#DETKUHAVÆRETMIG
HOW TWITTER ENABLED THE EXPRESSION AND PROPAGATION OF SOLIDARITY AMONG HEALTHCARE PROFESSIONALS

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KEYWORDS

ABSTRACT

HEALTHCARE PROFESSIONALS IN DENMARK USED THE HASHTAG #DETKUHAVÆRETMIG ["IT COULD HAVE BEEN ME"] TO EXPRESS PROFESSIONAL SOLIDARITY WITH A JUNIOR DOCTOR WHO WAS INITIALLY DECLARED NEGLIGENT AFTER ORAL INSTRUCTIONS WERE NOT WRITTEN DOWN AND FOLLOWED UP. THIS ARTICLE EXPLORES HOW THE FUNCTIONALITIES OF TWITTER FACILITATED THE EXPRESSION AND PROPAGATION OF SOLIDARITY WITH A FELLOW MEDICAL PROFESSIONAL. OUR DATA CONSIST OF ALL #DETKUHAVÆRETMIG TWEETS FROM AUGUST 2017–MAY 2019. DEVISING A MIXED METHODS APPROACH TO ANALYSE PROFESSIONAL SOLIDARITY IN TWEETS, WE EXPLORE, AMONGST OTHER THINGS, WHO THE TWEETERS WERE, WHEN THE HASHTAG WAS MOST FREQUENTLY USED, AND THE CONTENT OF TWEETED STATEMENTS. SOLIDARITY WAS EXPRESSED THROUGH THE HASHTAG ITSELF, TWEETED STATEMENTS AND PHOTOS. THE HASHTAG'S PROPAGATION POTENTIAL WAS PROMOTED BY MENTIONING POLITICIANS AND NEWS MEDIA AND INCLUDING CO-HASHTAGS THAT LINKED TO RELATED CONCERNS. TWITTER, THROUGH THE HASHTAG #DETKUHAVÆRETMIG, BECAME A VEHICLE FOR EXPRESSING AND PROPAGATING PROFESSIONAL SOLIDARITY.

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Introduction

While growing attention to patients' use of Twitter is reflected in the number of articles that highlight, for example, patients' perspectives on medical errors (Nakhasi et al., 2019), health advocacy (Koteyko & Atanasova, 2018) and negative sentiments about public health interventions such as immunisation programmes (Du, Xu, Song, & Tao, 2017), healthcare professionals' (HCPs') communication on social media represents an under-explored aspect. Where it does exist, focus has primarily been on HCPs' use of Twitter for scientific dialogue (Chaudhry, Glodé, Gillman, & Miller, 2012), or for professional branding purposes, with doctors using Twitter to share new research, connect with colleagues, manage their online personas, and develop relationships with patients in other ways than via the typical face-to-face consultation (Alpert & Womble, 2016). Another strand of research into HCPs' use of Twitter focuses on how Twitter can be used for educational purposes (Gagnon, 2015). As such, existing research on doctor–doctor Twitter communication prioritizes the communication of doctors' professionalism and expertise.

Somewhat in contrast to the above, the present article focuses on the Twitter communication of (mainly) HCPs that was sparked when the professionalism of an individual doctor was at stake. In Denmark, in 2013, a young doctor attended to a patient with stomach pains. The patient had diabetes, and the doctor said she orally instructed a nurse to measure his blood sugar; however, the instruction was not written down or acted upon. Three weeks later, he died of another illness. The doctor was charged with not writing down the instruction and for not following up, not with the death of the patient. On the 27th April 2017, the City Court acquitted the doctor. However, on the 30th August 2017, the Eastern High Court charged the doctor; this led to HCPs across Denmark taking to Twitter with the hashtag #detkuhaværetmig ("It could have been me") to express solidarity with the young doctor. On the 28th March 2018, the Supreme Court acquitted the doctor (Højesteret [Danish Supreme Court], 2018).

In this article, we focus on the Twitter communication associated with the hashtag #detkuhaværetmig ("It could have been me"). Our purpose is to explore how the functionalities of Twitter were used to promote the expression and propagation of professional solidarity for the individual doctor concerned. By functionalities, we mean the technical features of Twitter such as hashtags, @mentions and the possibility of including photos. We use the term "functionality" here to refer to the technical aspects of the Twitter medium, thus avoiding the term "affordance" which can be seen as broader and include how a medium's possibilities are perceived by its users (e.g. Norman, 1990). We also analyse other characteristics of Twitter communication that refer to features that reflect the communicative situation more generally, such as the professional identity of the tweeters and the timeline of the hashtag.

In exploring the expression of solidarity, we focus on the functionalities and characteristics of Twitter, as Twitter makes new forms of sociality possible (Zappavigna, 2011, p. 789), new modes of expressing emotion (Margolin & Liao, 2018), and new ways of affiliating with a cause (Bonilla & Rosa, 2015). Hougaard (2018) considers #detkuhaværetmig to be a form of political activism. In this article, we use a different optic, professional solidarity, as a recent news article highlighted a shortage of solidarity amongst doctors in the Danish context (Damsgaard, 2019). In the article, Prof. Allan Holmgren, who was interviewed, attributed lack of solidarity between doctors in Denmark to highly individualizing workplace cultures. This view clashed with our immediate impression of #detkuhaværetmig tweets, where it seemed that HCPs turned to Twitter to express profound solidarity with a fellow professional.

Reviewing the literature revealed two major gaps. The first was empirical in nature. We found that *professional* solidarity as expressed via social media is strikingly under-investigated. This seemed, on the face of it, a little surprising given solidarity's historical links with the workplace; Smith (2015), for example, considers the rise of the ideal of solidarity to be "intimately bound up with work", both in the mid-nineteenth century in France and with trade union Solidarnosc in the 1980s in Poland, where solidarity meant uniting to achieve the best conditions for workers. Instead, we found numerous articles where solidarity as expressed on Twitter was associated with political instability (Papacharissi & de Fatima Oliveira, 2012) such as the Arab Spring (Abul-Fottouh, 2018), the Maspero massacre (Bakry & Alkazemi, 2016), and the terrorist attack on the Charlie Hebdo offices (De Cock & Pizarro Pedraza, 2018; Johansson et al., 2018).

Secondly, there was a significant methodological gap. Only a few functionalities or characteristics of Twitter had been theorized in ways that could facilitate analytical traction. The most theorized functionality of tweets relating to the communication of solidarity was the hashtag. First, De Cock and Pizarro Pedraza (2018), for example, explored the "communicative affordances"

(p. 199) of hashtags "beyond merely labelling a topic" (p. 199) as exemplified by the hashtag #jesuisCharlie ("I am Charlie") which started as an expression of condolence, alignment and solidarity, though it later transformed to serve sardonic and disaffiliating purposes. According to De Cock and Pizarro Pedraza (2018, p. 299), hashtags "are a kind of metadata" (p. 299). The fact that hashtags label one's tweet as part of a broader theme and link to tweeters interested in the same issue creates "networked publics" (Boyd, 2010; De Cock & Pizarro Pedraza, 2018, p. 199), which in turn makes solidarity possible. In other words, what hashtags express may be messages of solidarity, but the hashtag functionality itself can propagate solidarity as it allows interested parties who associate themselves with the message to affiliate their online selves with a cause (Gruzd, Wellman, & Takhteyev, 2011, p. 1314). Not only this but, as Ince, Rojas, and Davis (2017) point out, the presence of an audience adds solidarity which is expressed through "approval of the movement and its goals" (p. 1825), which may occur through likes and retweeting. According to Narayan (2013), this can result in a "shallow" form of solidarity "clicktivism" (p. 45), as well as deeper forms of solidarity that can lead to action and change.

Another way in which tweets have been considered to support the expression of solidarity is their potential to include emotional content. Emotion has been associated with solidarity in a number of ways, including members' own affective association with a community. Margolin and Liao (2018) explain the ripple effects of a group member's emotional response to events that may impinge on the group as follows, "Specifically, crowd members' shared experience at the macro-level (a shared event) spurs individual behaviors at the micro-level (the expression of emotions) which in turn stimulate or suppress a macro-level property of the crowd (solidarity)" (p. 3713). Indeed, responses to events that may impinge on a group may also not only reflect their common interests but also serve to galvanize them, contributing even further to solidarity (Margolin & Liao, 2018, p. 3704). Also, the expression of various emotions in Twitter communication can serve as a potent affective cue that promotes solidarity. Margolin and Liao (2018, p. 3704), drawing on Turner (2007), identify four discrete types of emotional antecedents of solidarity: a general category for "positive emotions", as well as anger, sadness and fear. The immediate emotional reactions to an event are particularly interesting, according to Margolin and Liao (2018), as they reveal the direct response before larger narratives or discourses converge to give an event meaning.

Beyond these main areas – hashtags, audience affiliation and emotional content – there has been little investigation of how other aspects of tweets could express or propagate messages of solidarity. Yet many more aspects of Twitter communication are likely to promote solidarity too. It was clear to us that a more comprehensive methodology that brought together notions of (professional) solidarity and broader understandings of the functionalities of Twitter was needed as a first step before we analysed the Twitter communication that included the #detkuhaværetmig tweets.

In order to be stringent in our use and application of the term solidarity in our methodology, it was essential to consult the theoretical literature on solidarity. Existing literature distinguishes between solidarity and neighbouring concepts such as justice, altruism and loyalty. Habermas (1989) differentiated between solidarity and justice, characterizing solidarity as always internal to a community, while universal morality and justice necessitate detachment from the ties of specific communities. As such, solidarity relies on communities' internal bonds and sense of homogeneity, rather than being true for broader populations. Laitinen and Pessi (2015) distinguished between solidarity and altruism, as solidarity is often "based on we-thinking" while altruism rests on "thou-centricism" (p. 2). Kolers (2016), on the other hand, contrasted solidarity with loyalty; with solidarity, a general principle is a stake, rather than an existing relationship, as is characteristic of loyalty.

A more operational definition of solidarity is provided by May (1996) who proposed that solidarity consists of five attributes: "1) conscious identification with the group, 2) bonds of sentiment, 3) common interests in the group's well-being, 4) shared values and beliefs, and 5) readiness to show moral support" (p. 44). The fifth point highlights the latent quality of solidarity: groups are always already in a state of readiness to support each other; they are predisposed to act. Motivated by a sense of "all for one and one for all" (Laitinen & Pessi, 2015, p. 1), solidarity involves action on behalf of another (Kolers, 2016). Solidarity often involves putting oneself on the line; expressions of solidarity potentially require a personal sacrifice that benefits an individual or group (Laitinen & Pessi, 2015). According to Scholz (2008), solidarity is an important moral and political concept, as acts of solidarity are responses to perceived injustice and oppression. Kolers (2016) expresses this aphoristically as follows: "In justifiable solidarity we do not join with others because they are right, but because they are wronged" (n.p.). Clarity about what solidarity means helps to distinguish it from other important uses of Twitter such as for activism (Hopke, 2015; Hougaard, 2018; Ince et al., 2017).

To recapitulate, the research question which this article explores is: how did the functionalities of Twitter, as evident in the tweets using the hashtag #detkuhaværetmig, facilitate the expression and propagation of professional solidarity? In addressing this question, our article serves two distinct purposes. It addresses an empirical gap – to our knowledge, this is the first empirical study that investigates HCPs' use of Twitter to express solidarity and galvanise professional support. However, to tackle the empirical gap, it was first necessary to address the methodological gap to find ways of identifying how the various functionalities and characteristics of Twitter support the expression and promulgation of professional solidarity.

We proceed with an overview of Twitter functionalities, followed by the methods that are tailormade to identify solidarity in tweets, the analysis and discussion.

Twitter

Twitter functionalities

Twitter was launched in 2006 and is an example of a microblogging service. Twitter allows users to post messages, so-called "tweets", of 280 characters (maximum) in length (before 2018, the maximum allowed was 140 characters) using their mobile phone, instant messaging clients and the web. Tweets are fully public, rather than being restricted to one's friends (Murthy, 2018, p. 2), displayed to everyone who follows that user or by searching. Other users can then retweet the tweet, like it, reply to it or send a direct message to the original tweeter. To manage the character constraints, tweets often use abbreviations and include links. Other functions include mentions (@) where other Twitter users are addressed in the tweet.

Tweets often include hashtags (#) which are keywords that mark the topic of a tweet and enable searching. Hashtags highlight specific themes (Bruns & Burgess, 2011, p. 2), and thus, hashtags "organize discussion around specific topics or events" (Fitton, Gruen, & Poston, 2009, p. 127). Hashtags enable users to communicate with a community of interest without having to establish a follower/followee relationship (Bruns & Burgess, 2011, p. 2). Hashtags are searchable not only through Twitter, but also various search engines. Hashtags thus have a social function as they provide "an easy means of grouping tweets, and in turn, creating ad hoc social groups or sub-communities" (Zappavigna, 2011, p. 801). Hashtags have been said to facilitate "a new kind of sociality where microbloggers engage in ambient affiliation. The affiliation is ambient in the sense that the users may not have interacted directly and likely do not know each other, and may not interact again" (Zappavigna, 2011, p. 801). For this reason, Twitter has been considered useful in social movements like Occupy Wall Street and Black Lives Matter (Murthy, 2018, p. 4). Similarly, as Twitter encourages a many-to-many model through both hashtags and retweets, it has "a propensity to act as an echo chamber" (Murthy, 2018, p. 41). Cross-referring to various causes using other hashtags and mentions could link to other related causes, strengthening both (Hopke, 2015). Breaking news can result in peaks of activity in hashtag use (Fusaroli et al., 2015; Jungherr & Jürgens, 2014).

Zappavigna (2011) highlighted that language has a pivotal role in creating new forms of sociality online, but that there are few linguistic models that support the analysis of "online, and indeed offline, affiliation" (p. 789). We aimed to develop a model of analysis that incorporated the Twitter functionalities and Twitter content that could support solidarity.

Methods

This study employs a mixed methods research design that combines both quantitative and qualitative data in order to enable a comprehensive analysis relating to the research question: how did the functionalities of Twitter, as evident in the tweets using the hashtag #detkuhaværetmig, facilitate the expression and propagation of professional solidarity?

Data collection

The study follows a concurrent mixed methods design where both quantitative and qualitative data were collected at the same time (Creswell, 2009, pp. 14-15). We set up a Twitter crawler using the Twitter Stream API via DMI_TCAT (Borra & Rieder,

2014) to capture all tweets that included #detkuhaværetmig and alternative orthographic variants #detkuhaveværetmig, #detkunnehaveværetmig, #detkunnehaveværetmig, #detkuhaveværetmig from the 19th February, 2014 (the date ensured that all relevant cases were included) to the 3rd May, 2019 (the date we stopped data collection). The study was filed in April 2018 with the Danish Data Protection Agency (file number 2015-57- 0002), whose role it is to protect the privacy of individuals whose data are recorded in Danish registries.

To enable us to characterise the data set, we used the time of tweet to see when solidarity was expressed and tweeter (both Twitter name and real name if provided by user) including user description (e.g. "OB/GYN interested MD") to ensure that we were looking at professional solidarity. The functionalities we explored were co-hashtags (e.g. "#sundpol"), replies, mentions (e.g. @EllenTraneNorby), retweet count (the number of times each tweet is retweeted by others), like count (the number of times each tweet is liked by others), photos as well as tweeted statements, i.e. tweet texts.

Developing an analytical framework

The first part of the research question, i.e. the expression of solidarity, was analysed using the following functionalities: 1) the hashtag itself, 2) tweet texts and 3) photos. See Table 1. We acknowledge that the division into expression and propagation functionalities is a construct; it could be argued that all expressions of solidarity can also serve to propagate the message, as expressing solidarity through Twitter, using for example hashtags, can also be a way of propagating the message more generally. In the following, we outline the analytical approaches we applied in answering the research question.

Functionality	Analysis method
Hashtag	Pragmatic theory – analysis of #detkuhaværetmig
Tweet texts	Computational (sentiment analysis of content of tweet texts)
Photos	Categorisation of photos

Table 1 *Twitter functionalities for the expression of solidarity.*

The hashtag itself

It is well known that hashtags can express solidarity (e.g. Ince et al., 2017; Margolin & Liao, 2018; Narayan, 2013). The wording of the hashtag was analysed drawing on pragmatic theories (exophoric reference and implicature theory) in order to investigate how it expresses solidarity. These are explained in further detail below when they are applied.

Tweet texts

Using a computational approach, we explored the expression of solidarity by analysing tweet content. We know from the literature that the expression of emotions can promote solidarity, and that both positive and negative emotions can be used to express solidarity (Margolin & Liao, 2018, p. 3704). In order to classify affective expressions of solidarity in tweet content, we applied a dictionary-based approach to sentiment analysis developed for social media in Danish, the AFINN-32 dictionary (Nielsen, 2011). This type of sentiment analysis relies on lexical matching between, in this case, words in tweets and a sentiment dictionary that assigns a positive or negative score to each word. The AFINN-32 has 3552 terms ranging from -5 (maximum negative) to 5 (maximum positive) (M = - 0.62, SD = 2.12).

Photos

We included photos in the analysis of solidarity, as solidarity relies on conscious identification with a group, and thus, it was relevant to examine what kind of photos were included. Also, the inclusion of photos on social media can engage audiences (Bakhshi, Shamma, & Gilbert, 2014; Thomson & Greenwood, 2017). Stocchetti (2019, n.p.) has highlighted the potential of selfies to act as a form of "interpellation from below", or hailing of their audiences, which is relevant for the creation of solidarity. As such, photos also have the propensity to act as propagators of solidarity – see below.

The second part of the research question, i.e. the propagation of solidarity, was analysed using the following functionalities: 1) retweets and likes, 2) @mentions, and 3) co-hashtags. See Table 2.

Functionality	Analysis method
Retweets and likes	Computational (when tweets were most retweeted and liked)
@mentions	Categorisation of the most frequent @mentions
Co-hashtags	Categorisation of the most frequent co-hashtags

Table 2 *Twitter functionalities for the propagation of solidarity.*

These functionalities were included to be able to analyse how solidarity was propagated. With retweets and likes, we wanted to see whether tweets containing #detkuhaværetmig received attention through retweets and likes, and if so, when this occurred. @mentions have been said to be the primary interactive functionality (Hemsley, Stromer-Galley, Semaan, & Tanupabrungsun, 2018), and an analysis of the most frequent @mentions provides information on who tweeters wanted to address when expressing their solidarity. Co-hashtag analysis was conducted to investigate how tweeters framed their tweets, i.e. by analysing which topics were included in the conversation, and whether these topics were related to solidarity.

Retweets and likes were analysed using a frequency count and visual inspection. As for @mentions and co-hashtags, we extracted the most frequent @mentions and co-hashtags and categorized these.

Results

In all, 1,634 tweets that included the hashtag or variants were posted. In the rest of the article, we will for simplicity use "#detkuhaværetmig" to refer to all variants, as it was the most popular spelling, featuring in 1,352 of the total tweets. The first tweet that included the hashtag #detkuhaværetmig that related to the concrete Svendborg case was posted on the 15th September 2017; the last tweet with hashtag #detkuhaværetmig in our data set was posted on the 29th March 2019. The number of distinct users was 473.

Characterizing relevant data features

Tweeters

In order to investigate the main voices in the expression and propagation of solidarity, we categorized users into professions. It was important to identify whether tweeters were indeed HCPs in relation to our focus on professional solidarity, and to investigate which other voices were involved. For all 473 distinct users, we consulted the Twitter profile user description. If it was not possible to identify the profession from these descriptions, we consulted the tweet texts (words like "we" in relation to doctors), and, in cases of doubt, by consulting the individuals' personal Twitter pages. Inspired by Prabhu et al.'s (2015) classification of Twitter users into professions, we started deductively with the professions "healthcare professional", "news media", "politician" but were open to other categories.

The identification of tweeters' professions resulted in the following professional categories, "healthcare professional", "news media/journalist", "politician", "professional association", "mixed", "unknown" (where it was not possible to establish a profession based on Twitter data) and "bots" (cases where tweets were clearly unrelated to the case, such as tweets in another language than Danish and advertising videos). As can be seen in Table 3 below, the majority of tweeters were healthcare professionals (234). The fact that also politicians (35) and professional associations (29) tweeted about #detkuhaværetmig indicates the political nature of the hashtag. The news media tweeters (29) illustrate that the issue was viewed as newsworthy, and finally, the mixed category (29) implies that the topic caught interest outside the medical community, and that there was a more general desire to express solidarity with the individual concerned.

Profession	Number
Healthcare professional	234
News media/journalist	38
Politician	35
Professional association	29
Mixed	29
Unknown	42
Bot	66
Total	473

Table 3 *Identified tweeters categorized with respect to professions.*

Hashtag timeline

The purpose of including the hashtag timeline in the analysis was to show how hashtag activity unfolded over time, and to investigate whether expression of professional solidarity was linked to real-life events. As can be seen in Fig. 1a below, there are two main spikes in the frequency of the tweets along the timeline. The first concentrated period of Twitter activity took place during October 2017; the highest spike during that period involved 93 tweets on the 13th October. There was another spike on the 28th March 2018 where 55 tweets with #detkuhaværetmig were posted. These spikes are associated with specific events in the Svendborg case: the Eastern High Court charging on 30th August 2017 (there was a period of latency between the event and posting about it) and the Supreme Court's acquittal of the doctor on the 28th March 2018, respectively. Finally, there are indications of a final stream of tweets starting on the 13th September 2018, which we were not able to cross-refer to real-life events.

Expression of solidarity

In the following, we present the results of the analysis of the three data types that provide insight into the expression of solidarity, i.e. the hashtag itself, the tweet content and the photos included in the tweets.

The hashtag itself

The first tweet using the hashtag that related to the Svendborg case was posted on the 15th September 2017 by the public relations officer for the trade union, the Association of Junior Doctors, two weeks after the Eastern High Court's malpractice ruling.

Exophoric pragmatic theory is relevant for solidarity expression in two of the words in #detkuhaværetmig (#itcouldhavebeenme) – "det" (it) and "mig" (me), both of which are pronouns. Exophoric pragmatic theory has to do with words referring to extralinguistic identities, events or phenomena that lie outside the utterance (Cutting, 2008). Exophoric words are deictic – they index a reality outside the utterance (Mey, 2001, p. 54). Both "det" (it) and "mig" (me) refer to the extralinguistic context of the utterance. Significantly, the hashtag's underdetermination, reflected in the exophoric use of "it" referring to something outside the tweet, implies a shared narrative (Hougaard, 2018) that is known by a select few, thus projecting solidarity that is limited to the group that is "in the know" about the narrative. This thus emphasizes the "we-ness" of solidarity expression. "Mig" (me) refers to the personal support offered to the individual at the centre of the narrative; the speaker (whose identity is evident from their Twitter details and possibly a selfie, if it is included) is putting themselves on the line, as is characteristic of expressions of solidarity.

Implicature theory is also relevant for the expression of solidarity in the hashtag #detkuhaværetmig (#itcouldhavebeenme). As Griffiths (2006) explains, "implicatures are inferences that depend on the existence of norms for the use of language, such as the widespread agreement that communicators should aim to tell the truth" (p. 134). In the case of #detkuhaværetmig (#itcouldhavebeenme), the proposition that is reasonably implicated is the following: "What happened could have happened to anyone, including the interlocutor." According to Hougaard (2018), "it could have been me" shows empathy and identification as well as a high degree of randomness. The arbitrary nature of the case indicated in this implicature suggests the innocence of

the individual at the centre of the case and the fact that apportioning blame is inappropriate, hence the moral basis for expressing solidarity. Thus, the hashtag itself, "it could have been me", sends a powerful message of solidarity.

Tweet texts

As we saw above, the expression of emotions can provide an affective cue that promotes solidarity. In order to investigate emotions in #detkuhaværetmig tweets, sentiment analysis was used.
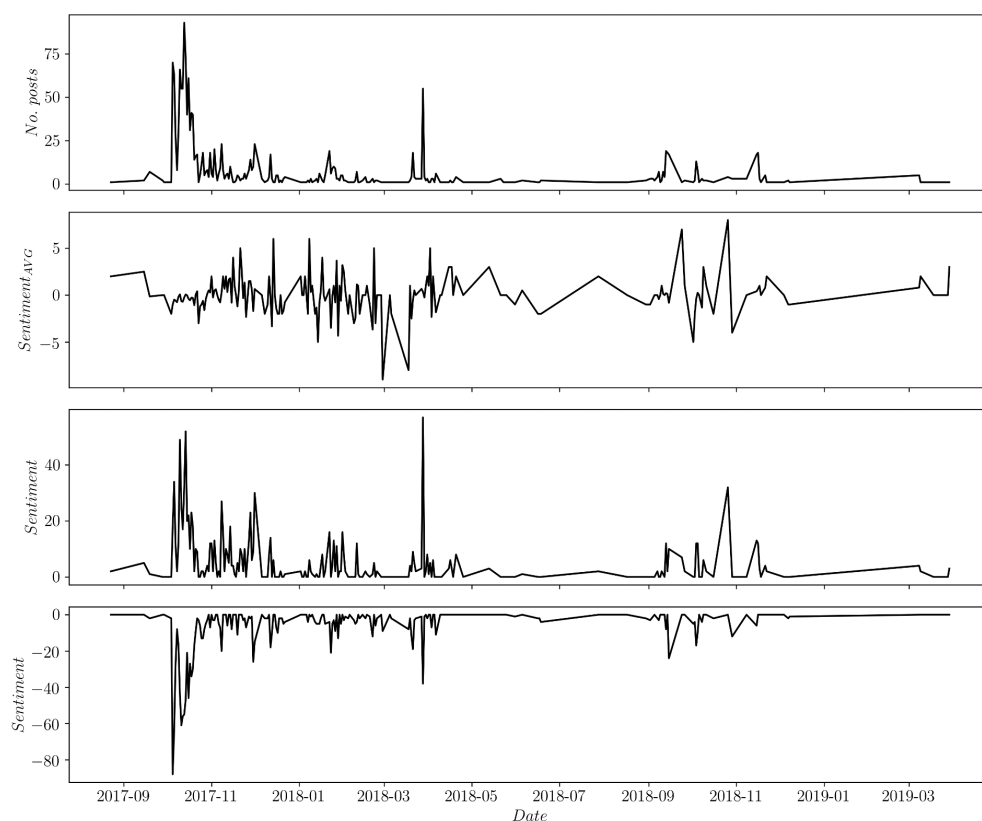

Figure 1

The figure shows four timelines with Twitter content over time (days). The first timeline, Fig. 1a) shows number of tweets per day (i.e. the hashtag timeline); Fig. 1b) daily average tweet sentiment scores; Fig. 1c) daily summed positive sentiment score; Fig. 1d) daily summed negative sentiment score. Notice qualitatively distinct phases, early onset and late resurgence corresponding to the Supreme Court's acquittal of the doctor on the 28th March 2018.

Simple average sentiment score over time resulted in a slightly negative picture (M = -0.12, SD = 2.34) that oscillated around neutral (see Fig. 1b). This interpretation, however, disregards two important factors: first, the time dependency of the response (i.e. that the evolution of the process follows a non-uniform pattern), and second, that solidarity can be expressed as positive emotions towards the target of criticism (i.e. fellow medical professional) as well as negative emotions towards the opposing force (i.e. the authorities). After separating the positive and negative responses, we saw temporally correlated bi-model responses (see Fig. 1c-d) that were particularly pronounced in the early phases of the process, peaking around the 10th-20th October, 2017, a later positive and negative spike on March 28th, 2018, and a final phase starting on the 13th September, 2018. Analysis confirmed that the two responses were highly correlated in time (r(204) = -0.65, p < 0.00001). Finally, we plotted the distribution of non-zero sentiment values in Fig. 2, which displayed bi-model behaviour (a positive and negative mode) and long tails in both directions such that the sentiment distributions mirror each other. This confirms that we are dealing with two modes of solidarity, which behave similarly although in opposite directions. Most non-zero tweets are either moderately positive or negative (see the spikes in Figure 2), while a few tail off to either extreme.
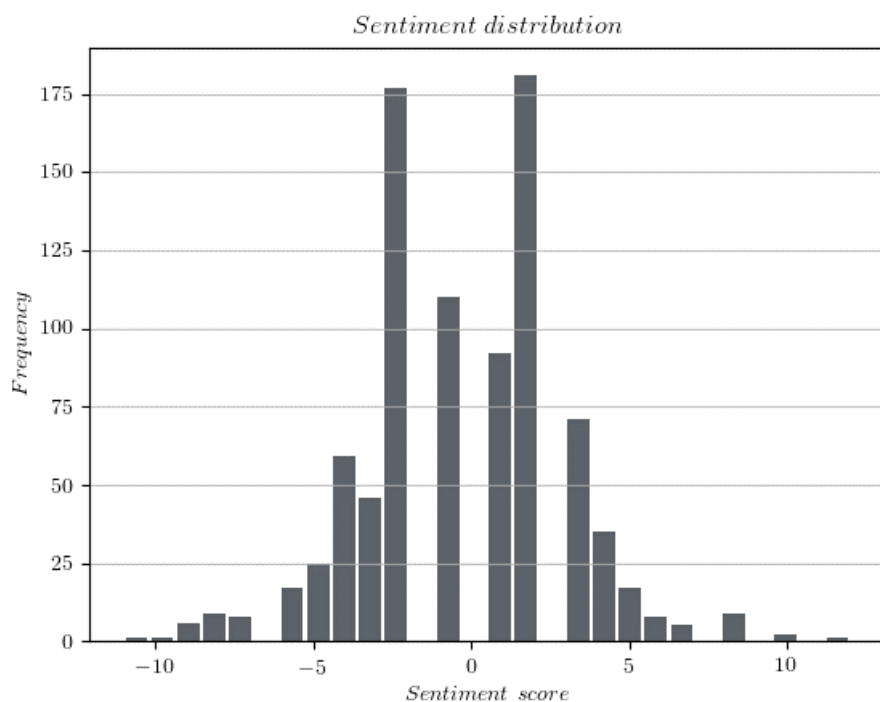
Figure 2

Distribution of non-zero sentiment scores for tweets. Tweets can contain more than one word included in the sentiment dictionary, and hence the range of the first axis is larger than the sentiment dictionary's range (-5 to +5). The distribution has two modes of affective solidarity embedded, a negative mode towards the opposition and a positive mode to the target.

Photos

There were 212 photos included in the data set. As solidarity can rely on conscious identification with a group, we wanted to see what kind of photos were included. Furthermore, as solidarity can involve putting oneself on the line as well as in-group and we-thinking, we categorized the photos included into three categories: one person in the photo (86), more than one person in the photo (73), and no person in the photo (53).

The first category of one-person pictures primarily included selfies. These mainly depicted the individual wearing a white doctor's coat or surgical wear, included stethoscopes and name tags, and the individuals were clearly at work, evident by hospital or medical equipment in the background, with one HCP even standing at the hospital helipad. Other selfies showed people in their everyday clothes and were taken outside the workplace. Most selfies had the hashtag #detkuhaværetmig written across the picture, and some also included the date of the Svendborg case "05.08.13". These selfies can be seen as evidence of expressing solidarity, as showing your face clearly illustrates that one is "putting oneself on the line". The fact that many of the pictures included medical clothing and settings highlights the expression of professional solidarity.

The second category included five main types of photos. The first type was a large group of people representing a hospital department, as seen by the inclusion of the name in the photo, i.e. "Department of Neurology", or by the setting, such as an ambulance or a hospital lunch room. The second type was a mosaic of selfies where all selfies were included in one large picture. The third type was a large group of what can be assumed to be medical students with the hashtag #detkanblivemig (#itcanbeme) included. A fourth type was photos from a #detkuhaværetmig demonstration, and the fifth type was photos from meetings. These group photos illustrate "we-thinking", standing together to show support.

The third category of photos, where no individual was included in the photo, mainly included pictures of newspaper articles, social media posts or other correspondences related to the Svendborg case. The purpose of this category seems to be to illustrate the magnitude of the case and the hashtag by showing photos of the use of the hashtag in other media as a way of highlighting how news of the case had propagated.

Propagation of solidarity

As mentioned, the propagation of solidarity was analysed through the hashtag timeline, retweets and likes, @mentions and co-hashtags.

Retweets and likes

To investigate whether #detkuhaværetmig tweets gained popularity through retweets and likes, and if so, when, a computational approach was used to investigate when tweets were most frequently retweeted and liked. Retweets followed the same overall pattern as the hashtag timeline (see Fig. 3 below) confirming that the overall process was characterized by two to three phases, an initial phase that shows by far the most massive tweet-retweet activity in October 2017 followed by a slight resurgence in the beginning of December 2017, and then the final spike on the 28th March, 2018. There is no indication in retweet behaviour that corresponds to a final phase (as in the hashtag timeline). The case had, in other words, effectively ended with the Supreme Court's acquittal. Like and retweet cycles are coupled, because a liked tweet is more likely to get retweeted and vice versa. The like cycle (called "favourites" in Fig. 3) therefore reproduces findings from the hashtag timeline and retweet cycle, with two to three predominant phases.
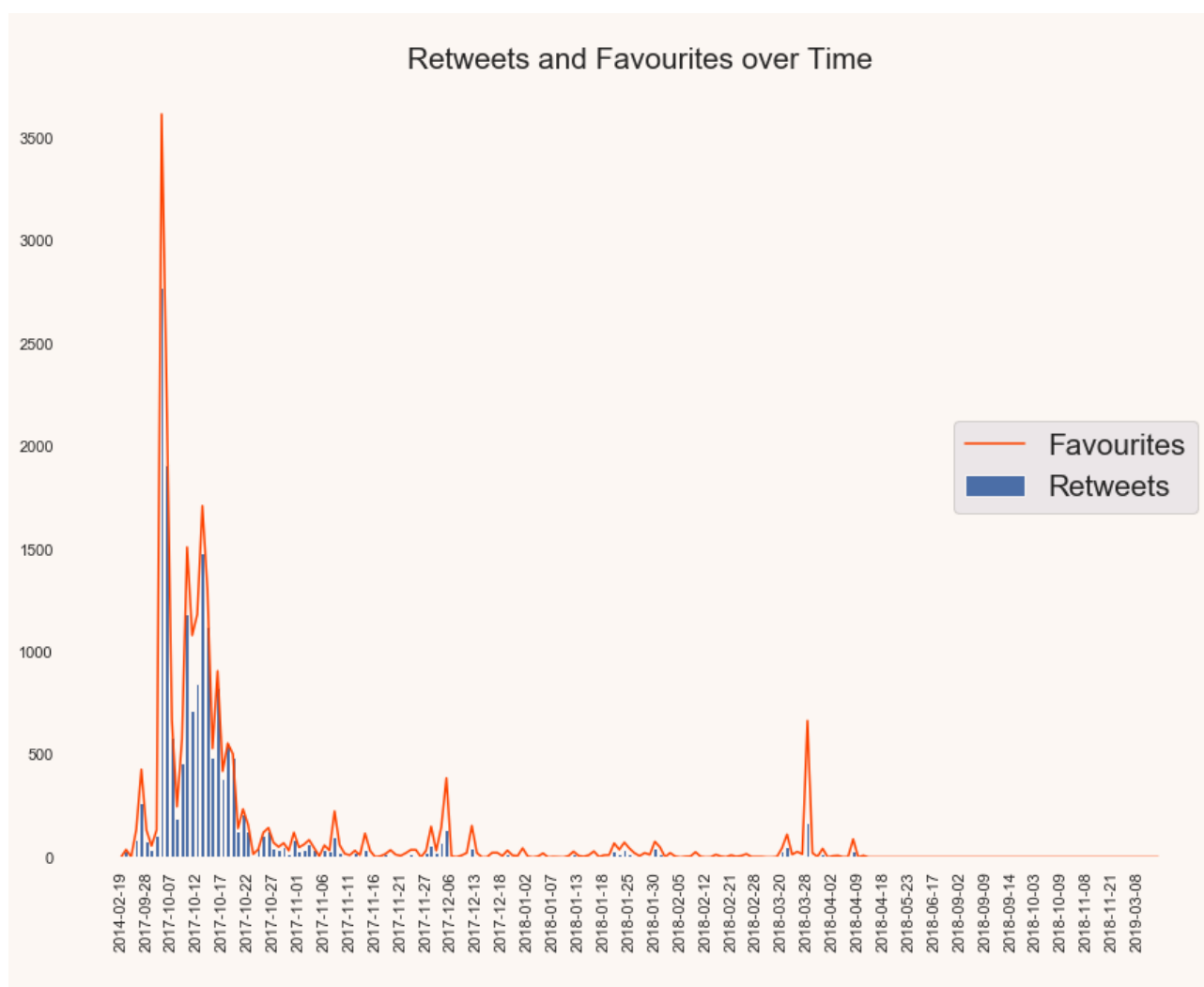

Figure 3 *Retweet and like (favourites) cycles for the hashtag timeline. Retweets and likes appear highly correlated over time.*

@mentions

Tweeters can include the "@" symbol followed by a user account name (e.g. @EllenTraneNorby) in their tweet, and then a notification is sent to the user being mentioned (Bruns & Moe, 2013, p. 19). To see which main voices were summoned to be included in the solidarity discussion, we extracted tweets of @mentions with more than 20 occurrences (see Table 4 below). We saw three main categories of @mentions: politicians and government agencies, professional associations and news media. For politicians ("Blixt22", "smbrix"), the former minister of health ("EllenTraneNorby") was the most mentioned. The government agency, the Danish Patient Safety Authority, ("STPS_DK") as well as their director ("VangstedMarie") and section leader ("bech_karsten"), were often mentioned. The medical professional associations, The Danish Medical Association ("laegeforeningen") as well as their president ("rudkjoebing"), and the Association of Junior Doctors ("YngreLaeger") as well as their president at the time ("Camilla_Rathcke") are also mentioned. Finally, news media were represented ("DagensMedicinDK" "dkmedier", "Radio24syv").

Mention	Number
EllenTraneNorby	206
STPS_DK	141
bech_karsten	69
laegeforeningen	62
YngreLaeger	59
VangstedMarie	40
smbrix	39
rudkjoebing	36
Camilla_Rathcke	36
DagensMedicinDK	35
Blixt22	29
Radio24syv	28
dkmedier	23

Table 4 *@mentions with more than 20 occurrences.*

@mentions have been said to be the primary interactive functionality on Twitter as they signal the occurrence of a discussion between Twitter accounts (Hemsley et al., 2018). By using @mentions, tweeters can both target their own followers as well as those of the user they mention, which means that "such messages have greater reach, and potentially for campaigns, greater influence" (Hemsley et al., 2018, pp. 5-6). These mentions paint a clear picture of the people and organisations tweeters wanted to include in their conversation, or who they wanted to address as their audience. When looking at these mentions, it becomes clear that there also is an activist element in the #detkuhaværetmig communication, as noted by Hougaard (2018), with tweeters urging politicians and government agencies to take action. The mentions of news media showed the wish to propagate the message.

Co-hashtags

To investigate which other topics were included in the communication, we extracted the most frequent co-hashtags. Using co-hashtags, tweeters can frame their communication. The use of co-hashtags can strengthen the solidarity message of #detkuhaværetmig hashtag and reach a broader audience as people searching for these other hashtags will be included in the conversation. As mentioned by Hopke (2015), cross-referring to other causes can strengthen both causes.

The most frequent co-hashtags included "sundpol" (677; health politics), "dkpol" (209; Danish politics), "dkmedier" (122; Danish media), "patientsikkerhed" (116; patient safety), "dksund" (76; Danish health), "svendborgsagen" (34; the popular name for the case involving the young doctor), "utryglæge" (29; unsafe doctor), "nomoresilence" (23; already in English), and "dksundpol" (21; Danish health politics). These co-hashtags add meaning to the original hashtag, helping to nuance it.

Co-hashtags link back to the original issue, the Svendborg case, as well as link #detkuhaværetmig to more general issues such as "Danish health" and "patient safety". The "unsafe doctor" and "nomoresilence" hashtags can be seen as signs of solidarity with the accused doctor and as potentially a call to action. The co-hashtags "Danish politics" and "health politics" also make it clear that it is a political issue. Finally, the "Danish media" co-hashtag can be seen as reflecting a desire to propagate the message in the media.

Discussion and Conclusion

#detkuhaværetmig as showing solidarity

Twitter is a new medium and an emerging forum for healthcare professional communication. For this special issue on health, media and participation, we highlighted and analysed functionalities and characteristics of Twitter communication that facilitated HCPs' expression and propagation of solidarity. The hashtag #detkuhaværetmig, which all of the analysed tweets had in common, served as a nodal point for the expression of solidarity in a number of ways. All #detkuhaværetmig tweets signalled solidarity as they portrayed a readiness to show moral support which is an attribute of solidarity (May 1996, p. 44). Furthermore, the fact that people took to Twitter to show support showed solidarity as it involved action on behalf of another (Kolers, 2016). The hashtag showed readiness to put oneself on the line, even a kind of personal sacrifice (Laitinen & Pessi, 2015), as the hashtag itself showed that tweeters felt they could easily have made the same "mistake" as the doctor in the Svendborg case ("it could have been me"). They did this using personal photos depicting individual tweeters in doctor's coats and surgical wear or in large groups in the hospital, clearly showing conscious identification with the group and we-thinking. Tweeters tweeted, retweeted and liked at crucial moments as the Svendborg case evolved as seen by the hashtag timeline and retweet and like cycles. Our study also showed that solidarity in #detkuhaværetmig tweets was both, and equally, portrayed through positive and negative emotions, as both emotions can support solidarity – positive to the "victim" and negative to the "oppressors". Besides expressing solidarity, functionalities of Twitter also helped to propagate it. Professional solidarity was expressed by mainly HCPs, but also politicians, professional associations and news media. Finally, the @mentions and co-hashtags demonstrated a wish to propagate #detkuhaværetmig, not only as a message of (professional) solidarity, but also as a political issue. An interesting finding was that photos attached to #detkuhaværetmig tweets functioned both as a means of expressing solidarity as well as propagating it, through interpellation.

By facilitating expressions of solidarity with a fellow HCP in all #detkuhaværetmig tweets, Twitter became at the same time a means of communicating a politically resonant message about working conditions. While a recent news article (Damsgaard, 2019) highlighted a shortage of professional solidarity amongst doctors in Denmark, the fact that doctors who may not otherwise tend to show solidarity chose to do so with the hashtag #detkuhaværetmig is an interesting aberration that may say something about the case hitting a particular professional nerve as well as the usefulness of Twitter functionalities for expressing solidarity. Also, the fact that the very first #detkuhaværetmig tweet was published by the public relations officer for the Danish Association of Junior Doctors makes it seem a modern-day call to action by the union. Thus, from the start, #detkuhaværetmig can be said to have facilitated the expression of political solidarity with the cause, as well as subjective solidarity with the individual.

#detkuhaværetmig and participation

According to Hunt and Benford (2007), "participation often emerges out of a sense of solidarity" (p. 439). At a basic level, Twitter facilitated participation: it provided HCPs with a medium through which they could express their solidarity by standing shoulder-to-shoulder with a fellow professional whom they felt was made a scapegoat for deficiencies in the system. The part of our study devoted to analysing the propagation of solidarity clearly shows interactive and participatory elements. The volume of tweets containing the hashtag #detkuhaværetmig as well as their alignment with real-life events in the case show that the Twitter communication did not just happen in a vacuum. Similarly, the number of likes and retweets that tweets containing the hashtag received indicate online participation. The functionality of @mentions provides a type of "addressivity" (Honeycutt & Herring, 2009), either trying to initiate a conversation with that person or talking about someone while others were around to hear, and thus, not just shouting into the abyss. Finally, the co-hashtags themselves can be viewed as an interactive practice

cutting across Twitter as this practice is a way of aligning with existing topics.

Participation facilitated by Twitter is transient and might be decried as clictivism or armchair participation. However, we would argue that this seems far from the case with #detkuhaværetmig, as photos of individuals and groups with the names of hospital departments were included. The inclusion of doctors' photos in many of the tweets is interesting in relation to Dreyfus's (2001) characterization of internet technologies as facilitating "disembodied telepresence" (p. 50), as HCPs brought their physical presence to the tweets. It is impossible to say that Twitter had an impact on the case, but the issue and the hashtag were picked up by other news media. Moreover, #detkuhaværetmig was nominated by most Danes as word of the year in 2017, in a vote held each year by the Danish Language Council (Fyens Stiftstidende, 2018), indicating its broader appeal and circulation.

Previous research

Several findings resonate with previous studies. Other studies have investigated emotions on Twitter such as Margolin & Liao (2018), who argued that solidarity can be signalled through both positive and negative emotions. Our sentiment analysis demonstrated that the emotions were nearly equally positive and negative, though with a slight tendency to be negative.

Pragmatic analysis of the hashtag itself showed that the exophoric reference to the extralinguistic reality implied and required a shared understanding. This can be said to be the case for many other popular hashtags such as #metoo and #jesuischarlie as these are also not self-explanatory. Future studies comparing such hashtags requiring extralinguistic knowledge with more self-explanatory ones might yield interesting knowledge. Other studies have demonstrated re-use of hashtag wording for broader purposes as a general marker of solidarity and alignment (e.g. "jesus", De Cock & Pizarro Pedraza, 2018).

Our analyses also show that #detkuhaværetmig portrays some characteristics that seem unique compared to previous studies. Hashtags tend to gather communities that are very loosely affiliated (see, for example, Bruns & Burgess (2011) on "ad hoc publics" and Zappavigna (2011) on "ambient affiliation"). However, in our analysis, we found that tweeters were mainly (Danish) healthcare professionals, and thus consisted of a real-life professional community, without necessarily knowing each other personally, of course. The wording of the hashtag of course contributes to this, as the "me" clearly refers to a fellow healthcare professional, thus implying an in-group (and an out-group).

Strengths and limitations

This study does not cover all Twitter functionalities. We selected the data sources we found to be most appropriate for our research object of solidarity expression in tweets; other data sources could have been included such as analyses of most popular tweets (based on retweets and likes), number of followers of main tweeters, tweeters' total number of tweets, and weblinks.

Also, to model solidarity as variation in word-level sentiment scores is not without its limitations. First, every quantification involves a formalism that simplifies the studied system, meaning that every model is also a simplification. The validity of the model relies on the formalism being adequate for the research problem and data under scrutiny. In this case, sentiment analysis is a well-tested approach to modelling the affective dimensions of linguistic meaning, but it is typically not sensitive to subtleties of language use such as irony and metaphor. Second, in affective computing, there are multiple approaches to sentiment analysis, and a dictionary-based approach is not ideal for handling contextual effects of linguistic meaning (e.g. negation or word order) or some data-specific facets (e.g. emoticons). In the present case, it actually disregards both. A dictionary-based approach is, however, transparent, compared to more machine or deep learning-based approaches, in the sense that we can account for the groups of words and concepts that drive the observed results and, furthermore, sentiment scores are generally robust across dictionaries (Reagan, Danforth, Tivnan, & Dodds, 2017). Importantly, the applied dictionary, AFINN-32, is developed specifically for social media and written for Danish and not "just" translated from English.

We believe that one of the main contributions of this article is its methodology. Twitter is a relatively new medium, and because of its many different functionalities (text, hashtags and co-hashtags, @mentions, photos etc.), it requires new analytical approaches. We assembled a range of approaches that would enable the exploration of solidarity expression and propagation associated with the hashtag #detkuhaværetmig in Twitter data. Mixed methods were appropriate for exploring specific functionalities of Twitter data, also given the relatively large data size. An innovative aspect of our methodology is its

use of computational analysis to gauge positive and negative emotions associated with solidarity. We also tracked the volume of tweets over time, noting connections between real events and the volume of tweets with the hashtag #detkuhaværetmig. Qualitative analysis also supported the exploration of solidarity in our data, for example, in relation to the meaning of the hashtag itself. As we focused on solidarity expression and propagation, the approach presented in this article could benefit other studies exploring solidarity expression and propagation in Twitter data.

Future perspectives

In our Introduction, we include both general solidarity and professional solidarity. Our analysis showed that tweeters joined the debate to express solidarity, but it is not possible to interpret what kind of solidarity is demonstrated. Are tweeters joining this debate because a moral principle was violated, or did they join because a member of their in-group was attacked (in-group solidarity)? A follow-up interview study with tweeters could shed light on these questions.

As we wanted to investigate which Twitter functionalities could be relevant when studying solidarity, the analysis, as presented above, is somewhat atomized. For example, photos are analysed isolated from the tweet text and the tweeter. Future studies could take a multimodal approach as multimodal analysis explores the interplay between various modes, such as text and image, where each is considered to contribute meaning to the other (Kress & van Leeuwen, 2001).

Future studies into this or a similar hashtag might benefit from applying a theoretical framework of power and empowerment to see how Twitter may facilitate the expression of empowerment and involve power plays. Also, future studies could take a more media-holistic approach, investigating how hashtags based on real-life events develop and unfold across the broader (social) media landscape. Finally, further research is needed to explore the wider cultural and sectoral implications of the #detkuhaværetmig hashtag in terms of how it may have affected communicative norms among HCPs, as it provided them with a new means of expressing personal messages of professional solidarity.

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