetic frequencies", and their impact on Earth and human consciousness. Central to the discourse are observations and interpretations of solar phenomena such as sunspots, solar winds, and flares, with a focus on their perceived effects on human well-being. The discussions extend to the realm of frequencies and energetic flows, notably the Schumann Resonances, exploring their supposed influence on human health and mental states. The cluster also touches upon the practical implications of these cosmic and energetic forces, examining how they may affect everyday mood, health, and overall life quality. Additionally, it incorporates elements of the Mayan calendar and astrological references, using them to decipher the quality of time and associated energies.

Cluster 4 - Esoteric cluster 2: Alternative Medicine and Spirituality

Cluster 4 presents messages that focus on mysticism, alternative medicine, and esoteric knowledge. A spectrum of themes, ranging from the therapeutic approaches of natural remedies (like Spirulina and Aronia) to the mysterious properties attributed to items such as the "Richat-Structure" (a prominent circular geological feature in Mauritania), are talked about. Central to the messages is the link between health and spirituality, exemplified by discussions on the "healing potential of colors in aura reading" and the "metaphysical significance" of teeth in relation to overall well-being. The messages also contain discussions of folklore and ancient wisdom, recounting tales like the karmic journey of seals in Celtic legends and the transformative power of sacred geometries. Furthermore, the cluster contains a critical view of "conventional" or "mainstream" medicine and their health practices. Overall, the cluster contains messages blending historical mysteries, spiritual approaches, and alternative health perspectives.

Cluster 5 – Esoteric Cluster 3: Harmony and Empowerment

This cluster encompasses a diverse array of messages that predominantly revolve around themes of spirituality, community support, and personal empowerment. The discussions range

from the significance of individual spiritual journeys and the power of positive affirmation to the importance of community solidarity and collective action. There is a strong emphasis on self-expression and authenticity, with messages advocating for living a life true to one's "inner calling" and embracing unique paths, and in demarcation and opposition to (claimed) predetermined social norms. Additionally, the cluster features a blend of motivational and inspirational content, aimed at uplifting and encouraging individuals through life's challenges. There's also a notable focus on health and well-being, both mental and physical, with discussions on holistic approaches to wellness. Environmental awareness and appreciation for nature's beauty are recurrent themes, reflecting a understanding of what is perceived as the interconnectedness of all life. Cultural and festive celebrations are highlighted, underlining the value of traditions and communal gatherings in enriching human experience. Finally, the messages often touch upon dealing with grief and loss, offering support and solidarity in times of sorrow.

Cluster 6 – Esoteric Cluster 4: Collective Awakening and Societal Critique

This cluster of messages presents a dynamic mixture of themes, exhibiting both similarities and differences when compared to the previous cluster. Like its predecessor, it contains spiritual and philosophical reflections, emphasizing the importance of introspection and inner growth. However, unlike the more personal and introspective focus of the earlier messages, this cluster adopts a more critical and confrontational stance towards societal structures. A strong undercurrent of societal critique and distrust of authorities pervades these messages, reflecting a deep scepticism towards the legal system, government, and mainstream narratives. This is complemented by an emphasis on empowerment and self-reliance, calling individuals to seek strength and understanding within themselves. Additionally, these messages stand out for their criticism of the perceived societal status quo and a call for unity and collective action. The theme of activism and social change is more explicit here, urging active participation in societal change, which marks a distinct shift from the introspective and personal growth-oriented themes of the previous cluster.

Cluster 7 – Disbelief in Covid-19 and Vaccination Scepticism

This cluster of messages exhibits a deep distrust in what is perceived as official narratives and government policies related to the COVID-19 pandemic. Central to these messages are scepticism towards the safety and efficacy of COVID-19 vaccines, as they propagate misinformation and unverified claims about harmful ingredients and side effects, often linking them to conspiracy theories involving Bill Gates, the 5G technology and genetic manipulation. Mask mandates are also critiqued, with debates on their effectiveness and implications for personal freedoms. There's a strong anti-establishment sentiment, criticizing the actions of governments, health authorities, and the mainstream media, accusing them of overreach and spreading false information. This cluster underscores a call for individual choice and rights, emphasizing alternative narratives and often unverified information, reflecting a significant divide in public opinion on pandemic management and the legitimacy of official health guidance.

Cluster 8 - Geopolitics and the War in Ukraine

In this message cluster, the Russia-Ukraine conflict dominates and is discussed through a geopolitical lens, emphasizing strategic interactions between global powers, particularly Russia,

Ukraine, the USA, and China. The messages center around the roles and diplomatic strategies of key figures like Putin and Xi Jinping, alongside a detailed scrutiny of military tactics and deployments. Economic aspects, notably sanctions and their impact on Ukraine's economy, are critically assessed, reflecting broader economic implications. Overall, in most cases the familiar Russian narrative is spread or implied that Russia is only defending itself against the increasing influence of the West with the attack on Ukraine, i.e. that it is a proxy war between the West and Russia. Furthermore, it is claimed that the Ukrainian government and politicians are in fact Nazis from whom Russian President Putin will liberate Ukraine. Reports in Western and "mainstream media" about the war are described as untrustworthy.

Cluster 9 - US Politics and Elections

The messages in this cluster predominantly center around politics in the USA, featuring a mix of conspiracy theories, allegations, and political propaganda. Key themes include claims of election fraud in the 2020 U.S. Presidential election, particularly focusing on voting systems (like Dominion) and audits in states such as Arizona. There are accusations directed against prominent political figures like Joe Biden, Barack Obama, and Hillary Clinton, encompassing a range of alleged misconduct. The content also supports theories about the U.S. military's allegiance to the Constitution, global crises, and the supposed existence of a "deep state" within the government. Furthermore, these messages criticize what they call mainstream media for alleged bias, particularly against Donald Trump, and use militaristic and nationalistic rhetoric to emphasize patriotism and perceived threats to the nation. Overall, the discourse is characterized by misinformation and propaganda, lacking substantiated evidence and often reflecting extreme political view.

Cluster 10 – Heterogenous Conspiracy Cluster 2

The themes of this cluster cannot be narrowly described but center around multiple topics with many of them showing up in other clusters. The collection of messages in this cluster predominantly revolves around conspiracy theories, misinformation, and speculative content. Themes include unsubstantiated claims about public figures and governments, discussions of technological issues like social media and data privacy, and references to political and geopolitical matters, notably involving Russia and allegations of election fraud. Environmental issues, including climate change, are mentioned, alongside financial and economic topics such as market movements and economic crises. Additionally, there are elements of science juxtaposed with paranormal claims, as well as cultural and historical references, including architectural comparisons and mentions of historical figures. The overall tone of the messages is sensationalist, blending factual information with speculative and unverified claims.

Cluster 11 – Covid-19-Protest Movements

This cluster reflects the mobilization of people protesting governmental measures mainly in the context of the Covid-19 pandemic (lockdowns, vaccination, mask mandate). This cluster of messages is characterized by a strong advocacy for personal freedoms and rights, primarily in response to government-imposed restrictions and policies during the COVID-19 pandemic. The central theme is the organization of protests and demonstrations across various cities in Germany, emphasizing the importance of unity and solidarity among diverse groups. The

messages express deep scepticism and criticism towards governmental actions and "mainstream" media reporting, suggesting a perceived overreach and misinformation. The focus is on grassroots organization and decentralized action, highlighting local involvement and the necessity of collective action. Overall, the cluster again reflects a significant public sentiment of deep distrust towards governmental policies, coupled with a strong call for preserving individual freedom through organized protests.

Cluster 12 – Antigovernment Protests

This cluster of messages address widespread protests and significant distrust in governmental decisions. Central themes include vehement opposition to COVID-19 lockdowns and vaccine mandates, with these events often serving as flashpoints for broader dissatisfaction with political leadership and state authority. The messages frequently mention instances of civil unrest in response to perceived overreach in government-imposed health measures, showcasing a deep-seated resistance to restrictions on personal freedoms. Alongside this, there are mentions of police conduct during demonstrations, raising questions about law enforcement approaches in times of civil dissent.

The cluster also touches on other topics such as drug trafficking and immigration, highlighting the complex interplay of global crises and national policies. Notably, undercurrents of conspiracy theories and misinformation thread through many messages. The cluster illustrates a heightened sense of scepticism and defiance towards established institutions, revealing a polarized and often contentious global discourse. While this and the previous clusters share themes of protest and government critique, this cluster is rather globally oriented with a variety of contentious issues, whereas the above cluster is focused on locally organized protests in Germany.

Cluster 13 – "Vivoterra"

This cluster is a data artifact and contains messages that mainly originate from a single channel ("Vivoterra"). All messages from this channel contain the same claim, so they have been grouped together in a cluster. Apart from that, this channel mainly spreads all kinds of conspiracy theories (Covid-19, New World Order, migration, pedophilia, Satanism, chemtrails, etc.) and could serve as a typical example.

Cluster 14 – Conspiracy Theories partly in the context of QAnon

Cluster 14 is quite heterogenous with respect to topics, but central to its messages is the promotion of theories related to QAnon, the Deep State[14], and global conspiracies, often implicating high-profile figures and hidden operations. The messages frequently challenge

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[14] The notion of the "deep state" suggests the existence of a clandestine network within government agencies or the military, believed to be operating independently of elected officials. Originally emerging in Turkey in the 1990s as "derin devlet," it described secret alliances between government, military, and organized crime. In recent years, the concept has gained traction in the United States, particularly around the 2016 presidential election, with allegations of bureaucratic members undermining the president's agenda. As we can see in the semantic cluster, it is closely associated with the QAnon conspiracy theory, which posits that a cabal of global elites and pedophiles is working against President Donald Trump. While initially more prominent in the US, the idea of a deep state is increasingly popular in Europe, co-opted by far-right and populist movements to critique governments and the European Union (Berg, 2024).

perceived misinformation and propaganda, advocating for a pursuit of 'hidden truths'. There is a notable presence of political activism and criticism, with a focus on mobilizing supporters and challenging the perceived status quo. Calls to join specific Telegram channels and groups are recurrent, indicating an emphasis on community building within alternative information networks. The cluster also touches on themes like pandemic narratives and health policies, not surprisingly approached with a sceptical viewpoint. Overall, also this cluster underscores a deep distrust in traditional sources of information and authority, emphasizing "alternative" viewpoints and the importance of individual investigation beyond "mainstream media".

Cluster 15 - Heterogenous Conspiracy Cluster 2

This collection of messages reveals a deep-rooted scepticism towards government actions, mainstream media, and the established narratives, particularly regarding the COVID-19 pandemic. Central themes include strong opposition to pandemic-related restrictions, vaccinations, and mask mandates, often intertwined with conspiracy theories suggesting hidden agendas and misinformation. The discourse frequently challenges the credibility of the media, accusing it of being an instrument of state propaganda and spreading biased information. These messages also reflect political and social dissent, expressing dissatisfaction with global and national political decisions and emphasizing the need for resistance and awakening. Additionally, there's a notable concern for child welfare and education in the current socio-political climate, alongside discussions on economic issues and personal financial strategies. As the others, this cluster highlights a community actively questioning and opposing mainstream perspectives, promoting alternative viewpoints, and advocating for individual freedoms and rights.

Cluster	Messages
Disbelief in Covid-19 and Vaccination Skepticism	8244
Conspiracy Theories partly in the context of QAnon	5536
Esoteric cluster: Collective Awakening and Societal…	5248
Antigovernment Protests	3725
English-language messages	3409
Covid-19-Protest Movements	2319
US Politics and Elections	1976
Esoteric cluster: Alternative Medicine and Spirituality	1879
Geopolitics and the War against the Ukraine	1877
Esoteric cluster: Harmony and Empowerment	1460
Esoteric cluster: Cosmos and Energy	1121
Messages removed by Telegram	689
Vivoterra	566
Heterogenous Conspiracy Cluster 1	5782
Heterogenous Conspiracy Cluster 2	10516

Figure 12 - Semantic key clusters by number of messages (total N = 54,347)

Figure 12 presents a breakdown of all 15 clusters, categorized into fifteen groups that align with distinct discussion themes. Each cluster is now quantitatively represented, with the number of messages serving as a metric of the topic's prevalence. Central to this chart are – besides

the clusters with heterogenous topics – dominant conspiracy clusters highlighting public scepticism towards Covid-19, the conspiracy theories partly referring to QAnon theories, anti-government protests, discussions on US politics, elections, and Donald Trump, as well as geopolitical discourses surrounding Russia's war against Ukraine. This illustrates a significant engagement with conspiracy beliefs within the platform's discourse. Adjacent to these conspiracy-centric themes are clusters characterized by esoteric subjects. Topics range from the quest for collective awakening and societal transformation to pursuits in alternative medicine and spirituality. These clusters suggest a confluence of conspiracy and esoteric discussions within the channels, painting a complex picture of narratives pretending to transcend conventional subject boundaries.

It is important to note that the messages grouped into clusters by our method first of all do not necessarily appear in the same channels or were sent at the same time. Instead, the clusters result from semantic similarities between the messages. They reveal the primary themes present in messages from a selected set of Telegram channels (those with a higher-than-average semantic proximity to conspiracy theories and an above-average number of subscribers in our dataset). Figure 13 shows the connections between the channels and clusters in a network format. Grey nodes represent the Telegram groups, and blue ones signify the semantic clusters, i.e., all messages belonging to a particular cluster are combined into a network node. The arrows indicate the respective percentage of a channel's messages belonging to each cluster. Stronger and darker arrows indicate a higher proportion of messages, and the closer a channel is to a semantic cluster, the larger its share of messages. It is evident that some channels focus on specific semantic clusters (themes), while others are more diverse in their thematic content - especially those at the center of the network. At the network's periphery are the more homogeneous clusters and their respective channels, progressing clockwise from Esotericism, Covid-19, anti-government protests, US politics and Donald Trump, to Russia-Ukraine. As one looks towards the center of the network, the clusters and associated channels become more heterogeneous and mixed. Therefore, the network shows that the identified clusters indicate not only semantic but also social proximity of these themes – in the sense that they appear together in the same channels.

Thus, this analysis provides not only an identification of thematic patterns within Telegram messages; it reveals a deeper social dimension. By examining the clusters of themes that emerge in specific channels, the results suggest a specific interplay between the content of the messages and the social context of their dissemination. Certain themes are not randomly distributed but are instead more prevalent in particular channels, indicating a targeted spread. This pattern underscores the dual nature of the transmission of these topics: it is not only about the semantic content but also about how these themes resonate within specific social groups. These findings point towards a complex web of semantic and social connections, suggesting that the spread of certain topics is both a reflection of and an influence on the social dynamics within these online communities.
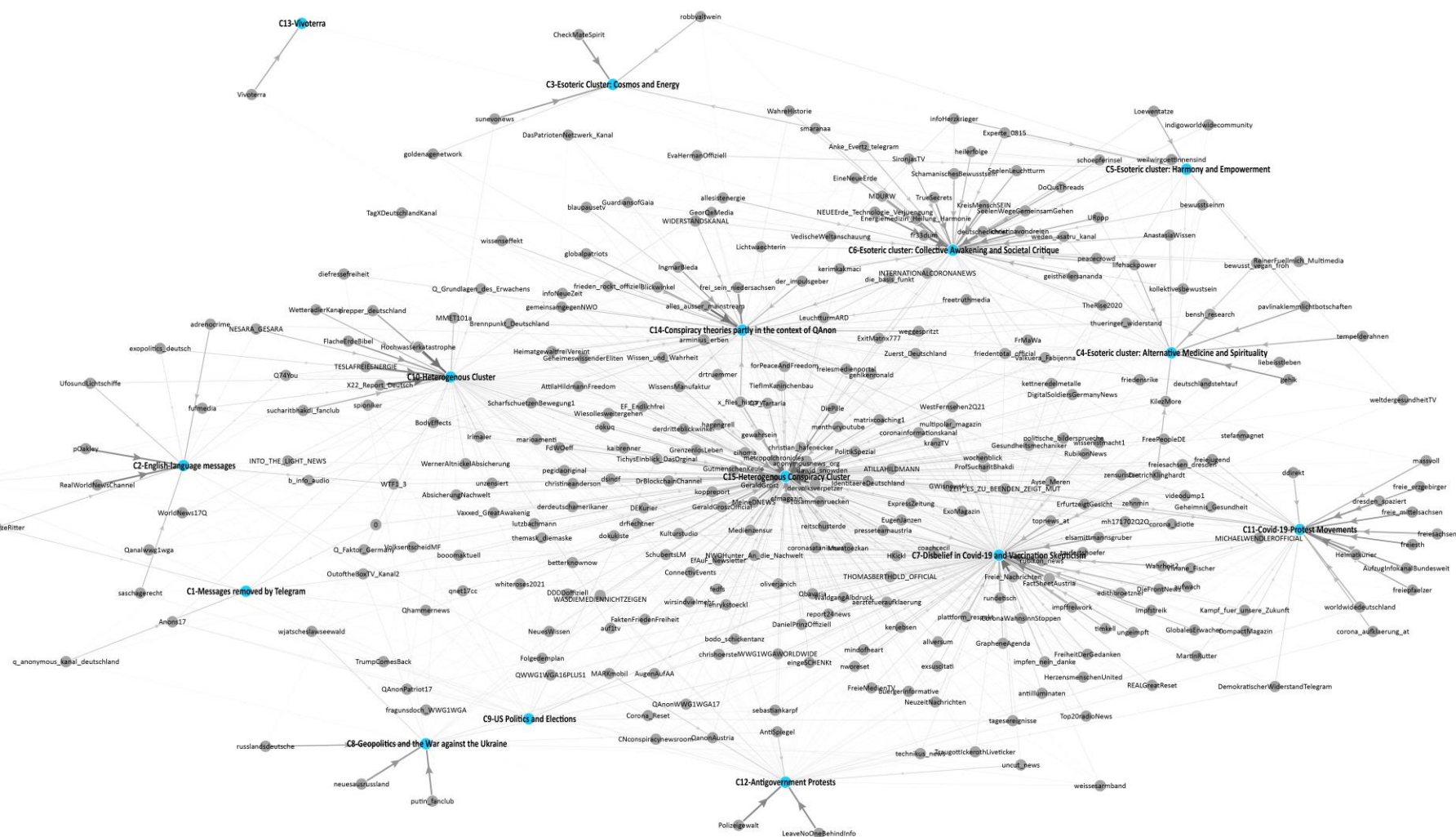
Figure 13 – Network of German-language Telegram channels and semantic key clusters (data base: 316 channels, 54,347 messages).

6.1.3. Key Term Analysis of Conspiracy Narratives

To gain a deeper insight into the topics related to conspiracy theories present in the messages of the 15 clusters (14 after excluding the first cluster with the deleted messages), we searched for corresponding keywords and determined which of them tend to show up in the same channels. For this purpose, we created a comprehensive list of keywords in two ways:

1) Identification of keywords that are typical for current conspiracy narratives, based on a comprehensive **literature search** with regard to scientific publications that have recently dealt with this topic.
2) This list was supplemented by keywords identified through the **Term Frequency Analysis** described above with respect to the 15 semantic key clusters (see chapter 6.1.2.5).

The complete list of keywords can be found in the appendix (see 11.3). We searched for these keywords in the messages from the years 2020, 2021, and 2022 in the and German- and English-language Telegram channels. With respect to the German-language ones, 11.529.743 messages taken from 4.012 channels were examined.
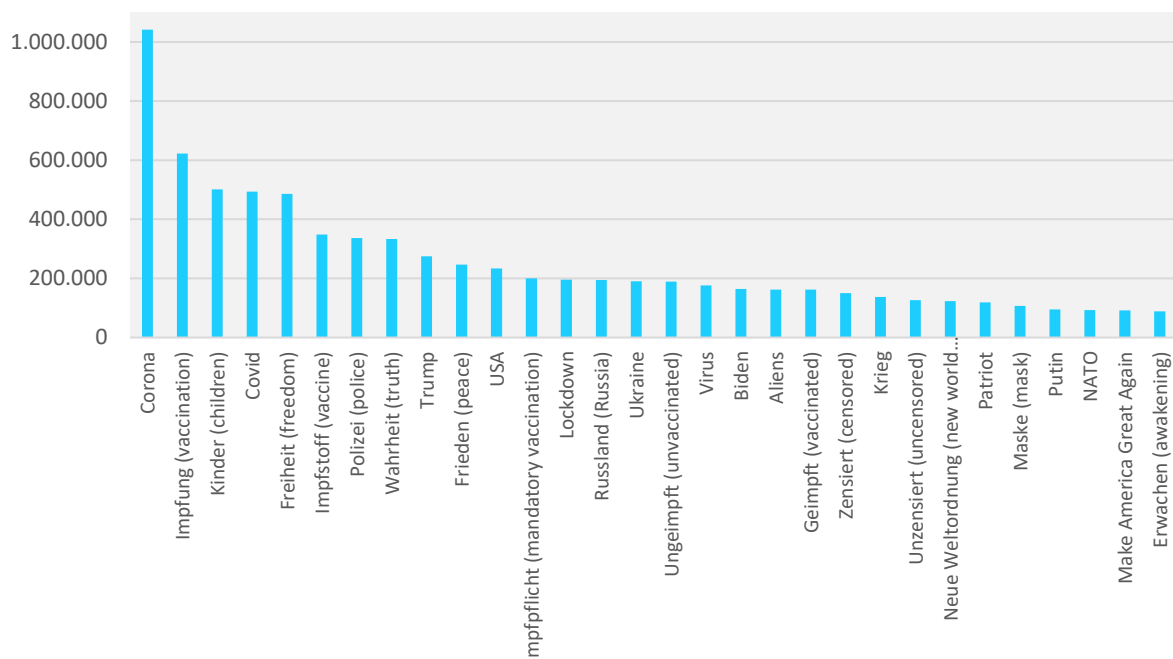
Figure 14 – Top 30 conspiracy related keywords by in German-language Telegram channels January 2020 – July 2022 (N = 4,012. channels, 11,529,743 messages).

Figure 14 displays the frequencies of the top-30 keywords within German-language Telegram messages, highlighting the intensity and focus of related discussions. The high frequencies of keywords such as "Corona" and "Covid" reflect the significant impact of the COVID-19 pandemic as a discourse topic in the messages. The term "corona" alone appears in around one in ten messages. Other prevalent themes, including "Impfung" (vaccination), "Impfstoff" (vaccine), and above all compulsory vaccination ("Impfpflicht") further emphasize the pandemic's role in shaping the discussion, as vaccination efforts have been a focal point for emotionally charged discussion, scepticism, and also conspiracy theories. Other important topics, as we have already seen, are the US presidential elections and Donald Trump as well as Russia-

Ukraine, war and peace. Keywords like "Freiheit" (freedom), "Wahrheit" (truth), and "Erwachen" (awakening) indicate a broader societal impact, as they resonate with common (partly conspiracy-related) narratives that challenge what is regarded as established (mainstream) perspectives, promote alternative truths, and explicitly link the recognition of this truth with the idea of awakening from a state of sleep and with the (re)attainment of freedom. "Children" refers, among others, to the discussion of controversial Covid measures such as compulsory masks and school closures.
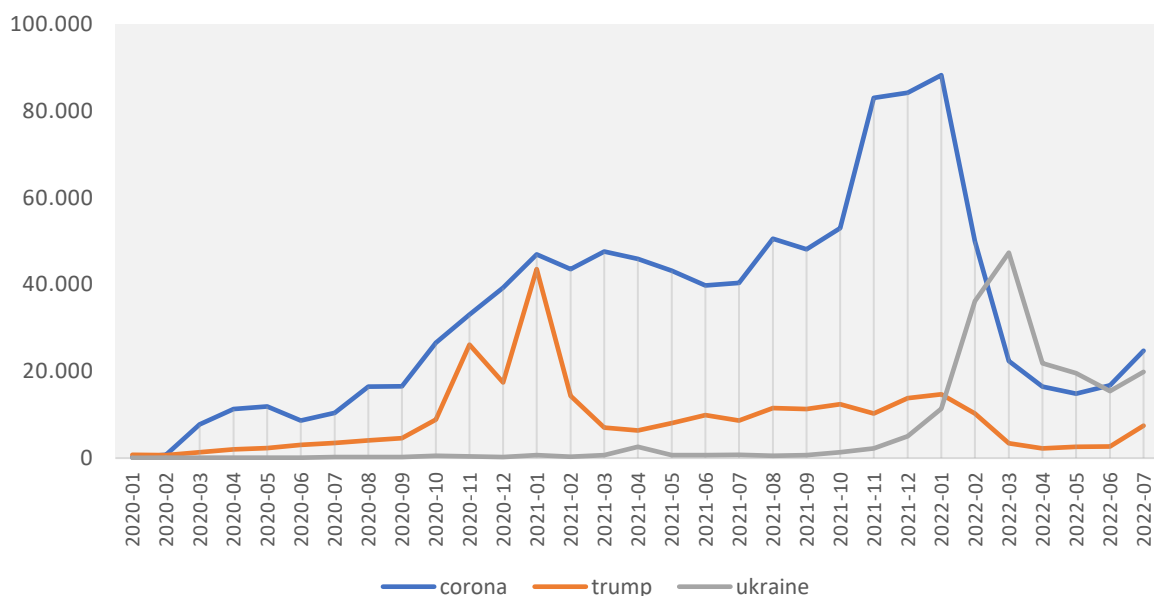
Figure 15 – Frequency of selected keywords over time (January 2020 – July 2022). N = 4,012. channels, 11,529,743 Telegram messages.

Figure 15 displays the frequency of selected keywords in the German-language Telegram messages over time, showing a clear connection with specific events. The keyword "Trump" peaked in November 2020, coinciding with the 59th U.S. presidential elections, and again in January 2021 (January 6 US Capitol attack). The term "Ukraine" reached its highest frequency in March 2022, following Russia's attack on Ukraine on February 21, 2022. The keyword "Corona" started to become prominent in February 2020 (with the first lockdowns in Germany and Austria in March 2020) and hits an initial peak between November 2020 and January 2021 (announcement and subsequent intensification of second lockdowns in Germany and Austria). It maintained a consistently high level throughout 2021 and eventually reached its highest value in the winter of 2021 (new Covid wave, renewed lockdowns, introduction of the controversial so called 2G rules which granted access to various public areas only to those who were vaccinated or had recovered [2G = "geimpft oder genesen"] from COVID-19, in both Germany and Austria)[15].

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[15] https://de.wikipedia.org/wiki/COVID-19-Pandemie_in_Deutschland, https://de.wikipedia.org/wiki/COVID-19-Pandemie_in_Österreich, last accessed 2024/01/15.

Figure 16 - Co-occurrence network of keywords in German-language Telegram channels 2020 – 2022 (189 keywords, 4,012 channels, 11,529,743 messages).
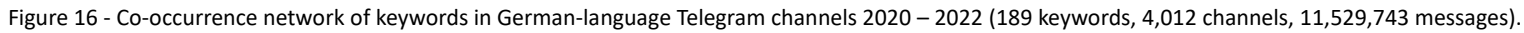
Let us now examine which keywords frequently appear together in the same Telegram groups. Figure 16 illustrates the co-occurrence of these keywords as a network. The nodes represent the keywords, with their size corresponding to their frequency in the messages from 2020 to 2022. The strength of the connections and the proximity between the keywords indicate the likelihood that the respective keywords appear in the same Telegram channel (Pearson correlation between the frequency distributions of the keywords across the channels). Only the top seven strongest connections for each keyword are depicted in order to make structures more clearly visible.

Based on the pattern of relations among the keywords, we have identified nine distinct communities using the Louvain community algorithm which is used to detect communities by maximizing the modularity of a network (Blondel et al., 2008). Modularity is a metric used in network science to measure the strength of division of a network into clusters, or communities. It quantifies how well a network is partitioned into modules (or communities) where nodes are more densely connected to each other within their own community than to nodes in other communities. High modularity indicates a strong presence of such clusters, implying that the network has a pronounced community structure. In this context, the network is formed by keywords based on their co-occurrence in the same Telegram channels. The resulting communities, therefore, represent groups of keywords that are commonly used together, suggesting thematic or topical coherence within each cluster. In this way, nine different keyword clusters were identified in the network. With all due caution, we can describe the clusters (sorted in descending order according to the aggregated frequencies of the terms they consist of) using the keywords as follows.

(1) **Covid-19-Pandemic** (top left in Figure 16): Dominating the conversation with the highest aggregated frequency, this cluster of keywords is distinctly characterized by the focus on the COVID-19 pandemic. The prevalent keywords like "Corona", "Impfung (Vaccination)", and "Covid" underscore a deep engagement with public health topics, particularly vaccination debates. The presence of "Freiheit (Freedom)" and "Kinder (Children)" indicates a nuanced discussion around civil liberties and the pandemic's impact on children, reflecting concerns about societal and familial implications of health policies.

(2) **COVID-19 Management and Response** (bottom left): Closely related to the first cluster, this one is centered on COVID-19, but with a specific emphasis on response measures. Keywords such as "Impfung (Vaccination)", "Masken (Masks)", and "Lockdown" refer to discussions and scepticism towards the effectiveness and impact of various containment strategies including vaccination and mask mandates and lockdowns.

(3) **Russia – Ukraine and the USA** (upper centre): This cluster is characterized by a dual focus. On one hand, keywords like "USA", "Russland (Russia)", and "Ukraine" indicate a strong engagement with international politics and geopolitical conflicts. On the other hand, the inclusion of "Aliens (Aliens)" and "Militär (Military)" suggests the examination of theories about extraterrestrial life and its potential connections to military activities (the assumption that the discovery of aliens is kept secret by the US military).

(4) **Conspiracy Theorizing and Truth-Seeking** (bottom centre): This group of keywords stands out for its exploration of what is perceived as hidden truths versus mainstream narratives.

The prominence of "Wahrheit (Truth)" and "Lügen (Lies)" points to a community invested in uncovering and challenging conventional wisdom. The presence of "5G", "Bill Gates", and "Elites" implies a specific focus on technology and public figures, often within the realm of conspiracy theories.

(5) **US Presidential Elections and Donald Trump** (right side in Figure 16): This cluster is heavily influenced by U.S. political dynamics, as evidenced by keywords such as "Trump", "(Joe) Biden", and "Demokraten (Democrats)". Topis related to this cluster of keywords revolve around political ideologies, party politics, and the actions of specific political figures like "Clinton", suggesting a keen interest in the intricacies of American politics.

(6) **Freedom of Speech, Political Activism, and Climate Change** (top left between the Covid and Ukraine cluster): These keywords encapsulate discussions related to societal issues and activism. "Zensiert (Censored)" and "Unzensiert (Uncensored)" indicate the assumption that opinions beyond what is considered "mainstream" and predetermined by the social elites are suppressed and censored. The inclusion of "Antifa", "Migranten (Migrants)", and "Klima (Climate)" points towards the topics discussed in the context of these censorship assumptions.

(7) **Awakening and the Recognizing of Conspiracies** (bottom right): This cluster is characterized by its focus on spiritual awakening and deep state theories. The keyword "Erwachen (Awakening)" suggests a theme of spiritual or intellectual enlightenment. The inclusion of "Kabale (Cabal)", "Tiefer Staat (Deep State)", and "Q" indicates a strong inclination towards conspiracy theories involving secretive powers and alleged hidden government mechanisms. The presence of "Mainstream-Medien (Mainstream-Media)" implies scepticism towards conventional media outlets, possibly perceived as part of the 'deep state' narrative.

(8) **High-Profile Scandals and Secret Societies** (bottom right): This cluster refers to controversial scandals and theories about secret societies. The presence of "Epstein", "Pädophil (Pedophile)", and "Maxwell" points to discussions centered around high-profile criminal cases and allegations of sexual misconduct. "Freimaurer (Freemasons)" and "Satanist (Satanist)" refer to the fact that in certain discourses (e.g. in the context of QAnon) pedophilia is associated with secret societies and members of the "liberal elite".

(9) **Spirituality and Prophecy** (lower centre): This smallest cluster focuses on themes of spirituality and prophecy. Keywords such as "Spirituell (Spiritual)", "Prophezeiung (Prophecy)", "Kosmisch (Cosmic)", "Engel (Angel)", and "Licht (Light)" indicate a community engaged in discussions about spiritualism, esoteric beliefs, and mystical prophecies. This cluster likely represents a group interested in exploring beyond the tangible, delving into metaphysical and transcendental topics.

The frequencies and patterns of relationships between the keywords offer us an initial insight into which themes were predominant in the years 2020 to 2021 and how they are structurally interconnected. These are the topics found in Telegram groups whose messages display an above-average semantic proximity to conspiracy theories. We have observed that the theme of Covid (along with criticism of pandemic measures) dominates, but in the same channels, it is interconnected with other typical themes in the context of conspiracy narratives. These include particularly Russia – Ukraine, the U.S. presidential elections and Donald Trump, secret

elites, awakening from a state of slumber through the recognition of "truth", and the associated (re)attainment of freedom.

At the end of this section, let us also examine which channels contain messages that feature a particularly high number of the keywords:

rank	Jan 24	username	title	subscribers	messages	kwds per message	total kwds
1	1	Qbavaria	True Bavaria	13.378	146	9,2	1.336
2	1	coronasatanismus	Corona SATANISMUS	15.755	1.444	4,7	6.739
3	1	Q74You	Q7 4 YOU	125.880	5.858	3,9	23.037
4	1	QanonAustria		12.894	8.317	3,1	25.801
5	1	Gesundheitswesen_in_der_Krise	Gesundheitswesen in der Krise	87.801	1.375	3,1	4.252
6	1	WernerAltnickelAbsicherung	Werner Altnickel, Lebenswerk (Offizieller Kanal)	15.361	586	3,0	1.755
7	1	putin_fanclub	Putin Fanclub	21.563	1.441	3,0	4.276
8	1	unzensiert	🔒Unzensiert🔒	77.573	14.202	2,8	39.842
9	1	multipolar_magazin	Multipolar Magazin	16.118	6.250	2,8	17.309
10	1	FreiheitDerGedanken	🕊Freiheit der Gedanken🕊	73.526	7.710	2,6	20.108
11	1	CoronaTransition	Transition News	17.088	4.186	2,5	10.484
12	1	gema1963	Gerald Markel	15.212	1.347	2,4	3.200
13	1	russlandsdeutsche	RU Russländer & Friends DE	29.812	2.835	2,4	6.676
14	1	Polizeigewalt	Wenn die Polizei von sich aus Gewalt anwendet...	10.758	1.272	2,3	2.968
15	1	SironjasTV	SironjasTV	14.447	328	2,3	761
16	1	antiilluminaten	Antiilluminaten TV	66.811	11.772	2,3	27.024
17	1	NeuzeitNachrichten	Neuzeit Nachrichten 🌀	41.038	3.409	2,3	7.746
18	1	FaktenFriedenFreiheit	Fakten Frieden #FreeJanich	111.597	10.447	2,2	23.492
19	1	tagesereignisse	TAGESEREIGNIS.DE🇩🇪	15.008	2.724	2,2	6.061
20	0	billsix	Billy Six	12.730	502	2,2	1.114
21	1	DieFrontNews	LaTika "DieFrontNews "	15.835	4.742	2,2	10.257
22	1	elsamittmannsgruber	Elsa Mittmannsgruber	20.946	340	2,1	709
23	1	LIONMediaTV	LION Media TV	79.826	193	2,1	399
24	1	medusa_auge	Medusa Auge	12.344	1.070	2,0	2.182
25	1	EfAuF_Newsletter	📰 Newsletter Eltern für Aufklärung und Freiheit	12.018	2.902	2,0	5.905
26	1	stefanmagnet	Stefan Magnet	20.362	698	2,0	1.415
27	1	FrMaWa	❀Freiheit macht Wahr, Wahrheit macht Frei❀	36.904	9.717	2,0	19.334
28	1	Q7_Tartaria	Q7 Tartaria	27.595	576	2,0	1.131
29	1	ImpfstoffKritik	✖ Impfstoff-Kritik	11.184	694	1,9	1.344
30	1	Corona_ist_nicht_das_Problem	Corona ist nicht das Problem	37.758	3.098	1,9	5.993
31	1	Masernschutzgesetz	Verfassungsbeschwerde gegen Masern- und Corona-Imp	14.685	348	1,9	660
32	1	rubikon_news	Rubikon	16.301	3.835	1,9	7.248
33	1	topnews_at	AT TOPNEWS AUSTRIA AT	12.941	1.068	1,9	2.017
34	1	DanielPrinzOffiziell	Das Prinz Telegramm	41.537	2.445	1,9	4.595
35	1	DatenAnalyseProgrammieren	EMA Daten Analyse Programmieren	29.356	601	1,9	1.120
36	1	CompactMagazin	✖ COMPACT-Magazin	61.071	9.945	1,8	18.329
37	1	technikus_news	@TECHNIKUSᴀᴛNEWSᴅᴇ	26.744	445	1,8	814
38	1	uncut_news	Uncut-News.ch "Das Original"ᴄʜ	80.713	12.969	1,8	23.480
39	1	russiatoday_de	RT Deutsch	14.191	10.000	1,8	18.079
40	1	gemeinsamgegenNWO	Gemeinsam gegen die NWO	12.482	3.162	1,8	5.605
41	1	frieden_rockt_offiziell	Frieden rockt offiziell	78.585	10.428	1,7	18.236
42	1	LegitimNews	Legitim.ch	28.985	218	1,7	380
43	1	silberjungethorstenschulte	Silberjunge Thorsten Schulte OFFIZIELL	52.764	1.920	1,7	3.341
44	1	auf1tv	AUF1	196.421	2.715	1,7	4.710
45	1	KlagepatenElternInfo	Klagepaten Eltern Info	20.440	485	1,7	839
46	1	AnalyseSterbedatenDeutschland	CoronaDatenanalyse	25.662	316	1,7	540
47	0	Epoch_Radar	Epoch Radar	12.214	328	1,7	554
48	1	KlagePATEN_eu	Klagepaten Kanal - Gerechtigkeit in Deiner Hand	64.110	2.717	1,7	4.586
49	1	Anwaelte_fuer_Aufklaerung	Anwälte-für-Aufklärung	80.209	3.120	1,7	5.241
50	1	unn_neu	UNN - Unabhängig-Neutrale Nachrichten	11.866	3.636	1,7	6.077

Figure 17 – Top 50 German-language Telegram channels sorted by number of conspiracy-related keywords per message with at least 10.000 subscribers (messages from January 2020 – July 2021, N = 11,529,743).

This table displays the top 50 German-language Telegram channels with the highest number of keywords per message and a subscriber count of at least 10,000 (as of July 2022). These channels are characterized by high activity in disseminating conspiracy-related themes (real "fringe" platforms[16]) while having a relatively large reach. With few exceptions, they still can be found as open groups at the time of writing this report (in January 2024). A notable number

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[16] In the context of social media, "fringe" typically refers to platforms or online communities that are unmoderated and exist outside the mainstream. These platforms are known for hosting content and discussions that might be too extreme or controversial for more widely-used social media sites. Fringe platforms often become hubs for specific niche groups, including those with extremist views, and are characterized by less stringent content moderation compared to mainstream platforms. In general, Telegram is considered one of the fringe platforms, in contrast to Facebook or YouTube. (Schulze et al. 2018).

of these channels reference QAnon in their names (e.g., Qbavaria, Q74you, QanaonAustria), indicating the extent to which this conspiracy theory and political movement has already penetrated Europe and the German-speaking area. Other channels continue to be related to Covid (e.g., coronasatanismus, Gesundheitswesen_in_der_Krise, CoronaTransition), tied to the Russia – Ukraine theme (e.g., putin_fanklub, russlandsdeutsche), or spread a more diverse range of conspiracy content (e.g., WernerAltnickelAbsicherung, unzensiert, FreiheitDerGedanken, etc.). This list, based on the number of keywords and subscribers, also includes particularly radical and somewhat influential Telegram groups.

A characteristic of conspiracy belief is its flexibility regarding themes, as evidenced by the shifting focus of many Telegram channels. During the pandemic, these channels primarily discussed COVID-19, but from February 2022, the Russia-Ukraine topic gained prominence. This does not imply every message in these channels is conspiracy-oriented, but that both themes are significant within explicitly conspiracy-themed Telegram groups. A notable Pearson Correlation of 0.46 exists between the distribution of terms "Corona" and "Ukraine" across channels with at least 10,000 subscribers (excluding major news portals covering all topics). For comparison, the correlation between "war" and "Ukraine" is 0.91. The following table lists Telegram channels with at least 10,000 subscribers, ranked by the sum frequency of terms "Corona", "Ukraine", and "Trump":

	Jan 24	username	title	subscribers	corona	trump	ukraine	total
1	1	SchubertsLM	Schuberts Lagemeldung - Stefan Schubert Offiziell	49.660	3.745	109	3.136	6.990
2	1	EvaHermanOffiziell	Eva Herman Offiziell	212.560	2.491	158	2.629	5.278
3	1	koppreport	KOPP Report	12.062	2.713	147	2.160	5.020
4	1	Q74You	Q7 4 YOU	125.880	3.772	443	116	4.331
5	1	epochtimesde	Epoch Times Deutschland	43.357	2.752	86	1.223	4.061
6	1	CoronaTransition	Transition News	17.088	3.787	9	125	3.921
7	1	Mad_In_Germany	Mad in Germany 🤪	15.938	2.900	128	167	3.195
8	1	bleibtstark	Bleib Stark 💪💪	29.746	2.028	532	470	3.030
9	1	WWG1WGAWORLDWIDE	WWG1WGA	12.125	1.766	191	885	2.842
10	1	booomaktuell	💥 Booom Aktuell 💥 Austausch über das aktuelle Weltgeschehen…🌐	39.703	1.140	563	1.033	2.736
11	1	GFTV_HH	GROSSE FREIHEIT TV	14.287	2.502	137	54	2.693
12	0	qnet17cc	QNET17	DEATCHLI 🤍 NL	18.320	1.474	860	329	2.663
13	1	bitteltv	BITTEL TV - EINFACH ANDERS	103.804	2.510	38	38	2.586
14	1	antiilluminaten	Antiilluminaten TV	66.811	1.694	543	341	2.578
15	1	multipolar_magazin	Multipolar Magazin	16.118	1.727	50	798	2.575
16	1	InSvensWelt	Sven Liebich aus Halle Kanal	10.736	1.079	35	1.407	2.521
17	1	der17stammtisch	DER 17. STAMMTISCH KANAL 🤍 💥	33.719	998	1.106	361	2.465
18	1	LKNews2	LK News für ein Leben in Freiheit	58.611	2.062	60	292	2.414
19	0	coronainformationskanal	Corona Virus Informationen	50.882	1.999	353	48	2.400
20	1	Haintz	RA Markus Haintz DEATCH - We the People - Wir sind der Souverän	103.088	1.680	77	620	2.377

Figure 18 – Top 20 German-language Telegram channels with at least 10,000 subscribers ranked by the sum frequency of the terms "Corona", "Ukraine", and "Trump", January 2020 – July 2022.

The channels at the top are among the most well-known in the conspiracy theory and right-wing circles, as well as among the "Querdenker" (lateral thinkers) milieu in German-speaking regions.

6.2. The English-Language Telegram Channels and Messages

We will now switch to the English-language Telegram channels, which we will analyze in the same way as the German-language channels.

6.2.1. Key Figures of the Channels

The English-language Telegram dataset consists of 2.607 channels with a total number of 16,816,121 messages.
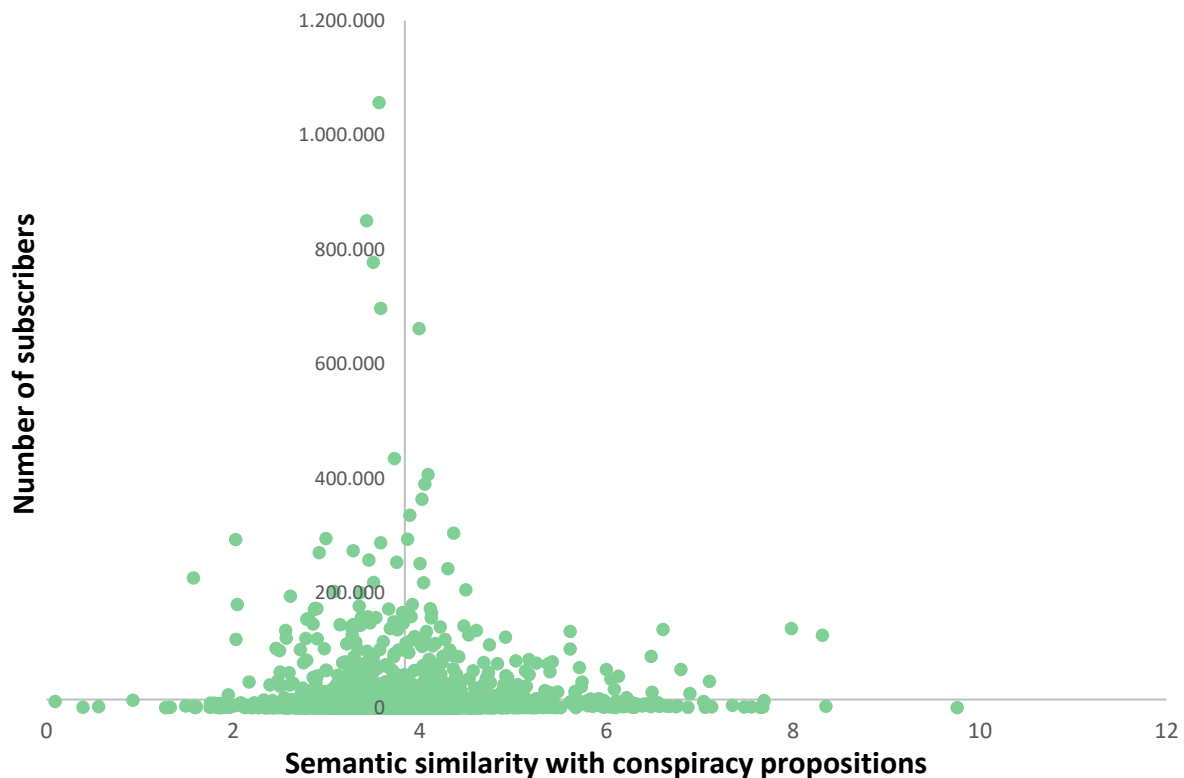
Figure 19 – English-language Telegram channels by number of subscribers and average similarity to conspiracy statements.

In the English-speaking channels, the same pattern as in the German-speaking ones is observed (Figure 19): Those with a high number of subscribers show an average semantic similarity with conspiracy statements, while channels with lower or higher similarity have fewer subscribers. Again, in our analysis, we will focus on the Telegram groups with above-average similarity and number of subscribers.

In the list of channels with the largest number of messages (Figure 20), we find first of all news agencies (News Wire) and news websites (Daily Mail, The Independent, The Guardian). The Telegram channel Breaking_911 is known for distributing breaking news, trending stories, and content that is claimed to be ignored by what is regarded as "mainstream media"[17]. Similar to that, AzazelNews is a Telegram channel that describes itself as a distributor of what they refer to as "actionable intelligence" and knowledge on topics including COVID-19, protests, riots,

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[17] https://t.me/Breaking_911, last accessed 2024/01/16.

and conspiracies[18]. Qlobal-Change USA is a Telegram channel with a focus on sharing content related to the QAnon conspiracy theory and news from a conservative perspective. It appears to be part of a network of channels that offer similar content in different languages, indicating a broader international reach or audience. The channel includes a substantial amount of content, such as photos, videos, and links, which suggests that it is actively maintained and updated with new information regularly[19]. The channel also operates a news feed service (@QlobalChangeUS) which aggregates news from conservative websites, suggesting a curated selection of content that aligns with its ideological stance. The content shared on this channel may include political commentary, news articles, and other media that reflect a right-leaning or QAnon-sympathetic viewpoint[20]. The Resistance 1776 is a Telegram channel that shares news stories and content which viewers can react to, comment on, and share. It also appears to focus on topics that are of interest to a conservative or libertarian audience, frequently sharing articles from alternative news sources. The content shared on The Resistance 1776 covers a range of topics, including American politics, global events, and various social issues, presenting them again from a perspective beyond "mainstream" media narratives[21]. To sum up, this list mainly consists of U.S.-based Telegram channels which appear to serve as alternative news platforms, predominantly espousing conservative viewpoints. They frequently position themselves as countering "mainstream" media narratives. Some of these channels may be perceived as bots due to a disproportionate ratio of high message frequency to a relatively small subscriber base. This characterization suggests a targeted dissemination of content rather than engagement-driven community building, indicative of a strategic focus on information distribution rather than discourse. - Although many of them are US channels, they are still relevant to our analysis as we will see that many of them are linked to channels from European countries.
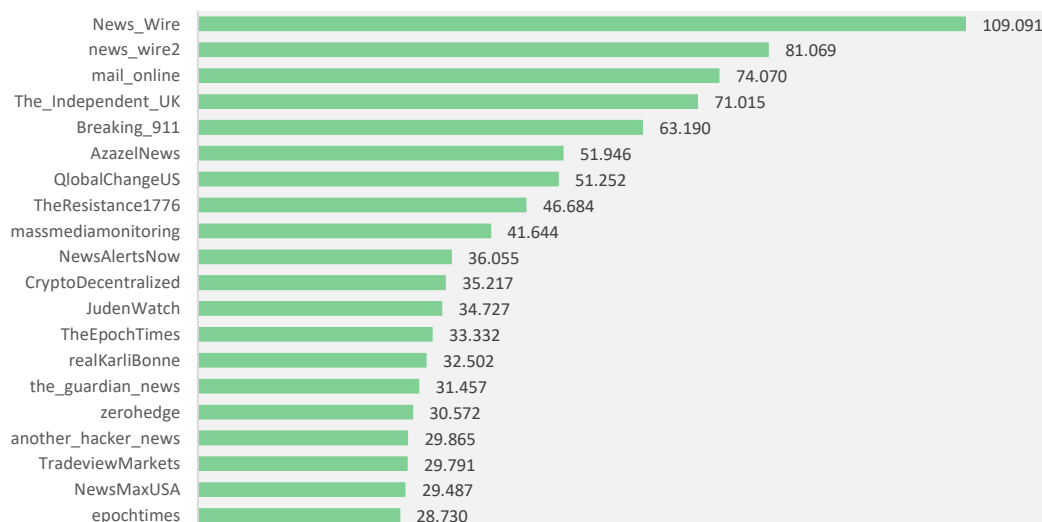
Figure 20 - Top-20 English-speaking Telegram channels by number of messages.

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[18] https://t.me/AzazelNews, last accessed 2024/01/16.
[19] https://t.me/QlobalChangeUSA, last accessed 2024/01/16.
[20] https://tgstat.com/channel/@QlobalChangeUS, last accessed 2024/01/16.
[21] https://t.me/The_Resistance1776, last accessed 2024/01/16.
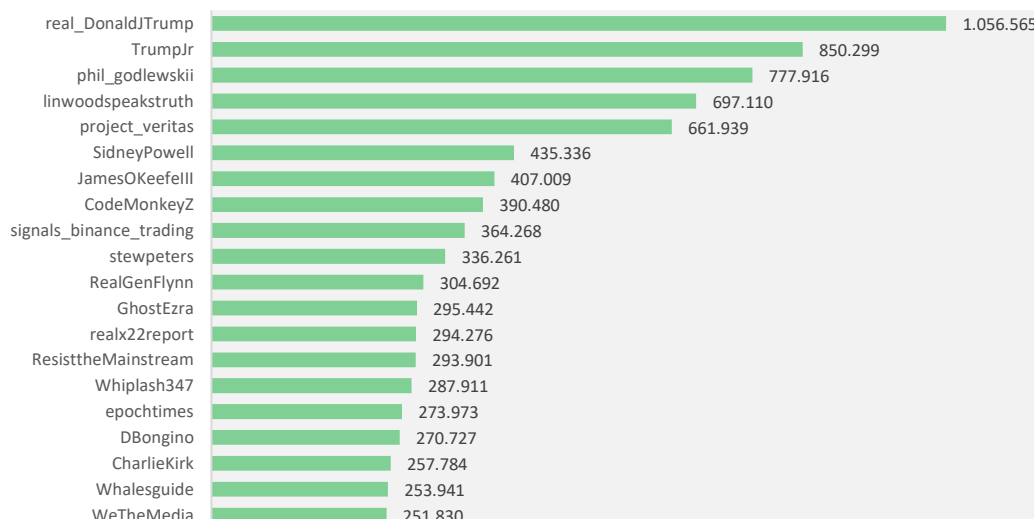
Figure 21 - Top-20 English-speaking Telegram channels by number of subscribers.

Figure 21 visualizes the top 20 Telegram channels according to their subscriber counts as of July 2022. We find Donald Trump's channel on top of the list, followed by the one of his sons, Donald Trump Jr. - Phil Godlewski is described as a US-American QAnon leader and influencer.[22] Lin Wood is a former American lawyer who has made allegations of widespread voter fraud in the 2020 US presidential election. He communicates a variety of conspiracy theories and is also associated with QAnon[23]. Edward O'Keefe is known for establishing "Project Veritas", an organization leaning towards the far-right. The group is recognized for its controversial use of undercover recordings and strategically edited videos aimed at challenging mainstream media entities and liberal organizations. O'Keefe and his team have been involved in covert operations within educational, government, and social service sectors, allegedly uncovering misconduct. However, their approach has been critiqued for presenting these encounters in a manner that may distort the actual context and responses of the involved parties.[24] Sidney Powell is a US lawyer and attorney who worked for Donald Trump and became also known for challenging the results of the US presidential election 2020.[25] "CodeMonkeyZ" is the pseudonym of the conspiracy theorist Ron Watkins, founder of the imageboard platform 8chan and also connected to QAnon.[26] We also find channels (or bots) related to cryptocurrencies (signals_binance_trading) in our dataset. And Stew Peters is also an American far-right activist and conspiracy theorist known for spreading Covid-19 disinformation.[27] If we go further down the list, we find similar platforms and people. Their characteristics should make them suitable for analyzing conspiracy theories in their Telegram messages.

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[22] https://www.businessinsider.com/online-retailer-spring-teespring-sells-qanon-far-right-extremist-merch-2022-9, last accessed 2024/01/16.
[23] https://en.wikipedia.org/wiki/L._Lin_Wood, last accessed 2024/01/16.
[24] https://en.wikipedia.org/wiki/James_O%27Keefe, last accessed 2024/01/16.
[25] https://de.wikipedia.org/wiki/Sidney_Powell, last accessed 2024/01/16.
[26] https://en.wikipedia.org/wiki/Ron_Watkins, last accessed 2024/01/16.
[27] https://en.wikipedia.org/wiki/Stew_Peters, last accessed 2024/01/16.

6.2.2. Semantic Key Clusters

6.2.2.1. Data preparation and processing

The identification of the semantic key clusters of the messages from the English-language channels was carried out in the same steps as for the German-language channels (see 6.1.2):

a. Extraction of messages of the years 2020, 2021, and 2022 (N = 15,737,843).
b. Selection of Telegram channels with number of subscribers and semantic similarity to conspiracy related propositions above average (207 out of 2,607).
c. Identification and removal of emojis.
d. Identification and removal of links of various formats.
e. Extraction of messages with 10 or more words.

These steps resulted in a data corpus of 52,368 messages between 2020 and 2022 belonging to the selected 207 English-language channels. Further steps were:

f. Computation of the embeddings of the selected English-language messages.
g. Application of the Hierarchical Clustering Method to the embeddings of the messages.
h. Determination of the cluster size by means of the "entropy-based" approach.

For the English dataset, the uniformity increase was as with the German messages most notable around 15 clusters, suggesting that 15 clusters were optimal for a balanced distribution.
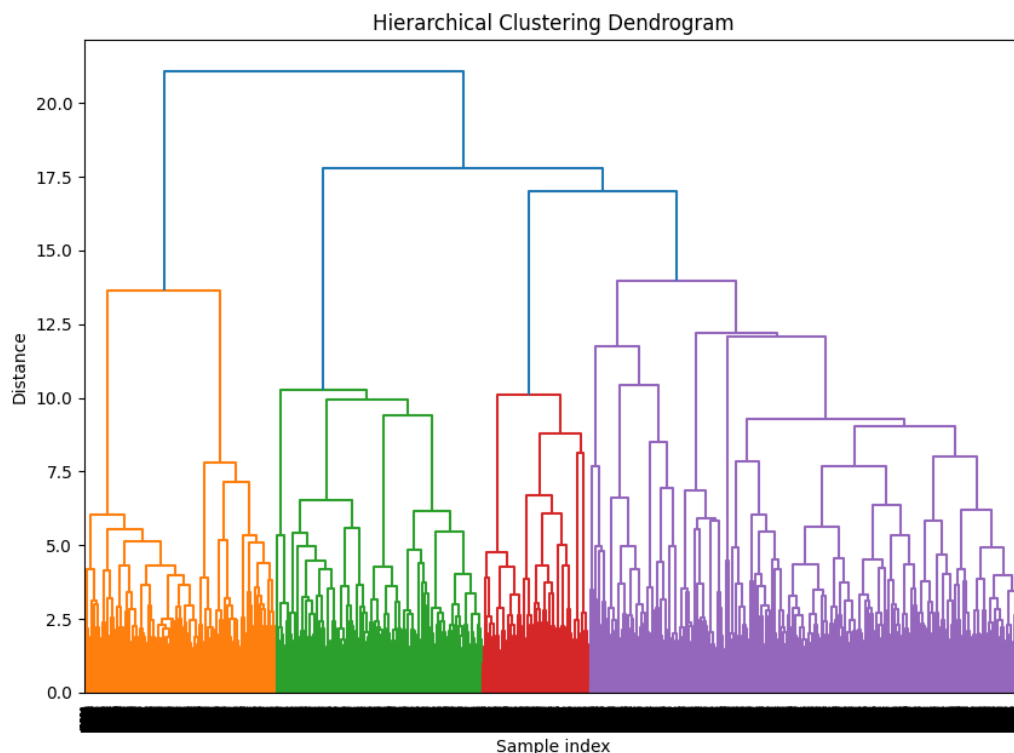
Figure 22 - Hierarchical Clustering dendrogram for the selected English-language Telegram messages.

Figure 22 depicts the formation of hierarchical clusters. As clusters merge, they are connected in the dendrogram diagram. The final number of distinct clusters is determined by the chosen cut-off distance.
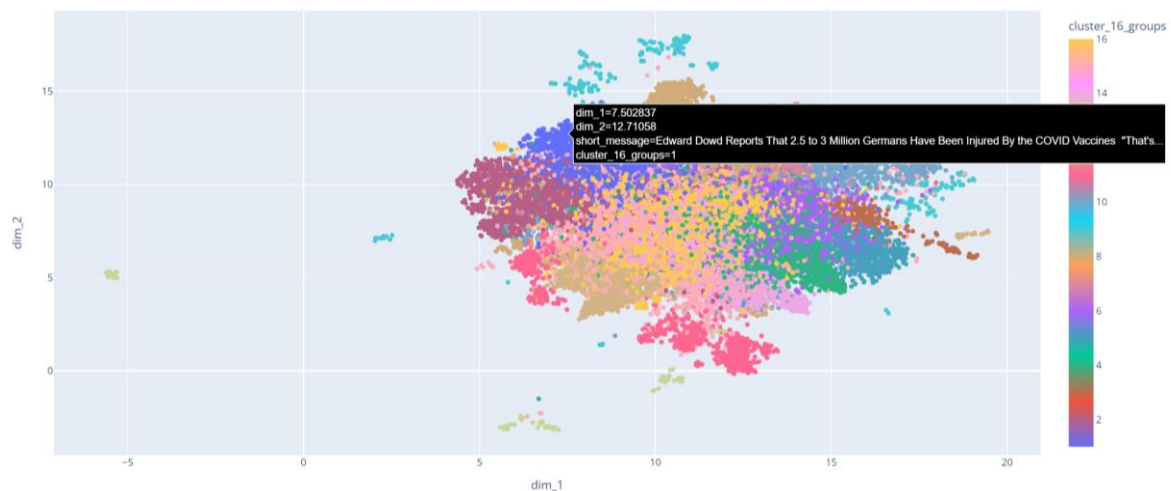
Figure 23 - Interactive UMAP visualization of the clustered English-language Telegram messages (screenshot, N = 52,368).

Figure 23 presents the UMAP visualization of the English-language messages. Again, UMAP is used to convert text message clusters into a 2D format, based on semantic similarities from text embeddings. It features a color-coded system to distinguish various clusters, with the arrangement of points indicating semantic alignment of the messages. This technique not only reveals underlying clustering patterns in the data but also validates the clustering algorithm, demonstrated by the proximity of points within the same cluster. The original HTML file is interactive so that it is possible to browse through the message landscape and display the respective texts.

6.2.2.2. Cluster description

As with the German-language messages, we also carried out a key term analysis for the English-language messages (see 6.1.2.5). The following matrix lists the 30 most frequent keywords (after data cleaning):

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
covid	people	person	trump	election	trump	ukraine	que
vaccine	covid	report	people	audit	biden	russia	los
people	freedom	warning	flynn	arizona	president	russian	china
vaccines	police	account	media	state	people	putin	military
vaccinated	protest	famous	maxwell	county	joe	ukrainian	las
join	vaccine	impersonates	going	ballots	house	military	subscribe
world	world	organisation	fbi	trump	time	subscribe	wwinfo
years	government	users	president	people	america	nato	para
health	protesters	join	biden	fraud	country	forces	del
fauci	passports	president	project	vote	state	wwinfo	por
mask	tyranny	trump	ghislaine	states	american	president	people
even	canada	people	epstein	elections	going	gas	dass
deaths	convoy	great	durham	maricopa	donald	border	con
pfizer	share	biden	time	votes	much	people	una
medical	going	election	government	president	person	world	tmeestructura
time	france	democrats	court	voting	election	moscow	forces
fda	mandates	fake	capitol	going	white	biden	afghanistan
children	australia	country	general	biden	make	media	kabul
pandemic	want	america	terramar	dominion	report	state	taliban
first	canadian	house	case	senate	states	newresistance	covid
government	protests	years	state	report	great	country	biden
virus	germany	joe	intelligence	time	years	europe	más
mandate	trudeau	states	believe	voter	covid	weapons	disclosetv
jab	truckers	time	clinton	right	warning	according	chinese
cases	subscribe	media	right	court	right	foreign	trump
data	vaccination	realdonaldtrump	military	ballot	governor	troops	world
make	french	american	world	voters	account	security	control
want	human	americatodayr	cnn	audits	famous	trump	está
media	pass	even	truth	america	impersonates	states	fire
may	health	thank	fake	georgia	organisation	time	according

Cluster 9	Cluster 10	Cluster 11	Cluster 12	Cluster 13	Cluster 14	Cluster 15
trump	people	linux	god	world	people	people
order	money	join	may	join	world	god
card	time	googlefactss	love	truth	god	children
last	bitcoin	hackersworldu	life	people	going	time
bucks	crypto	daily	lord	trump	want	truth
cards	bank	hacks	ephesians	military	years	great
golden	tax	use	people	share	time	world
free	want	channel	world	twitter	tunnel	never
least	year	network	truth	social	life	states
change	good	funfact	things	channel	water	good
coin	make	telkom	jesus	media	good	believe
people	gas	system	time	facebook	around	united
donald	price	need	put	state	light	make
coins	inflation	windows	van	deep	prince	white
chance	biden	want	stand	time	channel	want
bitlyexlpure	government	people	day	control	first	need
stock	world	computer	good	big	day	even
soon	big	free	spirit	elon	days	right
bitlypotusbuc	market	using	christ	president	love	state
time	high	files	word	white	real	let
able	last	way	evil	ect	earth	patriots
days	even	make	every	supported	way	day
america	trump	file	light	biden	sept	life
plan	need	password	faith	way	well	control
world	trading	first	heart	going	much	every
president	going	tech	always	post	say	going
low	first	smallboiitricks	shall	account	great	school
life	energy	big	able	plan	operation	way
bitlylimitedtru	years	time	pray	tech	year	freedom
gold	since	social	soul	telegram	make	true

Figure 24 - Top 30 most frequent terms per cluster, random sample of 3,750 messages (250 for each cluster) 2020 – 2022 of 207 selected English-language Telegram channels.

These keywords already give an indication of the topics that the messages in the various clusters deal with. Clusters 1 and 2, for example, obviously deal with the Covid pandemic again, clusters 3 to 6 refer to US politics, Donald Trump and the 2020 presidential elections, and cluster 7 refers to Russia's war against Ukraine. Other clusters are semantically more heterogeneous and less easy to characterize. Again, we combined this key term analysis with an AI-assisted thematic analysis and with manual review in order to get to a description of the content of the clusters, as far as the semantic uniqueness of the messages allows (see 6.1.2.5). In this sense, the overall content of the clusters can be described as follows:

Cluster 1 - COVID-19 Pandemic Scepticism

This cluster of messages presents a multifaceted discourse characterized by scepticism towards COVID-19 vaccines and public health policies, underpinned by a mixture of conspiracy theories and misinformation. The narrative frequently challenges the credibility and intentions

of health authorities, pharmaceutical companies, and political figures, reflecting a deep distrust in their guidance and actions during the pandemic. Central to this discourse is the debate over personal freedoms and rights, especially in relation to vaccine mandates. The messages also touch upon historical allegations of medical and corporate misconduct, suggesting a persistent concern over ethical practices in healthcare. The collection illustrates a polarized view of the pandemic, emphasizing individual choice and scepticism of mainstream scientific consensus. The overall tone is one of questioning and resistance, indicative of a segment of public opinion that is critical of the prevailing narrative and approaches to managing the COVID-19 crisis.

Cluster 2 - Vaccine Scepticism and Anti-Government

This cluster of messages also focuses on the COVID-19 pandemic. It primarily exhibits a concentrated sentiment of anti-vaccine scepticism and opposition, marked by a deep mistrust towards COVID-19 vaccines, often perceived as part of an overarching "Big Pharma" conspiracy. This narrative is interwoven with a strong resistance against government actions and health authorities, particularly in the context of COVID-19 restrictions and mask mandates. The messages frequently mention protests and civil unrest in various global locales, highlighting a unified movement against perceived governmental overreach and pharmaceutical company collusion. Unlike the above cluster, which encompasses a broader range of scepticism including natural immunity arguments and more explicit criticism of public health leaders, this cluster focuses more intensely on a unified opposition narrative. It is characterized by claims of media censorship and misinformation through mainstream media, and includes elements of populist and nationalist overtones, combining the discourse with an emphasis on defending national sovereignty against perceived global threats.

Cluster 3 – Divisions in U.S. Politics

This cluster encompasses a broad spectrum of U.S. political discourse, characterized by partisan advocacy and deep political divisions. It addresses a wide range of topics including electoral integrity, public policy, and international relations. Its distinctiveness lies in its comprehensive coverage of the U.S. political landscape, extending beyond specific events or figures to a general analysis of political dynamics. Discussions of electoral processes, governmental actions, and global diplomacy are central, along with a critical view of media representation.

Cluster 4 - January 6 United States Capitol attack

Central to the narrative is a critical examination of political events and figures from a conservative point of view, prominently featuring commentary on the January 6th Capitol riot, and discussions involving political personalities like Tucker Carlson (the conservative political commentator and writer, until 2023 at Fox News), Devin Nunes and Madison Cawthorn (both politicians of the Republican Party). A recurrent theme is the questioning of "mainstream" media's coverage, underscored by allegations of censorship and biased reporting, notably in the suspension of a TV reporters and critiques of fact-checking practices.

Cluster 5 – The 2020 U.S. Presidential Election

In this compilation of messages, the central discourse revolves around the integrity and legitimacy of the 2020 U.S. Presidential Election. Key themes include persistent allegations of electoral fraud, notably ballot stuffing and illegal harvesting, often citing the documentary "2000 Mules" as evidence. The discourse is heavily punctuated by calls for, and references to, comprehensive audits of election results, particularly in US key swing states, alongside legal challenges reaching the Supreme Court and Department of Justice. Statements from political figures, predominantly former President Donald J. Trump, feature prominently, articulating dissatisfaction with the election's handling and outcomes. There is a notable emphasis on shifts in voter turnout, with observations of increasing Republican engagement contrasted with a decrease in Democratic participation in certain regions. The narrative is interspersed with critical assessments of political figures and institutions, accusing them of either participating in or failing to address the alleged electoral malpractices.

Cluster 6 – The polarized US political discourse

This cluster stands out for its explicit focus on the polarization in U.S. politics under the presidency of Joe Biden. It uniquely addresses the vehement criticisms of President Biden's administration and the glorification of Donald Trump, showcasing a clear division in political allegiances. While it touches upon the theme of election fraud, similar to Clusters 3 and 5, its approach is more satirical and provocative, making it distinctive in tone. The discussions here are more centered on current political strategies, internal dynamics within parties, and the cynicism towards the political establishment, offering a perspective that is more attuned to the immediate political climate and future electoral contests.

Cluster 7 – Russia's War on Ukraine

This cluster of messages is centered on Russia's war on Ukraine. It discusses international military, political, and economic responses, notably the involvement of NATO, the U.S., and European nations, mainly from a pro-Russian view, underscored by the scepticism towards military aid to Ukraine and discussions about NATO's expansion as the "real" reason for the war. A significant emphasis is placed on the propagation of political narratives and information warfare. The negative economic impact associated with sanctions against Russia (energy security, particularly in Europe) is criticized. Leadership dialogues, including high-level diplomatic talks, are also a focus, emphasizing the role of key political figures in shaping the direction of the conflict. The overall tone and content of the messages leans overwhelmingly towards a pro-Russian perspective.

Cluster 8 - Heterogenous Cluster 1: German, English and Spanish messages

Cluster 8 (as well as clusters 14 and 15) contains a large number of very different messages that cannot be easily assigned to a specific topic area. Cluster 8 consists of messages on global tensions and crises, predominantly characterized by military and political conflicts, crisis situations, and emergent socio-political movements. A significant portion of the content centres on geopolitical strife, highlighting military actions and diplomatic manoeuvres in regions such as the Middle East and Afghanistan, underscoring the persistent volatility in international relations. Concurrently, there is a discernible focus on various emergency scenarios, including

natural disasters and urgent military incidents, which reflect the ongoing challenges in crisis management and response. Another prominent aspect of the messages is the propagation of controversial viewpoints and conspiracy theories, particularly pertaining to public health initiatives like vaccinations, which signal a deep-rooted scepticism towards mainstream scientific consensus and institutional narratives. A semantic feature of this cluster is that it also contains a number of Spanish messages.

Cluster 9 - Trump-Branded Financial Products

This cluster contains messages on marketing campaigns characterized by aggressive sales tactics and the exploitation of political allegiance. Central to this campaign is the association with former President Donald Trump, leveraging his political identity to promote various products such as 'Trump Patriot Golden Cards', 'Trump Bucks', and 'Trump Coins'. A recurring theme is the artificial creation of scarcity and exclusivity, employing phrases like 'limited stock' and 'last chance' to induce urgency and prompt immediate purchases. These messages frequently tout substantial financial and lifestyle benefits, including claims of future monetary gains and access to free services, which lack substantiation. Additionally, the campaign strategically appeals to patriotism and loyalty towards Trump, suggesting that the purchase of these items is both a demonstration of political support and an investment opportunity. The messages also insinuate insider knowledge and impending significant events to create a sense of being part of an exclusive group privy to confidential information.

Cluster 10 - Cryptocurrency and Finance

This collection of messages presents a clear focus on cryptocurrency, reflecting a strong interest in its market performance and potential as an investment. There's noticeable attention on government actions and political decisions, pointing to how these factors might impact financial markets and society. The messages also touch on conspiracy theories and critiques of economic policies, indicating scepticism towards mainstream narratives and questioning the intentions behind political and financial decisions. Corporate actions, especially from major companies like Robinhood and Amazon, are scrutinized, showing an interest in how these companies influence and react to market and legal pressures.

Cluster 11 - Hackers and Cybersecurity

This cluster of Telegram messages reveals a concerning exploration of hacking techniques and methods for maintaining anonymity online, often straying into potentially illegal or harmful activities. Far from mere cybersecurity awareness, the content discusses the strategic manipulation of technology and internet security, with an underlying theme of exploiting digital vulnerabilities. The discussions center around tech hacks and unauthorized access methods, including social media account breaches and network exploitation. These messages delve into the realm of concealment, potentially facilitating the spread of illegal or damaging content. The use of sophisticated tools and operating systems, such as Calyx on Pixel 4, reflects a deep understanding of digital anonymity and the capacity for covert operations. The emphasis is on forensic evasion, highlighting the use of tactics like canary tokens for preempting detection of questionable activities.

Cluster 12 - Christian Spirituality

This cluster of messages contains spiritual discourse, characterized by an amalgamation of Christian theology, personal introspection, and esoteric beliefs. Central to this narrative is a robust engagement with spirituality, prominently featuring Christian doctrines, scriptural references, and a celebration of religious events such as Easter. The discourse frequently gravitates towards themes of resilience and personal growth, with an emphasis on overcoming adversity through faith and internal fortitude. Integral to these messages is the notion of inner transformation, where mindfulness and self-awareness are pivotal in navigating life's challenges. Community and unity emerge as pivotal themes, underscoring the importance of collective support and transcending sociocultural divides.

Cluster 13 - QAnon and Deep State

This cluster of messages represents a convergence of disinformation and conspiracy theories. Central to these themes is the propagation of QAnon narratives, characterized by allegations of global cabals and deep-state machinations. The content frequently addresses political commentary, often laden with criticism towards specific figures and institutions, underpinned by a palpable distrust of mainstream narratives. Misinformation about the COVID-19 pandemic is prevalent, challenging scientific consensus and public health measures. The discourse repeatedly targets big tech and social media, accusing them of censorship and manipulative practices, reflecting a broader scepticism towards technological gatekeepers of information. The messages often call for mobilization and action, employing apocalyptic and cult-like language, creating a sense of urgency and impending societal shifts.

Cluster 14: Heterogenous Cluster 2: Fringe Narratives and Activism

This cluster of messages contains fringe narratives and a focus on activism, characterized by a convergence of conspiracy theories, pseudoscience, and esoteric beliefs. Predominantly, these messages exhibit a deep scepticism towards mainstream scientific consensus, particularly in the realms of public health and technology, with recurrent themes challenging the validity of COVID-19 responses, vaccine efficacy, and the safety of 5G technology. Interwoven are threads of political and social commentary, often critiquing governmental actions and global issues such as climate change, while simultaneously highlighting a distrust in traditional media outlets. The discourse also delves into religious and mystical concepts. Additionally, there is a notable presence of activism and community mobilization efforts, ranging from organizing local events to broader calls for social and political change.

Cluster 15: Heterogenous Cluster 3: Political and Societal Discourse

This cluster of messages contains conspiracy theories, political and social criticism, and discussions on public health policies, particularly COVID-19. The content predominantly reflects a critical stance towards mainstream media, governmental actions, and societal norms, often interlaced with undercurrents of racial and ethnic tensions. Notably, the discourse encompasses controversial social issues such as abortion, human rights, and gun control, framed within a context of deep societal divisions and distrust in established institutions. Judicial and legal matters are scrutinized, with a focus on perceived injustices and legal outcomes.

Additionally, religious and moral overtones are evident, suggesting a blend of ideological perspectives.

6.2.2.1. Interpretation

The method of summarizing messages using embeddings results in two distinct types of clusters. On one hand, there are clusters with well-defined content but with overlapping semantics. On the other hand, there are clusters with more heterogeneous content, which are less clearly classifiable but still share elements with the clearly defined clusters. A detailed analysis reveals several prominent thematic focuses and narrative tendencies within these clusters. Key topics include the Covid pandemic, the Russia-Ukraine war, Donald Trump and US politics, spirituality and esoteric beliefs, cryptocurrencies, and hacking techniques. These subjects are predominantly approached from a conservative viewpoint, ranging from right-wing to far-right perspectives. The overarching themes within these discussions are characterized by conspiracy theories, a pervasive mistrust towards elites, decision-makers, established media, and scientific institutions, painting a distinct narrative landscape.

Cluster	Number of messages
COVID-19 Pandemic Skepticism	6.424
The polarized US political discourse	4.554
January 6 United States Capitol attack	4.536
Vaccine Skepticism and Anti-Government	4.326
QAnon and Deep State	3.261
Christian Spirituality	2.606
Russia's War on Ukraine	2.256
Cryptocurrency and Finance	2.101
Hackers and Cybersecurity	1.831
The 2020 U.S. Presidential Election	1.800
Trump-Branded Financial Products	1.017
Divisions in U.S. Politics	743
Heterogenous Cluster: Fringe Narratives and…	7.286
Heterogenous Cluster: Political and Societal…	5.888
Heterogenous cluster: German, English and…	3.739

Figure 25 - Semantic key clusters by number of messages (sample N = 52,368, period: January 2020 – July 2022).

Figure 25 shows the clusters according to the number of messages. The two major focal points have roughly the same size: US politics (the proportion of unique clusters in the messages relating to this is 22.2%) and the Covid pandemic (20.5%), although both topics can also occur in the other clusters. Further topics to follow are the conspiracy theories in the context of the QAnon movement (6.2%), (Christian) spirituality and esotericism (5%), Russia's war against the Ukraine (4.3%; here it should be noted once again that the messages in this respect only cover the period up to July 2022), cryptocurrencies (4%), and hacking techniques (3.5%).

6.2.3. Key Terms Analysis of Conspiracy Narratives
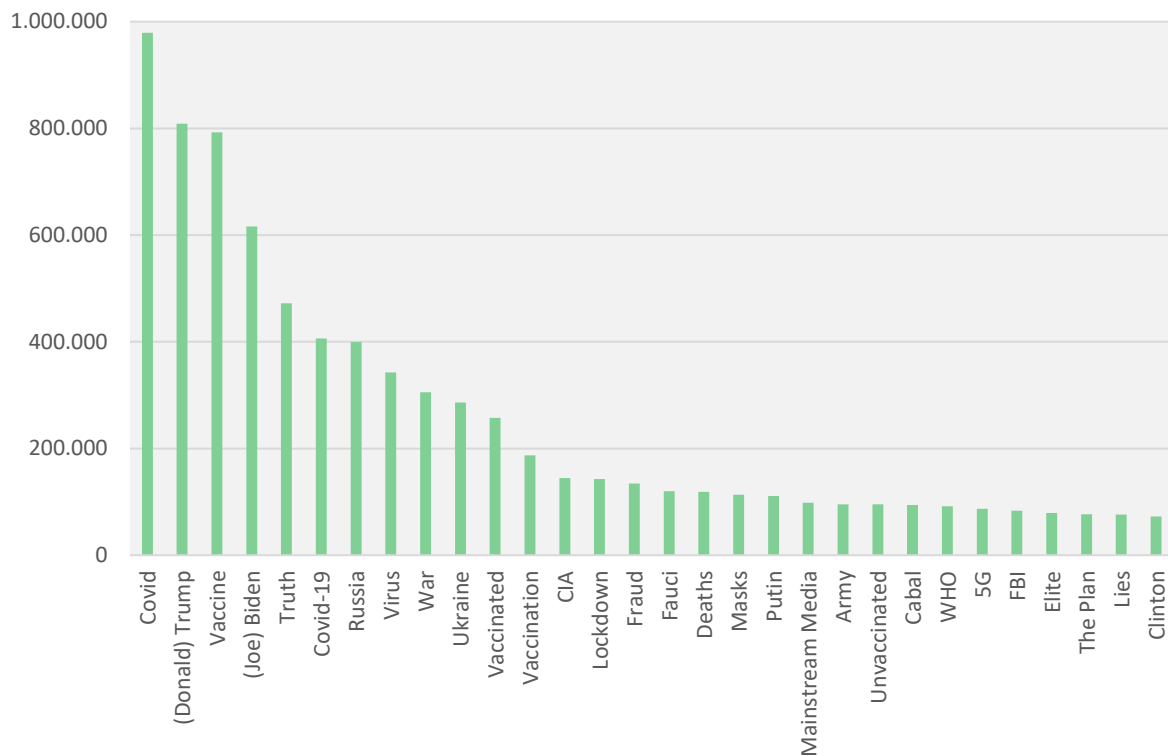
Figure 26 - Top 30 conspiracy related keywords by in German-language Telegram channels January 2020 – July 2022 (N = 2,607 channels, 16,816,121 messages).

As with the German-language Telegram messages (see section 6.1.3), we have also compiled a list of keywords for the English-language messages (Appendix 11.4) and searched for them in the messages. The most frequent keywords, as illustrated in Figure 26, can be categorized into the key topics Covid pandemic, Donald Trump/US politics, Russia's attack on Ukraine, and broader conspiracy theories. The Covid pandemic is prominently represented with keywords like 'Covid', 'Vaccine', and 'Virus' indicating a significant focus on pandemic-related topics. US politics form another major cluster, with frequent mentions of 'Donald Trump', 'Joe Biden', and 'Election'. The topic of Russia's attack on Ukraine is also notable, although less prevalent compared to the other two categories (but very frequently, considering the shorter period covered by the messages which is until July 2022). Additionally, there are keywords that broadly fall under general conspiracy theories, such as 'Truth', 'New World Order', and 'Illuminati', pointing towards a widespread engagement in conspiracy narratives. This distribution of keywords mirrors the results obtained from our semantic cluster analysis based on embeddings.
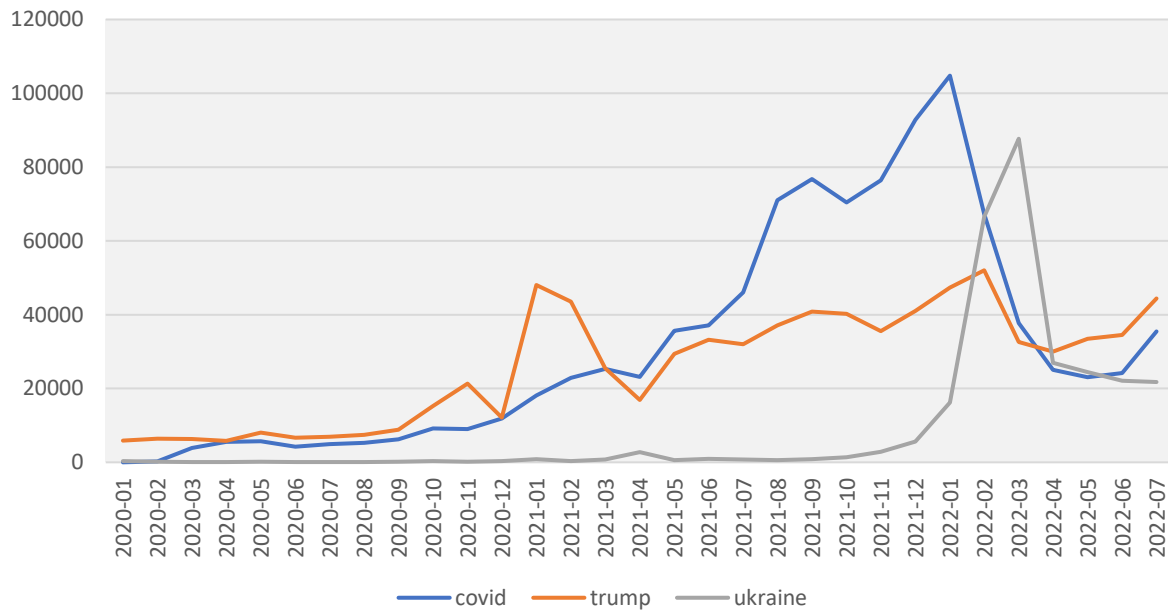
Figure 27 - Frequency of selected keywords over time (January 2020 – July 2022). N = 2,607 channels, 16,816,121 messages.

Figure 27 displays the frequencies of the three keywords 'Covid', 'Trump', and 'Ukraine' from January 2020 to July 2022. Overall, the trend lines exhibit similarities to those observed in the German-speaking messages (see 6.1.3), particularly regarding the term 'Ukraine', which peaked in March 2022 following the onset of the war. For 'Trump', there is an initial peak in January 2021, coinciding with the January 6 US Capitol attack, and another in February 2022, for which we cannot presently identify a singular event that might explain this surge, even upon reviewing the messages from that month. Similarly, the peak for 'Covid' in January 2022 does not correspond to a specific theme in the messages, despite a resurgence of Covid cases in the winter of 2022 in the USA and the UK. Overall, the analysis suggests that discussions around Covid and the corresponding categorization of events (not limited to, but including conspiracy narratives) intensify with a certain temporal delay, before diminishing again as Covid cases decline.

As for the German-language messages, we examine which keywords frequently appear to-gether in the same Telegram groups. Figure 28 was created in the same way as Figure 16 (co-occurrence network of the keywords. Again, the nodes represent the keywords, with their size according to their frequency in the messages from January 2020 to July 2022. The strength of the connections and the proximity between the keywords indicate the likelihood that the re-spective keywords appear in the same Telegram channel as measured by Pearson correlation. Here as well, only the top seven strongest connections for each keyword are visualised to make the structure clearer.
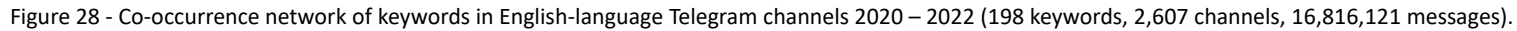
Figure 28 - Co-occurrence network of keywords in English-language Telegram channels 2020 – 2022 (198 keywords, 2,607 channels, 16,816,121 messages).

As for the German-language keywords, we have identified distinct keyword clusters based on the pattern of relations among them, applying the Louvain community algorithm which is used to detect communities by maximizing the modularity of a network, the division of a network into subnetworks based on the distribution of relationships and network density (see 6.1.3). Six distinct clusters of keywords have been identified. In descending order according to the aggregated frequencies of the keywords, they can be described as follows:

(1) **Covid-19 Pandemic** (network centre): This cluster predominantly deals with health and pandemic-related topics, focusing on COVID-19, vaccines, and public health measures. The discussion in this cluster is likely characterized by scepticism and criticism towards COVID-19 vaccines, lockdowns, mask mandates, and the roles of health organizations like the WHO. Key terms such as "Fauci," "Ivermectin," and "Vaccine Passports" suggest a strong inclination towards alternative treatments and opposition to governmental health policies.

(2) **Russia-Ukraine, Geopolitics** (right side of Figure 28): The central theme of this cluster revolves around international politics and geopolitical conflicts. Keywords like "(Joe) Biden," "Russia," "Ukraine," and "China" indicate that the conversations are centered around significant global political figures and conflicts. The focus is likely on U.S. politics, the dynamics of the Ukraine-Russia conflict, and the role of China in international affairs.

(3) **Donald Trump and U.S. Politics** (bottom right): This cluster focuses on U.S. politics intertwined with various conspiracy theories. Dominated by references to American political figures and movements such as "(Donald) Trump," "Patriot," and "MAGA," the discussions are likely to include a range of conspiracy theories related to U.S. politics and global events. Terms like "QAnon" and "False Flag" suggest a strong element of conspiratorial thinking within these discussions.

(4) **Conspiracy Theories and Global Elites** (bottom centre): This cluster is characterized by discussions on conspiracy theories about global elites and the idea of a new world order. Keywords such as "Truth", "New World Order," "Bill Gates," and "Great Reset" imply theories about global elites manipulating world events for their own interests. Terms like "Bioweapon" and "Plandemic" point to beliefs in the intentional creation and spread of diseases as part of these manipulative strategies.

(5) **Conspiracy Theories and Spiritualism** (at the very bottom): In this cluster, a blend of broad conspiracy theories and elements of spiritualism are evident. Covering a wide range of topics from "The Plan" and "Deep State" to "Aliens" and "Spiritual" matters, the discussions here likely mix political conspiracy theories with spiritual beliefs and theories about extraterrestrial life.

(6) **Conspiracy Theories, QAnon and Secret Societies** (left side): This cluster refers conspiracy theories concerning secret societies and child exploitation. With references to QAnon ("WWG1WGA"), "Cabal," "Illuminati," and "Freemasons," the discussions likely focus on alleged secret societies and their influence. Additionally, the mention of "Pizzagate" and "Pedogate" indicates a significant emphasis on theories involving child exploitation and human trafficking.

These clusters are formed by the keywords that appear particularly frequently together in the English-language Telegram channels. They do not only represent semantic similarities, but topics which belong together in the sense that they are discussed by the same Telegram groups. And we can see that it is a completely connected network graph. In other words, there are thematic focuses, but overall, the different conspiracy topics are connected to each other.

Jan 24	username	title	subscribers	messages	kwds per me	total kwds
1	WhiteHatsQ	White Hats	49.742	2.470	8,0	19.717
1	CovidTruth_UNCENSORED	Covid Truth - UNCENSORED	18.884	557	4,2	2.352
1	COVID19Up	COVID-19 Up	43.876	10.925	4,0	43.394
0	TRIBUNALSforJUSTICE	TRIBUNALS for JUSTICE	36.689	5.950	3,3	19.832
1	ExposeThePEDOSendTheCABAL		76.486	4.993	3,3	16.477
0	USAMilitaryQ	USA Military	33.408	2.994	3,2	9.679
0	FUCKtheNewWorldQrder		15.732	5.229	3,1	16.469
1	dailyexpose	The Exposé News	37.345	5.088	3,1	15.656
1	GitmoTV	GITMO TV	102.376	5.281	3,1	16.159
1	greatawakeningworld	GreatAwakening.World - Q + Trump	126.346	6.827	3,1	20.877
1	SpecialQForces	SpecialQForces	62.688	8.421	3,0	25.497
1	gabbichoong	Gabbi Choong	10.516	728	2,9	2.132
1	DUMBSandUnderground	D.U.M.B.S and Underground War	133.064	3.883	2,9	11.195
1	NVIC_VaccineFreedom	NVIC.org	15.097	6.851	2,6	17.535
1	TippyTopPatriot	TippyTopPatriot 🐱 us	31.215	1.767	2,5	4.463
1	GESARAandNESARA	QFS - GESARA - NESARA	26.518	5.147	2,5	12.828
0	TrumpNewsLive	TRUMP NEWS ⚡ NOT	22.062	8.249	2,5	20.325
1	LeakyVax	LeakyVax	16.483	1.091	2,4	2.633
1	qanonfighters	Qanon Fighters	54.729	428	2,4	1.021
1	darkuniverse09	dark_universe_09	137.997	4.000	2,4	9.480
1	SpaceForceGalacticFederation	Intergalactic SpaceForce - Galactic Federation –Special Command	80.126	6.091	2,3	13.981
0	TheCovidTruthNet	Covid Truth Network	37.496	1.151	2,3	2.612
1	GeneralFlynnExposed	General Fully Exposed	14.272	3.743	2,2	8.370
1	TheTruthAboutCancer_Vaccines	The TRUTH About Cancer | Vaccines	38.137	1.222	2,2	2.732
1	TrumpPatriotNews	American Patriot News & Intel	26.363	10.895	2,2	24.316
0	Nesara_Gesara1	Nesara - Gesara	56.332	4.769	2,2	10.638
1	awakenindiamovement	Awaken India Movement (AIM) Broadcast Channel	14.717	3.042	2,2	6.725
0	Melania_Trump_Organization	Melania Trump (Official)	30.138	5.173	2,2	11.397
1	ivanka	Ivanka Trump (Official)	28.647	5.145	2,2	11.316
0	q_qanon	Q Qanon	41.061	706	2,2	1.536
1	sguncensored	Singapore Uncensored	12.803	15.290	2,2	33.237
0	WorldAwakeningTrueNews	World Awakening	84.664	11.977	2,2	25.989
1	TrumpSource	Trump Source ⚡ us	10.909	7.007	2,2	15.200
0	Nesara_Gesara_Reform	Nesara - Gesara	17.923	5.616	2,1	12.062
1	KarenFannReal	Karen Fann	10.657	963	2,1	2.063
1	Truth_Awakening_Channel	Δ **Truth Awakening Channel** ☖	13.536	7.076	2,1	15.111
1	Donald_Real_Trump	Real Donald Trump	52.936	4.181	2,1	8.715
1	greatreject	GreatReject.org	23.857	15.385	2,1	31.675
0	Maga_Revolution	MAGA REVOLUTION us	27.533	2.157	2,1	4.437
0	Ivanka2024	Ivanka Trump	24.750	8.494	2,0	17.359
1	News4AChange	We Are Change	24.943	7.781	2,0	15.805
1	TheLightTruthPaper	The Light Paper	18.195	6.829	2,0	13.791
1	FountainOfTruthMedia	Alan Fountain - FountainOfTruthMedia	16.979	2.845	2,0	5.707
1	FionaRoseDiamond	Fiona Rose Diamond	10.270	1.611	2,0	3.154
0	ThePunisher_Q17	ThePunisher_Q17	11.152	2.305	2,0	4.507
0	covidtruthnet	Covid Truth Network	109.840	3.784	1,9	7.360
1	StormCloudsGathering	StormCloudsGathering	15.718	620	1,9	1.196
0	trump		136.671	9.997	1,9	19.230
0	FreedomIdeasNoVax	Freedom ideas	24.733	10.050	1,9	18.901
1	insider_amigo	Insider Amigo	39.149	2.510	1,9	4.670

Figure 29 – Top 50 English-language Telegram channels sorted by number of conspiracy-related keywords per message with at least 10,000 subscribers (messages from January 2020 – July 2021, N = 16,816,121).

This table lists the top 50 (public) Telegram groups with the highest number of conspiracy-related terms per message, each having at least 10,000 subscribers. This indicates that these groups are particularly radical in terms of the intensity of conspiracy theory concepts ("fringe" platforms) and also have a significant minimum reach. The names of the channels provide clues as to which social groups and thematic focuses they are associated with. Within the QAnon movement, for example, the term "white hats" refers to individuals who are believed to be working secretly to expose and thwart the devious actions of morally corrupt officials in powerful positions and within the "deep state". This concept is part of a broader narrative

within QAnon that frames the world as a battleground between good and evil forces, with the "white hats" being the positive force working against the so-called cabal of malevolent actors.[28] Several groups feature the letter Q in unique positions (e.g., "USAMilitaryQ", "FUCKthe-NewWorldQrder", "SpecialQForces"). "WhiteHatsQ" is a channel with very long, text-heavy messages containing many conspiracy theory keywords. Covid-related terms continue to be a part of numerous group names (such as "CovidTruth_UNCENSORED", "TheCovidTruthNet", "NVIC_VaccineFreedom"). Other names include core concepts of conspiracy theories ("ExposeThePEDOSendTheCABAL", "greatawakeningworld", "WorldAwakeningTrueNews"), many of which refer to Donald Trump ("TrumpPatriotNews").
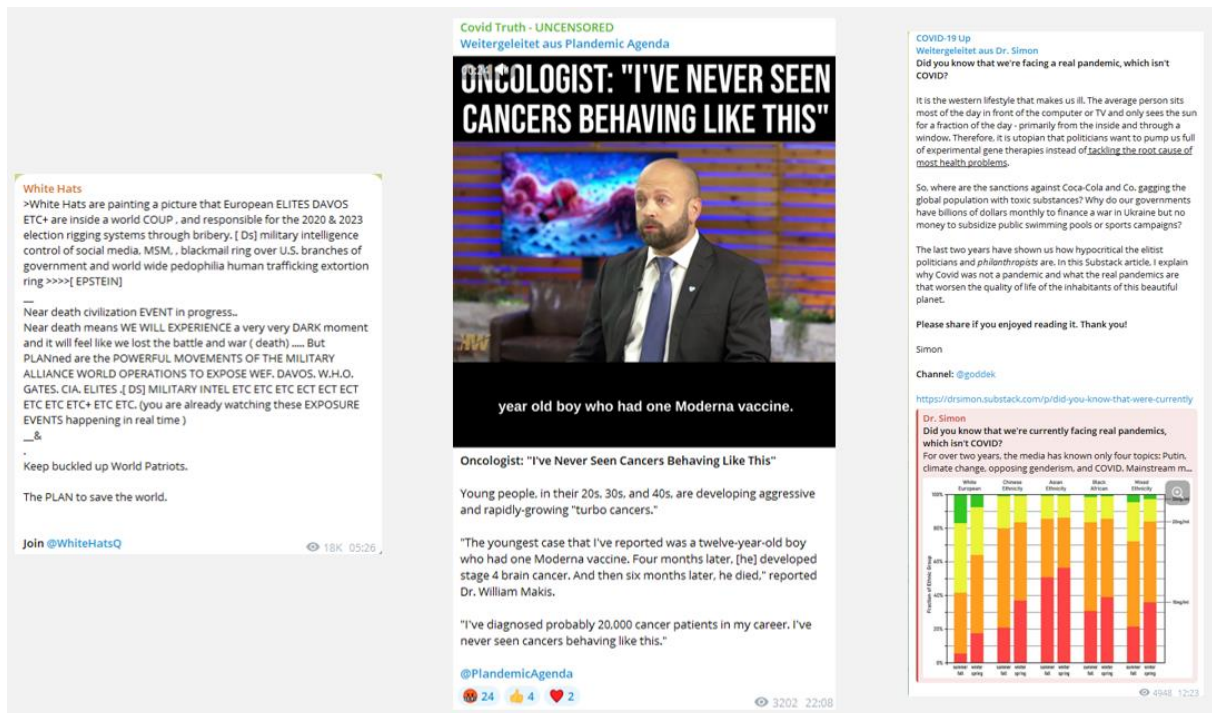
Figure 30 - Screenshots of three exemplary Telegram messages of the channels "WhitesHatsQ", "CovidTruth_UNCENSORED", and "COVID19Up" from January 18th, 2024.

Figure 30 shows sample messages from the top three Telegram channels in the ranking including well-established conspiracy narratives (elites in Davos, mainstream media [MSM], pedophilia, cancer because of the covid-vaccine, covid was not a pandemic. The third message is a good example of how a pressing issue and concern – health worries – is linked with conspiracy theory explanatory models).

We now have a better understanding of the main themes and content present in the messages of the Telegram groups, and we are aware of which Telegram channels appear in the data, which are particularly active, which exhibit a close affinity to conspiracy theory content, and which among them have a broader reach.

Let us now turn to an initial attempt to identify and describe the ways in which the messages address moral violations in the sense of the Moral foundations concept by Jonathan Haidt.

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[28] https://www.jewishvirtuallibrary.org/qanon, last accessed 2024/01/18.

6.2.4. The Moral Foundations addressed by the Telegram messages

6.2.4.1. Methodology

As explained in section 3.3, a central aim of our analysis is to determine which moral foundations are addressed by Telegram messages in the context of conspiracy theories. We find the hypothesis plausible that content is particularly successful and appealing when it discusses moral violations affecting specific groups of people or those they perceive as affecting them. By attempting to identify the types of moral violations involved (e.g., perceptions of injustice, illegitimacy, disgust, or disruption of the usual order) that were most frequently addressed, we aim to better understand the powerful impact of conspiracy theories. Additionally, we seek to contribute to the discussion of which topics and moral issues counter-interventions should address to effectively counteract conspiracy narratives.

In the following section, we focus on assigning moral foundations to text units using machine learning techniques. In a first step for this progress report and to apply the analysis to other data sets in the further course of the project, we take the same English Telegram messages in which we identified semantic key clusters (section 6.2.2), covering the period 2020 – 2022, n = 52,368). For this, we refer to the Moral Foundations Reddit Corpus (MFRC, Trager et al. 2022), a publicly available dataset of more than 16,000 Reddit messages with assigned moral foundations.[29] This corpus pertains to English messages, and this is the reason why, for this report, we are only examining the English-language Telegram messages for their moral foundations. As for the German-language messages, we will conduct the corresponding analysis for the final report, once we have explored the available options.

Using the MFRC, we trained a machine learning model, which was then applied to our Telegram messages to identify the moral foundations addressed within them. This approach allows us to determine the extent to which moral foundations are addressed and identify those most frequently occurring. We will pinpoint Telegram channels from our sample that frequently address moral foundations, and we will correlate the moral foundations with the semantic key clusters we identified, i.e., the primary themes in the messages (Covid, U.S. politics and Donald Trump, Russia-Ukraine, esotericism, and spirituality, etc.).

The MFRC encompasses comments from subreddits. Subreddits are specific forums or communities within the website reddit.com, each dedicated to a particular topic or theme. Users can join these subreddits to engage in discussions, share content, and view posts related to the specific subject of the subreddit. Trager et al. had annotators classify each of these Reddit comments in terms of the moral foundations. We took the MFRC including the annotations to fine-tune a natural language processing (NLP) model (OpenAI's GPT-3.5 Turbo model) to classify and interpret the Telegram messages with respect to the moral foundation categories.

Our approach involved integrating the annotations from Trager et al.'s MFRC into a format suitable for model fine-tuning. Each Reddit comment in the corpus was originally evaluated by three independent annotators, providing a rich set of perspectives on the moral sentiments expressed. In our adaptation, we merged these multiple annotations to enhance the depth and diversity of the training data for the language model. Instead of treating each annotation

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[29] https://huggingface.co/datasets/USC-MOLA-Lab/MFRC, last accessed 2024/01/23.

separately, we consolidated the annotations for each Reddit comment into a single record. This approach was taken to ensure that the model training could benefit from the full spectrum of moral interpretations provided by the different annotators. Where annotators agreed, a single label was used. In cases of disagreement, we included the diversity of labels to maintain the breadth of moral sentiments. This method aimed to enrich the model's learning process by exposing it to a wider range of moral nuances. Central to the preprocessing phase was the decision to discard the 'Thin Morality' category. Despite being part of the original annotation scheme, this category consistently yielded unsatisfactory fine-tuning results, prompting its removal to refine the classification model's focus on the remaining categories.

In preparing and preprocessing the data for model fine-tuning, a crucial aspect was determining the optimal size of the training and validation sets. The final dataset was divided into two subsets: a training set, which included 3,000 messages, and a validation set, with 1,000 messages. This partition was informed by a balance between having sufficient data for model learning and ensuring a robust standalone dataset for validating the trained model's performance. During the data preparation phase, we conducted tests with various dataset sizes to ascertain the impact on model performance, particularly in terms of training and validation loss. These tests were relevant to understand how scaling the dataset size influenced the fine-tuning results. It was observed that the loss values did not show significant improvement with larger dataset sizes. In other words, increasing the number of messages in both the training and validation sets beyond the chosen sizes of 3,000 and 1,000, respectively, did not yield proportionally better fine-tuning outcomes. This plateau in performance improvement indicated that beyond a certain point, the addition of more data did not contribute to a meaningful increase in the model's accuracy or its ability to generalize.

Fine-tuning in the context of machine learning, particularly in natural language processing, involves the adjustment of a pre-trained model to perform a specific task or accommodate a particular type of data. The pre-trained model, in this case, GPT-3.5 Turbo, has already learned a vast amount of general information about language and its use. Fine-tuning refines this general knowledge base, enabling the model to focus on and become more proficient in a specific domain or task – here, identifying and classifying moral sentiments in Reddit comments. This fine-tuning process differs from training a model from scratch. It starts with a model that has already learned a broad range of language features and nuances. The goal is to build upon this pre-existing knowledge, steering the model's focus toward the peculiarities of the specific dataset at hand. This approach is often more efficient than starting the learning process anew, as it leverages the extensive learning the model has already undergone. The decision to use GPT-3.5 Turbo for fine-tuning was informed by its proven effectiveness in understanding and generating natural language, as well as its adaptability to specific tasks through fine-tuning[30]. The

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[30] Evaluating the performance of Large Language Models (LLMs) is a challenging task, as the selection of specific benchmarks can introduce bias into the results. To mitigate this, we referred to the LMSYS Chatbot Arena Leaderboard which is a crowdsourced open platform for LLM evals, available at [https://huggingface.co/spaces/lmsys/chatbot-arena-leaderboard] (last accessed on 2024/02/20), which aggregates the outcomes of over 200,000 comparative evaluations conducted by humans. At the time of choosing a model for the fine-tuning job, GPT-3.5 Turbo was the leading model that could be fine-tuned.

fine-tuning process aimed to harness these capabilities and direct them towards the specialized task of identifying and categorizing moral sentiments as per the MFRC.

The training proceeded for a total of three epochs, to ensure comprehensive learning without overextending the number of iterations that could lead to overfitting. An epoch in this context refers to a complete pass through the entire dataset, which allows the fine-tuning process to iteratively enhance the model's ability to discern and apply the moral foundations framework to new data.

The primary indicators of success within model training are the training and validation losses, which are critical for evaluating the model's predictive accuracy. The training loss, recorded at 0.3504, indicated how well the model learned from the training dataset. The validation loss, slightly higher at 0.4172, reflected the model's performance against new, unseen data. This differential between the training and validation losses suggests a good generalization without significant overfitting, although such analyses should be conducted with careful observation of potential performance gaps. These loss values guide the ongoing adjustment of the fine-tuning process, serving as vitally important feedback. Lower loss values signify that the model's predictions are closely aligned with the actual annotations, pointing to an efficient and effective learning course. In summary, the fine-tuning procedure, represents a targeted effort to endow the GPT-3.5 Turbo model with the capacity to accurately interpret and replicate the moral assessments as established in the annotated dataset.

This process led to applying the fine-tuned GPT-3.5 Turbo model to classify the English-language Telegram messages. This task aimed to automate the complex process of moral sentiment analysis, leveraging the customized capabilities of the model. To facilitate this application, a custom Python script was developed. The script's primary function was to automate interactions with the OpenAI API, utilizing the fine-tuned model to systematically analyse the Telegram messages.

The classification used differs slightly from that described in section 3.3. The following categories are used in the MFRC:

1. **Care/Harm**: This category emphasizes empathy, kindness, and protection of others from harm. It values nurturing and caring behaviours, advocating for the welfare and safety of all, especially those vulnerable or in need.
2. **Equality/Inequality**: This foundation addresses issues of fairness, justice, and equal rights. It rather resonates with liberal, progressive, or leftist attitudes, focusing on equality as a form of justice. It underscores the importance of treating individuals equitably and opposes discrimination or unfair treatment based on arbitrary criteria.
3. **Proportionality/Disproportionality**: This concept relates to justice as deserved inequality. It's rather aligned with conservative positions, emphasizing that rewards or consequences should be proportionate to one's actions or merits. This foundation advocates for equitable treatment based on contribution or effort, rather than equal outcomes for all.
4. **Loyalty/Betrayal**: This foundation centers on allegiance, fidelity, and loyalty to a group, community, or nation. It values solidarity, commitment, and the importance of standing with one's group, often placing group interests above individual ones.

5. **Authority/Subversion**: This principle deals with respect for legitimate authority, tradition, and the established social order. It values hierarchy, structure, and the role of authority figures in maintaining order and stability.

6. **Purity/Degradation**: This foundation focuses on sanctity, purity, and avoiding degradation. It values the preservation of what is considered pure or sacred, whether in moral, spiritual, or physical terms, and often involves abiding by certain codes or standards to maintain this purity.

6.2.4.2. Preliminary results

As the following table illustrates, 46.8% of the messages from our sample were not assigned to any moral foundation. Conversely, 53.2% were linked to at least one of the six categories. Precisely a third were categorized under exactly one foundation, 12.1% under two categories, and the remainder falls under three or more categories.

mf categories	messages	pct
0	24.530	46,8%
1	17.498	33,4%
2	6.350	12,1%
3	2.916	5,6%
4	919	1,8%
5	139	0,3%
6	16	0,0%
total	52.368	100,0%

Figure 31 - Messages according to the number of assigned moral foundation categories.

Here are three examples from the 16 messages in our dataset that, according to our classification, incorporate all six categories in one way or another:

1. *People are going to wake up to the full horror of it now. They killed people in the hospitals. Why ? MONEY. They diagnosed people who didn't have COVID as being COVID infected. They said thousands upon thousands of people died of COVID when they didn't. Why? MONEY. They stuck people on ventilators and pumped full of poisonous Remsdivir. Why? MONEY. They closed businesses and churches, causing many business to fail. Why? MONEY. They killed thousands of elderly people in the nursing homes. Why? MONEY. They suppressed real early drug treatments that prevented/cured COVID infection. Why? MONEY. And they're **still** determined to keep those f**king masks on all your kids. Why? TAKE A WILD GUESS.This evil man directed an insane and evil system that was chock-full of **financial incentives** that rewarded hospitals and doctors and gov't bureaucrats for doing all of this financially-driven policy.*

2. *The media and the politicians all have said covid is fake without actually saying it since Day 1 💥Anyone having the vaccine did it by choice .This is why some of us have no sympathy because speaking out at the start we was laughed at when we spoke of children being abused .Some children don't have a voice .Cops sign up to an oath .Doctors and nurses do the same .We all have a duty of care over children. Children are innocent. Hurting a child is the worst way to lower the Earths frequencies causing a huge ripple effect We must learn. Lookout for one and another always 💖If youre feeling abit vulnerable look after yourself but if you have energies to give then give some out, you don't know who you may help 🙏 💗Speaking out also helps open your Chakra's - universal law one cannot receive unless they give. #144 Its a time for healing ❤️💋 brothers and sisters Together as one to ascend into the New Earth 🌍 Positive thoughts 💭 create positive outcomes 🗯creates happy faces 😄#Forgiveness.*

3. *Nurses in the Third Reich were instruments of death, dispensing lethal injections to kill vast numbers of people whom the Hitlerite government considered "life unworthy of life." People forget that back then, doctors, nurses, and scientists were behind the atrocities and crimes against humanity. However, since then, little has changed, as it is now.*

Eight of these 16 messages with the highest moral charge relate to the Covid pandemic (four specifically about vaccination and one about vaccinating children), two address pedophilia, one each pertains to Donald Trump and QAnon's fight against evil in the world. Four messages

concern other threatening or anger-inducing issues, and for one message, it is unclear why all six moral foundations were assigned to it.

The following table displays the number of messages containing specific keywords and the respective count of messages assigned to each moral foundation (Figure 32).

Messages

Keyword	Messages	Care	Authority	Equality	Proportional	Loyalty	Purity
covid	3.319	1.002	1.204	200	307	306	219
vaccine	4.908	1.440	1.597	295	530	431	379
pedophil	528	283	236	99	58	84	147
qanon	583	105	171	27	51	105	40
trump	5.667	778	1.964	246	580	1.376	277
ukraine	1.452	269	504	80	77	251	66

Percentages of messages

Keyword	Messages	Care	Authority	Equality	Proportional	Loyalty	Purity
covid	3.319	30,2%	36,3%	6,0%	9,2%	9,2%	6,6%
vaccine	4.908	29,3%	32,5%	6,0%	10,8%	8,8%	7,7%
pedophil	528	53,6%	44,7%	18,8%	11,0%	15,9%	27,8%
qanon	583	18,0%	29,3%	4,6%	8,7%	18,0%	6,9%
trump	5.667	13,7%	34,7%	4,3%	10,2%	24,3%	4,9%
ukraine	1.452	18,5%	34,7%	5,5%	5,3%	17,3%	4,5%
average		27,2%	35,4%	7,5%	9,2%	15,6%	9,7%

Diffeerence to average

Keyword	Messages	Care	Authority	Equality	Proportional	Loyalty	Purity
covid	3.319	3,0%	0,9%	-1,5%	0,0%	-6,4%	-3,1%
vaccine	4.908	2,1%	-2,8%	-1,5%	1,6%	-6,8%	-2,0%
pedophil	528	26,4%	9,3%	11,2%	1,8%	0,3%	18,1%
qanon	583	-9,2%	-6,0%	-2,9%	-0,5%	2,4%	-2,9%
trump	5.667	-13,5%	-0,7%	-3,2%	1,0%	8,7%	-4,9%
ukraine	1.452	-8,7%	-0,7%	-2,0%	-3,9%	1,7%	-5,2%

Figure 32 - Moral foundations in Telegram messages with specific keywords (11,942 messages January 2020 – July 2022).

Reading example: Out of the 52,368 messages in our sample, 3,319 contain the keyword "covid". Of these, 1,002 or 30.2% were assigned to the Care moral foundation. On average, 27.2% of messages were assigned to the Care foundation, so the Covid messages are 3.0 percentage points above the average in this category. For messages containing the keyword "pedophilia," the percentage is even higher, 26.4 percentage points above the average.

The most important moral foundation in this message sample is authority (35.4% of the messages), followed by care (27,2%), and loyalty (15.6%). The categories dealing with fairness (equality and proportionality) are less important (9.2% and 7.5% respectively). The dominance of the 'Authority' moral foundation in your corpus suggests a strong emphasis on structure, order, and respect for traditional hierarchies or leaders. This focus, coupled with the significant representation of the care and loyalty moral foundations, indicates a tendency towards values often associated with conservative ideologies (Haidt 2013, pp. 155ff.), which emphasize the importance of social cohesion, duty, and caring for the in-group. In contrast, the lower

frequency of the egalitarian, rather "progressive" principles (ibid.) suggest that these values are less prioritized or influential in the discourse of this message sample - what could be expected with respect to the selection of the channels.

Messages referencing pedophilia are thus particularly often associated with moral foundations. While this may not be surprising in terms of content, it indicates that our machine learning model is likely a reliable tool for the valid assignment of text units to moral foundations. Improvements are certainly needed at the level of individual text units (additional training datasets, further fine-tuning, use of another, even more powerful machine learning model). However, at an aggregated level, the results are very interpretable:

- **In the context of the COVID-19 pandemic, there is an inherent focus on the themes of care and harm**. The messages contain various types of misinformation, including conspiracy theories and false claims. The misinformation includes unfounded allegations about the origins of the virus, the efficacy and safety of Covid-19 vaccines, and the motivations behind public health measures. Some messages spread fear about vaccines causing harm or being part of a depopulation agenda and suggest alternative, unproven treatments for Covid-19. There are also false assertions about legal actions being taken against those involved in vaccine efforts and pandemic response, as well as misleading interpretations of data regarding Covid-19 cases and vaccination effects. Additionally, there are claims that suggest a coordinated effort to deceive the public about the pandemic and vaccines, involving various government agencies, tech companies, and individuals. It's important to note that these messages are not based on scientific evidence and are part of disinformation campaigns that can undermine public health efforts.

- **Furthermore, Covid-19 related messages address the authority moral foundation**. The messages claim that authorities dealing with Covid-19 are involved in a conspiracy or are mishandling the pandemic response. They frequently accuse public health leaders, organizations, and governments of various forms of misconduct, including: 1. Lying to the public about the seriousness of the virus and the effectiveness of vaccines. 2. Suppressing information and treatments that could help combat the virus in favor of promoting vaccines. 3. Intentionally using the pandemic as a cover to implement a range of restrictive measures that impinge on personal freedoms. In addition to these allegations directed at health authorities and governments, these messages commonly invoke the theory of a global elite or "deep state." They suggest that this elite group is manipulating the pandemic for financial gain or to exert control over the population, which could align with different agendas, including: 1. The imposition of vaccine mandates as a means of control, not public health. 2. Using Covid-19 and vaccines for purposes of depopulation or to impose authoritarian rule. 3. Financial exploitation of the pandemic through vaccine sales and other related business opportunities. The messages often point fingers at high-profile individuals or entities, such as Bill Gates, the World Health Organization (WHO), the World Economic Forum (WEF), Big Pharma companies, and others, portraying them as part of the conspiracy to exploit the pandemic situation for nefarious purposes.

- **Messages containing "pedophilia" address moral violations particularly frequently, especially the violation of the care, the authority, and the purity moral foundation**. They propagate accusations concerning pedophilia, alleging that a vast array of individuals and groups are involved in the sexual abuse of children. The accusations are leveled without evidence and often target public figures, including politicians, entertainers, and business executives, suggesting they are part of a global pedophilic ring. Many of the messages contain elements commonly associated with the QAnon conspiracy theory, which purports the existence of a deep-seated cabal of high-profile pedophiles that operates within the shadows of government, entertainment, and business industries. This supposed cabal is alleged to engage in child trafficking and is often linked to Satanic practices in the messages. Among the individuals and groups targeted by these accusations, there is a clear bias against certain political affiliations. The messages frequently single out liberals, Democrats, and progressives, claiming they are either complicit in or the driving forces behind these nefarious activities. This partisan angle often aligns with a typical QAnon narrative, where Democrats and progressive individuals are vilified as being part of or protecting the criminal network in question. The messages often use inflammatory language and dramatic symbolism to evoke emotional responses and create a sense of urgency among readers to rally against these alleged crimes.

- **QAnon related messages often refer to the loyalty foundation**. They reflect various themes central to the movement, but a recurring aspect is the emphasis on loyalty. The messages suggest that loyalty is considered a pivotal value within the movement, particularly loyalty to President Trump, the movement itself, and its associated figures, such as General Michael T. Flynn and others mentioned. There is a strong sentiment against perceived betrayal or disloyalty, particularly highlighted in the context of events and individuals connected to the group. For instance, there are references to Kyle Rittenhouse's interview, which some members of the movement felt portrayed their support in a negative light, leading to accusations of disloyalty. Additionally, these messages convey a sense of being in a struggle against mainstream media (referred to as "MSM") and other entities, including social media platforms. The group's members encourage each other to stay united and support efforts to expose what they believe to be a broader conspiracy or "deep state" activities, implying that loyalty to the cause and among members is crucial in this fight.

- **Trump related messages also particularly address the loyalty foundation**. They showcase a strong sense of loyalty among his supporters, who express unwavering support and trust in the former President. The notion of loyalty appears to extend beyond personal allegiance to Trump; it's also linked to broader ideals such as patriotism, the fight against "deep state" conspiracies, and support for what is referred to as "the Plan." Users demonstrate a commitment to the beliefs and conspiracy theories often associated with the QAnon movement, frequently tying Trump's actions to a greater purpose or battle against a perceived corrupt establishment. Loyalty to Trump is often equated with loyalty to the country and its supposed true values, which the messages suggest Trump embodies and represents. Criticism of Trump or divergence from the group's shared belief system is often met with accusations of betrayal or alignment with the

group's enemies, which includes mainstream media, technology companies, and various political figures. The loyalty emphasized within these messages is not just towards an individual leader but also towards a shared narrative of saving or restoring the nation based on the principles they believe Trump represents.

- The Telegram discussions regarding the conflict in Ukraine present varied and often contradictory viewpoints. Some portray Russia's actions as defensive, aimed at stopping alleged bioweapons threats, casting the nation more as a guardian than an aggressor. Accusations are leveled at the United States, implicating the Biden family in using Ukraine for covert activities like bioweapon development and money laundering. There is a split in international reactions—some support Ukraine, while others blame the U.S. Media distrust is evident, with allegations of significant narrative manipulation. Public opinion is seen as potentially steered away from domestic issues. Military happenings, including troop movements, suggest an active conflict zone. Ukraine's internal politics face scrutiny over neo-Nazi ties and corruption. There is speculation about the conflict's potential to widen and scepticism over Western leaders' abilities, with Putin seen as capitalizing on their perceived shortcomings. **The messages reflect a complex understanding of loyalty**, suggesting that various political figures and nations may have conflicting allegiances that influence their stance on the conflict. There is a notion that internal Ukrainian loyalty is divided, with some messages highlighting allegations of neo-Nazi influences within the government and others pointing to citizens fiercely defending their sovereignty. Additionally, there is an implication that global loyalties are being tested, with some countries accused of supporting hidden agendas rather than advocating for Ukraine's independence or regional stability.

Figure 33 shows which moral foundations occur in the semantic key clusters and underlines the connection between the topics discussed and the moral violations. Reading example: The cluster "Covid-19 Pandemic Scepticism" consists of 6,424 messages; 32% of these address the care foundation. In total, 21% of the messages from the sample refer to the care foundation, meaning that the messages from this Covid-related semantic cluster address the care foundation more frequently than average (by a margin of 12 percentage points).

Cluster Title	Messages	Care	Authority	Equality	Proport.	Loyalty	Purity
1 COVID-19 Pandemic Skepticism	6.424	32%	26%	5%	10%	8%	8%
2 Vaccine Skepticism and Anti-Government	4.326	23%	42%	8%	9%	15%	6%
6 The polarized US political discourse	4.554	13%	31%	5%	8%	19%	4%
4 January 6 United States Capitol attack	4.536	16%	29%	5%	8%	12%	6%
5 The 2020 U.S. Presidential Election	1.800	9%	32%	6%	10%	12%	4%
3 Divisions in U.S. Politics	743	8%	20%	1%	8%	11%	2%
13 QAnon and Deep State	3.261	16%	31%	6%	8%	17%	7%
7 Russia's War on Ukraine	2.256	16%	29%	5%	5%	16%	4%
10 Cryptocurrency and Finance	2.101	11%	17%	4%	10%	10%	3%
11 Hackers and Cybersecurity	1.831	8%	7%	1%	6%	6%	2%
12 Christian Spirituality	2.606	36%	29%	4%	10%	19%	16%
9 Trump-Branded Financial Products	1.017	18%	26%	1%	16%	32%	4%
14 Heterogenous Cluster: Fringe Narratives and Activism	7.286	16%	17%	4%	7%	10%	7%
15 Heterogenous Cluster: Political and Societal Discourse	5.888	31%	35%	11%	12%	20%	11%
8 Heterogenous cluster: German, English, Spanish messages	3.739	22%	28%	5%	7%	11%	5%
total	**52.368**	**21%**	**28%**	**5%**	**9%**	**14%**	**7%**

		Difference to average					
Cluster Title	Messages	Care	Authority	Equality	Proport.	Loyalty	Purity
1 COVID-19 Pandemic Skepticism	6.424	12%	-2%	-1%	1%	-6%	1%
2 Vaccine Skepticism and Anti-Government	4.326	2%	14%	3%	0%	2%	-1%
6 The polarized US political discourse	4.554	-8%	4%	-1%	-1%	5%	-2%
4 January 6 United States Capitol attack	4.536	-5%	1%	0%	-1%	-2%	-1%
5 The 2020 U.S. Presidential Election	1.800	-12%	4%	0%	1%	-2%	-3%
3 Divisions in U.S. Politics	743	-13%	-8%	-4%	-1%	-2%	-5%
13 QAnon and Deep State	3.261	-4%	3%	1%	0%	4%	0%
7 Russia's War on Ukraine	2.256	-4%	2%	-1%	-4%	2%	-3%
10 Cryptocurrency and Finance	2.101	-10%	-11%	-2%	1%	-4%	-3%
11 Hackers and Cybersecurity	1.831	-13%	-21%	-4%	-2%	-7%	-5%
12 Christian Spirituality	2.606	15%	1%	-1%	1%	5%	10%
9 Trump-Branded Financial Products	1.017	-2%	-2%	-4%	7%	18%	-3%
14 Heterogenous Cluster: Fringe Narratives and Activism	7.286	-4%	-11%	-2%	-1%	-4%	0%
15 Heterogenous Cluster: Political and Societal Discourse	5.888	10%	7%	6%	3%	6%	4%
8 Heterogenous cluster: German, English, Spanish messages	3.739	2%	1%	-1%	-2%	-3%	-1%
total	**52.368**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Figure 33 - The moral foundations of the semantic key clusters (206 English-language channels, 52,368 messages January 2020 – July 2022).

The message cluster we have labeled as "Covid-19 Pandemic Scepticism" disproportionately focuses on the **care moral foundation**, particularly in relation to distrust surrounding how the pandemic, its causes, and its trajectory are depicted by decision-makers, experts, and the media, as well as regarding the measures proposed for combating the pandemic. The "Vaccine Scepticism" cluster frequently addresses the **authority foundation**, reflecting a critical stance towards vaccinations that conveys mistrust in the legitimacy of authorities recommending or mandating vaccinations. Moreover, it challenges the authority of scientists advocating for vaccinations and questions the integrity of pharmaceutical companies, often accusing them of being solely profit-driven. In extreme cases, it is claimed that the Covid-19 pandemic is a fabrication used by "the elite" in their various forms ("globalists", the WHO, the WEF, Bill Gates, etc.) to pursue world domination – a notion of global deception based on the abuse of authority. The **loyalty foundation** is also prevalently found in these messages, either in terms of questioning the elites' loyalty to the "people" or as a renunciation of loyalty to these deceitful elites.

Loyalty, authority, and purity are often addressed as "**binding foundations**". Leone et al. 2019, who investigated the relationship between moral foundations and conspiracy theories (see section 3.3), associate the binding foundations with individuals who are more susceptible to conspiracy theories. Regarding loyalty and authority, our results correspond with the assumptions of Leone et al. 2019.

The next three semantic clusters, which relate to conflicts within U.S. politics (Polarization, January 6 attacks, 2020 presidential election), also frequently address the **authority** foundation. The questioning of authority and legitimacy, particularly that of the existing authorities, Democrats, and liberals, is, as we have observed, a central component of this discourse. The cluster focusing on polarized political discourse in the U.S. additionally engages with the **loyalty** foundation, which is unsurprising given that polarization is inherently tied to loyalty to one's own group and the rejection of the other. We find similar patterns for the semantic clusters which refer to QAanon and the Deep State and to the discussions about Russia's war against the Ukraine.

The spirituality cluster, on the other hand, primarily addresses the **care foundation** with its themes and messages, which makes sense as it largely involves discourses and practices aimed at the physical and mental well-being of individuals. Additionally, the **purity foundation** is frequently invoked in the sense that a physical and mental purity is sought, which is contrasted with a world perceived by many participants in the discourse as impure or threatening. Many messages emphasize the importance of maintaining purity in thoughts, intentions, and actions, aligning with the virtue of care as a moral principle. Participants encourage each other to practice love, empathy, and compassion, especially during difficult times, and to seek a deeper connection with the divine or higher self. Thereis a consensus in the messages that true change and healing begin from within and that individuals should strive for personal growth and enlightenment. The concept of ascension is frequently mentioned, suggesting that individuals are evolving towards a higher state of consciousness that is characterized by unconditional love and harmony. Several messages contain prayers, affirmations, and expressions of gratitude, highlighting the value of nurturing the soul and the heart, which aligns with the moral foundation of care. The virtue of purity is observed in discussions about overcoming negative influences and seeking spiritual liberation from the 'matrix' of societal programming.

Finally, the (somewhat confusing) "Trump-branded products cluster" contains messages which feature a variety of offers and opportunities that are frequently linked to Donald Trump's branding or political messaging. The messages cover an array of more or less trustworthy products, such as purported health supplements bearing Melania Trump's name; collectibles like Trump inauguration badges, Trump cards, and Trump Bucks; as well as investments in a so-called Trump Coin cryptocurrency. These offers often come with urgent calls to action, implying a limited time to act or hinting at insider knowledge. They sometimes also invoke celebrity endorsements or high-profile figures to bolster their legitimacy. The urgency and exclusivity suggested in the messages are designed to create a sense of immediacy and opportunity that can encourage quick decisions. These messages often appeal to the concept of loyalty, presenting the offers not merely as transactions but as ways to demonstrate allegiance to Trump and his political movement. This framing aligns making a purchase or investment with an act of support or patriotism.

This concludes the summary of the most important preliminary results regarding the prevalence of moral foundations in the English-language Telegram messages. Even though these messages largely originate from the USA and thus reflect the discourses prevalent there, we hope to be able to apply many of our findings and insights to the European (and German-speaking) context when we conduct corresponding analyses – in terms of the topics, the way

these topics are negotiated, as well as the connection with the moral values and violations that are addressed in the messages.

6.3. Key Figures and Structure of the Telegram Channel Network

Telegram messages naturally comprise more than just text; they also include images, memes, videos, and links. These links lead in part to other Telegram channels (which we term "internal links") and to platforms outside of Telegram ("external links" such as video sharing, social media, news platforms, and websites related to bloggers, etc.). The investigation of external links will aid in identifying platforms and domains located in the neighbourhood of "fringe" channels that potentially engage a broader, less radicalized user base and could thus be regarded as potential entry points for interventions. We reserve this aspect of our analysis for further evaluation and for the final report. In what follows, we will turn our attention to the internal links between Telegram channels, explore the network they create, and identify key channels, communities, and links, as well as assess if and to what extent the German- and English-speaking Telegram channels are interconnected.

To arrive at a comprehensive yet manageable visualisable dataset, several steps of data cleaning and data reduction were necessary for both the German and English Telegram messages. The German dataset, encompassing a staggering 11,850,140 messages in total, was filtered to focus on 2022's messages, numbering 3,058,482. From these, 3,365,537 links (both internal and external) were extracted from 3,498 unique channels. Further refinement was applied by selecting channels based on subscriber count and a higher-than-average semantic similarity to conspiracy propositions, resulting in 308 channels and 519,004 links to other internal and external platforms. From these, we extracted 172,437 links (including duplicates) to Telegram channels (and excluded all other platforms), ultimately forming a network that, after data cleaning, removing duplicates and aggregating multiple links, comprised 4,299 unique channels interconnected by 16,481 links. This is a weighted graph, meaning if there are multiple links between the same channels (which is often the case), this is represented by the corresponding line weigh.

Similarly, the English dataset, initially containing 16,816,121 messages, was narrowed down to 5,781,389 messages from 2022. After applying the same selection criteria based on subscribers and semantic similarity, a refined subset of 206 channels with 829,260 internal and external links was established. Again, from these data only the links among Telegram channels were taken (and external platforms removed). This subset further led to a network of 2,308 unique Telegram channels, connected by 7,847 links as a weighted graph as well.

The final stage involved amalgamating these two datasets into a singular Telegram channel network. Post data cleaning, which included the elimination of duplicates and loops (links within channels), the network featured 5,602 unique channels connected by 131,179 links. A subsequent process of aggregating multiple links between the same channels resulted in 23,527 weighted links. These exhibited an average value of 6.6, with a range spanning from a minimum of 1 to a maximum of 10,342.

To manage the network's size for effective visual representation, we removed all connections with a line value below a certain threshold which was set to 3. This means only links between two Telegram channels that occurred at least three times in 2022 were retained. From this refined data, the largest connected network component was extracted. This component is characterized by direct or indirect accessibility between each pair of nodes. It consists of 1,985 channels and 6,739 weighted connections, offering a clearer overview of the network's structure and composition.

In summary, we have constructed the one-step environment network of links to other Telegram channels based on 2022 messages from selected publicly accessible German and English Telegram groups. These new groups include ones already in the initial sample and additional ones. Figure 34 displays the network's core as a network graph. The nodes represent channels, their size corresponds to the number of subscribers as of July 2022. German-speaking channels are shown in blue (809 out of 1985, or 40.8%), English-speaking in green (619, 31.2%), and other channels, for which preliminary metadata is not yet available, in gray (557, 28.1%). To better visualize sub-communities, the line thickness represents the number of so-called 3-rings. That is, a line between two channels A and B is thicker the more additional channels (C, D, E, etc.) are connected with both A and B (akin to "number of mutual acquaintances" in personal networks).

It is evident that the German (left side in Figure 34) and English channels (right side) form densely interconnected subnetworks, which are also strongly interconnected with each other. The German-language channels differ less in terms of subscriber numbers, while some English-language channels (especially those of Donald Trump and his relatives) have very high user numbers. The core of the German-speaking network consists of a multitude of densely interconnected channels, showing how various, more or less different, milieus of active users have merged: Firstly, conservative to right-wing journalists, lawyers, authors, bloggers, influencers, and musicians (those with the most subscribers include people like Boris Reitschuster, Eva Hermann, Oliver Janich, Michael Wendler, Beate Bahner, and Xavier Naidoo). These individuals will not be described in detail here[31]; they are more or less known from the media in Germany, hold conservative, right-wing, and in parts far-right extremist, racist, sometimes homophobic, and almost always conspiracy-theorist positions. Many of them have expressed criticism during the Covid pandemic towards the "official narrative" of the pandemic, as well as against vaccination and measures to combat the virus, especially when they were personally affected, such as musicians who could not perform concerts during lockdowns. Some of them are very popular and thus reach a large audience with their views. Additionally, we find channels from news platforms that position themselves in opposition to what they refer to as "mainstream media" and whose names explicitly reflect their mission or content (e.g., "auf1tv", "freiemedientv", "allesaussermainstream", "faktenfriedenfreiheit"). From their perspective, they provide facts from an alternative viewpoint and present news that, in their opinion, is suppressed by established media. Finally, there is a multitude of

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[31] For further information see: https://reitschuster.de, https://de.wikipedia.org/wiki/Eva_Herman, https://de.wikipedia.org/wiki/Oliver_Janich, https://de.wikipedia.org/wiki/Michael_Wendler_(S%C3%A4nger), https://de.wikipedia.org/wiki/Beate_Bahner, https://de.wikipedia.org/wiki/Xavier_Naidoo; all last accessed 2024/01/24.

smaller platforms and channels, which are not as easily categorized by their affiliation, but all of which disseminate news, comments, videos, pictures, memes, and links on the very topics that we have described above in connection with the semantic key clusters. Overall, the picture that emerges is one of a very large number of highly active platforms with similar content that constantly refer to each other, within which, however, at least in terms of reach, none truly dominates (the channel with the highest number of subscribers within the German-language network core was reitschuster.de with about 235,000 in January 2024). This means that the network density is high, but the concentration in terms of user numbers and reach is relatively low.

The truly new-right, far-right extremist, or neo-Nazi channels are not found, or not primarily, in this German-speaking network center, but are located around it (e.g., "freiesachsen" on the very left or "martinsellnerlb" at the bottom).

On the right side at the English-language side, we see two superimposed subclusters. For the upper one (realx22report, realgenflynn, rtnews, wethemedia, pepematter), the question arises whether, given their dense and strong interconnections, they are not partly driven by bots and largely originate from Russia (with RT News it is obvious, and with "ULTRA Pepe Lives Matter 🐸" there are indications that we currently cannot verify[32]). The lower cluster, as indicated by the names of the channels, is likely to be situated in the context of Donald Trump, Qanon, and conspiracy theories in general).

It is not about characterizing the American far-right Telegram channels in detail here.[33] What is important to us is to point out the connections between the left and right sides of the network map. It emphasizes the strong connections between European (German-speaking) and U.S. Telegram groups within the context of conservative, conspiracy-related, and far-right movements. These connections are established, at least based on the data available to us from publicly accessible channels, by a number of channels, many of them associated with the QAnon movement, as indicated by their names. Figure 35 shows the so-called brokerage zone of the network, that is, the area where channels are identified as facilitating connections between the left and right halves. The channel "project_veritas" is easily recognizable due to its high subscriber count, but it is not the one with the most connections between German and English language channels. The 15 Telegram channels with the highest value in this respect are shown in red in the graphic and listed in the table that follows after the map.

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[32] https://www.oporaua.org/en/polit_ad/and-telega-is-still-there-how-telegram-channels-push-pro-russian-narratives-to-the-west-24911, last accessed 2024/01/24.

[33] See, for example: https://medium.com/dfrlab/understanding-telegrams-ecosystem-of-far-right-channels-in-the-us-22e963c09234, last accessed 2024/01/24. The Telegram channels identified as central in this mapping also appear in our analysis (.
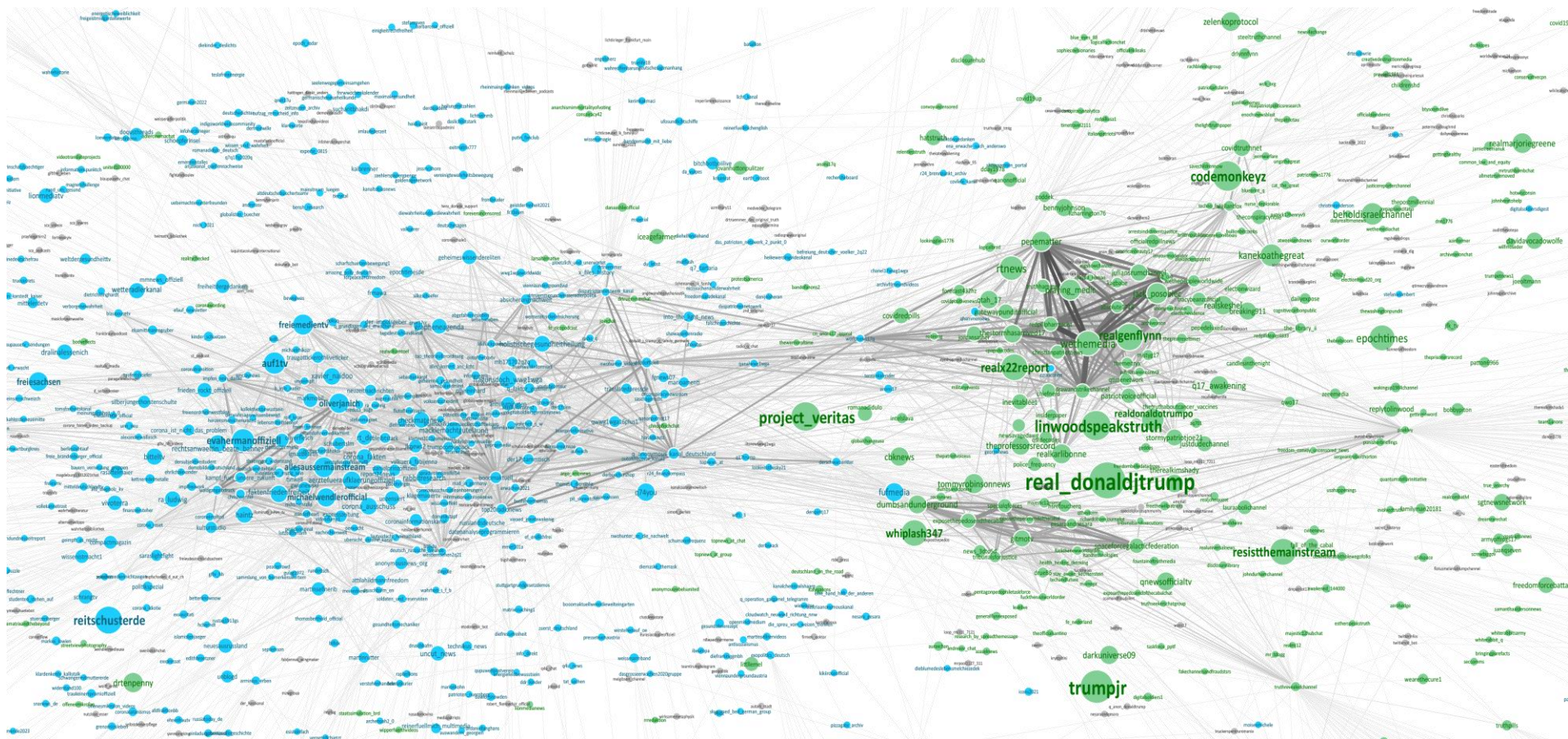
Figure 34 – Inter-channel linkage map of selected Telegram channels (detail), Jan. – July 2022 (n = 1,985). Size of channels: number of subscribers in July 2022.
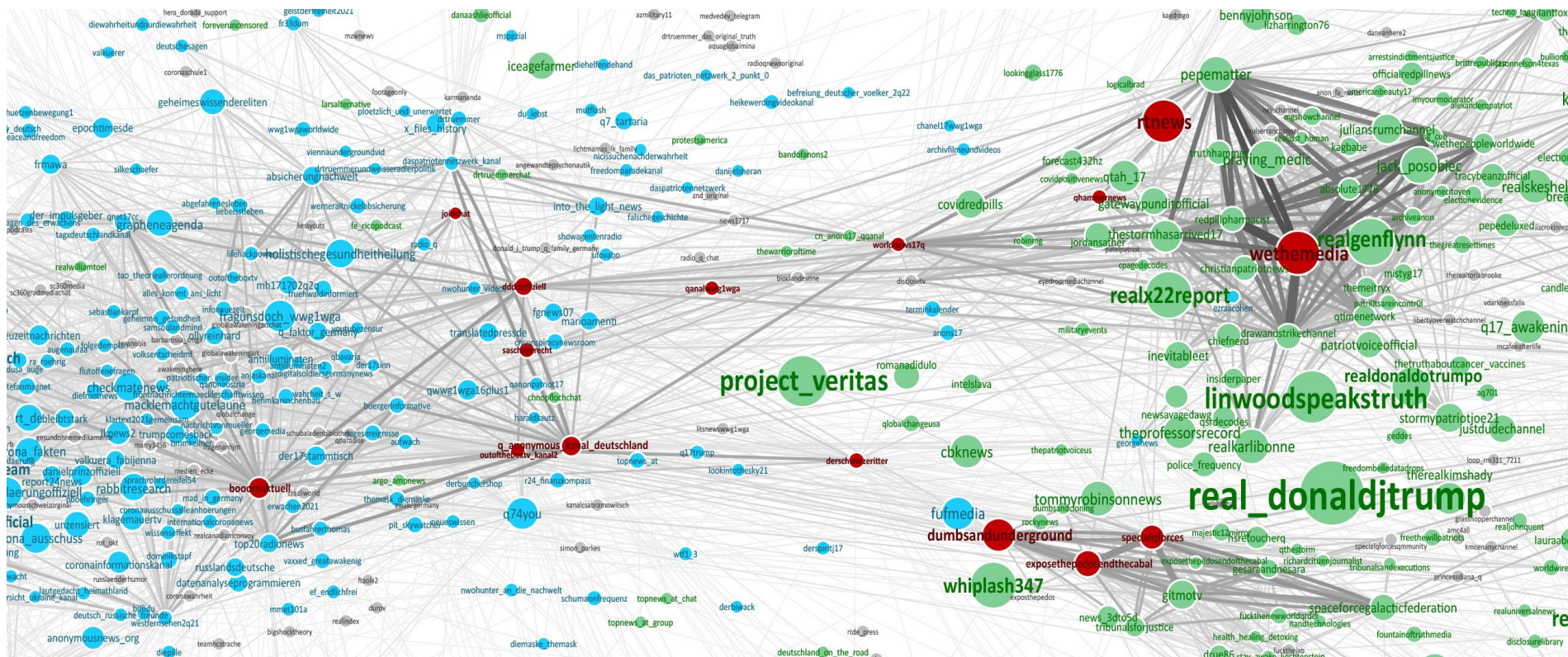
Figure 35 - Inter-channel linkage map of selected Telegram channels (detail), Jan. – July 2022 (n = 1,985) – brokerage zone between German-language (blue) and English-language channels (green). Red channels: top-15 channels with the highest number of links between German- and English-language channels. Size of channels: number of subscribers in July 2022.

Username	Description	Degree Germ.-Engl.	Subscribers
worldnews17q	🔞 17News17 🔞 ®️LQVE ♡ 🔞 ⌛Man kann einige Menschen die ganze Zeit und alle (…)	54	5.883
joinchat	N.A. (…)	52	N.A. N.A.
derschwarzeritter	B17 Freigeister 369 (…)	33	11.867
qhammernews	Hammer News (Nana Albert) Aktuelles und Hintergrundinformationen für die ne (…)	32	7.013
q_anonymous_kanal_deutschland	🔞QANONYMOUS KANAL DEUTSCHLAND🔞🌐 USA Patriots United Digitale ArmyWahrhei (…)	25	33.607
ddddoffiziell	Dirk Dietrich 🤝 NL X22 Report Übersetzung für Qlobal Change + vieles mehr. (…)	19	24.994
outoftheboxtv_kanal2	OutoftheBoxTV_DerIrrsinnhatProgramm Wir leben in der wunderbaren Welt des S (…)	19	5.722
rtnews	RT News Freedom over censorship, truth over narrative. Question more! (…)	16	242.563
dumbsandunderground	D.U.M.B.S and Underground War (…)	14	133.064
exposethepedosendthecabal	🔞SATANS WITCH BITCH 🔞🔞🔞🔞VIP CLUB:🔞🔞ILLUMINATI - FREEMASONS BILDERBER (…)	13	76.486
wethemedia	We The Ultra Media 🦅🦅🦅 Real News: For The People By The People. NOTE: (…)	12	251.830
specialqforces	SpecialQForces SpecialQperation Catching Human and Drug Trafficker (…)	12	62.688
qanalwwg1wga	Q-Qanal Germany 🖤 ♡ ♡ Nachrichten und Fakten für das große Erwachen!(Wil (…)	11	7.112
booomaktuelll	🔞Booom Aktuell 🔞Austausch über das aktuelle Weltgeschehen… 🌐 (…)	10	44.545
saschagerecht	Sascha Gerecht (…)	10	11.075

Figure 36 – Top-15 connectors based on the number of links between German- and English language Telegram channels ("Degree Germ.-Engl."), Jan. – July 2022.

The listed brokering Telegram channels represent another collection of fringe, conservative, or right-wing political movements and communities active on the messaging platform. Many feature overt references to QAnon, indicated by the letter "Q" in some channel names. Again, the content of these channels revolves around themes of "truth-seeking", patriotism, and a desire for a return of power to the people, often framed in opposition to perceived forces of corruption or control, such as the Illuminati, Freemasons, or other secret societies. The channels often promote narratives of a "great awakening," share news and information that align with their world view and encourage a sense of unity among their followers. Phrases like "WWG1WGA" (Where We Go One, We Go All) are common and directly tied to the QAnon movement. The mix of content ranges from patriotic messages and support for figures like General Flynn to more extreme and explicit accusations against Hollywood and other institutions.

"Project Veritas" is an American far-right activist group founded in 2010 by political activist James O'Keefe. The organization is known for producing deceptively edited undercover videos to target mainstream media and progressive groups, engaging in entrapment and pushing disinformation. It has faced legal action and criticism for its methods, which include secret recordings and misrepresentation. The organization has been funded by donors including Donors Trust and the Donald J. Trump Foundation and has had controversies surrounding financial malfeasance leading to layoffs and the resignation of key figures, including O'Keefe.[34]

We conclude this section with an overall ranking of the channels in the selected network, based on reach and network analytic metrics, particularly measures of centrality.

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[34] https://en.wikipedia.org/wiki/James_O%27Keefe, last accessed 2024/01/25.

Rank	Username	Subscribers	Brokerage	Closure	Centrality	Nw. flow	Total
1	poakley	7.855	100,0	62,5	100,0	26,2	126,2
2	booomaktuelll	44.545	58,8	30,0	54,6	52,2	106,8
3	sgtnewsnetwork	111.966	0,6	2,5	1,9	100,0	101,9
4	worldnews17q	5.883	18,2	100,0	72,8	15,6	88,3
5	specialqforces	62.688	55,2	26,3	50,1	32,4	82,5
6	spaceforcegalacticfederation	80.126	99,8	15,0	70,7	7,8	78,5
7	q_anonymous_kanal_deutschland	33.607	38,1	65,0	63,5	12,1	75,5
8	q74you	125.880	42,0	8,8	31,3	42,5	73,8
9	exposethepedosendthecabal	76.486	41,4	25,0	40,9	17,7	58,5
10	ddddoffiziell	24.994	42,9	38,8	50,3	5,1	55,4
11	daspatriotennetzwerk_kanal	6.718	27,7	33,8	37,8	13,2	51,0
12	schubertslm	49.660	1,5	1,5	1,5	49,8	51,3
13	joinchat	N.A.	1,5	65,0	40,0	9,7	49,7
14	drue86	29.805	54,2	12,5	41,1	8,4	49,5
15	qnet17cc	18.320	31,1	22,5	33,0	15,7	48,6
16	sergeantroberthorton	N.A.	1,5	1,5	1,5	46,1	47,6
17	wethemedia	251.830	30,2	33,8	39,4	5,1	44,5
18	absicherungnachwelt	30.443	52,0	6,3	35,9	7,2	43,0
19	derschwarzeritter	11.867	0,8	62,5	38,9	4,1	43,0
20	frei_sein_niedersachsen	21.752	8,2	8,8	10,4	30,4	40,8
21	top20radionews	28.736	45,1	15,0	37,0	3,4	40,3
22	westfernsehen2q21	7.466	44,0	10,0	33,2	6,1	39,3
23	pepematter	159.202	24,0	27,5	31,7	7,3	39,1
24	outoftheboxtv_kanal2	5.722	1,5	48,8	30,0	7,7	37,7
25	disclosetv	N.A.	1,5	57,5	35,4	2,2	37,6
26	liebeisstleben	12.514	27,6	23,8	31,6	5,0	36,6
27	dumbsandunderground	133.064	5,9	21,3	16,7	18,0	34,7
28	antiilluminaten	66.811	13,3	7,5	12,8	20,7	33,5
29	qhammernews	7.013	1,5	48,8	30,0	2,9	32,9
30	globalawakeningart	N.A.	1,5	50,0	30,8	2,0	32,8
31	cnconspiracynewsroom	16.224	29,5	17,5	28,9	2,2	31,1
32	logicalbrad	25.563	45,9	3,8	30,5	0,3	30,9
33	rtnews	242.563	1,4	23,8	15,5	15,3	30,8
34	into_the_light_news	30.522	29,7	11,3	25,2	4,9	30,1
35	impfen_nein_danke	12.036	1,5	36,3	23,2	6,6	29,8
36	theeuropenews	15.728	19,2	17,5	22,6	5,6	28,2
37	awakeninghere	N.A.	1,5	42,5	26,2	1,6	27,7
38	lifehackpower	7.025	30,4	1,3	19,5	7,6	27,1
39	anons17	13.477	27,9	13,8	25,6	1,4	27,0
40	truthrevealedchannel	20.449	1,5	27,5	16,9	10,0	26,9
41	drawandstrikechannel	66.996	19,2	20,0	24,1	2,6	26,7
42	vigilantfox	27.974	18,5	21,3	24,4	2,2	26,7
43	meinednews	18.282	5,0	7,5	7,7	18,6	26,3
44	waldgangalbdruck	16.615	19,0	15,0	20,9	5,3	26,2
45	channel_trump	N.A.	1,5	7,5	4,6	20,6	25,2
46	blaupausetv	12.717	9,1	16,3	15,6	8,4	24,0
47	aufwach	10.656	1,5	26,3	16,2	7,8	24,0
48	schoepferinsel	35.224	25,6	1,5	15,8	7,8	23,6
49	oliverjanich	158.661	20,3	12,5	20,2	3,3	23,5
50	thestormhasarrived17	124.954	13,8	18,8	20,0	3,2	23,2

Figure 37 – Top-50 Telegram channels based on network centrality and network flow (N = 1,985, links from Jan. – July 2022).

The ranking is made up of the following key figures:

(1) **Subscribers**: Number of Subscribers in July 2022.
(2) **Brokerage**: Betweenness centrality, the amount of connecting other channels which are not directly interrelated as a measure for connecting different network areas.
(3) **Closure**: Amount of embeddedness in closed triadic relationship a measure for the amount of community membership.
(4) **Centrality**: Sum of brokerage and closure as an overall indicator for the network position. A "central" position in terms of Social Network Analysis results firstly from an actor establishing connections between distant network areas, and secondly from belonging to groups or communities.[35]
(5) **Network flow**: Aggregated number of ingoing and outgoing links as an overall indicator for network activity. Noticeably high values here can also be an indicator of bot activities.
(6) **Total**: Sum of centrality and network flow. The overall rank is determined by the network position and the extent of linking activity.

These key figures allow us to identify the relevant Telegram channels in the network and serve as the basis for further analysis steps, in particular the selection of YouTube videos whose metadata and comments we will evaluate.

7. Preliminary Findings Daily Mail

7.1. Basic statistics

Category	Articles	Comments	Average	
News	83.533	41.125.809		492,3
Tvshowbiz	71.708	7.914.902		110,4
Sport	30.973	3.309.568		106,9
Femail	18.234	4.255.745		233,4
Money	7.569	532.643		70,4
Sciencetech	5.278	748.957		141,9
Health	2.911	789.478		271,2
Debate	1.616	1.318.226		815,7
Others	2.072	95.939		46,3
Travel	1.087	70.260		64,6
Total	**224.981**	**60.161.527**		**267,4**

Figure 38 – Key figures of the Daily Mail dataset 2021.

We start with the key figures of the dataset. Figure 38 displays the Daily Mail categories according to the number of articles (of the year 2021), the number of comments, and the average number of comments per article. As can be seen, the categories with the most comments on

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[35] Burt, 2007.

average are debate, news, health, femail, and sciencetech. The topics in these categories obviously generate the most intense discussions.

The average number of words per comment (within a 2.5% random sample with n = 1,044,929 comments) is 20.7 with a variation between 16.1 in TVShowbiz and values around 28 in Debate and Money, and with Health, News, and Sports in the middle.
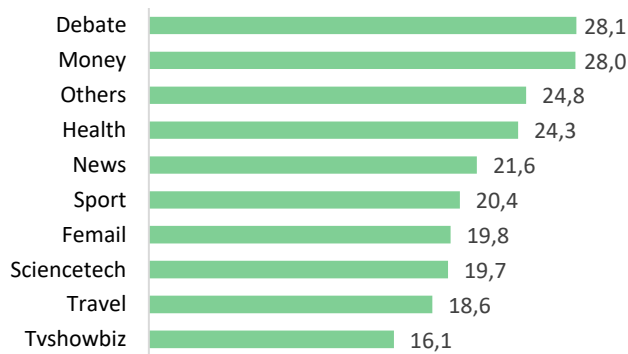
Figure 39 – Average length of comments on Daily Mail articles 2021 (random 2,5% sample, n = 1,044,929).

To contextualize these values, we calculated the average word count for a similarly sized sample of messages from English-speaking Telegram channels in 2021, which stands at 35.9, significantly higher than the corresponding value for Daily Mail comments. This aligns with the fact that Telegram messages tend to disseminate messages or provide descriptions or comments on images, memes, or videos. In contrast, Daily Mail comments, except in the Debate section focused on discussions, are typically shorter as they directly respond to news or articles.

7.2. Key Topics of the Comments 2021

To get a first overview over the numerous topics that can be expected from a dataset like this, we implemented a text summarization process with the help of a natural language processing tool using the OpenAI API. Specifically, we input 1,000 random user comments from the Daily Mail dataset of 2021 into the system. This procedure was repeated 10 times and applied to 10 different random samples of comments. Based on the results, the main aspects of the content of the Daily Mail contents can be described as follows:

1. Criticism of Government Policies: There is widespread distrust and criticism of government actions, particularly regarding COVID-19 measures, lockdowns, and vaccination programs. Comments often suggest that these measures are excessive or mismanaged.

2. Anti-Immigration Sentiment Prevalent: A strong anti-immigration sentiment pervades, with particular focus on the UK's handling of illegal immigrants and border control. Commenters frequently express frustration over perceived leniency and lack of effective policy.

3. Climate Change Policy Scepticism: Environmental policies and actions to combat climate change are hotly debated topics. Many comments question the efficacy of government actions and raise concerns about their impact on daily life.

4. Royal Family Controversies: The Royal Family, especially figures like Prince Harry and Meghan Markle, draw considerable attention, often in a negative context. Public opinion appears divided, with many expressing dissatisfactions with their actions and public statements.

5. Brexit Frustrations Linger: Brexit remains a contentious issue, with comments reflecting ongoing frustration about its negotiation, implementation, and perceived negative consequences.

6. Distrust in Media, Health Officials and Scientists: There is notable scepticism towards what is regarded as "mainstream media", public health officials and scientific experts, with accusations that the public is being misled or manipulated regarding health information, especially related to COVID-19.

7. Yearning for Traditional Values: Many comments express a desire to return to or preserve what they regard as traditional values, criticizing modern societal changes and movements (e.g., the push for "political correctness" and "censorship" of conservative viewpoints, LGBTQ+ rights and multiple gender identities, the #MeToo movement, progressive education reforms including sex education that is perceived as too extensive, the "wokeness" culture, the climate protection movement, advocacy for increased immigration, calls for stricter gun control, etc.) for undermining these values.

8. Concerns Over Free Speech and Censorship: The issue of freedom of speech and censorship, especially in relation to social media and mainstream media, is a significant concern. Many feel that conservative voices are particularly targeted.

9. National Identity and Sovereignty: Discussions frequently touch on the UK's national identity and sovereignty, especially in relation to past EU membership and ongoing global politics, indicating a strong sense of national pride.

10. Crime and Policing Discourse: Crime prevention and policing are common subjects, with many commenters debating the effectiveness of law enforcement policies and expressing concern over rising crime rates.

11. Economic Impact of Policies: The economic consequences of government policies, particularly those related to COVID-19, are a major worry. Comments often highlight concerns regarding taxes, unemployment, and general economic downturn.

12. Mental Health Issues Dismissed: Mental health discussions often reveal a dismissal or belittlement of these issues, with the sentiment that they are overemphasized by media and society.

13. Celebrity Culture Critiqued: Celebrity lifestyles and their influence on societal issues are often viewed negatively, with many commenters sceptical of celebrities' authenticity and their engagement in social and political causes.

14. Distrust and Discontent with Politicians: There's a clear distrust of politicians across the political spectrum, with a call for increased accountability, integrity, and transparency in politics.

15. Calls for Traditionalism and Governance Reform: The general sentiment in comments is one of scepticism, frustration, and dismay towards current societal, political, and environmental issues. There's a noticeable yearning for a return to traditional values and significant reform in governance and policy making.

Frustration, distrust, and fear of change are key elements in the discussions found in the Daily Mail comments. In contrast, there is an expressed desire for "truth" and "freedom," in the sense of being preserved from changes. These key elements can flexibly connect with different events, topics, and individuals. For the final analysis, we aim determine which of these issues and topics are discussed in relation to disinformation and conspiracy theories, and based on these insights, select samples of comments for subsequent analysis of sentiments and Moral Foundations, as well as examining the voting (liking) behaviour of the users including the determination of polarisation patterns. As expected for the year 2021, the topic of Covid, in connection with conspiracy beliefs, dominates the moderated Daily Mail forum, while other (conspiracy) topics fade into the background.

7.3. Sentiments of the Headlines and of the Comments

To gain an understanding of the emotions ("sentiments") expressed in the article headlines and comments, we are conducting a sentiment analysis for both. Regarding the headlines, we are considering all articles from the year 2021 (N = 224,981). For the comments analysis, we are using the same random sample of 2.5% of all downloaded comments (N = 1,044,929), for which we have already calculated the average number of words per comment.

For this purpose, we conducted a sentiment analysis using an R script using the NRC Word-Emotion Association Lexicon.[36] The reason for choosing the NRC Lexicon is that it includes more categories than the typical ones (positive, negative, neutral) found in other sentiment analysis methods. It categorizes words into ten different sentiments: anger, anticipation, disgust, fear, joy, negative, positive, sadness, surprise, and trust. Each word in the lexicon is associated with one or more of these sentiments. For example, 'hate' is associated with anger, disgust, and negativity, while 'love' is linked to positive, joy, and trust. The analysis quantifies the presence of these sentiments in text by counting the frequency of words corresponding to each category. This approach allows us to gauge the emotional tone of the headlines and comments, providing insights into the predominant sentiments they convey.

Figure 40 shows the results for the article headlines. The first table presents the absolute numbers, i.e., the count of terms associated with each sentiment per article category. The second table contains the average figures, meaning the frequency of sentiments per headline. The

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[36] See https://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm, last accessed 2024/01/26.

third table shows the deviation from the average to highlight which sentiments are more or less frequent than average in the headlines of each category.

Overall, more positive than negative words were found, and this is likely not due to a bias in the NRC lexicon, as this lexicon generally has more negative terms[37]. However, in three categories of articles - News, Debate, and Health - there are more negative than positive sentiments in the headlines. Thus, news, discussions, and health topics tend to generate more negative headlines, while themes like Travelling, Femail, TVShowbiz, and Sport are predominantly positive. The highest number of emotions (sum of positive and negative words per headline, not depicted in the table) can be found in the categories of Sport, News, and Femail.

						Number of words					
Category	Articles	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
News	83.533	64.592	32.178	89.579	59.244	60.519	43.220	34.971	80.462	125.804	111.803
TVshowbiz	71.708	23.579	13.988	28.706	28.511	53.518	61.252	25.234	57.656	50.768	102.329
Sport	30.973	20.081	7.595	20.031	18.241	27.746	19.492	12.553	36.584	39.042	59.662
Femail	18.234	7.104	5.243	9.760	9.418	14.184	15.364	6.954	17.187	18.039	31.141
Money	7.569	3.155	934	4.379	3.104	5.316	4.080	2.482	6.119	6.882	9.536
Sciencetech	5.278	2.041	1.654	3.570	2.235	3.410	2.113	1.576	3.128	5.208	7.096
Health	2.911	1.476	1.030	2.655	2.194	1.740	975	956	1.894	3.874	3.840
Debate	1.616	941	668	1.111	918	908	699	423	1.262	2.007	1.921
Travel	1.087	249	173	376	300	960	854	413	861	615	1.745
Others	2.034	593	393	749	644	997	1.181	503	1.295	1.310	2.391
Total	**224.943**	**123.811**	**63.856**	**160.916**	**124.809**	**169.298**	**149.230**	**86.065**	**206.448**	**253.549**	**331.464**

						Number of words per headline						
Category	Articles	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive	pos-neg
News	83.533	0,77	0,39	1,07	0,71	0,72	0,52	0,42	0,96	1,51	1,34	-0,17
TVshowbiz	71.708	0,33	0,20	0,40	0,40	0,75	0,85	0,35	0,80	0,71	1,43	0,72
Sport	30.973	0,65	0,25	0,65	0,59	0,90	0,63	0,41	1,18	1,26	1,93	0,67
Femail	18.234	0,39	0,29	0,54	0,52	0,78	0,84	0,38	0,94	0,99	1,71	0,72
Money	7.569	0,42	0,12	0,58	0,41	0,70	0,54	0,33	0,81	0,91	1,26	0,35
Sciencetech	5.278	0,39	0,31	0,68	0,42	0,65	0,40	0,30	0,59	0,99	1,34	0,36
Health	2.911	0,51	0,35	0,91	0,75	0,60	0,33	0,33	0,65	1,33	1,32	-0,01
Debate	1.616	0,58	0,41	0,69	0,57	0,56	0,43	0,26	0,78	1,24	1,19	-0,05
Travel	1.087	0,23	0,16	0,35	0,28	0,88	0,79	0,38	0,79	0,57	1,61	1,04
Others	2.034	0,29	0,19	0,37	0,32	0,49	0,58	0,25	0,64	0,64	1,18	0,53
Average	**224.943**	**0,55**	**0,28**	**0,72**	**0,55**	**0,75**	**0,66**	**0,38**	**0,92**	**1,13**	**1,47**	**0,35**

						Difference to average					
Category	Articles	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
News	83.533	0,22	0,10	0,36	0,15	-0,03	-0,15	0,04	0,05	0,38	-0,14
TVshowbiz	71.708	-0,22	-0,09	-0,32	-0,16	-0,01	0,19	-0,03	-0,11	-0,42	-0,05
Sport	30.973	0,10	-0,04	-0,07	0,03	0,14	-0,03	0,02	0,26	0,13	0,45
Femail	18.234	-0,16	0,00	-0,18	-0,04	0,03	0,18	0,00	0,02	-0,14	0,23
Money	7.569	-0,13	-0,16	-0,14	-0,14	-0,05	-0,12	-0,05	-0,11	-0,22	-0,21
Sciencetech	5.278	-0,16	0,03	-0,04	-0,13	-0,11	-0,26	-0,08	-0,33	-0,14	-0,13
Health	2.911	-0,04	0,07	0,20	0,20	-0,15	-0,33	-0,05	-0,27	0,20	-0,15
Debate	1.616	0,03	0,13	-0,03	0,01	-0,19	-0,23	-0,12	-0,14	0,11	-0,28
Travel	1.087	-0,32	-0,12	-0,37	-0,28	0,13	0,12	0,00	-0,13	-0,56	0,13
Others	2.034	-0,26	-0,09	-0,35	-0,24	-0,26	-0,08	-0,14	-0,28	-0,48	-0,30
Difference	**224.943**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

Figure 40 – NRC Sentiment Analysis of Daily Mail article headlines 2021 (N = 224,943).

Now let's look at the emotions in detail. The emotions with the greatest relative frequency are trust, anticipation, and fear, while the rarest are disgust, surprise, and anger (see the "average" row in the second table). Interpretation at this level is difficult due to the potential for biases in the lexicon. This changes when we examine the categories of articles in terms of sentiments (third table). First, the negatives: According to the dataset from 2021, News headlines predominantly evoke fear, anger, and sadness. In terms of negative sentiments, Sport is associated with anger, Sciencetech occasionally with disgust, and health topics are disproportionately linked with fear, sadness, and disgust in the headlines. The exact quantification of the impact

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[37] Ibid.

of the Covid topic on health sentiments is not yet clear, but an influence is assumed. In the debate category, headlines are also disproportionately associated with disgust. Regarding positive terms in headlines, TVshowbiz and Femail are frequently associated with joy, Sport with trust and anticipation, and Travel with anticipation and joy.

Let's compare this with the sentiments of a sample of user comments on Daily Mail articles:

Number of words

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
News	655.568	269.855	204.646	336.451	285.502	326.287	240.446	177.125	402.025	606.911	618.409
TVshowbiz	172.726	43.711	45.337	48.830	53.252	73.159	72.463	38.563	78.303	103.931	133.302
Sport	70.177	23.716	17.105	24.005	24.529	39.367	29.327	19.646	43.358	52.160	68.493
Femail	76.242	23.604	21.030	24.330	28.183	36.816	35.860	18.829	43.537	54.945	72.840
Money	11.201	4.281	2.640	4.965	4.768	7.876	5.914	3.713	8.771	10.441	14.171
Sciencetech	15.890	4.210	3.797	5.964	5.015	6.754	5.215	3.299	7.643	11.055	13.143
Health	16.254	6.271	5.507	9.914	8.120	7.949	4.966	4.202	9.362	17.009	15.464
Debate	23.371	11.874	8.883	13.855	12.829	14.392	10.702	6.952	18.515	27.265	29.327
Travel	1.538	326	290	438	415	660	680	357	709	865	1.370
Others	1.962	680	576	849	907	1.168	1.020	587	1.350	1.714	2.265
Total	**1.044.929**	**388.528**	**309.811**	**469.601**	**423.520**	**514.428**	**406.593**	**273.273**	**613.573**	**886.296**	**968.784**

Number of words per headline

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive	pos-neg
News	655.568	0,41	0,31	0,51	0,44	0,50	0,37	0,27	0,61	0,93	0,94	0,02
TVshowbiz	172.726	0,25	0,26	0,28	0,31	0,42	0,42	0,22	0,45	0,60	0,77	0,17
Sport	70.177	0,34	0,24	0,34	0,35	0,56	0,42	0,28	0,62	0,74	0,98	0,23
Femail	76.242	0,31	0,28	0,32	0,37	0,48	0,47	0,25	0,57	0,72	0,96	0,23
Money	11.201	0,38	0,24	0,44	0,43	0,70	0,53	0,33	0,78	0,93	1,27	0,33
Sciencetech	15.890	0,26	0,24	0,38	0,32	0,43	0,33	0,21	0,48	0,70	0,83	0,13
Health	16.254	0,39	0,34	0,61	0,50	0,49	0,31	0,26	0,58	1,05	0,95	-0,10
Debate	23.371	0,51	0,38	0,59	0,55	0,62	0,46	0,30	0,79	1,17	1,25	0,09
Travel	1.538	0,21	0,19	0,28	0,27	0,43	0,44	0,23	0,46	0,56	0,89	0,33
Others	1.962	0,35	0,29	0,43	0,46	0,60	0,52	0,30	0,69	0,87	1,15	0,28
Average	**1.044.929**	**0,37**	**0,30**	**0,45**	**0,41**	**0,49**	**0,39**	**0,26**	**0,59**	**0,85**	**0,93**	**0,08**

Difference to average

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
News	655.568	0,04	0,02	0,06	0,03	0,01	-0,02	0,01	0,03	0,08	0,02
TVshowbiz	172.726	-0,12	-0,03	-0,17	-0,10	-0,07	0,03	-0,04	-0,13	-0,25	-0,16
Sport	70.177	-0,03	-0,05	-0,11	-0,06	0,07	0,03	0,02	0,03	-0,10	0,05
Femail	76.242	-0,06	-0,02	-0,13	-0,04	-0,01	0,08	-0,01	-0,02	-0,13	0,03
Money	11.201	0,01	-0,06	-0,01	0,02	0,21	0,14	0,07	0,20	0,08	0,34
Sciencetech	15.890	-0,11	-0,06	-0,07	-0,09	-0,07	-0,06	-0,05	-0,11	-0,15	-0,10
Health	16.254	0,01	0,04	0,16	0,09	0,00	-0,08	0,00	-0,01	0,20	0,02
Debate	23.371	0,14	0,08	0,14	0,14	0,12	0,07	0,04	0,21	0,32	0,33
Travel	1.538	-0,16	-0,11	-0,16	-0,14	-0,06	0,05	-0,03	-0,13	-0,29	-0,04
Others	1.962	-0,03	0,00	-0,02	0,06	0,10	0,13	0,04	0,10	0,03	0,23
Difference	**1.044.929**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

Figure 41 - NRC Sentiment Analysis of user comments on Daily Mail articles 2021 (2.5% random sample, N = 1,004,929).

This table presents the sentiments of the comments in the same manner as Figure 40. It is important to note that these are not the same samples (see below). We observe that, with some exceptions regarding categories, there is a similar emotional pattern in the comments as in the headlines (the Pearson Correlation between the two tables of average values is 0.73, indicating a fairly strong relationship). In the comments as well, negative emotions are more prevalent in news, and especially in the debate and health categories. Comments on news frequently express fear, sadness, and anger, those on health topics mainly fear, sadness, and disgust, and in comments on debates, all four negative emotions appear more frequently than average. However, comments on debates also have a higher-than-average occurrence of positive emotions; they, along with economic ("money") and health topics, elicit the most (positive and negative) emotions overall.

7.4. Covid-19 related Comments

Based on whether the Daily Mail articles contain the word elements (covid, lockdown, vaccine, mask, pandemic) in the headlines, 26,990 or 12% of the 224,981 articles are related to Covid-19. On average, each Covid-related article receives 488.1 user comments, while the corresponding number for other articles is 237.3 – this too is an indication of the intense discussions sparked by the Covid pandemic and the measures to manage it.

The sentiments expressed in comments on Covid-related articles are significantly different from those on articles about other topics:

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
Not Covid-related	835.704	308.056	244.474	354.537	330.523	410.872	337.523	221.317	489.080	681.852	768.598
Covid-related	209.225	80.472	65.337	115.064	92.997	103.556	69.070	51.956	124.493	204.444	200.186
Total	**1.044.929**	**388.528**	**309.811**	**469.601**	**423.520**	**514.428**	**406.593**	**273.273**	**613.573**	**886.296**	**968.784**

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive	pos-neg
Not Covid-related	835.704	0,37	0,29	0,42	0,40	0,49	0,40	0,26	0,59	0,82	0,92	0,10
Covid-related	209.225	0,38	0,31	0,55	0,44	0,49	0,33	0,25	0,60	0,98	0,96	-0,02
Total	**1.044.929**	**0,37**	**0,30**	**0,45**	**0,41**	**0,49**	**0,39**	**0,26**	**0,59**	**0,85**	**0,93**	

Category	Comments	anger	disgust	fear	sadness	anticipation	joy	surprise	trust	negative	positive
Not Covid-related	835.704	0,00	0,00	-0,03	-0,01	0,00	0,01	0,00	0,00	-0,03	-0,01
Covid-related	209.225	0,01	0,02	0,10	0,04	0,00	-0,06	-0,01	0,01	0,13	0,03
Total	**1.044.929**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**

Figure 42 - NRC Sentiment Analysis of user comments on Covid-related and not Covid-related Daily Mail articles 2021 (2.5% random sample, N = 1,004,929).

It is evident that comments related to Covid, compared to others, are disproportionately often associated with negative sentiments, particularly fear, sadness, and disgust. These are the primary emotions expressed here, and understanding them is essential for developing measures aimed at countering distrust.

8. Preliminary Findings YouTube

The following aims to demonstrate how we describe and select YouTube videos and channels referenced in Telegram messages for further analysis, based on their significance within the Telegram   network.

Figure 43 – Network of German-language Telegram channels and YouTube links (detail), Jan. – July 2022.

Figure 43 illustrates a detail of the network of German-speaking Telegram channels (blue network nodes) and YouTube channels or videos (grey nodes, unlabeled for clarity), to which they refer at least three times between January and July 2022. Using network analytic metrics, YouTube links of particular relevance to the network's cohesion can be identified. In this case, betweenness centrality is suitable for detecting important YouTube link with respect to connectedness. Betweenness centrality is a measure used in network analysis to quantify the importance of a node within a network. It calculates the number of times a node acts as a bridge along the shortest path between two other nodes. A higher betweenness centrality score indicates that a node has a significant role in facilitating connection within the network, as it lies on many shortest paths between other nodes. The following table displays the top 25 in-between YouTube links to both channels and links within the German-speaking Telegram/YouTube network including a short description.

The list contains YouTube links that are significantly integrated within the network of Telegram channels known to propagate disinformation and conspiracy beliefs and highlights a variety of channels and videos, predominantly emphasizing alternative news and media. The content spans across several closely related themes, including:

- **Conspiracy Content**: Channels like Antiilluminaten TV offer material that aligns with conspiracy theories, indicating a significant focus on questioning mainstream narratives and promoting "alternative" viewpoints.
- **Alternative Media**: Entities such as Mutigmacher e.V. and Haintz Media are examples of platforms that present news and perspectives outside of traditional media outlets, catering to audiences seeking divergent viewpoints.

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- **Esoteric and Spiritual Topics**: Playlists and channels like Glücksfrequenz and Cosmow-ellness delve into esoteric and spiritual content, suggesting a blend of interest in mysticism and alternative spiritual practices among the audience.

- **Health and Alternative Medicine**: The emphasis on health-related content, particularly through alternative medicine approaches as seen in the video about organic germanium, reflects a significant interest in non-mainstream health practices. This includes discussions on nutrition, natural remedies, and scepticism towards conventional medicine.

- **Survival and Preparedness**: Although not explicitly detailed in the top entries, the underlying themes suggest a potential interest in survivalism and preparedness topics, which often accompany discussions on alternative media and conspiracy theories.

Rank	YouTube link	Betweenn	Category	Name	Description	Subscriber	Views
1	https://youtube.com/c	100,0	Channel	Antiilluminaten TV	Channel with conspiracy content	53.100	
2	https://www.youtube.c	54,0	Channel	Mutigmacher e.V.	Alternative media	10.300	
3	https://youtube.com/c	53,3	Channel	Freie Niedersachsen	Channel of right-wing movement	738	
4	https://www.youtube.c	41,2	Video	"It's Time That You Resign!" Every Rand Paul vs. Dr. Fauci Confrontation From 2021	Video on R. Paul (politician)/A. Fauci (US chief med. advisor)		1.100.000
5	https://www.youtube.c	39,2	Channel	Cosmowellness	Esoteric content	6.490	
6	https://youtube.com/p	38,6	Playlist	Glücksfrequenz	Esoteric content	1.570	
7	https://www.youtube.c	29,2	Channel	Haintz Media	Alternative media	29.400	
7	https://www.youtube.c	29,2	Channel	We the People - Wir sind der Souverän Kanal 2	Alternative media	1.030	
9	https://www.youtube.c	21,8	Video	organisches Germanium gegen KREBS und VIREN	Alternative medicine		357.774
10	https://www.youtube.c	21,3	Channel	TangsWorld	Channel of Musician BM Tang	3.790	
11	https://www.youtube.c	19,5	Video	This video has been removed because it violates YouTube's community guidelines.	N.A.		
12	https://www.youtube.c	18,9	Channel	SC-360* Media	Alternative media	16.800	
13	https://www.youtube.c	15,5	Channel	Mittelerde TV	Alternative medicine	9.180	
14	https://www.youtube.c	14,5	Channel	Augen Auf Medien Analyse	Alternative media	1.200	
15	https://youtu.be/Nh9V	13,7	Video	LIVE | Konferenzschaltung aus 6 Städten	Video on Covid-related demonstrations in Germany 2022	3.630	
16	https://www.youtube.c	11,7	Channel	Welt der Gesundheit	Alternative medicine	28.200	
17	https://www.youtube.c	11,6	Video	Die schockierende Wahrheit! Ernährungsfallen der Lebensmittelindustrie - so schlecht ist unser Essen	Video on food industry	23.081	
18	https://www.youtube.c	11,6	Channel	BugOutSurvival NRS	Prepper channel	52.700	
19	https://youtu.be/kgTue	10,3	Video	This video is no longer available because the YouTube account associated with this video has been terminated.	N.A.		
20	https://youtu.be/mjvFh	10,2	Video	Frankie Goes To Hollywood - The Power Of Love (Extended Version)	Esoteric content		505.000
21	https://www.youtube.c	10,1	Video	Chlorophyll entgiftet, behebt Eisenmangel, macht ein gesundes Blut...	Alternative medicine		32.000
22	https://youtu.be/ATEq	9,9	Video	ABSTURZ! Biontech-Chef BRICHT ZUSAMMEN!	Video critical of vaccination		322.000
23	https://www.youtube.c	9,6	Video	Die Mikrobe ist nichts, das Milieu ist alles!	Alternative medicine		196.000
24	https://www.youtube.c	9,4	Video	Psychofalle Supermarkt - Wie Edeka, Rewe & Co dir das Geld aus der Tasche ziehen	Video critical of Supermarkets		115.000
25	https://www.youtube.c	8,2	Channel	Leuchtturm ARD	Alternative medicine	3.730	

Figure 44 – Top-25 YouTube links according to betweenness centrality within the German-language Telegram network.

The top-10 links are:

1. **Antiilluminaten TV** (Channel): A channel with conspiracy content, having 53,100 subscribers.

2. **Mutigmacher e.V.** (Channel): Described as alternative media, with 10,300 subscribers.
3. Freie Niedersachsen (Channel): A channel of the right-wing movement, with 738 subscribers.
4. "**It's Time That You Resign!**" Every Rand Paul vs. Anthony Fauci Clash (Video): A video on Rand Paul (politician) and Anthony Fauci (US chief medical advisor) clashes, with 1,100,000 views.
5. **Cosmowellness** (Channel): Focuses on esoteric content, with 6,490 subscribers.
6. **Glücksfrequenz** (Playlist): This entry is a playlist, focusing on esoteric content. It has 1,570 subscribers.
7. **Haintz Media** (Channel): Described as alternative media, with 29,400 subscribers. It shares the same rank and betweenness score with the next entry, suggesting a tie in their centrality measure.
8. **We the People - Wir sind der Souverän Kanal 2** (Channel): Also categorized as alternative media, with 1,030 subscribers. This channel shares its rank and betweenness score with Haintz Media, indicating they have a similar level of influence within the network.
9. **organisches Germanium gegen KREBS** und VIREN (Video): A video focusing on alternative medicine, specifically the use of organic germanium against cancer and viruses, with 357,774 views.
10. **TangsWorld** (Channel): A channel by the musician BM Tang, which seems to include a variety of content, with 3,790 subscribers.

With the help of such information and taking into account metadata (subscribers, views, likes, etc.), we will select YouTube links and videos for both German and English Telegram messages, whose comments we will subsequently analyse semantically (above all, sentiments and moral foundations).

9. Conclusion

Through an extensive literature review, we developed a theoretical framework to better understand the reasons and motivations behind the dissemination of harmful content and a predisposition towards conspiracy theories. This framework is designed to contextualize these behaviours within broader or more limited processes of radicalization.

Our research involved collecting and analysing data from three distinct platforms: the Daily Mail forum, Telegram messenger, and YouTube. This effort aimed to uncover the structural and semantic hallmarks of disinformation and conspiracy theories, providing a comprehensive view of the landscape.

We employed a range of analytical techniques to process our data. This included network analysis to identify key actors and map key connections, word embeddings to capture a comprehensive content overview over a huge amount of data, and various natural language processing (NLP) techniques for extracting key topics and their interrelations as well as the sentiments and emotions expressed in the context of these topics.

A key part of our methodology was the development of an approach to operationalise and identify the moral foundations referenced in discussions around different conspiracy theory topics. This allowed us to quantify the moral dimensions that underpin these narratives.

- Our analysis of the Telegram channels and messages revealed a pronounced spike in disinformation and conspiracy theory-related activities during 2020 and 2021, concurring with the Covid-19 pandemic. The semantic key clusters analysis identified several recurring themes, including government policy critiques, anti-immigration rhetoric, climate change skepticism, and notably, a neighborhood of conspiracy topics with issues related to health, spirituality, economic concerns, and societal changes. These discussions frequently intertwined conspiracy theories not just with health critiques (most notably surrounding Covid-19 responses) but also with discussions on spirituality, evoking a complex interplay of mistrust, alternative belief systems, and societal critiques. This narrative complexity showcases how conspiracy theories often dovetail with broader topics to create rich, multi-themed dialogues that resonate on multiple levels with their audiences. The channels examined exhibit a profound distrust of decision-makers across various spheres, including politics, science and expertise, along with a widespread scepticism towards traditional, so-called "mainstream media".
- Analysis of the Daily Mail comments section illuminated distinct sentiment patterns between comments on Covid-19 related articles and those concerning other subjects. Covid-related discussions were overwhelmingly imbued with negative sentiments, particularly fear, sadness, and disgust, pinpointing the pandemic's role as a significant nexus for distrust-laden and anxiety-driven discourse.
- Further exploration into YouTube content referenced by Telegram channels underscored the key role these links play in circulating conspiracy theories and disinformation across platforms. The content spanned a variety of focal points, from alternative news, esotericism, and alternative health practices to survivalism, highlighting a

sprawling network of disinformation and conspiracy narratives bridging the digital eco-system.

- The sentiment analysis revealed a prevalence of negative emotions across discussions related to controversial topics, notably Covid-19 and political unrest. This dominance of negative sentiments underscores the emotional charge that fuels the spread of dis-information and conspiracy theories, signifying the importance of understanding emo-tional responses in combating these narratives.

- The moral foundations analysis painted a picture of content deeply aligned with moral values of loyalty, authority, and purity, particularly evident in right-wing and conspir-acy-laden narratives. These binding moral foundations suggest a strategic moral fram-ing of disinformation, aiming to consolidate group identity, uphold authority, and strive for ideological purity. Such framing significantly contributes to the appeal and mobili-zation of certain demographic segments, highlighting the sophisticated use of moral narratives in disinformation campaigns.

- Network analysis of Telegram channels uncovered a richly interconnected community of German and English-speaking channels. This intricate web of channels demonstrates a transnational pipeline through which conspiracy narratives and disinformation seam-lessly flow, suggesting a global scale of conspiracy theory proliferation.

The findings underscore the imperative for collaborative efforts across societal sectors to forge robust counter-narratives and foster resilience against disinformation. Next, we will finalize the analyses that remain to be done concerning the Daily Mail, Telegram, and YouTube da-tasets. Additionally, we will collect specific, smaller datasets with current discussions from these three sources to apply our analytical methods, with a specific focus on sentiment analy-sis and the identification of moral foundations. From these efforts, we will derive conclusions and formulate recommendations aimed at developing strategies to mitigate the impact of harmful content online.

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11. Appendix

11.1. German-language propositions referring to conspiracy theories

Initially, the following statements were used to identify German-language Telegram channels with affinity for conspiracy theories:

1. **Russland-Ukraine 1**: Die Ukraine ist eine künstliche Schöpfung, kein souveräner Staat. Die ukrainischen Gebiete gehören historisch zu Russland. Die Bevölkerung dieser Gebiete hat sich in einer freien politischen Willensäußerung dafür ausgesprochen, nach Russland zurückkehren zu wollen, und es ist die patriotische Pflicht Russlands, sie zu befreien und zu beschützen.

2. **Russland-Ukraine 2**: Russland befindet sich im Krieg mit dem Westen. Die Ukraine ist nur ein Strohmann der NATO und ein Kampfgebiet. Russland verteidigt sich gegen den Aggressor Ukraine.

3. **Russland-Ukraine 3**: Russland kämpft in der Ukraine gegen den westlichen Imperialismus und Neokolonialismus, um eine multipolare Weltordnung zu schaffen, in der sich die Länder nicht in die gegenseitigen inneren Angelegenheiten einmischen.

4. **Covid-19 1**: Die Pandemie ist nur ein Ablenkungsmanöver für Bill Gates' ultimativen Plan, uns allen durch den 'Impfstoff' ortbare Mikrochips zu implantieren.

5. **Covid-19 2**: Die globale Elite hat die Krise nicht nur ausgenutzt; sie hat die gesamte Pandemie geplant (Plandemie), um die Weltordnung zu ihren Gunsten zu resetten.

6. **Covid-19 3**: Die Big Pharma hat das Virus erschaffen, damit sie an dem Impfstoff profitieren kann; es ist nur eine weitere Geschäftsstrategie für sie.

7. **11. September**: Die 'offizielle Geschichte' des 11. Septembers ist ein Täuschungsmanöver. Es war ein Inside-Job, orchestriert von der US-Regierung oder globalen Eliten, möglicherweise als Vorwand für Krieg und zur Rechtfertigung der Einschränkung von Bürgerrechten. Die Zwillingstürme wurden durch eine kontrollierte Sprengung zum Einsturz gebracht, nicht nur durch die Flugzeugeinschläge und Brände, und das Pentagon wurde von einer Rakete getroffen, nicht von einem Flugzeug.

8. **Chemtrails**: Die weißen Spuren, die Flugzeuge hinterlassen, sind nicht einfach harmlose Kondensstreifen, es sind 'Chemtrails', gespickt mit Chemikalien oder biologischen Stoffen, die absichtlich versprüht werden für finstere Zwecke wie Gedankenkontrolle, Wettermanipulation oder Reduzierung der Bevölkerung.

9. **Erde eine Scheibe**: Die sogenannten 'Beweise' für eine runde Erde sind eine massive Täuschung. Die Erde ist tatsächlich flach, und diese Wahrheit wurde uns von den globalen Eliten, Raumfahrtbehörden und Regierungen verborgen, um uns zu kontrollieren.

10. **Freimaurer**: Die Freimaurer sind nicht nur eine brüderliche Organisation; sie sind eine schattenhafte globale Kabale, die weltweite Ereignisse manipuliert, Regierungen kontrolliert und esoterisches Wissen für ihre eigenen finsteren Zwecke hortet.

11. **Bilderberg**: Die Bilderberg-Gruppe ist nicht nur ein Diskussionsforum; sie ist eine geheime und elitäre globalistische Kabale, die hinter verschlossenen Türen Weltstrategien entscheidet und globale Ereignisse zu einer Neuen Weltordnung manipuliert.

12. **Holocaust**: Der sogenannte 'Holocaust' ist eine Erfindung der Juden, ein Mythos, der aus politischen und finanziellen Gründen aufrechterhalten wird, um die Gründung Israels zu rechtfertigen und Sympathie für jüdische Anliegen zu gewinnen.

13. **Reptiloide**: Die Welt wird heimlich von gestaltwandelnden reptilienartigen Außerirdischen kontrolliert, die in die menschliche Gesellschaft eingedrungen sind, Positionen der Macht in Regierung und Gesellschaft besetzen, um die Menschheit zu manipulieren und sich auf ihre letztendliche Übernahme vorzubereiten.

14. **Rothschilds**: Die Rothschild-Familie ist nicht nur eine wohlhabende Bankendynastie; sie sind Teil einer globalen Verschwörung, nutzen ihren immensen Reichtum, um weltweite Ereignisse zu manipulieren, Regierungen zu kontrollieren und eine Neue Weltordnung zu etablieren.

15. **Klimawandel**: Der Klimawandel ist ein Schwindel, eine Erfindung von Wissenschaftlern, Regierungen und liberalen Eliten, um massive wirtschaftliche Veränderungen zu rechtfertigen, Industrien zu kontrollieren und persönliche Freiheiten unter dem Deckmantel des 'Umweltschutzes' einzuschränken.

16. **Reichsbürger**: Die Bundesrepublik Deutschland ist kein legitimer Staat, sondern eine von ausländischen Mächten aufgezwungene Gesellschaft, während das echte Deutsche Reich seit 1918 rechtlich immer noch existiert und auf die Befreiung von der Besetzung wartet.

17. **QAnon**: QAnon ist ein anonymer Insider, der die verborgene Wahrheit über eine globale Kabale von Pädophilen und tiefenstaatlichen Akteuren enthüllt, einschließlich mächtiger Prominenter und Politiker, die gegen Donald Trump arbeiten und eine Neue Weltordnung etablieren wollen.

18. **Große Austausch**: Globale Eliten planen absichtlich eine Verschwörung, um die weiße europäische Bevölkerung durch nicht-europäische Einwanderer zu ersetzen, um kulturelle Identität zu zerstören und ihre eigene politische und wirtschaftliche Kontrolle zu ermöglichen.

19. **Pizzagate**: Pizzagate enthüllt die dunkle Wahrheit über ein geheimes Netzwerk mächtiger Eliten, einschließlich Hillary Clinton und anderer hochrangiger Demokraten, die unter dem Deckmantel einer Pizzeria in Washington, D.C. unsagbare Taten des Menschenhandels und der Pädophilie begehen. Sie verwenden verschlüsselte Botschaften in ihren E-Mails, um ihre bösen Machenschaften zu koordinieren und ihre verborgene Agenda vor der Entdeckung zu schützen.

20. **Impfungen**: Impfungen sind nicht nur unschuldige medizinische Maßnahmen; sie sind Teil eines groß angelegten Plans, orchestriert von Big Pharma und Regierungen, um die Bevölkerung zu kontrollieren und zu schädigen. Diese Impfstoffe sind mit gefährlichen Toxinen und Chemikalien gefüllt, die langfristige Gesundheitsschäden verursachen, während das eigentliche Ziel die Durchsetzung von Gehorsam ist und eine Entvölkerung der Welt anstrebt. Vaccines cause Autism in children.

21. **5G-Technologie**: Die 5G-Technologie ist nicht nur ein schnelleres drahtloses Netzwerk; sie ist ein hinterhältiges Kontroll- und Überwachungsinstrument, das von globalen Eliten aufgezwungen wird. Sie strahlt schädliche Strahlung aus, die verschiedene Gesundheitsprobleme, einschließlich Krebs, verursacht, während sie Massenüberwachung ermöglicht und die Etablierung einer totalitären Weltregierung vorantreibt.

22. **Illuminaten**: Die Illuminaten, ein Geheimbund mächtiger Personen, kontrollieren das Weltgeschehen, um eine neue Weltordnung zu errichten.
23. **Great Reset**: Die globalen Eliten, vor allem das Weltwirtschaftsforum (World Economic Forum, WEF) nutzen die COVID-19-Krise als Vorwand, um einen "Great Reset" durchzusetzen, der zur Abschaffung der persönlichen Freiheiten und zur Errichtung einer totalitären Weltregierung führen wird.
24. **Aliens, UFOs, Außerirdische**: Die Regierungen in aller Welt vertuschen Beweise für außerirdisches Leben und außerirdische Technologie.

11.2. English-language propositions referring to conspiracy theories

The following statements were used to identify German-language Telegram channels with affinity for conspiracy theories:

1. **Russia-Ukraine 1**: Ukraine is an artificial creation, not a sovereign state. The Ukrainian territories historically belong to Russia. The population of these areas has expressed a free political will to return to Russia, and it is Russia's patriotic duty to liberate and protect them.
2. **Russia-Ukraine 2**: Russia is at war with the West. Ukraine is just a NATO straw man and a battlefield. Russia is defending itself against the aggressor Ukraine.
3. **Russia-Ukraine 3**: Russia is fighting against Western imperialism and neo-colonialism in Ukraine to create a multipolar world order in which countries do not interfere in each other's internal affairs.
4. **Covid-19 1**: The pandemic is just a smokescreen for Bill Gates' ultimate plan to implant trackable microchips in all of us through the 'vaccine'.
5. **Covid-19 2**: The global elite didn't just take advantage of the crisis; they planned the entire pandemic to reset the world order in their favor.
6. **Covid-19 3**: Big Pharma created the virus so they could profit off the vaccine; it's just another business strategy for them.
7. **9/11 as inside job**: The 'official story' of 9/11 is a cover-up. It was an inside job, orchestrated by the US government or global elites, possibly as a pretext for war and to justify the curtailing of civil liberties. The twin towers were brought down by a controlled demolition, not just the plane impacts and fires, and the Pentagon was hit by a missile, not a plane.
8. **Chemtrails**: Those white trails left by planes aren't just harmless contrails, they're 'chemtrails', laced with chemicals or biological agents deliberately sprayed for sinister purposes like mind control, weather modification, or population reduction.
9. **Flat Earth Theory**: The so-called 'evidence' for a round Earth is a massive deception. The Earth is actually flat, and this truth has been hidden from us by the global elites, space agencies, and governments to control us.
10. **Freemasons**: The Freemasons are not just a fraternal organization; they're a shadowy global cabal manipulating world events, controlling governments, and hoarding esoteric knowledge for their own nefarious purposes.

11. **Bilderberg**: The Bilderberg Group isn't just a forum for discussion; it's a secretive and elite globalist cabal, deciding world policies behind closed doors and manipulating global events towards a New World Order.

12. **Holocaust**: The so-called 'Holocaust' is a fabrication, a myth perpetuated for political and financial gain, used to justify the creation of Israel and gain sympathy for Jewish causes.

13. **Reptilian Elite**: The world is secretly controlled by shape-shifting reptilian aliens who have infiltrated human society, occupying positions of power in government and society to manipulate humanity and prepare for their eventual takeover.

14. **Rothschilds**: The Rothschild family isn't just a wealthy banking dynasty; they're part of a global conspiracy, using their vast wealth to manipulate world events, control governments, and establish a New World Order.

15. **Climate change**: Climate change is a hoax, a fabrication by scientists, governments, and liberal elites to justify massive economic shifts, control industries, and limit personal freedoms under the guise of 'environmental protection'.

16. **Reichsbürger**: The Federal Republic of Germany isn't a legitimate state but a corporation imposed by foreign powers, with the real German Empire still legally in existence since 1918, awaiting liberation from the occupation.

17. **QAnon**: QAnon is an anonymous insider who reveals the hidden truth about a global cabal of pedophiles and deep state operatives, including powerful celebrities and politicians, who are plotting against Donald Trump and working to establish a New World Order.

18. **Great Replacement**: Global elites are deliberately plotting to replace the white European population with non-European immigrants to destroy cultural identity and enable their own political and economic control.

19. **Pizzagate**: Pizzagate reveals the dark truth about a secret network of powerful elites, including Hillary Clinton and other high-ranking Democrats, who engage in unspeakable acts of child trafficking and pedophilia under the disguise of a pizza restaurant in Washington, D.C. They use coded messages in their emails to coordinate their evil deeds and protect their hidden agenda from being exposed.

20. **Vaccines**: Vaccines are not just innocent medical interventions; they are part of a grand scheme orchestrated by Big Pharma and governments to control and harm the population. These vaccines are filled with dangerous toxins and chemicals that cause long-term health damage, while the true purpose is to enforce compliance and depopulate the world. Sie verursachen Autismus bei Kindern.

21. **5G Technology**: The 5G technology is not just a faster wireless network; it is a sinister tool of control and surveillance imposed by global elites. It emits harmful radiation that causes various health problems, including cancer, while enabling mass surveillance and the implementation of a totalitarian world government.

22. **Illuminati**: The Illuminati, a secret society of powerful individuals, is controlling world events to establish a New World Order.

23. **Great Reset**: The global elites, represented through the World Economic Forum (WEF), are using the COVID-19 crisis as a pretext to impose a 'Great Reset' that will lead to the

eradication of personal freedoms and the establishment of a totalitarian world government.

24. **Aliens and UFO cover-ups**: Governments worldwide are covering up evidence of extra-terrestrial life, UFOs, Aliens, and technology.

11.3. List of conspiracy related keywords for the German-language Telegram channels

Keywords 1	Keywords 2	Keywords 3	Keywords 4
adrenochrom	flat earth	klima	ritualmord
aliens	freiheit	klimahysterie	rockefeller
antichrist	freimaurer	klimahysteriker	rote pille
antifa	frieden	klimalüge	rothschild
armee	gedankenkontrolle	klimawandel	russland
außerirdische	geheimloge	krieg	satanismus
bevölkerung	geimpft	LGBTQIA	satanist
bevölkerungsaustausch	genozid	lobby	satanistisch
bevölkerungskontrolle	genspritze	lobbyist	schwindel
bevölkerungsreduktion	gmo	lockdown	selenskyj
biden	gentherapie	loge	seventeen qanon
big pharma	geoengineering	lügen	sixty ghz
bilderberg	george soros	magnet	soros
bill gates	germanen	mainstream medien	spirituell
biowaffe	giftspritze	make america great again	stellvertreterkrieg
black hats	global reset	marionetten	terrorist
blackout	globale elite	maske	testpflicht
blaue pille	globalisten	maskenzwang	thunberg
booster	great reset	maxwell	tote
brd gmbh	greta	melinda gates	transhuman
chemtrail	greta thunberg	michael flynn	trump
china	grippe	migranten	tyrannei
CIA	große austausch	mikrochip	ukraine
clinton	haarp	militär	unfruchtbar
corona	harari	Mondlandung	ungeimpft
corona maßnahmen	herdenimmunität	mrna	unmaskiert
covid	hoax	nato	uno
covid maßnahmen	holocaust	neue weltordnung	unzensiert
das böse	id2020	nine eleven	usa
davos	illuminaten	nord stream	vatikan
deep state	impfgegner	obama	verbrecher
demokraten	impfling	omikron	virus
deutsche	impfpass	pädophil	völkermord
deutschland	impfpflicht	patriot	wahrheit
diktatur	impfschaden	pedogate	wef
drogen	impfstoff	pentagon	weltbevölkerung
durham	impfung	pizzagate	weltelite
elite	impfzwang	plandemie	weltkrieg
elon musk	implantat	polizei	weltwirtschaftsforum
elvis	inside job	prophezeiung	white hats
entvölkerung	ivermectin	putin	who
epstein	juden	q space	world economic forum
erwachen	jüdisch	qanon	wtc
fake news	kabale	querdenk	wwg1wga
false flag	kannibalismus	reptil	zensiert
fauci	kinder	reptiloid	zwangsimpfung
FBI	kinderopfer	republikaner	zwangsspritze
five g	kindersex	rfid	

11.4. List of conspiracy related keywords for the English-language Telegram channels

Keyword 1	Keyword 2	Keyword 3	Keyword 4
adrenochrome	epstein	magnetic	russia
aliens	extraterrestrials	mandatory	satanic
anti fertility	fake news	mask	satanism
anti vax	false flag	maxwell	satanist
antichrist	fauci	measures	sealed indictments
antifa	fbi	melinda gates	seventeen anon
army	filmyourhospital	michael flynn	sex cult
awakening	five g	microchip	sheeple
biden	flat earth	migrants	sixty ghz
big pharma	flu	military	soros
bilderberg	flynn	mind control	spiritual
bill gates	forced vaccination	mms	ten days
bioweapon	fraud	mole children	terrorist
black hats	freedom	moon landing	teutons
blackout	freemasons	mrna	the evil
blue pill	gene therapy	msm	the plan
booster	genetically modified organism	musk	the storm
cabal	genocide	nato	thunberg
cannibalism	geoengineering	new world order	transhuman
censored	george soros	nine eleven	trump
chemtrail	german	north stream	trust the plan
child abuse	germany	obama	truth
child victims	gift	omicron	tunnel children
children	global elite	patriot	tyranny
china	global reset	peace	ukraine
cia	globalist	pedogate	uncensored
climate	great replacement	pedophil	unmasked
climate change	great reset	pentagon	uno
clinton	greta	pizzagate	unvaccinated
compulsory	greta thunberg	plandemic	usa
contrarians	haarp	police	vaccinated
corona	harari	population	vaccination
covid	herd immunity	population control	vaccine
covid 19	hoax	population reduction	vaccine injury
criminal	holocaust	prophecy	vaccine passports
davos	id 2020	proxy war	vatican
deaths	illuminati	puppets	virus
deep state	impersonates	putin	wake up
democrates	implant	q space	war
depopulation	inside job	qanon	white hats
dictatorship	ivermectin	quantum	who
dissenters	jewish	red pill	world economic forum
drugs	jews	reptiloid	world elite
durham	kids	republican	world health organization
elite	lgbtiq	rfid	world population
elon	lies	ritual abuse	world war
elon musk	lobby	ritual killing	wwg1wga
elvis	lockdown	ritual murder	zelenskyy
empty bed	lodge	rockefeller	
empty hospital	maga	rothschild	