Governmental Response to the COVID-19 Pandemic

A Quantitative Ethnographic Comparison of Public Health Authorities' Communication in Denmark, Norway, and Sweden

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Governmental Response to the COVID-19 Pandemic - A Quantitative Ethnographic Comparison of Public Health Authorities' Communication in Denmark, Norway, and Sweden

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Abstract. The Scandinavian countries are often seen as a unity. However, during the COVID-19 pandemic striking differences on how the countries approached the crisis became evident. This quantitative-ethnographic (QE) study aimed to understand political and cultural similarities and differences between the three Scandinavian countries – Denmark, Norway and Sweden – through their crisis communications during the COVID-19 pandemic. Specifically, we focused on how the health authorities of the three countries, in their press releases, treated information about COVID-19 and acted in four fields: reorganization of population behavior, containment of viral transmission, preparation of health systems, and management of socioeconomic impacts. As a methodology, the QE tools nCoder and ENA were applied, respectively: to code the press releases and to correlate the treatment of information with the four fields of action.

Keywords: COVID-19 · pandemic · crisis communication · quantitative ethnography

1 Introduction

Crisis communication is the 'collection, processing and dissemination of information required to address a crisis situation' [4, p.20]. Studying and evaluating communication strategies in health crisis situations is essential as their effectiveness reduces negative impact and prevents casualties. Research in crisis communication has rarely taken a comparative perspective as most investigations are limited to single case studies [20]. We take the global pandemic, caused by the SARS-CoV-2 coronavirus (COVID-19) as

an opportunity to undergo one of the first comparisons of crisis communication strategies across three Scandinavian countries.

On March 11, 2020 the World Health Organization (WHO) started to characterize the spread of COVID-19 as a global pandemic [28]. During an ongoing pandemic, the media, the government, and public health professionals and institutes play a central role in crisis communication and risk management as they inform the public about the vulnerability to the disease and suggest "measures to control the spread of the disease such as the promotion of individual protection (face masks and hygiene), imposing travel restrictions, and social distancing" [30]. The Trust and Confidence Model suggests that how the public estimates the risk associated with the disease and its willingness to comply with the mentioned countermeasures is strongly dependent on the level of trust and confidence people have in the government and its institution [26]. Research shows that people with a higher level of trust in the government are more likely to comply with what the authorities suggest [19,29,30]. However, groups of people, depending on their socioeconomic, psychological and cultural background, conceptualize risk differently and take different stands towards recommended measures [8,29]. This suggests that how a health crisis is framed and how the public is informed about the risk of a disease and the measures to control it will, to a large degree, depend on the cultural values in a country, as well as the governmental organization and the citizens relation to the state [27]. Thus, a central question is how authorities frame the crisis, communicate the countermeasures, inform about the risks and thus build up that trust among citizens.

As COVID-19 spread around the world, governments reacted in different ways. We analyze the differences in crisis communication of governmental health institutions in Scandinavia at the beginning of the spread of the COVID-19 pandemic in Spring 2020. In particular, we use the press releases published by health authorities between January and April in each country. Scandinavia is a sub region in Northern Europe, covering the three kingdoms of Denmark, Norway, and Sweden. The relation between these countries is characterized by strong historical, cultural, and linguistic ties, which leads to the Scandinavian countries often being considered a homogeneous unity. From a political perspective, the three countries are similar in that they developed a welfare state model where citizens have a high trust in the government [12,11,9]. Despite their salient closeness in culture and politics, during the COVID-19 pandemic significant differences between the countries became evident. While Denmark and Norway seemingly pursued a similar way in terms of their precautionary measures by giving clear instructions for hygiene, social distancing, etc. Sweden's government refrained from taking legally enforced measures such as closing schools, and decided to take a different path with the cost of many more deaths[6]. Acknowledging the differences between the Scandinavian countries, and especially their different reaction to the pandemic, lead to the following research question:

What similarities and differences can be found between the governmental response to the corona crisis in Denmark, Norway, and Sweden through their respective crisis communication strategies conveyed through the public health authorities' press releases?

[6] https://ourworldindata.org/grapher/total-deaths-covid-19?country=DNK NOR SWE

To study this question, we use methods from quantitative ethnography to investigate the different responses to the pandemic situation in Denmark, Norway, and Sweden, and people's relationship to the state. During our coding and analysis, two groups of codes – somewhat aligning with Salious' [23] two types of information during a pandemic – were identified as a starting point for understanding the discourses conveyed by the health authorities in the datasets: (1) what sources of information were considered and prioritized by the governments, e.g., statistics on the global spread or information on the symptoms that the virus causes; and (2) the actions taken by the governments e.g., to monitor and regulate people's behavior or equip the healthcare system for the challenge. We developed eight codes and organized them into two frames: four regarding information (sources) and four regarding actions. Our approach revealed significant differences between the countries regarding how the pandemic was framed. While Norway's and Sweden's crisis management followed a clear discourse, Denmark's framing was more difficult to interpret.

We continue by presenting the sociological background of our study as well as relevant empirical work from crisis communication research, before we present our data collection strategy.

2 Background & Related Work

To structure our investigation of how the three Scandinavian countries responded and acted in reaction to COVID-19 we needed to base our interpretation in political culture. This cultural approach was the basis for how we conceptualized the crisis communication the different governments adopted and allowed us to analyze the potential differences between them. Once we grounded our theoretical approach we are able to investigate crisis communication in the three countries.

2.1 Pandemic and Crisis Communication as Political Culture

Throughout the history of the social sciences, culture, in general, has been conceptualized from different perspectives. In the vast epistemological and methodological diversity, Cuche affirms the relevance of this concept to social sciences and explains the diversity of human unity beyond the biological body, by focusing on the ways of acting, thinking and feeling of individuals that are defined by socio-historical dynamics. [5, p. 9-15].

In this context, the ways that Scandinavian countries treated information regarding COVID-19 and acted in the reordering of population behavior, the containment of viral transmission, and the reorganization of health systems, are under cultural determinations. In specific, in order to understand similarities and differences between Scandinavian countries in how they handled information and acted in relation to COVID-19, it can be considered that press releases from health authorities are relevant because of how they manifest individual variants of *habitus*. These consist of "generative schemes" [2] of ways of acting, thinking and feeling of individuals, as their socialization processes lead to the internalization of values, norms and other social principles, which

underlie their readings of the world, their rational choices and other individual and social actions. They are predispositions to act, think and feel, which are "structured and structuring structures" of socio-historical dynamics between individuals in continuous socialization that, because of un-interruptibility of social interactions, keep updating these predispositions.

If we consider a social group in a macro-social perspective, such as the culture of a country, in order to differentiate Danes, Norwegians, and Swedes in responding to the COVID-19 pandemic, we need to consider that the choices of the authorities and the actions of the population are immersed in great social-historical syntheses that are structured as much as they are structuring structures of generative schemes. Thus, we can understand that the decision-making individual, as a health authority, "reveals itself as a 'structural variant' of the *habitus* of its group or class, [and] the personal style appears as a codified deviation in relation to the style of an era, a class or a social group" [18, p. 18]. In this way, governmental and population actions in pandemic situations, such as COVID-19, observed in press releases by health authorities, are empirical sources for studies about *habitus*, and henceforth express cultures of different social groups and countries.

Regarding the Scandinavian countries, the populations' *habitus* are by decades in relation to strong welfare states and high level of trust in government [15,14,13]. However, these countries' cultural differences have led to distinct polyarchies [6], in this paper addressed especially in the differences between distribution of power within the constitutional monarchies and citizens' relationship with the State. Moreover, elements of the *habitus* of each country are addressed - ethopoliticality in Sweden, to "act fast and with force" in Denmark and the more careful approach to individual rights in Norway.

2.2 Empirical Work in Crisis Communication

Research in communicating health emergencies have identified the need for unique forms of risk and crisis communication. Saliou's [23] investigation in crisis communication singled out two types of emergency information that are most important; preventive and reactive messages. Reynolds and Quinn [21] highlighted trust, creditably, and empathetic communication as essential elements for persuasive communication in influenza pandemics. Multiple studies investigate the risk perception and government trust during epidemics and how public health messages are heard, interpreted, and the responses studied [30]. However, the focus of our study is less on the reaction of the people and more on how authorities communicate information and actions.

The COVID-19 pandemic is still ongoing, however research on crisis communication has been part of a large body published articles investigating all aspects of the epidemic. Early research on crisis communication during the COVID-19 pandemic in the US shows that even within a country, political leaders and media outlets are having divergent ways of framing the crisis and its severity highlighting partisan differences [1]. Many researchers mentioned the problem of the infodemic that accompanies the pandemic: which makes it much harder to build trust in what the government says [17,10].

In summary, it is understood that ways of thinking and acting by government institutions and local populations, which are part of political cultures, in this article observed

in the response of Denmark, Norway and Sweden to the current pandemic situation, are intimately linked to socio-historical readings of the world by individuals under "generative schemes" of *habitus*. In specific, the "ways of thinking and acting" are under the eight codes selected to interpret the crisis communication of health authorities in Scandinavian countries: on one hand, information regarding COVID-19 biology, illness, spread and monitoring; on other hand, actions regarding healthcare system, financial system, government response and population response (see Table 2).

3 Data Collection, Processing & Coding

To investigate our research question we decided to use the press releases published by the health agencies of the three Scandinavian countries. The activities of the public health authorities in the three countries were similar in scope and intensity, and therefore considered viable objects for comparison. Thus, we took the press releases from the following three agencies:

Statens Serum Institut[7] (SSI) is under the auspices of the Danish Ministry of Health. The main duty is to ensure preparedness against infectious diseases and biological threats as well as control of congenital disorders. **Folkehelseinstitutet**[8] (FHI), the Norwegian Institute of Public Health, is a government agency under the Ministry of Health and Care Services. FHI provides knowledge about the health status in the population, influencing factors and how it can be improved; they also have competence in infectious disease control. **Folkhälsomyndigheten**[9] (FYI), the Public Health Agency of Sweden, has national responsibility for public health issues and works to ensure good public health. The agency also works to ensure that the population is protected against communicable diseases and other health threats.

3.1 Data Collection

To collect the different press releases, we used Octoparse[10] to scrape the health authorities press releases from their respective web presences over a time frame from the beginning of January to the end of April 2020. In a next step, we used R and the tidytext[11] package to clean and process the documents. First, we deleted non-COVID-19 related press releases and cleaned the remaining text from HTML tags, etc. Moreover, we tokenized the press releases into sentences that we used as stanzas in our coding process which can be considered our window size for looking at connections later. Following the cleaning process we translated each stanza from its respective language into English using the GOOGLETRANSLATE[12] function in Google Sheets. Finally, the two central

[7] https://en.ssi.dk/
[8] https://www.fhi.no/en/
[9] https://www.folkhalsomyndigheten.se/
[10] https://www.octoparse.com/
[11] https://cran.r-project.org/web/packages/tidytext/vignettes/tidytext.html
[12] https://support.google.com/docs/answer/3093331?hl=en

tools in quantitative ethnographic research, nCoder[13] and Epistemic Network Analysis[14] (ENA), were employed by coding the press releases in nCoder and visualizing the outcome of the coding process using ENA.

Table 1. Descriptive statistics of the dataset.

Institute	# press releases	avg. # tokens per release	# stanzas (i.e. coded units)
SSI (Denmark)	42	348.1	752
FHI (Norway)	71	257.6	955
FYI (Sweden)	58	249.9	717

Table 1 summarises descriptive statistics of our dataset. All in all, the applied data collection process resulted in a total of 171 press releases with 42 from the Danish SSI, 71 from Norwegian FHI, and 58 from the Swedish FYI. While press releases published by the Norwegian and Swedish health institutes are on average of similar length (FHI 257.6 vs FYI 249.9 tokens), the Danish press releases are quite longer with 348.1 tokens on average. When looking at the number of stanzas the Norwegian FHI accounts for most stanzas in the dataset (955), which aligns with the fact that they also published the most press releases during the period of analysis.

3.2 Coding Process

An iterative four-phase feedback loop guided the coding process. The three initial phases of the coding process followed the circle for interpretation and understanding of the datasets proposed by Shaffer [25]. The fourth, final coding process, followed the test-retest reliability of nCoder [25].

Phase (1), Planning: This phase involved setting team focus, brainstorming, making hypotheses, and development of the first codes. The coding process was initiated from the primary focus of the study, i.e. the differences in crisis communication and the discourse (narrative framing) of the Scandinavian countries with a focus on the peoples relationship to the state. From this overarching focus, two key themes were identified as a starting point for understanding the structure of the discourses in the datasets: (1) the information sources and (2) the response (actions) of the governments.

After the themes were discussed, joint brainstorming sessions were conducted to find keywords, subsequently used in the development of codes. Therefore, the first strategy was to visualize the health press releases from the health agencies in the form of a comparison cloud (Figure 1) that enabled identification of the most common keywords linked to each country's discourse. Based on the size and color of words, the relative frequency throughout the corpus was visually indicated. However, it should be noted that if a keyword such as "health" or "general" only appeared in one colour, it did not mean that other authorities did not use that word, but that this authority was the one that used the word most frequently. The second strategy was to watch YouTube

[13] http://www.n-coder.org/

[14] http://www.epistemicnetwork.org/

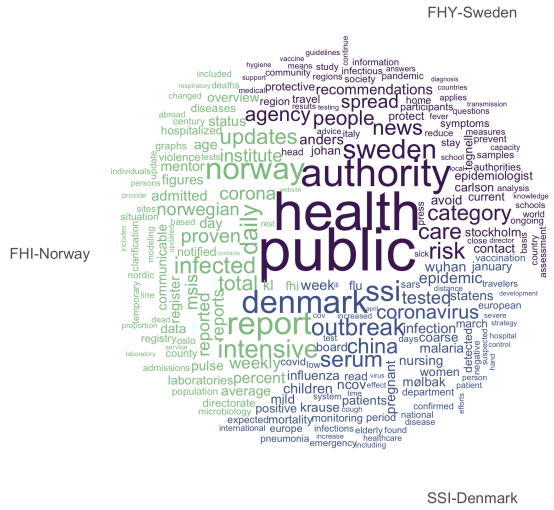

Fig. 1. Comparison wordcloud visualizing the most frequent words used by each health agency.

videos from various press conferences held by the three countries' governments and ministries. Both strategies had the purpose of collecting and defining keywords and helping with hypotheses modeling. Thus, hypotheses were created from the two focus themes and the findings made in the brainstorming process. For example, the initial hypothesis concerned how the three countries would differ in how people acted individually and collectively as a response to measures taken, if states were to adopt a proactive or reactive strategy for control, and if the economic status and issues regarding illness, spread, and health care would be other contrasts.

All coding was carried out using the nCoder software and followed the three-step rating process. Thereto, all codes were modeled using a binary (present/not present) decision [7]. In the first phase of the coding process, the following codes were tested: People's response, Duty of the state, COVID-related, Economy, Epidemic, Healthcare, and Sickness. Since the first test did not reach a Kappa > 0.9 for the level of agreement (and with a Rho > 0.05) between human and classifier, a second review of the dataset was conducted.

Phase (2), Refinement of codes: A second review of the datasets belonging to the health authorities was carried out by manual screening. As the same hypotheses still governed the work, the search resulted in more advanced keywords. New codes tested in phase 2 of the coding process were: Healthcare, Government actions, Government response – Financial, Intelligence2, and Peoples relationship to the state.

Phase (3), Additional tests: Phase 3 of the coding process specifically focused on discourse around health-related phenomena. The following codes were selected and tested based on previous examinations of the data sets: Epidemic, Health Care System, Biology of the Disease, and Illness. As test sets from coding phase 2 and 3 did not reach

the level of agreement between human vs. classifier with a Kappa < 0.9 (Rho > 0.05), a final, fourth, coding round was initiated.

Phase (4), Test-retest: Through ongoing discussions, a consensus on keywords was reached among the members of the research group, based partly on the research focus and partly on the importance of the keywords in relation to the discourses in the data sets. Therefore, the initial phases were essential in order to enable reliable and valid codes while reducing bias. After a high level of agreement was reached using a specific test-set (Kappa > 0.9 and Rho < 0.05), subsequent steps in nCoder were completed with acceptable values for inter-rater reliability and validity for the entire dataset.

Table 2 presents the results of the four-phase process, i.e. the final coding scheme. In the remains of the paper, codes will be highlighted as seen in this table based on their type as information codes and action codes.

Table 2. The final coding scheme presenting the codes, their description, keywords and type. The codes were used in an automatic coding process via nCoder.

Code	Description	Keywords	**Type**
Illness	Discourse that addresses the human symptoms and body reactions.	Fever, Respiratory, breath, cough, throat, pain, vomit, asympto, transmit, sick, symptom, flu	Information
Biology of the Disease	Discourse characteristics of nCoV, how it relates to other viruses, and how it is biologically transmitted between people.	Sars, ncov, mers, communicable, virus	Information
Epidemic Spread	Discourse about the spread of the virus on a global and a national level as well as related to social activities and locations.	Abroad, Market, Spread, Outbreak, Epidemi, Pandemi, Contamin, Contageous, Drop, Surface, Crowd, Gathering, Wuhan, China, Fish, Seafood, Abroad	Information
Monitoring Stats	Compilations of cumulative and numerical nature, such as reports, and calculations regarding the number of those hospitalized or ill.	Report, Rate, Statistic, Monitor, Register, Number, Total, Figure, Graph	Information
Healthcare System	Healthcare system-related materiality - entities such as laboratories, doctors, and practices such as intensive care, hospitals, and hospitalization.	Microbiolog, Laborator, Nurs, Doctor, Worker, Professional, Admit, Intensive, Care, Hospital, Patient	Action
Financial	Discourse addressing the nations' financial situations, and initiatives related to the states economy.	Money, Budget, Unemploy, Financ, Econom, Cost	Action
Peoples Responsibilities Response	Discourse addressing people's actions to follow recommendations and prevent spread.	Distanc, Distancing, Hygiene, Wash, Soap	Action
Government Response Control	Discourse regarding government's actions to monitor and assess the situation and to recommend and regulate people's behavior	Guideline, Information, Measures, Measuring, Recommend, Recommendation, Monitor, Monitoring, Assess, Assessment, Advice	Action

4 Results & Analysis

To answer our main research question of whether we can identify differences in the health crisis communication of the three Scandinavian countries, we started our analysis by looking at Figure 2 which showed the three main subtraction networks created via ENA on the basis of our coded data. The subtraction networks show each country's centroid in the form of a square with dotted boxes, which indicate their confidence intervals (CI) in both dimensions of the projection space. A centroid summarises each network as a single point in the projection space and allows for an easy comparison of a large number of networks as the position explains the variance between the networks. The centroids for all three countries are distributed far away from each other with non-overlapping CIs, which was the first indicator that differences existed in how the discourse about the health crisis was framed in each country. Non-parametric Mann-Whitney tests supported this observation statistically. Along the first dimension (x-axis) all three countries are distributed significantly differently from each other. (DK-SE: $Mdn = 0.39$, $N = 58$, $U = 685.00$, $p = 0.00$, $r = 0.44$; DK-NO: $Mdn = 0.19$, $N = 42$, $U = 640.50$, $p = 0.00$, $r = 0.57$; NO-SE: $Mdn = 0.39$, $N = 58$,

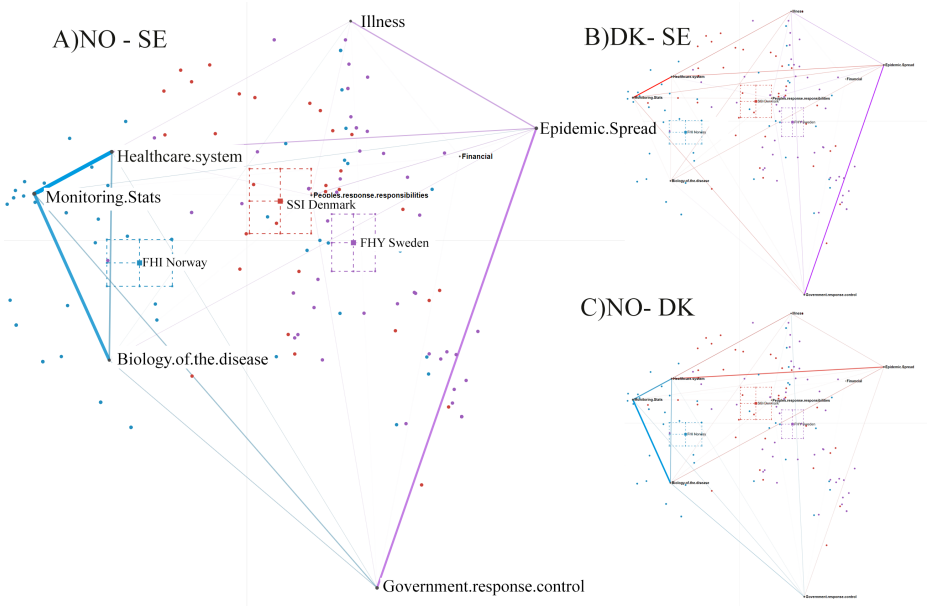

Fig. 2. Subtraction networks for all three country combinations A) Norway-Sweden, B) Denmark-Sweden and C) Norway-Denmark. The distribution of the centroids hints to a clear difference in crisis communication among the three countries.

$U = 514.50$, $p = 0.00$, $r = 0.75$). Along the second dimension (y-axis), only Denmark and Norway showed statistically significant differences ($Mdn = 0.19$, $N = 42$, $U = 2043.50$, $p = 0.00$, $r = -0.37$), that allowed for the conclusion that they also shared some similarities in how they communicated. All in all, this indicated clearly that Denmark, Norway, and Sweden communicated very differently during the pandemic and had divergent centres of attention in the framing of the discourse, but they also shared some common themes.

4.1 Differences in Crisis Communication

To determine which codes account for the differences between the networks of two countries, two signals were used. First, we looked at the position of the centroids in relation to the position of the codes. Second, we compared the weighted connection (thickness of lines) in each subtraction network. Here we looked for thicker ties (lines), which indicated stronger differences, and the colour of the tie (line), which provided information on which of the two countries involved has a stronger connection between the two codes. Norway's centroid (compared to DK and SE) sat closer to the codes Monitoring Stats, Biology of the Disease and Healthcare System. Furthermore, in both subtraction plots, one observed thick blue ties between the codes, which indicated that these three codes are highly central for Norway's framing of the pandemic and its health agency's crisis communication. Sweden, on the other hand, is the country whose centroid sat closest to Epidemic Spread. Compared to Norway and Denmark, Sweden's

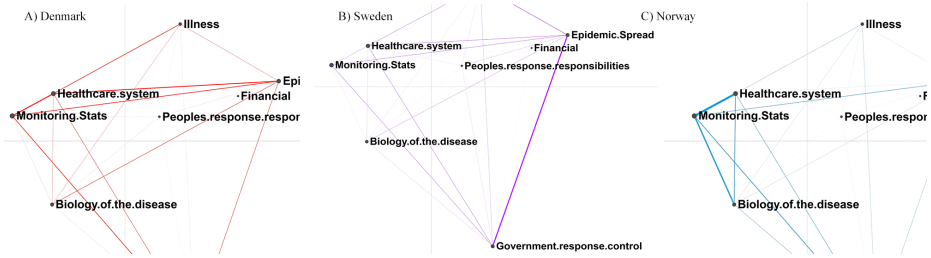

Fig. 3. Close-up views of the mean epistemic networks to illustrate the different relationships between the codes for A) Denmark, B) Sweden and C) Norway.

emphasis was positioned clearly on the relation between Epidemic Spread and Government Response Control. A less clear picture emerged for Denmark as its centroid was between Norway and Sweden (see figure 2). Compared to Norway, Denmark placed a stronger focus on Epidemic Spread and Healthcare System, whereas the tie between Epidemic Spread and Monitoring Stats differentiates it clearly from Sweden. To get a clearer picture of what these differences in tie strength mean for the individual countries' crisis communication, section 4.2 takes a closer look at each country's mean epistemic network.

4.2 The Discourse on the Scandinavian Countries' Framing of the COVID-19 Pandemic

An analysis process based on four levels was used to explore each country's crisis communication and discourse around the pandemic. In level 1, we performed a simple visual analysis of the network and took note of the ties between codes. Level 2 relates the codes involved in strong ties to their type, i.e. information or action codes. Level 3 aimed at an even deeper understanding of the ties by relating the codes involved to their descriptions and keywords (see Table 2). In the final and fourth level the interpretative loop was closed by relating the quantitative results to the qualitative data, i.e. quotes from the health agencies press releases (stanzas) as seen in previous quantitative ethnographic work [24].

Norway Figure 3 B) visualises Norway's mean epistemic network. The network indicates a strong relationship between the four codes Healthcare System, Monitoring Stats, Biology of the Disease and Government Response Control. The action code Healthcare System is strongly tied to the sources of information Monitoring Stats and Biology of the Disease and stands in relation to the action code Government Response Control. This can be interpreted as the actions regarding equipping laboratories, the increment of medical staff and admission rates to hospitals, as well as investments in a capacity such as intensive care, were mainly influenced by three factors: (a) accumulated information and facts referring to numbers and figures on the national level such as reports and registers, (b) information on the coronavirus and how it transfers between humans bodies; and (c) actions taken by the government to monitor and assess the situation and

to recommend and regulate people's behavior. The information that supplemented the specific actions taken by the healthcare system were publicly presented and communicated to the citizens as the following excerpts show: "there are a total of 166 people with confirmed SARS-CoV-2 that have been admitted to intensive care unit, of which 104 are still hospitalized" (ID:1154).

Moreover, Government Response Control is connected to the source of information Monitoring Stats and the action code Healthcare System. This indicates that governmental actions were mainly fed by accumulated national information (Monitoring stats) on the effectiveness of measures. The following quote exemplifies this: "The report concludes that the measures implemented have reduced infection figures considerably." (ID:1088).

Finally, the following excerpt from the press releases shows how the public was informed about the relation between government actions (Government Response Control) and the effects for the healthcare system (Healthcare System): "such a strategy has four assumptions: increased testing, and improved surveillance, a good understanding of the situation so that we can quickly discover traits that may require adjustments to the infection control measures, and restructuring the business of health care." (ID:855)

Sweden Sweden's epistemic network (Figure 3 C) indicates a strong tie between Government Response Control and Epidemic Spread, which can be explained by the fact that the government actions were mainly informed by sources of information regarding the spread of the virus. Furthermore, a strong tie between Epidemic Spread and Illness can be observed. This indicates that the actions taken by the government to monitor and assess the situation and to recommend and regulate people's behavior was mainly influenced by the information on the spread of the virus on a global and a national level, as well as related to social activities and locations. Additionally, the information around the spread of the virus was linked to the information gathered around the human symptoms and body reactions (Illness). The information available about the spread was used to inform governmental actions, e.g. actions on creating guidelines and how such measures (Government Response Control) were generally used to prevent contamination between people (Epidemic Spread). The Swedish FYI communicated these guidelines and additionally tried to justify them by adding contextual information that informed the decision making process. This was seen in press release excerpts such as the following: "public health authorities have decided to change the Agency's regulations and general guidelines (HSLF-FS 2020:12) on everyone's responsibility to prevent contamination of COVID-19 and make an exception for children and young people." (ID:1786). However, we also saw that more information did not necessarily lead to any changes in the means to address the disease: "the assessments of risk and the important strategies and measures presented in recent days remain - Now that WHO has now declared that COVID-19 is a pandemic does not make a difference in how we manage the disease." (ID: 2197). The relationship between how the coronavirus spreads (Epidemic.Spread) and how it affected individuals (Illness), is shown by the following example: "Infections, Infectiousness and Infection Risks COVID-19 infects from person to person through drip and contact infections, that is, via drops and secretions from

the airways that spread when someone coughs or sneezes, and at close contact between people." (ID: 1968)

Denmark The press releases published by the Danish authorities, as seen in Figure 3 C), indicate a strong relation between Healthcare System and three codes covering sources of information: Monitoring Stats, Epidemic Spread and Illness. Similar to the Norwegian authorities, the Danes informed the public on how they base the actions taken regarding the healthcare system, i.e. equipping laboratories, the increase of medical staff and investments in capacity such as intensive care were on (a) accumulated information and facts referring to numbers and figures on the national level such as reports and registers, (b) information around the spread of the virus on a global and a national level, as well as related to social activities and location, and (c) the information on the human symptoms and body reactions: "now that it is primarily in patients with severe symptoms who tested positive we work hard to put monitoring systems up that also can follow the spread of infection in the community, such as by random testing of people who have contacted the doctor with mild symptoms [...] confirmed COVID-19 event in Denmark the 1044 cases, 672 men and 372 women aged 0-94 years" (ID: 365). Furthermore, Epidemic Spread has a strong relationship with Biology of the Disease, which indicates that the press releases commented on how the virus spreads on a global and national level through social activities and specific locations (e.g., nursing homes) and linked it to information on how the virus transfers between human bodies. Finally, the analysis of the Danish press releases link Government Response Control to Monitoring Stats, and reveal a mutual relationship to Healthcare System. This indicated that the actions taken by the government to monitor and assess the situation lead to accumulated information and facts referring to numbers and figures in reports and public health registers, which were made publicly accessible. In addition, the actions taken by the government to monitor and assess the situation are linked to Healthcare System, i.e. the actions around equipping laboratories, increment of medical staff and so forth. These activities, carried out to improve the healthcare system, are supported by the government's efforts to mitigate the consequences of viral transmission (Government Response Control), as exemplified by the following quote: "The new guidelines from SST practice this update criteria for suspicious coronavirus infection, and instructions for handling patients and contacts to match the latest knowledge about the disease, infection risk, etc" (ID:608).

However, one has to acknowledge that crisis communication during the corona pandemic was and is still an evolving process where actions by the government might get updated later as compared to earlier reports, as the following excerpt indicates: "the new infections, which is the first in Denmark, does not change the current risk assessment that State Serum Institute and the Board of Health issued on Tuesday, the assessment is that there is low risk that we see widespread infection in Danish society, and low risk that our health care system is challenged." (ID:500).

In the next and final section, we discuss our findings by linking them back to our background and related work presented in section 2.

5 Discussion and Conclusion

In this article, we addressed the question of how different health authorities in Denmark, Norway, and Sweden framed crisis communication during the COVID-19 crisis in early months of 2020 (January through the end of March). We applied a quantitative ethnographic approach by the use of nCoder for the automatic coding of press release data. Additionally, we visualized the relation of these codes using ENA. Our main results can be summarized as follows: On the one hand, some of the codes that we developed to cover the discourse around the pandemic (e.g., Monitoring Stats,Epidemic Spread, and Healthcare System), occurred much more frequently than others, which hinted at similarities in the countries' press release reports. On the other hand, the subtraction networks (Figure 2) showed a significant difference in each country's framing, which was surprising given their sociocultural closeness. In the following paragraph, we discuss our findings from the perspective of political cultures and polyarchies, and how the concept of *habitus* can be interpreted as constitutive of generative schemes reflecting peoples ways of acting and thinking.

A central finding is Sweden's closeness to the code Epidemic Spread and the strong tie the code builds to Government Response Control. The frequent co-occurrence of these two codes and the tie they form separated Sweden's discourse strongly from the crisis communication of its neighbouring countries. This characteristic of Sweden's crisis communication can potentially be linked back to the characteristics of welfare states, polyarchy regimes, the resulting autonomy of the Swedish health authorities and the ethopolitical character of Swedish *habitus*. Despite the fact that the three Scandinavian countries are constitutional monarchies, the health authorities in Sweden, have more decision-making autonomy in affecting the behavior of the population, while "the politicians are more directly in charge of the administration in Norway and Denmark" [27]. During the start of the COVID-19 pandemic, this difference in autonomy made it "easier in Denmark and Norway to react quickly with political decisions and even to overrule authorities and their expertise" [27]. Although the three countries' health authorities were initially against severe measures [3,27], the less restrictive measures were applied only in Sweden. To understand Sweden's way of informing the public during the crisis even further, a cultural perspective was applied. Nygren and Olofsson consider [13] that the less restrictive measures taken by this country can further be explained by the biopolitics of "governing of conduct and individual responsibilization" [16]. If one interprets Nikolas Rose's studies on ethopolitics as biopolitics merged with a set of values, practices and moralities on how life ought to be lived by individuals, Sweden's way of communicating the crisis is a good example of how to inform citizens with high autonomy for self-government [22]. It referred to citizenship guided by high trust in the state, in which the conduct of health authorities has historically been marked by routine communication on recommendations for a healthy life. However, this attitude can also be seen as naive, as Swedish citizens are said to blindly follow any recommendation [27].

Sweden differs from Denmark and Norway, which followed a stronger discourse lead around Healthcare System together with accumulated information on statistics, symptoms, and virus characteristics. For instance, in the Swedish political culture the government response to regulate peoples' behavior, appeared more prominently than

the less regulatory character of the action code Healthcare System, seen to be stronger in Denmark and Norway. From a ethopolitical perspective, the Swedish health authorities' acknowledgement of the global and national information spread, fed into the actions to create guidelines, disseminate information and make recommendations, and helped to mitigate the consequences of the corona-spread. Hence, such actions reflect the relationship between the state and the people, since milder restrictions convey the trustful relationship between the government and the Swedish citizens' *habitus* of self-governance.

Another central finding was Norway's focus on information around Biology of the Disease, the statistics, numbers and reports on the amount of tested and infected citizens (Monitoring Stats), and the strong connection both had with actions taken by the Healthcare System (see Figure 2. A) and C)). This draws attention to the more inclusive character of the Norwegian polyarchy's decision-making process. According to Christensen, the Norwegian government has a political leadership characterized by bringing together diverse sectors of state and society, such as health authorities, opposition parties, executives and workers [3]. This Norwegian characteristic became strongly evident during the management of the COVID-19 pandemic [3], and the press releases tended to illuminate the inclusive character of the Norwegian *habitus*.

From a cultural perspective, regarding the restrictive measures taken in Denmark and Norway, Olagnier and Davidsen stated that the Danish reaction to COVID-19 can be characterized as "act fast and act with force" [15], due to the fast adoption of restrictive measures and the national speeches to enforce the isolation. Although Norway also adopted restrictive measures and the use of force, Strang highlighted that the political culture of Norway is marked by a greater concern that political changes could limit the individual's democratic rights and weaken democracy [27]. Such political culture can be seen in laws and other regulations taken to ensure that COVID-19 special measures were not threatening democracy and individual rights. For instance, when the Swedish government proposed to empower government officials to take action more quickly, the public debate regarded how it would impact the relationship between government and parliament, not whether it would lead to a risk to individual rights. The Danish strategy "act fast" and the "careful" Norwegian *habitus*, are both important to explain why the former country's actions related to the health care system are informed by Illness, and the latter country's actions related to the healthcare system is informed by Biology of the Disease.

Denmark's crisis communication was much harder to interpret, as it is located centrally between the other two countries, and focuses on information from many sources that inform actions on multiple governmental levels (see Figure 3 A)). However, the special role that Denmark represents might be explained by the "fast" reopening (earlier and more permissive than Norway), which led to a greater need to inform the population about the transmission of the virus on surfaces and about characteristic symptoms of COVID-19.

Our study shows that quantitative ethnographic methods can be used to take a comparative perspective in crisis communication research. Yet, we found some methodological challenges with the combination of tools used. For example, using machine translation with Google translate, and possible translation errors of the keywords that could

impinge on the construction of codes in nCoder. However, multiple manual screenings of the source file showed only a few errors that were then corrected.

Theoretically, research on *habitus* can contribute to problematize cultural ways of acting. In particular, this study briefly problematized Scandinavian "generative schemes" of acting-thinking regarding the "high trust in State", specifically in the crisis communication during the COVID-19 pandemic. In summary, the particularities discussed – Swedish "ethopolitical life," Danish "act fast and with force" and Norwegian "carefulness" – can signal for attention on, e.g.: the Swedes' and Danes' level of criticality on State measures and the Norwegians' level of tolerance to political changes. These results can contribute to a better understanding of the "generative schemes" and of "high trust in State," and therefore to research and practices on democratic life.

Finally, our findings are only limited to press releases of health agencies, which potentially limits the degree of conclusions we can draw from our study. For example, discourses around the Peoples Responsibilities Response were not salient, which reflects difficulties in finding additional keywords that could enclose this particular code in a good way. Moreover, the discourse around the Financial situation was not present in the press releases why this code could not be related to the actions of the three governments. This perspective is, however, essential as many countries now face economic difficulties due to the enforced lock-downs. As the COVID-19 pandemic is still underway, future work can investigate additional resources such as the speeches of the prime ministers, to gain a more holistic picture on the Scandinavian countries' crisis communication.

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