

RESEARCH ARTICLE

“How dare you?”—The normative challenge posed by Fridays for Future

Viktoria Spaiser ^{*}, Nicole Nisbett, Cristina G. Stefan

University of Leeds, Leeds, United Kingdom

^{*} v.spaiser@leeds.ac.uk

Abstract

Meeting the Paris Agreement will require unprecedented social change that goes hand in hand with technological and economic innovations. Research suggests that normative change, the change in what is perceived as normal or morally acceptable, can drive wider large-scale social change, i.e., change in legislation, policy, and behaviour. Normative change often starts with a normative challenge, i.e., practices considered normal, come to be seen as morally repugnant. In this paper we explore the normative challenge posed by Fridays for Future, analysing computationally a large data set of tweets in the context of this protest movement to understand the normative framework that challenges business as usual. We show that Friday for Future's normative framework makes the shared, unjust casualty experience of young people because of the unmitigated climate crisis accessible to the public. The victims are now in spatial, temporal, and social proximity, they are our children and grandchildren, and this makes the normative challenge of the status quo (continuation of fossil-fuel based economy) so potent. The normative framework references human rights and duty of care when establishing an anti-fossil-fuel norm and prescribes solidarity with climate victims in the Global South, activism and seeking solutions that are based in science.



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Introduction

It has been repeatedly argued that one key obstacle for the Paris Agreement to succeed is the lack of political and public will to embrace necessary radical measures [1, 2]. Foer [3] claims that to fight the climate crisis we need to have the same mentality and spirit people were displaying when they came together to support the greater cause during the World War II. And the most recent IPCC Assessment by Working Group III [4] emphasises the centrality of social transformation for achieving the Paris Agreement goals. Finding ways to establish the societal determination and consensus required to fight climate change thus becomes one of the central challenges we currently face. The emotional and moral understanding of the climate crisis is a prerequisite for societal determination and consensus [5–8]. Otto et al. [9] suggest that revealing the moral implications of greenhouse gas (GHG) emissions is a crucial social tipping intervention to trigger change in the norms and value system, i.e., the system that influences what is rewarded and desired or prohibited in society. Through this influence on what is rewarded or

prohibited, the norms and values system can affect other societal systems, changing behaviours, policies, laws etc. [9–15]. The moral implications of GHG emissions arise from assessing the harm and injustice that result from certain actions or inactions [16, 17]. In the context of climate change this assessment is subject to some uncertainty. Still, increasingly precise estimations are available to assess potential harm. For instance, Janssens et al. [18] predict that by 2050 an additional 77 million people will be at risk of hunger due to climate change; The IPCC [19] estimates that hundreds of millions of lives are at stake with every half degree of global heating; and the UN Office of the High Commissioner on Human Rights (ONHCR) [20] speaks of a new era of “climate apartheid”, because the rich will try to buy their way out of rising heat and hunger. Most recently, Bressler [21] published an estimate for number of deaths caused by the emissions of one additional metric ton of CO₂.

Yet, there is an immense gap between the scientific and the societal understanding of the climate crisis. According to Gardiner [22] climate change appears to be a perfect moral storm because it involves the convergence of a number of factors that lead to moral disengagement [6, 22–25]. Among these factors is the spatial and temporal dispersion of causes and effects, including the skewed vulnerability and the fact that the source of climate change is located deeply in the infrastructure of current human civilisation. Humans have a status quo bias, sticking with established, even if increasingly inadequate behaviours, norms, values, and institutions, particularly when confronted with uncertainty [26], even if fabricated uncertainty. This bias itself is rooted amongst others in loss aversion, i.e., the fear of losing what we already have, which is often stronger than the hope of gaining something new [27]. On the other hand, backloading, i.e., our emissions today will impact future generations rather than us today, makes it hard to grasp the connection between causes and effects, which undermines motivation to depart from the status quo [22]. Opponents of change, particularly the fossil fuel industry, have for decades exploited and nurtured moral disengagement, first casting doubt about the existence of climate change and increasingly through a climate action delay discourse [28, 29]. Consequently, public climate change debate is dominated by the discourse of climate action delay focussing on monetary costs of actions rather than the human costs and, ultimately, the *moral* implications of inaction [30–33]. As Wetts [33] shows, even environmental organisations tend to undermine their own mobilisation efforts by adopting a technocratic climate change discourse. People need to understand the threat of climate change to assess the crisis accordingly [34]. But the climate crisis is represented as one of many other topics, such as economic crisis, wars, etc. The full extent and the acuteness of the climate change threat is not communicated, bar a few exceptions, which however almost never appear on the front pages or during main broadcasting times [35]. As a result, the societal understanding then appears to identify the choice and prioritisation of topics in the media as representative of the actual urgency. Moreover, climate change is often discussed as a classical political topic, exchanging various political positions but hardly including any climate science that brings these political positions into perspective. As such, the media contributes to the bystander effect, as media appear unalarmed, and, as a result, the public is deceived to think that the crisis is not so bad after all and there is no need to act [35]. What we ultimately witness is a collective inertia. De la Sablonnière and Taylor [36] define collective inertia as “a societal state where group members face a macro system devoid of clearly articulated collective goals and values coupled with dysfunctional social and normative structures” (p. 65).

More recently, however, the public framing of climate change has seemingly started to shift, which has been partly attributed to climate protest movements, and in particular to Fridays for Future [37–39]. The Fridays for Future movement started with the one-person school strike of the Swedish (then 15-year-old) schoolgirl Greta Thunberg, outside the Swedish parliament each Friday in August 2018 to demand immediate action to combat climate change. Within a

few months Greta Thunberg became an iconic role model and spear figure for the movement and inspired millions of school children around the world to follow suit. On the 15th of March 2019 the world witnessed the first global environmental protest, staged by 1.4 million school students in 106 countries on five continents. Greta Thunberg and other movement representatives such as Vanessa Nakate (Uganda) have been repeatedly consulted by various parliaments, political leaders and UN bodies. Fridays for Future succeeded in sharpening the understanding of the crisis and win broad popular support for more ambitious climate policies [40, 41]. In the European Election in 2019 for instance, the climate change topic raised as the most decisive election topic by 28% [42].

Research shows that social movements displaying “norm entrepreneurship” can bring about normative change [43–49]. Past social movements that were crucial for driving normative and wider social change, include for instance the abolitionist movement, the suffragettes, or the gay rights movement [17, 48, 50–53]. Some argue that today in particular the youth climate protest movement, most prominently the Fridays for Future movement, has great potential to trigger rapid social change that would contribute decisively to climate change mitigation [54–56].

Normative change usually starts with a normative challenge. Predominant norms (e.g., social norm of participating in a fossil-fuel based economy) which are often enshrined in institutions, laws, formal processes, and habits, i.e., the status quo, are challenged as dysfunctional in response to an identified crisis. Challenging existing norms can be best achieved by appealing to other social or moral norms [48], that are widely shared, such as human rights [57]. Activists and social movements can play a crucial role as norm entrepreneurs in challenging existing norms through a moral dialogue, that revises and transforms fundamental norms, seeding society with new norms linking them to widely shared ones and initiating their spread [58]. In this paper, the normative challenge posed by the Fridays for Future movement in the face of inaction to curtail the climate crisis is explored through an assessment of the Twitter feeds around a major global climate strike event. Specifically, by zooming in on the normative framework proposed by the Fridays for Future movement, we aim at answering the research question: How is the Fridays for Future normative framework challenging the status quo? In doing so, we tackle a major gap in the relevant literature, namely the lack of attention to the important normative contribution from Fridays for Future. We argue that the Fridays for Future movement could contribute to filling the existing gap between the scientific and societal understandings of the climate crisis, given their focus on the *moral* implications of the climate crisis in a way that makes the crisis highly salient to people, so they are ready to embrace radical change.

In the following sections we will first summarise the theoretical and empirical knowledge on what norms are and why they are essential. We will then describe the methods and Twitter data used to understand the normative framework of Fridays for Future. Following this, we present the empirical results from our analysis, and then discuss these results and their wider implications. We conclude with a summary and some thoughts on the next steps in climate activism and future research.

Norms

A normative framework is an ensemble of interlinked norms and their accompanying arguments. There is no single agreed definition of a norm. Generally, norms are understood as standards of appropriate behaviour for actors with a given identity, calling for desirable social practices within specific fields, and thus amounting to expectations shared within a social context that certain behaviours will have either rewarding or punitive consequences [59–61]. A

distinction is often made in the literature between injunctive norms (ought-norms) that specify behaviours that are desirable within a group and descriptive norms (is-norm) for behaviours that are commonly observed within a group irrespective of their moral dimension [62]. Elster [63] provides a more nuanced conceptualisation, distinguishing between four different types of norms: social norms, moral norms, quasi-moral norms, and legal norms. Social norms are maintained by sanctions that others impose on norm violators [64]. Hence, the operation of social norms depends on the agent being observed by others. Specifically, a violation of social norm triggers contempt in the observer who then sanctions the norm violator by avoiding or ostracizing them, which may or may not have material consequences. As social rejecting constitutes a severe punishment even without any secondary material costs, the punitive reaction makes the violator feel ashamed, and they respond with adhering to the norm in the future or with hiding or running. When there is a trade-off between adhering to a norm and material rewards for violating it, then the norm violator will try to hide their norm violation [63].

The operation of moral norms on the other hand does not depend on the agent being observed, the sanctioning is in some way internalised. A violator would feel guilt at violating a moral norm, even if no one observed the norm violation and feelings of guilt lead to the violator seeking to undo the harm. However, if a violator of a moral norm is observed then the observer reacts with indignation and the violator would be punished [63]. For moral norms to work it is important that the guilt feelings are experienced as an internal conflict and are not externally induced, only then will they result in actions according to the moral norm [65–68].

Elster [63] also suggests the category of quasi-moral norms that are triggered by the agent observing the behaviour of others and copying it, assuming this behaviour is expected, even when they themselves are unobserved. Finally, Elster [63] suggests the category of legal norms, which have formalised sanctioning mechanisms, i.e., they rely on the existence of specialised enforcers rather than on more diffuse sanctions.

While analytically these categories may be clearly distinguishable, in practice they often converge on the same behaviour or action. For instance, the line between indignation and contempt may be hard to draw. In principle the first emotion targets an action and the second the character of the agent, but in the observer’s mind the two may well overlap [63]. The impact of a norm depends on how firmly it is established within a society or group, as there is a multiplier effect for consequences, i.e., the more people react to an action with sanctioning the more effect this reaction will have. Indeed, norms violation can lead to huge outcry which can result in changed legislation, where a norm becomes a legal norm. Norms and their change are often a pre-condition for laws and legislation. Norms apply not only to individuals, but equally to companies or governments. These can be shamed by publicity and political debate into changing its course of action or else being voted out or in an international context being sanctioned [63]. It is also important to note, that social groups operate in a space of multiple norms, from which a hierarchy of motivations arises. Hence, not surprisingly, norms can and often do get in conflict with each other [69]. Research has suggested that pro-ecological social norms are more likely to be disregarded if they conflict with other social norms such as what can be said during small talk. The authors of the study concluded that this may show that climate change is still not regarded immoral in the same way that for instance racism is [70].

Most people are unaware how powerful social norms are in influencing their behaviour [71, 72], but research has repeatedly shown that they often have the greatest effect on (changing) people’s behaviours [73, 74]. Grilli and Curtis [75] for instance established the effectiveness of norms for pro-environmental behaviour in a meta-study. They found that interventions where individuals learn from observing others are most effective and most lasting, even though this only works if there are reasonable pro-ecological options, resources, and infrastructure

available. Norms also influence business and investment practices, e.g., through pressure from shareholders [76]. And they influence political behaviour, including voting behaviour [12, 17] and policy support. The COVID-19 pandemic has shown that the public is willing to support far-reaching mitigation measures if the threat is perceived as severe and imminent, as societal political judgement is strongly driven by the moral norm of preventing unjust harm [77].

Norms do not only guide our behaviours as individuals. Norms are also the foundations for collective behaviour, i.e., group actions. In the context of group action, people follow perceived norms and goals of the groups they socially identify with, specifically, norms regulate the behaviour of group members to a large and often underestimated way, and they do so rather subconsciously [78]. People become active as groups, when they are motivated by shared moral convictions, by their social identity, which can also generate social norms of becoming active, and by efficacy, which can be most easily experienced within a group [78, 79]. Hoppe et al. [80] showed for instance that people were most likely to accept drastic measures against COVID-19 if they perceived collective ability to act. Group members derive group norms from observations but also from what (moral) beliefs the group holds. Leaders, authorities, and representatives of the group can play an important role in communicating norms and being role models, particularly if new norms are introduced that are not yet adopted by the majority of the group [79, 81]. It is not required that all actors believe in the new norm. Once they behave according to the new norm, copying community leaders for instance, their beliefs will adjust over time, as people often derive what they believe by looking at their own actions [82].

So, norms are essential for the inner workings of societies. And if behaviours and processes we consider “normal” are convincingly challenged, then that can seriously disrupt and/or transform societies. Investigating normative challenge, such as the one posed by Fridays for Future, allows us to understand its disruption and/or transformation potential.

Materials and methods

Given the applicatory discourses that norms generally rely on, especially in terms of their call for desirable social practices [60, 61], the discursive nature of norms becomes a key element to assess when examining norms that emerge from new norm entrepreneurs, such as Fridays for Future, that attempt to infiltrate a specific global challenge discourse, such as that of climate change. It is through the discourse employed when a norm emerges within a given community; that the community’s constituent actors recognize this norm as desirable and engage with it to justify its actions [59]. To capture the normative challenge of the Fridays for Future’s discourse, we collected Twitter data around the first major protest events of this movement, 15 March 2019, when Fridays for Future organised its first global school strike event. Specifically, we collected data a day before the global strike event, on the day of the first global strike and the day after, i.e., between 14th and 16th of March 2019. We used the Twitter Streaming API to collect the data in real time, using a set of hashtags (#FridaysForFuture, #SchoolStrike, #SchoolStrike4Climate, #ClimateStrike, #Fridays4Future, #Strike4Climate, #GlobalStrikeForFuture, #YouthStrike4Climate, #YouthClimateStrike, #GretaThunberg) and account names (@Schools4Climate, @GretaThunberg, @StrikeClimate, @Fridays4future, @Strike4Youth) that these movements were using for coordination and communication. The data set contains 846,232 tweets. The data was multilingual, with English dominating. To ease the interpretation, we filtered the data for English language.

Twitter is a well-established data source used in many social and political studies as it is one of the most popular social media platforms used by political actors worldwide and across the political spectrum to communicate [83]. Twitter was especially valuable to capture the Fridays

for Future discourse, as it is one of the preferred social media platforms for outward communication purposes of this movement [84]. The advantage of using Twitter data for capturing the discourse of a social movement is that it allows to capture all the voices of the movement that choose to communicate online rather than exclusively of its most prominent members. This allows for a greater argumentative diversity, and yet the main arguments will nevertheless be easily extractable from the data, as they tend to be more amplified through retweets. Twitter data also allows to capture a much more authentic, unfiltered communication by the movement, as there is no media intermediary [85]. There are of course also potential issues with the data [86]. Despite Twitter data allowing for greater diversity of voices from the movement, there will inevitably be voices that are not heard, because certain activists might not be on Twitter. However, that would be true for any data source, and certainly the problem of missing certain voices from the movement is much more severe when relying on other sources of data, that are even more narrow, such as interviews with activists. Twitter data can also be problematic because of the presence of social bots, i.e., bot Twitter accounts. Social bots can distort the data by simulating support for an issue by retweeting every tweet with a specific hashtag or by generating random tweets on a topic through syntactically correct combinations of words [87]. Marlow et al. [88] found for instance that (often undisclosed) bots were significantly amplifying the climate denial discourse on Twitter. The Fridays for Future movement is careful in disclosing any bots (e.g. @FFFBot1) it is using for retweet purposes; this allows researchers to filter out bots from their data if there are concerns that the bots may distort the data. However, Fridays for Future started to use social bots only recently (since 2021), there was therefore no need to filter out bots in our data.

With over 800,000 tweets a purely qualitative discourse analysis becomes simply impossible. We hence conducted a computational discourse analysis. The first step in a computational discourse analysis is knowledge extraction, where the content (i.e., topics, frames) is established computationally, before it can be interpreted qualitatively, similar to a qualitative discourse analysis [89]. We moreover refined the knowledge extraction process stepwise. First, we run a guided or seeded LDA (Latent Dirichlet Allocation) topic modelling analysis [90–92] to get a broad sense of the major themes in the data. The seeded LDA is a recent extension of the LDA topic modelling approach [93], which is an unsupervised classification approach to detect topics in textual corpora. Each tweet is made up of various words and each topic has various words that define it to a varying degree. The goal of LDA is to find topics that the tweets can be assigned to with a certain probability, based on words they share. This approach does not always lead to optimal results in terms of identifying clearly distinct and meaningful topics, particularly if the data consists of short texts as is the case with Twitter data [94]. The seeded LDA approach allows for some human supervision of the computational procedure. Specifically, a set of seed words (see [S1 Text](#)) is defined for certain topics that we may expect to see in the data. For our analysis we derived the seed words from a word counting analysis of the data and from a preliminary unguided LDA. The seeded LDA model is then guided to converge around those seed words, which act as Bayesian priors. The weight of these priors is set through a seed confidence parameter [90, 95]. We settled on a high seed confidence of 0.8. Exploring a range of models with different number of topics, comparing the distinctiveness and human interpretability of different topics in the various guided LDA topic models, we chose the model with 10 topics, eight of which were seeded (see [S1 Text](#) for further details). As not all the extracted topics were relevant for the normative discourse (e.g., topics on logistics of the protests), we then used only the tweets that were classified as belonging to topics that had some normative discourse relevance (topics 4, 5, 6 and 7, see [S1 Text](#)).

On these tweets we performed then a more fine-grained, network-based topic model [96, 97]. Specifically, after removing stop words that are frequent but contain little meaning (e.g.,

appearing in those topic clusters to and facilitate qualitative interpretation of the detected topics.

Results

The results from the seeded LDA can be accessed in SI LDA Results. We will focus here on the more fine-grained results from the semantic network-based topic model discussed above. Fig 1 shows various colour-coded topic clusters. The upper pink cluster contains bigrams and bigram chains (multiple, interlinked bigrams) such as global warming, global south, carbon emissions, coal companies spread doubt, crimes against humanity, genocide profit, but also renewable energy etc. pointing to a topic cluster where fossil fuel companies are called out for their crimes against the humanity (and in particular against the Global South) but also where appeals appear to reduce carbon emissions and transition to clean, renewable energy.

The red topic cluster on the left contains bigrams and bigram chains such as the need [to] act, thank Greta Thunberg, make [a] difference, making voices heard, impunity killing us, social collapse. So here we see a reference to one of the major spear figures of the movement, Greta Thunberg, and calls for action, in particular directed towards the movement itself, where school strikers are encouraged to raise their voice to make a difference. The motivation for action comes from the existential threat (killing us, social collapse) due to climate change. In this topic cluster the movement hence establishes a strong prescriptive norm for taking political action.

The green cluster in the middle is the largest topic cluster around the word with the highest betweenness centrality, climate. The key word climate links in fact various topic clusters. The green topic cluster contains bigrams and bigram chains such as climate change, climate catastrophe, climate action, climate justice, school strike spreading, #GreenNewDeal policies, sue climate deniers, system change. This is the central topic cluster as it combines various themes, such as the existential threat because of climate change, mobilisation for protest for climate justice, naming of violations such as climate change denial and demanding systemic solution such as a Green New Deal.

The light brown topic cluster to the right of the central topic cluster contains bigrams that reference climate change effects that we see today already, and the effects predicted for the future, e.g., killer floods, droughts, famines, mass displacement, millions [of] deaths, starvation poverty etc.

Underneath, on the right bottom, is the dark brown cluster, with bigrams and bigram chains such as government inaction, robbing poorest, robbing children, #climatejustice human right, children human right violation, intergenerational theft crime, intergenerational injustice hurts, etc. Here the protests position themselves as victims, calling out human rights violations against children such as intergenerational theft, while solidarity is shown with other victims, such as the poorest. Governments are called out for their inaction.

The orange topic cluster on the bottom contains bigrams and bigram chains such as young people around the world marching, 1.5 million students, demanding [to] hear science, hence referencing mainly a topic where the movement celebrates itself for having been able to mobilise millions of young people across the world and demanding that policy makers should listen to science.

The dark blue cluster underneath, at the bottom centre, is a rather small topic cluster with specific demands such as end subsidies [for] fossil fuel industry [and] bad agriculture as well as [putting] fossil fuel executives [in] jail. The light blue topic cluster at the bottom left is centred around the two central words, future and planet, and contains bigrams and bigram chains such as save planet, save civilisation [so it can] continue existing, implement Paris Agreement,

adults destroying planet, older generation stop stealing future, ecocide prosecution. So, in this topic cluster the focus is on the intergenerational grievance and the call to implement the Paris Agreement to make sure humanity has a future on a liveable planet.

Finally, the dark green topic cluster to the left of the central topic cluster, evolves around the keyword, action, and contains bigrams and bigram chains such as demand leaders take action, government failing, #cop25 #ipcc #climatechange. The focus is here on the need of action, while detecting lack of action from leaders and governments who are said to be failing to respond to the existential threat that climate change is, given the evidence collated by the IPCC.

Overall, we can extract a set of core themes from the Twitter discussion that build the normative framework: (1) the climate crisis as an existential threat, (2) identifying the victims, including positioning of children and young people as victims, (3) identifying the crimes and violations, (4) identifying the violators, (5) solutions, including establishing a set of prescriptive moral norms. The core theme of climate change as an existential threat appears across all topic clusters, but most vividly in the red and light brown clusters. The light brown cluster for instance lists the consequences of climate change, over 1°C warming, that we see today and the consequences to come if we do not act. The tweet that summarizes this cluster and the first core theme rather well is “The impacts of the #ClimateCrisis are already here: At 1°C rise—killer floods, droughts & famines. Millions losing lives & livelihoods in global South. 247 Environmental defenders killed in 2018. Solidarity to schoolkids on #ClimateStrike & to all front-line communities!”

Several topic clusters identify those who will suffer the consequences in the present and in the future, with an explicit focus on the present generation of children. A strong intergenerational grievance is expressed in the Fridays for Future narrative, e.g., in the dark brown and light blue topic cluster. The following tweet provides an example: “Today’s #schoolstrike4climate should be a wake-up call to our political leaders. #ClimateChange is robbing the poorest of their livelihoods, and robbing children of their future #climatestrike #fridaysforfuture #ourfuture”. This tweet makes it also explicit that the poorest are assumed to suffer the consequences most. The Global South is acknowledged as one of the main victims of climate change (see pink topic cluster). Solidarity with the climate change victims in the Global South is a prescriptive norm that is clearly established here (and in the exemplary tweet above). The normative challenge lies in explicitly identifying those, who are severely and unjustly harmed by the status quo (i.e., participation in and continuation of the fossil-fuel based economy).

This normative challenge is made even more explicit by equating the status quo and the political system maintaining it with crimes such as genocide and crimes against humanity etc. (see dark brown and light blue topic cluster). Emphasised are crimes against people in the Global South and crimes committed against the present generation of children, e.g., “intergenerational theft” as a “human rights violation”. Here the normative challenge explicitly appeals to norms widely upheld, such as human rights. Maintaining the fossil-fuel status quo is deemed incompatible with valuing human rights or even with valuing one’s children’s future. In the light blue cluster, the adults are for instance accused of “murdering future generations” and “destroying the planet”. An exemplary tweet states: “The leaders of the world who deny and fail to heed the obvious signs and warnings of climate change are committing the equivalent of genocide on future generations. They must be called out, voted out and held accountable”. The “business as usual”, i.e., “normal” practices exposed as crimes comprise: GHG emissions exceeding the carbon budget, fossil fuel extraction, refinement, and combustion, deforestation, sabotage (e.g., deception through deliberately spreading climate misinformation). Here an anti-fossil fuel norm [14] is clearly established: the “normal” practice of fossil-fuel extraction, refinement, and combustion, is rejected as morally repugnant.

The violators, the addresses of the normative challenge, are named and called out in the dark green and dark brown cluster, as well as in the pink and central green cluster: governments, political leaders, fossil fuel corporations. The light blue cluster contains a call to charge those responsible for climate crisis for ecocide, defined as “unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts” [100]. The following tweet represents this theme rather well: “Corporations driving #ClimateCrisis are responsible for countless environmental injustices. They act with impunity, killing untold numbers in the Global South: e.g., Mining companies behind deadly #Brumadinho dam collapse in January. #ClimateStrike #StopCorporateImpunity”. Fridays for Future does not refrain from also blaming individuals, more specifically “adults” as we have seen in the example above, although the focus is clearly on political decision makers and corporations.

Fridays for Future movement does also produce visions and some suggestions for solutions beyond the central demand to implement the Paris Agreement and listen to science, the latter being another explicit prescriptive norm. Some concrete suggestions are made for instance in the pink and dark blue topic cluster. An exemplary tweet states “Wow. Bold calls & a summit promised by UN Secretary General in response to #ClimateStrike today: * End subsidies to fossil fuels & bad agriculture. * Shift to renewables, electric vehicles & smarter practices. * Honest carbon pricing. * Close coal plants.” The dark brown cluster also contains the demand for inclusive climate action that leaves no one and no child behind. A tweet that shows the equity concerns of the movement is the following: “Poverty, racism, sexism, ableism, healthcare access, and climate change are intersectional issues. We must stand together and fight for equity for all. Everyone deserves clean air, clean water, safe soil, safe jobs, and affordable alternative energy. #ClimateStrike”. Indeed, the justice, equity and inclusiveness aspect of climate change action is quite explicit in the Fridays for Future normative narrative.

Discussion

The online discourse of the Fridays for Future movement captured in [Fig 1](#) challenges the status quo normatively because it exposes the moral violation of failing to respond to the climate crisis adequately [40]. This is not entirely new of course. The Fridays for Future normative discourse roots in a normative narrative advanced years before Fridays for Future appeared. It was advanced by various international, often indigenous climate change protest movements and civil society organisations such as the Climate Action Network (CAN) International, as well as various international agencies, such as UNFCCC, who started the normative shift in the global conception of climate change away from an environmental issue to a fundamental issue of human rights and global justice [101]. But this shift in the global conception did not find much resonance among the public in the Global North before Fridays for Future.

Young climate activists clearly establish themselves as the victims of climate injustice, in clear demarcation from those responsible for the climate crisis, namely political elites and corporations [40]. People focus predominantly on the presence and bias their decisions favouring the presence [102]. Fridays for Future succeeded in reducing the temporal psychological distance, by being the first global generation of present children that claim climate change victimhood. The victims are now in spatial, temporal, and social proximity, they are our children and grandchildren [40]. It has been repeatedly emphasised how important it is to make the climate crisis salient in people’s everyday life [103, 104] and this is exactly what Fridays for Future managed to do to a greater extent than any other climate protest movement [40]. Before Fridays for Future, the climate justice movement was focused on solidarity with the Global South, which is much more affected by climate change already in the present. And Fridays for Future

has strongly emphasised its solidarity with the Global South [54] as the movement itself includes the Global South [105]. But it is the intergenerational justice frame [106, 107] of Fridays for Future which makes the movement salient to the national governments in the Global North as it positions the own, young generation as a victim [40]. Greta Thunberg made the “shared, unjust affectedness of young people because of the climate crisis accessible to the wider public” (own translation, [40], pp. 262–263).

There is a strong, universal norm not to harm children [108] and so if millions of children from around the world get out repeatedly and state they are being harmed, this sends a very strong message. Empathy avoidance strategies are more difficult to pursue if the people, who are demanding compassion are (your own) children and grandchildren. And high levels of empathy are required if people are to care enough to take required actions [109–111]. Fridays for Future’s strong message resonates complementarily with other climate protest movements such as Extinction Rebellion, who derive from the voiced intergenerational grievance a duty of care that adults (often parents and grandparents) have [112]. Of course, a share of the population will nevertheless activate empathy avoidance mechanisms and engage in victim denigration of youth climate activists [113, 114]. Despite this, social movements such as Fridays for Future can change the dominant culture, common societal convictions and societal values and norm systems [49].

From the perspective of Fridays for Future allowing the climate crisis to unfold is deliberately facilitating atrocities (e.g., genocide through famines). This builds on arguments made by ONHCR [20] and Zimmerer [115] but also by scholars such as Caney [116], who established that human-made climate change threatens multiple human rights, including the most fundamental human right to life, as well as the human right to health, to subsistence (in particular food), to development and not to be forcibly evicted. According to Caney [116] a human rights perspective on climate change has important implications as it invalidates cost-benefit approaches to climate change, where the utility of some (usually those contributing to climate change) is weighted against the disutility of others (usually those suffering the consequences of climate change). Human rights establish universal moral thresholds that cannot be crossed irrespective of costs.

As shown in the previous section Fridays for Future does name those responsible for the climate crisis, political decision makers, who maintain the fossil-fuel status quo and (fossil-fuel) corporations. But their normative framework lacks an explicit definition of the *mens rea*, i.e., the criminal intent from which responsibility is derived. However, given the explicit reference to ecocide in their normative framework, we can derive the *mens rea* from the ecocide law proposal where the criminal intent is established from the knowing release of GHG emissions (above a certain threshold and hence prohibited) if awareness of the consequences can be assumed [117]. So *mens rea* is not so much based in direct (purpose) intent, but rather in indirect intent, where the actor has knowledge that substantial harm is very likely because of their action [118].

It has been suggested that because of the global dimension of the climate crisis and given there is currently no global institution with robust options for action, the nation states are the central actors [119]. Still, other actors such as companies, banks, universities, media, communities and civil society, including ordinary citizens who can exercise pressure on governments through voting and campaigning, are important too. The recent IPCC report [4] stresses the importance of distributed climate action by different actors to reach different segments of society and ensure comprehensive social transformation. While Fridays for Future is calling out governments and companies for their failure to act, it also holds individuals responsible and more importantly understands itself as a key actor for global, transformative change. From its diagnosis of the causes of the climate crisis, the movement derives that it is the youth climate

activists, who must act and enforce climate action (prognostic framing). There is an emphasis on moral responsibility that lies with young people to fight for change, which establishes a group norm, that is prescribing protest behaviour (motivational framing) [40]. What gave Fridays for Future its great mobilisation power is the perception of a moral wrong, of an injustice against young people of the world [40, 54, 120–122]. On the other hand, the Fridays for Future movement gave these young people a sense of empowerment and efficacy. How convincing a movement is, depends to a large extent on the *moral* legitimacy not least of its protest strategy [121, 123]. As Bleh [40] points out, the school strike, a mild form of civil disobedience, is a collective norm violation (violating compulsory schooling norm), but through this norm violation the movement can reference the societal norm violation (children’s rights violation through inadequate climate change policies), which provides legitimacy for their protest, both emotionally and argumentatively. Given the mild form of civil disobedience they have avoided to activate system-justifying defensive reactions or a stronger identification with the political opponent. They demand upholding the Paris Agreement and point out the gaps between the agreement and the actions taken so far. Through calling out the failure to abide by the agreement, the movement can reference integrity, a widely uphold value that is being violated, which further reinforces their moral standing. Finally, their emphasis on not being bound to any specific ideology facilitates a greater identification with the movement in the population [40].

Conclusion

Like other mass social movements that led to social change, such as the abolitionist movement or the suffragettes, the global climate change protest movement has a strong moral argument at its core [17, 52]. Exposing the moral failing of what is otherwise seen as “right”, “normal” or “common practice” explains in part the success of the past social movements and it is this exposure that can result in normative change [9, 14, 59, 116].

At this early stage the outcome of this initial normative challenge is unclear and will depend among others on the persistent continuation of political action by Fridays for Future and other climate protest movements. The movement will need a lot of perseverance. The availability bias makes people perceive something as more valuable, correct and societally accepted the more they hear it [124]. Indeed, research suggests that even if a group is in the minority on a position, if they constantly repeat their beliefs and do so vocally, their opinion may seem to the public to be the majority opinion or close to it. Having a standpoint that appears to be prevalent, can help create change. Moreover, people tend to assign greater credibility to information that they frequently receive. This is also important when trying to influence policy makers; when they receive a message repeatedly, they are more likely to believe it represents the majority opinion [125, 126]. But Fridays for Future also needs to be particularly skilful in their communication practice. It is important to reveal the moral implications of actions or inactions, as this allows people to notice their own disjunction, for instance between their concerns for their children and their non-consideration of their children’s wellbeing when it comes to climate-relevant behaviour [127]. Moral motivation is a very powerful motivation to act, but people often cope with moral threat in defensive ways. Invoking straight guilt, particularly in ordinary people, usually backfires [65, 66]. It is also important to communicate coping mechanisms that do not reflect defensiveness, emphasising moral convictions that increase a sense of agency [128] and ultimately a positive vision that can mobilise even more people [129, 130].

Survey research shows that although people are concerned about climate change, they are largely rejecting policies that would make carbon-intensive behaviour costly [131]. According to Hiss [127] we do not currently see strong majorities for required transformative climate

change policies because people experience high cognitive dissonance with respect to climate change. Climate change is anthropogenic and as most of our daily activities contribute to the crisis, this creates a strong inner conflict and people will desperately try to reduce the dissonance pressure through various strategies, such as trivialisation, denial, distraction etc. These strategies mean that people do not actually deal with the problem seriously. The climate protest movement disrupts these dissonance reduction strategies and in particular Fridays for Future, being a children's and youth movement, contributes to people starting to understand the problem not only intellectually, but also emotionally. Ultimately, we need a society, where the majority demands restrictions and disruptions, particularly during the transition phase [127]. This can only happen if people understand the threat also emotionally. Only if facts are combined with emotions, do people experience a pressure to act [132]. The normative challenge by Fridays for Future is important for this emotional understanding, as it forces us to consider what the climate crisis means for our children and grandchildren, which makes the crisis personally much more salient. And yet, it will not suffice on its own. This emotional salience needs to be reinforced through various sources, including the media and political leaders, particularly given that competing, and often more comforting narratives of climate action delay [32] are readily available, massively financed by fossil fuel companies [133, 134]. These competing narratives undermine the efforts of (young) climate protesters.

Indeed, while the normative argument with an emphasis on harm and fairness is generally very powerful [16, 17], it still needs strengthening to be able to outcompete contrarian arguments. In particular, the cause-and-effect feedback needs to be strengthened, and the harm (effect) on young people because of anthropogenic climate change (cause) needs to be clearly attributable and visible. A step in this direction could be UNICEF's [135] newly introduced Children's Climate Risk Index (CCRI). In the report on the new index the authors write: "Globally, approximately 1 billion children—nearly half of the world's children—live in countries that are at an 'extremely high-risk' from the impacts of climate change, according to the CCRI. These children face a deadly combination of exposure to multiple shocks with high vulnerability resulting from a lack of essential services. The survival of these children is at imminent threat from the impacts of climate change" (p. 6). This is important because, if the cause-effect-link is not completely clear and visible, world views and ideologies start to dominate the moral discourse [5], i.e., we shift our attention from prohibitive practices and systems that result in unjust harm to disputes of whether we should focus on individual (consumer) choices and market mechanisms rather than collective solutions [136].

For a normative change to happen, it will be important that the new normative framework is taken up by influential, well-connected, and diverse norm champions and opinion leaders outside the movement [14, 137–140]. Political decision makers can play a crucial role as they are in the position through their legislative and policy making power to set the conditions right for normative and social change to spread [11, 141]. They can (1) endorse the new normative framework and communicate it publicly and continuously, (2) implement policies that shift the expectations, e.g., by phasing out fossil fuels [142], sending a clear signal to the markets as well as citizens, and (3) make norm violations more visible, e.g., by mandating that all planning and policies need to pass a climate change impact assessment. Fortunately, we do see some first signs of the normative framework developed by Fridays for Future penetrating the political debate and even the judiciary system. At the IEA-COP26 Net-Zero Summit Frans Timmermans, Executive Vice-President of the European Commission said for instance "If we don't act in the next couple of years, our children will be at war with each other over water and food." [143]. In April 2021 the German Constitutional Court ruled in a historic decision that Germany's climate change laws violate fundamental rights of younger generations and hence need to be revised [144]. And in May 2021 the Australian Federal Court ruled that the federal

government has a duty of care to protect future generations from climate harm [145]. In both court cases activists from Fridays for Future filed the lawsuits.

The normative frames that Fridays for Future developed are likely to resonate within the wider public as they repurpose already established and widely accepted norms around human rights and duty of care for children to fill the gap between the scientific and societal understanding of the climate crisis. Such a powerful normative shift in our understanding of climate change has the potential to trigger far-reaching social change through changes of policies, laws, business practices and individual behaviours. Norms influence what is rewarded or prohibited; these rewards and prohibitions can be institutionalised. For instance, if an anti-fossil fuel norm is established at the international level, an international fossil fuel prohibition regime is likely to emerge [14, 142, 146] and in fact we see calls for such a regime (www.fossilfuel treaty.org). For now, a technocratic approach to climate change and various discourses of delaying climate action are still dominant and hence the gap between the scientific and societal understanding of the climate crisis remains largely unbridged. Future research should therefore focus on how a normative change in response to the climate crisis can be accelerated to provide recommendations for social change agents such as Fridays for Future to become even more effective norm entrepreneurs. Recent research suggests it is possible to proactively induce positive social tipping dynamics, i.e., accelerate complex contagion processes to diffuse new ideas or behaviours on social network [147].

This paper is limited in its ability to provide evidence that the Fridays for Future movement can indeed trigger normative and wider social change, as the change has not yet occurred. We are not on the trajectory of keeping global warming well below 2 degrees [148–151] yet, even if we may see some first promising signs for a shift [152]. Consequently, the analysis here is mainly descriptive, examining the nature of the normative challenge posed by Fridays for Future. And yet, our analysis shows the intricacy of the Fridays for Future normative framework. Civil society actors, such as Fridays for Future are key in pushing societies out of a collective inertia and that is why it is important to understand their normative arguments, so they can be amplified to galvanise wider social change. This study will hopefully contribute to this understanding.

Supporting information

S1 Text. LDA Results, including Fig A. The document includes section “Seed words for guided/seeded LDA and model selection” and section “Extracted topics for the Fridays for Future data”, which also contains Fig A showing a topic map of Fridays for Future discourse in March 2019.

(DOCX)

S2 Text. Gephi instructions. The document contains instructions for loading the extracted bigrams (S3 File) into Gephi and visualising them within a semantic network (Fig 1), as well as performing network analysis on the data for community detection (topic modelling).

(DOCX)

S1 Data. Tweet IDs. This is a single column file containing all the IDs of the tweets collected for this research. Twitter does not permit to share the data directly, however researchers are able to largely extract the same data, using the tweet IDs through Twitter API for Academic Research.

(TXT)

S2 Data. Stopwords. The file contains a single column, listing additional stopwords not automatically included in the Python nltk module default stopwords list for English. These

additional stopwords are specific for the extracted Twitter data.
(TXT)

S1 File. Python script for standard LDA. The commented code allows to run a standard LDA for a first exploration of the data. It requires amongst others the Python modules nltk and gensim. Python 3.7 or higher required.

(PY)

S2 File. Python script for guided/seeded LDA. The commented code allows to run a guided or seeded LDA with specified seed words. It requires amongst others the Python modules nltk, guidedlda and sklearn. Python 3.7 or higher required.

(PY)

S3 File. Python script for bigrams extraction. The commented code allows to extract bigrams using the nltk Python module, it uses Student t-Test for calculating association scores between words in the tweets data. These bigrams are required for semantic network analysis with Gephi, including visualisation of Fig 1. Python 3.7 or higher required.

(PY)

Author Contributions

Conceptualization: Viktoria Spaiser, Cristina G. Stefan.

Data curation: Viktoria Spaiser.

Formal analysis: Viktoria Spaiser.

Funding acquisition: Viktoria Spaiser.

Investigation: Viktoria Spaiser.

Methodology: Viktoria Spaiser.

Project administration: Viktoria Spaiser.

Resources: Viktoria Spaiser.

Software: Viktoria Spaiser.

Supervision: Viktoria Spaiser.

Validation: Viktoria Spaiser.

Visualization: Viktoria Spaiser.

Writing – original draft: Viktoria Spaiser.

Writing – review & editing: Viktoria Spaiser, Nicole Nisbett, Cristina G. Stefan.

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