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The Role of Communication In COVID-19 Crisis Management: Findings about Information Behavior of German and Italian Young People

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Abstract

Given the different levels of pandemic severity in Germany and Italy, the paper investigates the differences in information behavior, and its consequences, between German and Italian young adults during the COVID-19 pandemic, especially in the first and second waves of infections in the two countries. In particular, the issue of crisis management through institutional communication, the development of information behavior and information consumption throughout the year 2020 are analyzed through a questionnaire-based case study considering the constructs topic fatigue, trust in government sources and vaccination hesitancy. The paper reveals that there are considerable differences in time spent looking for information, with Italian respondents generally spending more time in these activities. Surprisingly, Italian respondents seem to place more trust in their government and institutions than Germans do. Vaccination hesitancy is estimated as higher in Germany than in Italy. People who feel less informed are also less likely to get a vaccination when offered the possibility, moreover, the perception of risk of infection plays a major role in vaccination acceptance. From the point of view of public management, findings of this work highlight the knowledge of citizens' information behavior and habits as relevant to the design of communication campaigns to address health crises.

Keywords: COVID-19, Information Behavior, Trust, Government, Vaccination Hesitancy, Topic Fatigue, Young Adults, Crisis Management, Institutional Communication.

1. INTRODUCTION

By March 2021, countries all over the globe have struggled to contain the COVID-19 pandemic for more than a year. The novel Coronavirus (COVID-19) first emerged in December 2019, and, in the following months, spread globally. By the end of 2020, it had spread to almost every single country on earth and killed close to 2 million people – a number that would keep rising to more than 3.5 million by May 2021, with no end in sight (Dong, Du, & Gardner, 2020).

The pandemic has had a massive effect on the world we live in today. It has changed the way people work (Bick, Blandin, & Mertens, 2020; Kramer & Kramer, 2020), the way people spend their free time (Cellini, Canale, Mioni, & Costa, 2020; Droit-Volet et al., 2020) and the way people interact with each other (Bhat et al., 2020). Not only that, but the pandemic, and the restrictions put in place to fight it, have also caused many challenges to psychological and mental health (Bäuerle et al.,

2020; Khan et al., 2020; Petzold, Plag, & Ströhle, 2020; Thome, Coogan, Fischer, Tucha, & Faltraco, 2020). According to Farooq et al. (2021), the pandemic has amplified the influence of information reporting on human behavior. This is due to people having to react to a new, uncertain health situation by gathering new information that, globally, encouraged people to adopt preventive measures such as self-isolation, avoiding public places, good hygienic care and face mask wearing (K. Wang et al., 2021; World Health Organization, 2021) for long time (Rai, 2020). International organizations, governments, public agencies and local authorities used various media (like mass media, print media and digital & social media) to reach out to the public, mobilize them and convey measures against the extraordinary situation in order to manage the crisis.

Particularly, due to an unprecedented major part of the population working from home (Naidoo, 2020), social media has, for many, become the main source of information during the crisis (Bick et al., 2020; Farooq et al., 2021). The research into this topic implies that the enormous amount of information generated about COVID-19 on social media has overwhelmed users with a strong impact on their lifestyle (Islam, Mahmood, Sadiq, Usman, & Yousaf, 2020).

According to Soroya (Soroya, Farooq, Mahmood, Isoaho, & Zara, 2021), Google Trends reports showed a substantial increase of interest in COVID-19, starting from February 2020. According to an initiative under art direction by Cairo (Schema Design, 2020), however, prior to March 2020, most searches were queries for general information such as "*What is Coronavirus?*"; from the beginning of March, searches evolved towards questions such as "*What are symptoms of Coronavirus?*" and "*How to behave with...*", among others. In other words, COVID-19 has also changed the way people gather information and process them in order to react to a situation; according to Tang et al. (2021), however, little is known about individuals' information consumption. This aspect is crucial to guide governments in managing the unprecedented outbreak of a serious disease, to align citizen participation with the proper behaviors to reduce the spread of infection. Particularly, the work of Husnayain et al. (2020) on this topic demonstrated that the volume of online research about COVID-19 correlates significantly with the number of new infections in individual countries (Husnayain, Fuad, & Su, 2020). Thus, there likely exists a correlation between information consumption and level of pandemic severity (as measured in number of COVID-19-related deaths per million inhabitants). Awareness of this relationship may be useful for public management. However, it has not yet been explored by academia.

This paper focuses its research on the target group of young people (under 35 years old) who are less easy to reach via traditional communication channels. Young people, moreover, have been affected especially harshly by the restrictions placed on everyday life (Manivannan, Jogalekar, Kavitha, Maran, & Gangadaran, 2021). Consequently, they have been found to show the most severe cases of pandemic fatigue (Lilleholt, Zettler, Betsch, & Böhm, 2020) – a concept that will be introduced in detail in section 2.3. Therefore, this study will focus on young people, specifically students aged 35 and under, as the subject of our research.

Given the above, this paper aims to answer the following research question:

> ***How does the severity of the ongoing pandemic influence the information behavior of young people, in Germany and Italy, in the perspective of crisis management?***

Thereby, the two countries stand for different levels of severity of the pandemic, as these two countries represent two extremes of 'COVID-19 related mortality rates within Europe (Dong et al., 2020).

In more detail, the following sub-research questions will be investigated with the aim to highlight salient information for govern of pandemic crisis by public agencies:
- How does the severity of the crisis and the mortality it causes affect respondents' time spent for information search on pandemic related subjects?
- How does the severity of the crisis affect the trust placed in official government sources?

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- What role do the level of severity in corresponding country, respondents' risk perception and information behavior play in the willingness of vaccination against COVID-19?

The COVID-19 pandemic is unprecedented in its severity and the way it has affected not only people of a few countries or continents, but rather the whole of humanity all over the globe. Accordingly, this study wants to answer the research questions in two cohorts of respondents, from Germany and Italy respectively, in order to understand how the differences of the countries, particularly in relation to the level of severity of the outbreaks of COVID-19, might influence information behavior. Consequently, the following section describes the background about the topic and the third one illustrates the methodology employed - whose results are reported in the fourth section. In the fifth section, we elaborate on the limitations of the survey before discussing the results in the sixth section. Lastly, the conclusion can be found in section seven.

2. BACKGROUND
2.1 Institutional Communication and Crisis Management
The COVID-19 crisis, floating between lockdown impositions and the need for affordable information to reduce infection rates, led to an unprecedented increase in the use of information channels (such as media, broadcasts and web newspapers) by the population. Accordingly, as of early February 2020, the risk of being inundated with fake news from unreliable sources posed a serious problem in managing the pandemic crisis, threatening to exacerbate the danger of the virus and posing even greater problems for governments. As a result, health care facilities and public agencies around the world acted as providers of information aimed at educating citizens about best practices, reasons for personal restraints, concerns, and correct behaviors to better combat the spread of infections. In this sense, it is important to analyze the role of communication in health crisis by examining how the population understands institutional proposals and constraints. To this end, communication with citizens becomes a lever for the effectiveness of public interventions (Osborne & Strokosch, 2013).

With an unprecedented large portion of the population working from home (Naidoo, 2020) and extremely high social media use (Bick et al., 2020; Farooq et al., 2021), it was incumbent upon the government to quickly implement innovative and unconventional communication strategies capable of reaching these (mostly younger and rather technology-oriented) segments for a co-productive system (Cepiku & Giordano, 2014). The management of the COVID-19 pandemic required rapid intervention aimed at educating people without causing panic (Cowper, 2020). Smith (2006), referring to the first SARS crisis, noted the lack of evidence of the relative role of the media, government or other entities in intensifying public debate about the risk of an epidemic and reassurance about its solutions. Different strategies were carried out: China, for instance, took an authoritarian approach to downplay the severity of the outbreak in its early stages. Other countries behaved differently, in line with the WHO strategies for Risk Communication and Communication Engagement (RCCE). These guidelines (World Health Organization, 2020) helped to combat the effects of an excessive amount of information about a problem (which can lead to difficulties in identifying the right solution), strengthen loyalty in response, and increase the likelihood of improving health literacy (Viola, Toma, Manta, & Benvenuto, 2021).

Accordingly, worldwide and supranational organizations took various actions to address the COVID-19 outbreak, including public access to disease data and transparency of government responses to the pandemic (Gao, Zhang, Wu, & Wang, 2020). Comfort, Kapucu, Ko, Menoni, and Siciliano (2020) noted that collective awareness, amplified by timely, valid communication, enables coordinated actions needed to bring the crisis under control. In this context of "information hunger" of citizens, the world of social platforms has exploded so much in the population that it encourages public institutions to use social networks to promote debate on the pandemic, in order to mitigate the risk of fake news as well as encouraging multiple points of view in crisis management (Viola et al., 2021). Nevertheless, the constant overload of (often conflicting) information through different channels at all times of the day seemed to discourage some people from trusting institutional channels and national newspapers with verified sources more than news disseminated through

social networks. This fact, as we can see in the following subsections, has implications for the communication themes of "topic fatigue" (Kuhlmann, Schumann, & Wolling, 2014) and "rally-around-the-flag-effect" (Chowanietz, 2011; Lee, 1977). From the very beginning, one of the most troubling concerns for public agencies related to the COVID-19 emergency has been the risk of misinformation and the resulting potential to engage only with affected communities (World Health Organization, 2020). Accordingly, given that home and hospital treatment depends on the structural capacity of the health care system to respond to the number of severe cases that occur, prevention strategies aimed at raising citizens' awareness of the risks of contracting the virus (Rosa, Marolla, & Benvenuto, 2020) have been crucial to pandemic management. However, Bennett and Pfetsch (2018) highlighted two relevant issues with these communication policy-based prevention strategies: i) the proliferation of social and digital media, which has increased the dispersion of institutional sources (Dahlgreen, 2005), ii) the fragmentation of the public that has led to an "inability to communicate across differences" (Waisbord, 2016), including adolescents. In addition, recent studies have shown that it is difficult to prevent infection rates through Internet sources (Hernández-García & Giménez-Júlvez, 2020), because of the difficulty in providing high-quality and affordable information. Accordingly, Chundakkadan and Ravindran (2020) demonstrated that a higher flow of information about COVID-19 resulted in a lower the rate of reported positive cases. Their findings suggest that the inclusion of institutional Internet-based communication channels is an important factor in enriching diverse audiences in the fight against the pandemic crisis. This means that public health agencies should begin to adapt risk communication strategies to meet the challenges of a dynamic news environment. (Kott & Limaye, 2016)

In this scenario, perceived knowledge plays an important role in risk perception. Zhu, Wei, and Zhao (2016) stated that people with higher perceived knowledge are more likely to perceive higher risks. Schäfer (2020), however, focusing on the social media sphere, argued that many posts on social network only increase perceived knowledge, which is very different from actual knowledge. In addition, the most educated people tend to adopt best practices for crisis management at the individual level; in particular, health literacy plays an important role in health protection (Kickbusch, 2001; Kim, Kim, & Lee, 2005; Nutbeam, 2000; van der Heide et al., 2013), and, recently studied, also with the willingness to get vaccination(K. Wang et al., 2021). Young people in particular have recently become more alert and concerned about public issues, including health. This is mainly due to the ability to absorb good information and knowledge, which depends more on education than age (Benvenuto, Avram, Sambati, Avram, & Viola, 2020). Accordingly, Viola et al. (2021) hope for further studies on institutional communication strategies, because since the beginning of the emergency, public institutions, both at the central and local levels, have been a key player in crisis management, especially in the implementation of health and social policies to prevent the spreading of the virus.

Against this background, this study aims to contribute to the debate on crisis management through communication strategies by starting from the analysis of young people's information consumption during the two main pandemic waives. Since information flow seems to influence the rate of contagion (Chundakkadan & Ravindran, 2020), we focus on two populations (with similar sociodemographic characteristics) from Italy and Germany, where the severity of pandemic was very different.

2.2 The Italian and German Context
Many countries have successfully reduced their COVID-19 infection rate early (e.g. Germany and Austria (Bilinski & Emanuel, 2020; Stafford, 2020; Villani, McKee, Cascini, Ricciardi, & Boccia, 2020)) while others have been overwhelmed (e.g. Spain and Italy (Del Buono, Iannaccone, Camilli, Del Buono, & Aspromonte, 2020; Indolfi & Spaccarotella, 2020; The Lancet Public Health, 2020)). The reasons for these differences are complex, but are generally attributed to the speed and magnitude of governmental intervention and how communities have received, perceived, and acted on the information provided by public agencies (Hyland-Wood, Gardner, Leask, & Ecker, 2021). Italy has had one of the worst responses to the COVID-19 outbreak globally, with deaths per capita being a lot higher there than in most other European countries. As of 30.05.2021, per 1 million Italians, 2,090 had died because of COVID-19 (Dong et al., 2020). In comparison, in the same time

frame, Germany only suffered 1,067 deaths per 1 million, and other European countries such as France (1,634), Austria (1,197), Spain (1,703) and Switzerland (1,265) have, thus far, also been more successful in dealing with the pandemic (Dong et al., 2020). Thus, a comparison of a German and Italian sample stands for a comparison of two countries within Europe, which are at two opposite ends of a severity-scale, i.e. having a very high vs. a very low level of severity, measured in deaths in connection with COVID-19.

The following figures 1 and 2 show the level of infections and deaths, in total and per month, in Germany and Italy. It is easy to note that, for a similar rate of infection, the death rate in Italy is much higher than that in Germany in both waves of the pandemic (Feb-Mar 2020 and Oct-Dec 2020). Especially the spike in COVID-19 related deaths in Italy during March and April 2020, as visible in figure 2, is an important difference between the two countries that is part of the basis for the research in this paper.
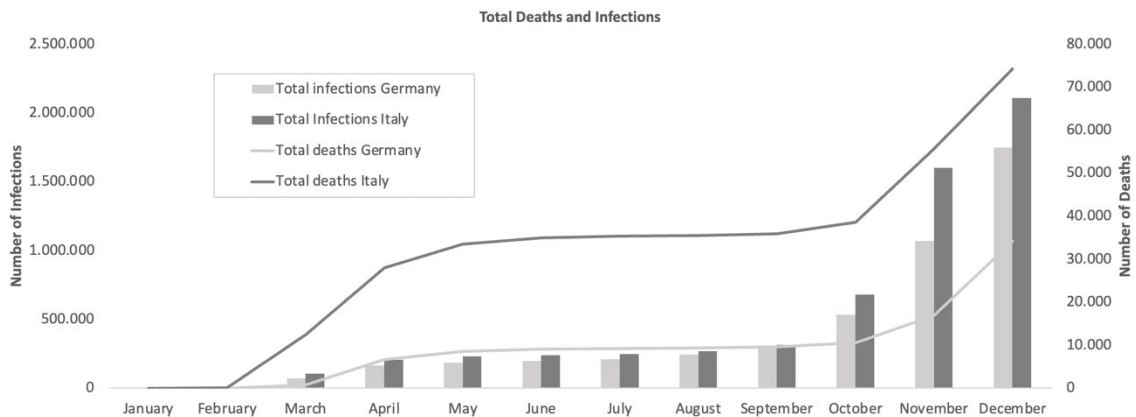
FIGURE 1: Total deaths and infections per month in Italy vs. Germany (own elaboration). Data from Dong et al., 2020.
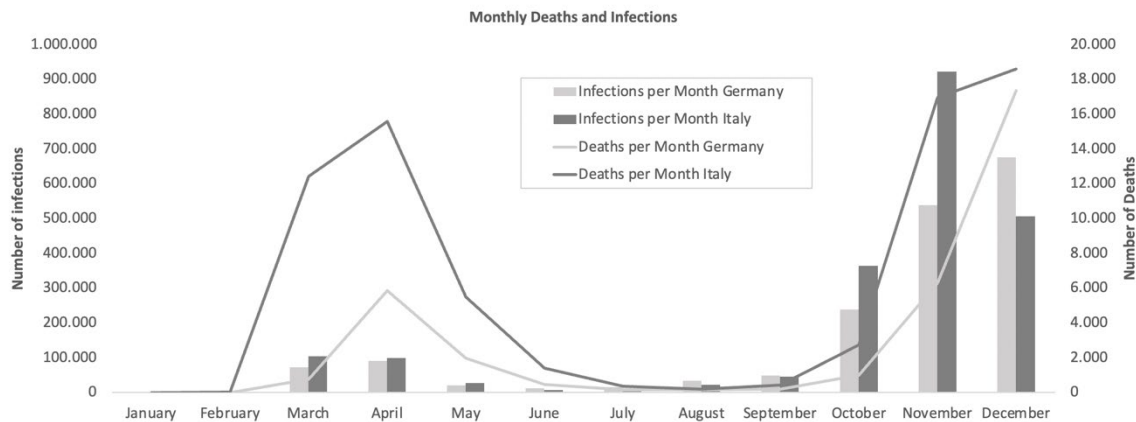
FIGURE 2: New monthly deaths and infections in Italy vs. Germany (o Own elaboration). Data from Dong et al., 2020.

This paper could not understand the clinical reasons for the presented results but wants to research if there are any connections between the infection rate and the way people inform themselves during a crisis situation. Moreover, focusing on the comparison of perceived threats posed by COVID-19 among Central European countries, other works reveal that German and Italian citizens feel a lesser and higher threat from the pandemic respectively (Perrotta et al., 2021). This makes the two countries particularly interesting candidates for comparison. Accordingly, the effective

communication during a public health crisis would be defined as "*an interactive process of exchange of information and opinion among individuals, groups, and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions or reactions to risk messages or legal and institutional arrangements for risk management*" (National Research Council, 1989). Television and printed news media must now compete with a vast array of easily accessible social media, online news and opinion sources (Hyland-Wood et al., 2021). In particular, social media is highly engaging and encourages users to share contents (Dobson, Robards, & Carah, 2018). In recent years, the use of social media platforms (e.g., Facebook, Twitter, LinkedIn, Weibo, WeChat) from government and entities (e.g., UN and WHO) for crisis communications (e.g., natural disasters, weather events, and criminal/terrorist events) has increased (Q. Chen et al., 2020; Guo, Lu, Kuang, & Wang, 2020). Governmental use of social media during crises may bring benefits such as improving people's crisis awareness and understanding, facilitating emotional relief as well as controlling crisis rumors.

On the other hand, however, internet-based sources also have the ability to negatively impact people's wellbeing, both in terms of physical and mental health (Farooq et al., 2021). They do so by fostering information-overload and cyberchondria (which are both negatively correlated to self-isolation intention). Moreover, misinformation about COVID-19 is prevalent in social media as the pandemic unfolds, and the associated risks are extremely high. Misleading information about the pandemic has been widely disseminated in digital spaces, and in some cases, even promoted by public figures, including celebrities and politicians (Ayoub, Yang, & Zhou, 2021). Accordingly, the use of social media as an information source has been widely criticized. Lay people tend to share subjective opinions and, occasionally, even misinformation - which at times can be challenging to distinguish from valid evidence-backed information (Del Vicario et al., 2016).

2.3 Topic Fatigue
All the previous issues lay the foundation for another phenomenon called topic fatigue. First introduced by Kuhlmann, Schumann and Wolling in 2014, topic fatigue is defined as "*the cognition that recipients do no longer want to hear nor see anything about a topic*" (Kuhlmann et al., 2014).

Topic fatigue has been the focus of many recent scientific works (Lilleholt et al., 2020; Meichtry, Sugden, & Barnett, 2020; Michie, West, & Harvey, 2020; Zhao et al., 2020) and, over the course of the pandemic, even received a new name for these extraordinary times: pandemic fatigue. Schumann finds that one of the potential outcomes of topic fatigue is "*mistrust in media systems and journalists*" (Schumann, 2018) as well as the fostering of "*political alienation*"(Schumann, 2018). As already mentioned, social media has become the main information source (Bick et al., 2020) during the pandemic - causing an information overload, which could potentially elicit psychological ill-being caused by the use of social media (Maier, Laumer, Eckhardt, & Weitzel, 2015; Maier, Laumer, Weinert, & Weitzel, 2015). As a consequence, according to Liu et al. (2021), perceived pandemic information overload on social media increases social media fatigue and fear of COVID-19, which in turn influences people's intention to leave social media, due to psychological discomfort (Koole, Van Dillen, & Sheppes, 2011). Interestingly, there exists a gap in literature concerning the influence of the severity of, and mortality caused by, the pandemic on topic fatigue. Do participants lose interest quicker if they are more exposed to the virus? This paper aims to investigate this by comparing the information behavior of respondents from Italy and Germany.

2.4 Rally-around-the-flag Effect
The "rally-around-the-flag" phenomenon first introduced by Mueller in 1973 refers to the often-observed effect that, in times of crisis, people often place more trust in their government and are, for example, more likely to reelect their current president (Chowanietz, 2011; Lee, 1977). These crises are, however, usually of military nature. The pandemic, while not an event of military nature, has been assumed to have a similar effect (Baekgaard, Christensen, Madsen, & Mikkelsen, 2020; Devine, Gaskell, Jennings, & Stoker, 2020; Hegewald & Schraff, 2020; Sibley et al., 2020). In fact, the opposite may also be true: How and with what measures a government tries to fight the pandemic and keep its citizens safe could negatively affect the people's trust in their government if

the government and its representatives do not appear to fully embrace the measures themselves (Broadbent, 2020). The duration of the crisis also plays a critical role in this. Accordingly, Rieger and Wang found that, among other things, "*a smaller number of deaths* [caused by COVID-19] *increase the trust in governments*" (Rieger & Wang, 2020). Moreover, some scholars (Castro & Guccio, 2020; Lovari, 2020) found Italians generally have little trust in their politicians and institutions. Based on the mentioned theories and authors, we could draw two possible conclusions: either, the lower impact of pandemic in Germany has led its citizens to place more trust in their government. Or, on the contrary, the worse crisis in Italy has led to a more pronounced rally-around-the-flag effect, resulting in a higher level of trust in the national government in Italy compared to Germany. To investigate this phenomenon in the two surveyed countries and make the results as reliable as possible, this research has to consider that the base-levels of trust in their respective governments are already different between citizens of Germany and Italy. This will be also investigated in this paper by comparing the results of respondents from the two countries; this research aims to find out if the rally-around-the-flag effect is present and if it is stronger than the increase in trust caused by good crisis management.

2.5 Vaccine Hesitancy and Information

According to Khubchandani et al. (Khubchandani et al., 2021), individuals living in rural areas, with lower incomes and lower levels of education, were more likely to be hesitant about getting immunized with a COVID-19 vaccine (vaccine hesitancy). Vaccine hesitant people were more distrustful of scientific expertise and health and government authorities: these individuals were less likely to consume, and trust, information from 'traditional' sources (i.e. newspapers, television, radio, and government agencies) and were somewhat more likely to obtain information from social media channels, which is consistent with global trends about reporting on social media as an instrumental platform for anti-vaccine messaging. (Kata, 2012; Tangherlini et al., 2016)

Jun, Yoo & Lee demonstrate the human behavioral changes and impacts on public awareness of COVID-19. They found a correlation between a higher level of information among a country's citizens and a better ability to fight the virus, especially through vaccination (2021); Wang et al. found that "*the primary care sector should also be engaged in health education to increase vaccination coverage*" (K. Wang et al., 2021). Kourlaba et al. found that a "*higher knowledge score regarding symptoms, transmission routes and prevention and control measures against COVID-19 was significantly associated with higher willingness of respondents to get vaccinated*" (Kourlaba et al., 2021).

These findings indicate, in order to effectively fight the pandemic through vaccinations, a country has to make sure to inform its citizens sufficiently. This will help increase the acceptance and willingness of the population to get a vaccination when offered the possibility. How this willingness is influenced by the pandemic situation in a country, based on the severity as well as the perception of risks its citizens have, will also be evaluated in this work. There could be inferences between the time spent looking for information and the development of trust in official sources; this aspect should be considered as critical in order to provide an outlook about how effectively fighting the pandemic in the future through the correct general information of citizens.

2.6 Hypotheses

Based on the insights from the previous sections, the following three hypotheses are developed to evaluate the occurrence and validity of the described phenomena as well as to answer the proposed research questions:

> H1: People in a country with a higher severity / mortality rate for people infected with COVID-19 inform themselves more about the virus than people living in a country with a lower severity.

> H2: The trust in official government sources is lower in a country with a higher severity / mortality rate for people infected with COVID-19 than in a country with a lower severity.

H3: The willingness to be vaccinated is influenced by the severity of the crisis as well as the perception of the risk of the crisis by the respondents.

To further dive into hypothesis 3, we have devised 3 sub-hypotheses which more clearly define the correlations this paper investigates:

SH1: The better people feel informed about the virus, the higher is their willingness to get vaccinated when possible.

SH2: The higher the severity and mortality caused by the virus is in a country, the higher is the willingness of its citizens to get vaccinated.

SH3: People who are more afraid of getting ill themselves or of relatives getting ill are more willing to be vaccinated if this is possible.

The hypotheses, and sub-hypotheses, will be answered through comparing the results between the two countries.

3. METHODOLOGY
3.1 Survey Design
In order to answer the previously introduced research question, the authors ran a quantitative online survey (Shehata, 2020; Yin, 2014) aimed at discovering the information consumption among the young German and Italian population in relation to the severity of the pandemic in the two countries following the two waves of infections in 2020. Two questionnaires were used, both featured the same questions, with the only difference being the language in which the survey was designed and distributed. The German part was distributed through the mailing-list at the University of Applied Sciences in Neu-Ulm and students were also asked to share the survey with friends and fellow students. Therefore, respondents were mostly students at the mentioned university. The survey had 92 respondents, of which 67 finished the survey completely. The second, Italian sample consisted mostly of students and former students from the Tor Vergata University of Rome. It was also distributed through official channels as well as word of mouth by the students. In total, 70 students took part in the Italian survey, with 55 of them finishing it. The surveys were open for answers from 8 to 23 December 2020 in both Germany and Italy.

While the language may have been different, the contents and (translated) wordings were identical in both samples. Both included 10 questions, 6 of which were demographic questions, with the remaining questions all being relevant to answer the proposed hypotheses and research question. The four relevant questions, however, were not simple polar questions offering the answers yes and no, but were rather complex rating questions including a multitude of different statements as well as sub-questions. The whole questionnaire is presented in the appendix. The four relevant questions, as well as the corresponding variables we designed to evaluate the proposed hypotheses and answer the research questions are listed in table 1.

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Hypothesis	Question	Variable
H1	„Please estimate your daily average of news consumption about the coronavirus at the moment."	Daily news consumption 5 different answering options ranging from „less than 5 minutes" to „more than 2 hours".
H1	„Please tick the box corresponding to how much you informed yourself about corona in the past months. There are some events in italy noted next to the months as small reminders."	News consumption per month Answering options on a 4-point Likert Scale ranging from „inform myself a lot" to „Don't inform myself".
H2	„How trustworthy are the following sources of information for you?"	Trustworthiness of governmental sources. Answering options on a 5-point Likert Scale ranging from „very trustworthy" to „not trustworthy at all".
H3	„In the following you will find a number of statements. For each statement, please tick the extent to which you agree with it. (randomised)"	Agreement with 14 different statements. Each statement has answering options on a 5-point Likert Scale ranging from „I totally agree" to „I do not agree at all"
SH1	1. „I feel well informed about the Coronavirus 2. „I believe that we can cope with this disease in our country"	1. Informedness 2. Optimism
SH2	1. „I will get vaccinated when I get the possibility to do so"	1. Vaccination Willingness
SH3	1. „I'm afraid that people close to me will get seriously ill" 2. „I'm afraid that I myself might become seriously ill"	1. Perceived risk of infection

TABLE 1: Questions relevant to the hypotheses.

Similarly to the work done by Rieger and Wang (2020), we used a balanced 5-point Likert Scale for the answering options, except for question 4, where we ask for the respondents' self-assessment of information behavior with compulsion to a tendency (rather much or rather little). With the above questions, the study investigated the time respondents spent informing themselves about COVID-19 (and how that time had changed over the course of the pandemic), the channels they use and how much they trust them as well as their agreement, or disagreement with a multitude of statements, designed to allow the authors to look for correlations between, for example, the fear of being infected and the willingness to receive vaccination when offered the possibility.

3.2 Structure of Respondents
On average, the respondents of the Italian sample were older than those of the German sample - the most frequently occurring age range being 25-29 years old - as opposed to 20-24 for the German participants. Most likely caused by the higher age average, the highest level of education completed was higher among the Italian respondents. Most of them (36%) had achieved a Master's degree. Among German participants, the most frequent degree is the high school diploma ("Abitur"), with 58% having achieved it.

Most respondents are female in both of the two samples: 70% of German respondents, 57% of Italians respondents. This is in line with other studies (Perrotta et al., 2021), which also had a disproportionately high percentage, about 67%, of female respondents. As demonstrated by other works as well, women appear to be more willing to be informed and interested in health-related issues, especially if concerning to digital technologies and innovation implementation (Bender et al., 2014; Xie, Nacioglu, & Or, 2018). As a consequence, women are more inclined to share their experiences (Kanstrup, Bertelsen, & Nøhr, 2015; Ryan & Sysko, 2007) which explains the higher portion of female respondents in many surveys.

3.3 Analysis Procedure
SPSS software is used for the analysis, with different procedures depending on the hypotheses considered and the underlying data: To test hypothesis 1 and the third sub-hypothesis of hypothesis 3, cross tables are created as they are able to reveal stated differences between Italy and Germany.

Their significances are calculated on the basis of Chi-square. Mean comparisons with T-tests are carried out to test hypothesis 2 and the second sub-hypothesis of hypothesis 3. Lastly, Pearson's correlation coefficients are conducted to prove the first and third sub-hypothesis of hypothesis 3. The condition for performing T-tests and correlation analyses that the underlying data are metric is fulfilled because the involved questions are based on a balanced Likert scale allowing an interpretation of being interval scaled (Halme, Joro, & Koivu, 2002). Furthermore, a multiple variance analysis is undertaken to finally clarify which of the factors tested in connection with the third hypothesis is ultimately more relevant for the vaccination decision: the country (Italy vs. Germany) and thus the severity of the pandemic or the level of feeling well-informed.

4. RESULTS

4.1 Hypothesis 1

Hypothesis 1 is tested in two steps. First, the results of the individual estimation of the current daily average of news consumption about COVID-19 are compared between Italy and Germany:

The results are very similar. In both samples, by far the largest proportion of respondents (I: 51.1%; G: 50.0%) informed themselves for "5 to 20 minutes" per day. The second-highest share is attributed to the category "less than 5 minutes" a day (I: 23.4%; G: 34.8%). Only a minority spends more than 20 minutes a day with news consumption about COVID-19 in both countries. According to this analysis, there are no significant differences in information behavior between Italy and Germany. However, we should keep in mind that the proposed answer category "5 to 20 minutes" per day includes a relatively broad range: It makes a difference whether someone spends 5 or 20 minutes a day looking for information.

On closer inspection, however, differences do emerge in the course of the year 2020: Participants were also asked to rate their information behavior for each month of 2020, offering a 4 point Likert scale, with answering options ranging from "1=inform myself a lot" to "4=don't inform myself at all". This forced-choice scale (based on 4 scores instead of 5) was intended to ensure that participants must at least tend to assess their information behavior without presenting an answer option that makes respondents too comfortable.

To achieve a clearer presentation of the data, the possible answering categories have been combined into two options: "inform myself much", made up of the options "inform myself a lot" and "inform myself rather much", and "don't inform myself much", made up of the remaining two. The results of participants informing themselves "much" are displayed in figure 3. It is apparent that Italian participants tend to always inform themselves more than the German participants, especially during the respective beginning of the first and second wave. During the peaks of the two waves, in March and November / December, information behavior is almost identical. The related Chi-square tests show significant ($p < 0.05$) differences in information behavior between the two countries in June and in the period August to October.
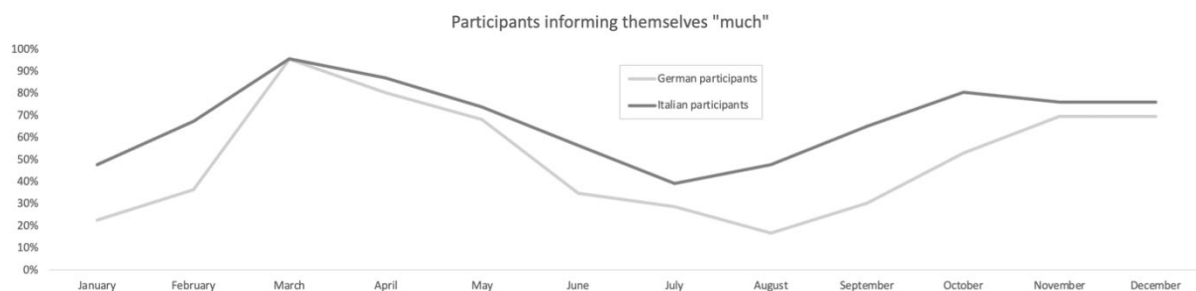
FIGURE 3: Participants informing themselves "much" per month.

Based on this data, hypothesis 1 can be partially proven: While Italian participants did not inform themselves more at all times, there are considerable and significant differences during the summer months (despite July) where infection rates were rather low.

4.2 Hypothesis 2
To evaluate hypothesis 2, the survey includes one question asking participants to indicate the trustworthiness of different channels on a 5-point Likert scale, ranging from "1=very trustworthy" to "5=not trustworthy at all". Among other channels, respondents assessed the trustworthiness of "websites/posts/tweets from government sources". As already mentioned, the scale allows the calculation of means and thus also a check of significance using a T-test.

Surprisingly, the Italian respondents trust information from their government even more than the German participants do. The mean trustworthiness of government sources as an information source in Italy is 1.53 and thus relatively close to the best possible value of trustworthiness, which is 1. The trust in government sources, with a mean of 1.91, is also relatively high in Germany but significantly lower (p=0.02) in comparison.

As a result, not only must hypothesis 2 be rejected, but the opposite is found to be true: The Italian respondents, living in a country with higher COVID-19 mortality rates than Germany, indicate that they trust their government sources even more than the German respondents

4.3 Hypothesis 3
To investigate the correlation between respondents' willingness to get a vaccination and other factors, the survey includes a number of statements. Respondents are asked to indicate their agreement – or disagreement – with these statements on a 5-point Likert scale, ranging from "1=totally agree" to "5=totally disagree". Then, correlations between different statements are calculated.

SH1 assumes a correlation between the feeling of being well-informed about COVID-19 and the vaccination willingness. The existence of this correlation turns out to be true: In Germany the Pearson's correlation coefficient is 0.26, which indicates a rather moderate strength (Cohen, 1988), but it is significant (p=0.03). In Italy, the correlation is of higher strength (0.36) and even of higher significance (p=0.01) at the same time. As the correlation is significant in both countries, this sub-hypothesis can be confirmed.

According to SH2, the vaccination willingness is expected to be higher in Italy than in Germany. The average agreement to the statement "I will get vaccinated when I get the possibility to do so" in Italy, still based on the above-mentioned 5-point scale, is 2.13, thus close to the level "rather agree". In Germany, however, the corresponding value of 2.95 indicates a higher level of vaccination skepticism and is close to the scale value "undecided". Additionally, the difference of these mean values is highly significant with p = 0.002. Therefore, SH2 can be verified as well.

The last sub-hypothesis assumes that there is a connection between a person's concern that he/she himself/herself or a close person could become seriously ill and his/her vaccination willingness. Interestingly, the connection between fear of the disease and vaccination willingness is completely different in both countries: There is absolutely no connection between the fear of becoming ill oneself and vaccination willingness in Germany. In contrast, there *is* a significant correlation in Italy: Pearson's correlation coefficient is 0.3 (moderate strength) with a p-value of 0.04. We might assume that the non-existence of an impact of the fear of becoming ill in Germany is because the fear itself is lower or almost absent there because mortality rates are much lower than in Italy. In fact, the cross table making a comparison of the assessment of the statement "I'm afraid that I myself might become seriously ill" between Germany and Italy shows a corresponding tendency. In figure 4, the table is displayed in the form of a diagram :

Agreement among participants
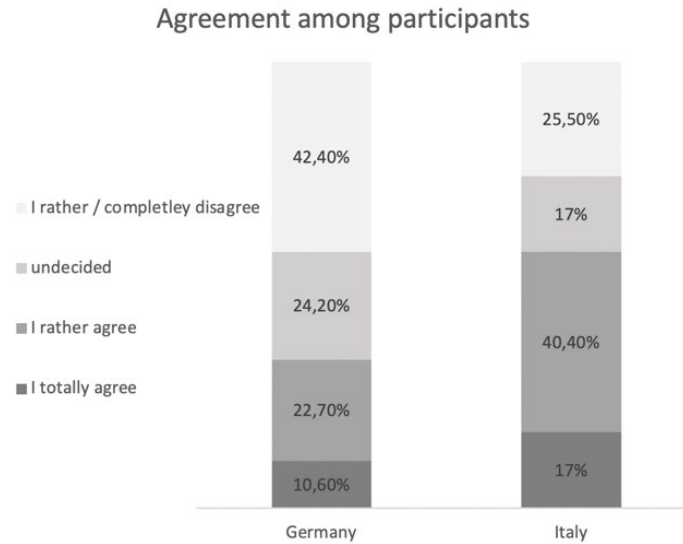
FIGURE 4: Assessment of the statement "I'm afraid that I myself might become seriously ill", Proportions of mentions in Germany vs. Italy.

Obviously, the fear of getting seriously ill with COVID-19 is much more pronounced in Italy than in Germany, where 42% are rather carefree in this regard. The related Phi-value is 0.24 and thus represents a moderate connection. The Chi-square independence test provides a significance level of p=0.08, which is hard on the border of being significant. Nevertheless, this correlation between fear of getting ill and the country could partly explain the different impact of the fear on the vaccination willingness.

The correlation between the fear that people close to oneself could become seriously ill in Italy is even stronger, given a value for Pearson's coefficient of 0.43 and a higher significance (p=0.003). However, there is again no significant correlation in Germany, but at least higher than in the context of fear that oneself could become seriously ill. In contrast to the findings above, there are no differences noteworthy referring to the statement "I'm afraid that people close to me might become seriously ill" between Italy and Germany. While 47% of the Italian respondents totally agree with this statement, 44% of the Germans do. Nonetheless, this variable does not affect the vaccination willingness in both countries, but only in Italy. Overall, the results lead to the conclusion that SH3 is verified only for Italy and must be rejected for Germany.

In summary, the question arises, which of the analyzed factors are most important, or at least more important than others, for the willingness of getting vaccinated. For this purpose, a multi-factor

variance analysis is conducted with the vaccination willingness as the dependent variable. The output table is shown in table 2:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	48,090[a]	9	5,343	3,233	0,002	0,220
Intercept	200,864	1	200,864	121,147	0,000	0,540
Country	7,207	1	7,207	4,347	0,040	0,040
Level of informedness	17,640	4	4,410	2,660	0,037	0,094
Country * level of informedness	6,476	4	1,619	0,977	0,424	0,037
Error	170,777	103	1,658			
Total	989,000	113				
Corrected Total	218,867	112				

a. R squared = ,220 (Adjusted R Square = ,152)

TABLE 2: Results of multi-factor variance anlysis: Tests of between-subject effects with dependent variable "Vaccination willingness".

Of the factors presented here, only two factors were able to make a significant explanatory contribution to vaccination willingness: The country, i.e. Italy or Germany on the one hand and the level of informedness (feeling of being well-informed) on the other hand. It has been already shown that the more a person has the feeling of being well-informed, the more he/she is willing to get vaccinated. Above that, respondents in Italy show a higher willingness to get vaccinated than the German sample. The model itself is obviously highly significant (p=0.002). As a whole, the model shows an eta square of 0.22 which corresponds to an effect size of 0.42, representing a strong effect according to Cohen (Cohen, 1988). The factors "country" and "level of informedness", are both significant and thus have an impact on the vaccination willingness. However, the partial eta squared values, show that the impact of the level of informedness is higher (0.094) than that of the country (0.040). Following Cohen, the level of informedness even has a strong effect on the vaccination willingness, while the effect by the country is moderate.

4.4 Summary of Results
In table 3, we compiled all results to grant an easy overview of the previously proposed hypotheses as well as the corresponding findings.

Variable	Summary of Findings	Confirmed or Refuted
H1: People in a country with a higher severity / mortality rate for people infected with COVID-19 inform themselves more about the virus than people living in a country with a lower severity.	While not true at all times (e.g. the peaks of the first and second wave), Italian respondents do tend to inform themselves more overall.	Partly Confirmed
H2: The trust in official government sources is lower in a country with a higher severity / mortality rate for people infected with COVID-19 than in a country with a lower severity.	Italian Respondents actually placed more trust in their government than German respondents.	Refuted
H3: The vaccination acceptance is influenced by the severity of the crisis as well as the perception of the risk of the crisis by the respondents.	Information and Severity do seem to influence vaccine acceptance. Fear, however, only seemed to influence the decision of Italian respondents.	Partly Confirmed
SH1: The better people feel informed about the virus, the higher is their willingness to get vaccinated when possible	Respondents who perceived themselves as being well informed were more likely to accept a vaccination when offered	Confirmed
SH2: The higher the severity and mortality caused by the virus is in a country, the higher the willingness of its citizens to get vaccinated.	People who are more afraid of getting ill themselves or of relatives getting ill are more willing to be vaccinated if this is possible. Italy has had a undoubtably worse outbreak of the pandemic, and Italian respondents were more willing to accept a vaccination.	Confirmed
SH3: People who are more afraid of getting ill themselves or having relatives get ill are more willing to get vaccinated when possible.	While true for Italians, worry or fear did not seem to influence German respondents in either direction.	Partly Confirmed

TABLE 3: Summary of all findings.

5. DISCUSSION

Based on the conducted research, all hypotheses and sub-hypothesis could be evaluated through the work of this paper. This allows this paper to answer the proposed research question: ***How does the severity of the ongoing pandemic influence the information behavior of young people aged 18 to 35 in Germany and Italy in comparison?***

Accordingly, findings of this study can be summarized as follows: The severity of the pandemic in a given country does influence the information behavior of its citizens. Hypothesis 1 proved that, while not consistently so, information behavior over the course of the year 2020 was higher among Italian respondents at most times. This means that the severity of pandemic and feelings of fear about it have influenced the information consumption. Additionally, figure 3 illustrated that the information behavior of the two groups seemed to decline over time and did not reach a new high when a new record of infections was set in November and December (in Italy and Germany respectively). This correlates with the idea of topic fatigue introduced by Schumann (2018). Respondents are tired of hearing about the virus and the pandemic. Similar results have been found by scholars such as Lilleholt in Denmark (Lilleholt et al., 2020), Zhao et al. in the US (Zhao et al., 2020) and Petherick et al. worldwide (Petherick et al., 2021). Accordingly, these results can be useful in crisis management by highlighting that an effective institutional communication strategy should take into account that people tend to decrease its attention about a topic; thus, it can be suggestable for health institution to modify the channels and ways (Comfort et al., 2020) through which they communicate to citizens.

Hypothesis 2, however, had to be refuted entirely. German respondents did not place more trust in their government. In fact, the trust Italians placed in their government was significantly higher. This is a clear indication for a rally-around-the-flag effect in Italy and confirms findings by other scholars (Baekgaard et al., 2020; Devine et al., 2020; Hegewald & Schraff, 2020; Sibley et al., 2020). Even though Lovari found that Italy "*suffers from a general lack of trust in public institutions*" (Lovari, 2020), findings of the study demonstrated Italian respondents trusted their government more than Germans. While other works also found a general lack of trust in public institutions by Italians, (Castro & Guccio, 2020), they also demonstrated that the Italian public placed a lot of trust in governmental experts during the COVID-19 pandemic. These results are in line with another study by Falcone et al. which found that, during the pandemic, about 75% of Italians trusted public institutions (Falcone et al., 2020). In the authors' words: "*A pandemic like COVID-19 creates the*

preconditions for a collective case of necessary trust in public authorities, or institutional trust by force majeure: not in the sense that we are being manipulated by some hidden power, as some conspiracy theorists may be prone to believe, but because the very nature of the health crisis leaves us with no other option than to put our trust in public authorities (that is why we emphasize a need, a necessity for trust)" (Falcone et al., 2020, p. 13). Therefore, Italian citizens have no other option than to trust the relevant public institutions as a way to deal with the crisis in the form of an "civil-alliance". (Falcone & Castelfranchi, 2001).

This finding shows that in crisis period, especially at its beginning, citizens are more willing to follow suggestions and advice from eminent institutional experts than simple rules provided by public agencies. This communication advantage should be adequately exploited by Governs in crisis management and in reducing risks for communities.

Going by the theory of the rally-around-the-flag effect, a more severe crisis leads to more trust in the government, which could be an explanation for the difference between Italy and Germany. The crisis in Germany was not as severe, therefore the government did not "earn" higher trust among its citizens. The Italian respondents do not seem to blame the government for the COVID-19 situation, but rather welcome the strict measures imposed by their government. This is also supported by the "Prevention Paradox" referred to by Rose in 2001 (Rose, 1985). By conducting a case study about a vaccine, the author found that through the successful vaccination of a population against a given disease, the awareness of that disease decreases, while the awareness of the risks associated with the vaccination itself increases. This vaccination evaluated by Rose could be compared to the restrictions put in place to fight the pandemic. An individual does not see its benefits but focuses instead on the restrictions directly affecting his or her everyday life. Similarly, an individual doesn't see immediately the positive effect of vaccinations, but rather hears about the associated risks – even if they are much less grave. As virologist Drosten put it: "there is no glory in prevention". (Drosten, 2020).

However, there are of course other possible explanations for the result: the demographic of the surveyed Italian respondents, for example, which mostly live in the centre of Italy, where the pandemic was less severe than in the north of the country (Dong et al., 2020). This could influence the trust in government. Accordingly, a definitive answer for how and why the findings differ so much cannot be given and further scholarly research into the different possible causes would be valuable.

Lastly, concerning the hypothesis 3, the first two sub-hypotheses could be confirmed. Those who considered themselves to be well-informed about the pandemic were more likely to get a vaccination when offered the possibility. This matches the findings of Malik et al. (Malik, McFadden, Elharake, & Omer, 2020), who linked vaccination acceptance to higher education. This result shows the need for crisis management through communication campaigns designed to inform and educate people on health issues. Knowledge of the scientific advantages and disadvantages of a vaccine (or other public safety measure) among all segments of the population forms the basis for citizen participation in managing health crises in a coproduction system. (Osborne, Radnor, & Strokosch, 2016).

Moreover, the percentage of people willing to get the vaccination was considerably higher in Italy than in Germany. This can be attributed to the higher risk of infection and bigger worry that the Italians have about getting infected with COVID-19 (as visible in figure 4). This difference in vaccination acceptance matches the findings by Barello, Nania, Dellafiore, Graffigna, and Caruso (2020), who found vaccination acceptance among university students in Italy to be around 86.1%, while two studies by Neumann-Böhme et al. as well as Lazarus et al. placed the vaccination acceptance in Germany at 70% (Neumann-Böhme et al., 2020) and 68.4% (Lazarus et al., 2021) respectively. The German studies were conducted among the whole population, however. Still, they also found Italian vaccination acceptance in general to be higher, at 77.3% (Neumann-Böhme et al., 2020) and 70.8% (Lazarus et al., 2021) respectively, for the general population. The role that fear of an, possibly deadly, infection plays in vaccination acceptance was also investigated by

Sallam (Sallam, 2021), who found that vaccination acceptance was highest in countries with worse outbreaks of COVID-19 as well as worse health care systems. The three countries with the highest vaccination acceptance were Ecuador with 97.0% acceptance (Sarasty, Carpio, Hudson, Guerrero-Ochoa, & Borja, 2020), Malaysia with 94.3% (Wong, Alias, Wong, Lee, & AbuBakar, 2020) and Indonesia with 93.3% (Harapan et al., 2020). Furthermore, studies (Murphy et al., 2021) showed that gender influences vaccination willingness, more precisely: Men are more willing to get vaccinated than women. This correlation can also be found in this study, because the average willingness to vaccinate by the male participants, with a mean of 2.3 on the agreement scale (1="totally agree" to 5="totally disagree") is higher than that of the females, who are rather undecided, given a mean of 2.8 (p=0.059). This tendency is present in both countries, but the willingness to get vaccinated of both genders is higher in Italy. The third sub-hypothesis couldn't be answered quite as clearly. While Italians who were worried about getting themselves or about related persons getting ill were more likely to get vaccinated, this worry did not seem to influence the German respondents' attitude towards vaccination in either way.

Especially the results for the third hypothesis carry with them a lot of valuable information about how to better deal with the COVID-19 pandemic. Most importantly, information is key. Citizens of a country need to feel that they are well-informed about the virus, so that they are more likely to accept a vaccination when made the offer. Going forward, the vaccination against COVID-19 is the most important tool to fight the pandemic and make a return to unrestricted everyday lives possible. Information is one key part to get there. Future research might focus on the channels with which the surveyed population can best be reached, to ensure that all people have easy access to the information needed to make an informed decision about their personal vaccination. Governments must invest heavily in informing their citizens in order to increase vaccination acceptance amongst the general public.

6. CONCLUSION

Before diving into the conclusion, however, we should keep in mind that the findings in this paper are not without limitations. The respondents in both samples consisted of two relatively homogenous groups of mostly students. These students mostly studied at the same university and had the same general age, which makes this paper unfit for drawing conclusions about the general public. Also, the number of participants in the two groups of respondents is limited to a relatively small sample size. While this does not pose a problem for the validity of the results, as other works have shown (Bailey et al., 2021; Ong et al., 2020; Shehata, 2020), it further limits the possibility of generalization. Nevertheless, the statistical evidence in this work proves its reliability. Finally, only two countries were analyzed by this research, meaning that the influence of political, geographical, or cultural differences cannot be excluded with absolute certainty. While comparing just two countries is not uncommon (J. Chen et al., 2020; C. Wang et al., 2020), this must be kept in mind when trying to apply the findings to other situations and / or countries.

Notwithstanding these limitations, this manuscript shows a clear correlation between the severity of the COVID-19 pandemic in a given country and the information behavior of its young adult citizens. Thus, the findings should prove useful in assisting public agencies with crisis management Particularly, the main findings of this study can be summarized as follows:

- The severity of the pandemic in a country directly influences the level of information consumption of its citizens; the higher the perception of COVID-19 health related risks, the higher the time spent by young people (aged 18 to 35) informing themselves.
- A health crisis, just like a military one, creates a condition of necessity; thus, in pandemic times, especially when the level of pandemic severity increased and the ability to manage it grew uncertain, young people tended to place more trust in institutional "experts" about the virus, which are published through institutional channels.
- In general, German and Italian respondents behave similarly; differences in information consumption and government trust between the two countries can be justified by the severity of the pandemic.

- Young people who are more informed and educated tend to be more willing to get the vaccination against COVID-19.

These findings can be of great use to both scholars and practitioners in designing communication campaigns aimed at engaging young adults in the fight against the spread of the pandemic and its management. Particularly the study fosters the debate about relevance of institutional information in uncertain times. The COVID-19 health crisis causes a condition of necessity, which pushes people to place more trust in institutional information channels (Jun et al., 2021). The study recognizes that institutional information is a fundamental factor in guiding a country's citizens to correct behavior that will help combat the pandemic in particular and public emergencies in general. As highlighted in this manuscript, the effectiveness of tangible answers provided by public agencies to health crises (e.g. lockdown decisions, social distancing, mask wearing, vaccination campaigns, etc.) also depends on how, and via which channel they are communicated and how many difficulties there are in fully understanding them (Hyland-Wood et al., 2021). In this way, institutional communication becomes a vehicle for educating citizens and creating a culture which is recognized as a key driver of success for both private/public and profit/non-profit organizations. (Dorda & Shtëmbari, 2020)

Thus, the paper highlights the relevance of the "social-networking" field of marketing and communication as a lever for the effectiveness of public interventions (Osborne & Strokosch, 2013) in crisis management. After all, what is marketing if not the ability to enrich and inform a target audience? This is exactly what governments and public policies are expected to do to increase the effectiveness of public health interventions, such as citizen vaccination acceptance, which is a vital step on the path back to a normal pre-pandemic life. Particularly, due to an unprecedented major part of the population working from home (Naidoo, 2020) with extremely high social media usage (Bick et al., 2020; Farooq et al., 2021), it would have been desirable that the government implements innovative and unconventional communication strategies capable of reaching those segments of the population (mostly younger and technology oriented) that tend to use non-traditional information channels. Public organizations should therefore continue to invest time and resources in building a culture among citizens to address the COVID-19 pandemic.

Following the debate triggered by the work of Cristofaro et al. (Cristofaro, Giardino, & Leoni, 2021), this paper expands on the IJBRM's journey of evaluating global management mainstreams in terms of public issues. The study seeks to sketch recommendations for policymakers and public managers to encourage the provision of guidelines and practices aimed at educating and informing diverse groups of people during extraordinary times. Particularly, the importance of marketing and communication is clearly highlighted in this paper, in their interferences for the co-creation of public value (Osborne et al., 2016). Accordingly, this work could contribute to the IJBRM debate by adding a new dimension to the repertoire of published articles: Communication issues in public crisis management, discussed in terms of the current public health crisis caused by COVID-19 and its global implications.

7. REFERENCES

Ayoub, J., Yang, X. J., & Zhou, F. (2021). Combat COVID-19 infodemic using explainable natural language processing models. *Information Processing & Management, 58*(4).

Baekgaard, M., Christensen, J., Madsen, J. K., & Mikkelsen, K. S. (2020). Rallying around the flag in times of COVID-19: Societal lockdown and trust in democratic institutions. *Journal of Behavioral Public Administration, 3*(2). doi:10.30636/jbpa.32.172.

Bailey, L., Ward, M., DiCosimo, A., Baunta, S., Cunningham, C., Romero-Ortuno, R., . . . McCarroll, K. (2021). Physical and mental health of older people while cocooning during the COVID-19 pandemic. *QJM: An International Journal of Medicine*.

Barello, S., Nania, T., Dellafiore, F., Graffigna, G., & Caruso, R. (2020). 'Vaccine hesitancy'among university students in Italy during the COVID-19 pandemic. *European journal of epidemiology, 35*(8), 781-783.

Bäuerle, A., Teufel, M., Musche, V., Weismüller, B., Kohler, H., Hetkamp, M., . . . Skoda, E.-M. (2020). Increased generalized anxiety, depression and distress during the COVID-19 pandemic: a cross-sectional study in Germany. *Journal of Public Health, 42*(4), 672-678. doi:10.1093/pubmed/fdaa106.

Bender, M. S., Choi, J., Arai, S., Paul, S. M., Gonzalez, P., & Fukuoka, Y. (2014). Digital technology ownership, usage, and factors predicting downloading health apps among Caucasian, Filipino, Korean, and Latino Americans: the digital link to health survey. *JMIR mHealth and uHealth, 2*(4), e3710.

Bennett, W. L., & Pfetsch, B. (2018). Rethinking political communication in a time of disrupted public spheres. *Journal of communication, 68*(2), 243-253.

Benvenuto, M., Avram, A., Sambati, F. V., Avram, M., & Viola, C. (2020). The Impact of Internet Usage and Knowledge-Intensive Activities on Households' Healthcare Expenditures. *International journal of environmental research and public health, 17*(12).

Bhat, B. A., Khan, S., Manzoor, S., Niyaz, A., Tak, H., Anees, S., . . . Ahmad, I. (2020). A study on impact of COVID-19 lockdown on psychological health, economy and social life of people in Kashmir. *International Journal of Science and Healthcare Research, 5*(2), 36-46.

Bick, A., Blandin, A., & Mertens, K. (2020). Work from home after the COVID-19 Outbreak. *CEPR Discussion Paper No. DP15000*.

Bilinski, A., & Emanuel, E. J. (2020). COVID-19 and excess all-cause mortality in the US and 18 comparison countries. *Jama, 324*(20), 2100-2102. doi:10.1001/jama.2020.20717.

Broadbent, J. (2020). The response to Covid-19 in England: political accountability and loss of trust. *Journal of Accounting & Organizational Change*.

Castro, M. F., & Guccio, C. (2020). Birds of a feather flock together: trust in government, political selection and electoral punishment. *Public Choice, 184*(3), 263-287.

Cellini, N., Canale, N., Mioni, G., & Costa, S. (2020). Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy. *Journal of Sleep Research, 29*(4).

Cepiku, D., & Giordano, F. (2014). Co-Production in Developing Countries: Insights from the community health workers experience. *Public management review, 16*(3), 317-340.

Chen, J., Lu, H., Melino, G., Boccia, S., Piacentini, M., Ricciardi, W., . . . Zhu, T. (2020). COVID-19 infection: the China and Italy perspectives. *Cell death & disease, 11*(6), 1-17.

Chen, Q., Min, C., Zhang, W., Wang, G., Ma, X., & Evans, R. (2020). Unpacking the black box: How to promote citizen engagement through government social media during the COVID-19 crisis. *Computers in human behavior, 110*.

Chowanietz, C. (2011). Rallying around the flag or railing against the government? Political parties' reactions to terrorist acts. *Party Politics, 17*(5), 673-698. doi:10.1177/1354068809346073.

Chundakkadan, R., & Ravindran, R. (2020). Information flow and COVID-19 recovery. *World development, 136*, 105112.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences. Hillsdale, NJ: Laurence Erlbaum Associates. In: Inc.

Comfort, L. K., Kapucu, N., Ko, K., Menoni, S., & Siciliano, M. (2020). Crisis decision-making on a global scale: Transition from cognition to collective action under threat of COVID-19. *Public Administration Review, 80*(4), 616-622.

Cowper, A. (2020). Covid-19: are we getting the communications right? *bmj, 368*.

Cristofaro, M., Giardino, P. L., & Leoni, L. (2021). Back to the Future: A Review and Editorial Agenda of the International Journal of Business Research and Management.

Dahlgreen, P. M. (2005). The Internet, Public Spheres, and Political Communication: Dispersion and Deliberation. . *Political Commun, 22*(2), 147-162.

Del Buono, M. G., Iannaccone, G., Camilli, M., Del Buono, R., & Aspromonte, N. (2020). *The Italian outbreak of COVID-19: conditions, contributors, and concerns.* Paper presented at the Mayo Clinic Proceedings.

Del Vicario, M., Bessi, A., Zollo, F., Petroni, F., Scala, A., Caldarelli, G., . . . Quattrociocchi, W. (2016). The spreading of misinformation online. *Proceedings of the National Academy of Sciences, 113*(3), 554-559.

Devine, D., Gaskell, J., Jennings, W., & Stoker, G. (2020). Trust and the Coronavirus Pandemic: What are the Consequences of and for Trust? An Early Review of the Literature. *Political Studies Review*. doi:10.1177/1478929920948684.

Dobson, A. S., Robards, B., & Carah, N. (2018). *Digital intimate publics and social media*: Springer.

Dong, E., Du, H., & Gardner, L. (2020). An interactive web-based dashboard to track COVID-19 in real time. *The Lancet infectious diseases, 20*(5), 533-534. doi:10.1016/s1473-3099(20)30120-1.

Dorda, B., & Shtëmbari, E. (2020). A new perspective on organizational culture in emergency situations. *International Journal of Business Research and Management (IJBRM), 11*(2), 16-26.

Droit-Volet, S., Gil, S., Martinelli, N., Andant, N., Clinchamps, M., Parreira, L., . . . Dubuis, B. (2020). Time and Covid-19 stress in the lockdown situation: Time free,«Dying» of boredom and sadness. *PloS one, 15*(8).

Drosten, C. (2020). Coronavirus-Update Nr.12. Retrieved from https://www.ndr.de/nachrichten/info/12-Coronavirus-Update-Schulen-schliessen-und-Gemeinden-unterstuetzen,podcastcoronavirus126.html.

Falcone, R., & Castelfranchi, C. (2001). The socio-cognitive dynamics of trust: Does trust create trust? In *Trust in Cyber-societies* (pp. 55-72): Springer.

Falcone, R., Colì, E., Felletti, S., Sapienza, A., Castelfranchi, C., & Paglieri, F. (2020). All we need is trust: How the COVID-19 outbreak reconfigured trust in Italian public institutions. *Frontiers in psychology, 11*.

Farooq, A., Laato, S., Islam, A. N., & Isoaho, J. (2021). Understanding the impact of information sources on COVID-19 related preventive measures in Finland. *Technology in Society, 65*.

Gao, P., Zhang, H., Wu, Z., & Wang, J. (2020). Visualising the expansion and spread of coronavirus disease 2019 by cartograms. *Environment and Planning A: Economy and Space, 52*(4), 698-701.

Guo, Y., Lu, Z., Kuang, H., & Wang, C. (2020). Information avoidance behavior on social network sites: Information irrelevance, overload, and the moderating role of time pressure. *International Journal of Information Management, 52*.

Halme, M., Joro, T., & Koivu, M. (2002). Dealing with interval scale data in data envelopment analysis. *European Journal of Operational Research, 137*(1), 22-27. doi:10.1016/S0377-2217(01)00090-X.

Harapan, H., Wagner, A. L., Yufika, A., Winardi, W., Anwar, S., Gan, A. K., . . . Mudatsir, M. (2020). Acceptance of a COVID-19 vaccine in southeast Asia: A cross-sectional study in Indonesia. *Frontiers in public health, 8*.

Hegewald, S., & Schraff, D. (2020). Who rallies around the flag? Evidence from panel data during the Covid-19 pandemic. doi:10.31219/osf.io/dwgsj.

Hernández-García, I., & Giménez-Júlvez, T. (2020). Assessment of health information about COVID-19 prevention on the internet: infodemiological study. *JMIR public health and surveillance, 6*(2).

Husnayain, A., Fuad, A., & Su, E. C.-Y. (2020). Applications of Google Search Trends for risk communication in infectious disease management: A case study of the COVID-19 outbreak in Taiwan. *International Journal of Infectious Diseases, 95*, 221-223.

Hyland-Wood, B., Gardner, J., Leask, J., & Ecker, U. K. (2021). Toward effective government communication strategies in the era of COVID-19. *Humanities and Social Sciences Communications, 8*(1), 1-11.

Indolfi, C., & Spaccarotella, C. (2020). The outbreak of COVID-19 in Italy: fighting the pandemic. In: American College of Cardiology Foundation Washington DC.

Islam, T., Mahmood, K., Sadiq, M., Usman, B., & Yousaf, S. U. (2020). Understanding Knowledgeable Workers' Behavior Toward COVID-19 Information Sharing Through WhatsApp in Pakistan. *Frontiers in psychology, 11*. doi:10.3389/fpsyg.2020.572526.

Jun, S.-P., Yoo, H. S., & Lee, J.-S. (2021). The impact of the pandemic declaration on public awareness and behavior: Focusing on COVID-19 google searches. *Technological Forecasting and Social Change, 166*.

Kanstrup, A. M., Bertelsen, P., & Nøhr, C. (2015). Patient innovation: An analysis of patients' designs of digital technology support for everyday living with diabetes. *Health Information Management Journal, 44*(1), 12-20.

Kata, A. (2012). Anti-vaccine activists, Web 2.0, and the postmodern paradigm–An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine, 30*(25), 3778-3789.

Khan, S., Siddique, R., Li, H., Ali, A., Shereen, M. A., Bashir, N., & Xue, M. (2020). Impact of coronavirus outbreak on psychological health. *Journal of global health, 10*(1). doi:10.7189/jogh.10.010331.

Khubchandani, J., Sharma, S., Price, J. H., Wiblishauser, M. J., Sharma, M., & Webb, F. J. (2021). COVID-19 vaccination hesitancy in the United States: a rapid national assessment. *Journal of Community Health, 46*(2), 270-277. doi:10.1007/s10900-020-00958-x.

Kickbusch, I. S. (2001). Health literacy: addressing the health and education divide. *Health Promotion International, 16*(3), 289-297. doi:10.1093/heapro/16.3.289.

Kim, S. S., Kim, S. H., & Lee, S. Y. (2005). Health literacy: Development of a Korean health literacy assessment tool. *Korean J. Health Educ. Promot., 22*(4), 215–227.

Koole, S. L., Van Dillen, L. F., & Sheppes, G. (2011). The self-regulation of emotion. *Handbook of self-regulation: Research, theory, and applications, 2*, 22-40.

Kott, A., & Limaye, R. J. (2016). Delivering risk information in a dynamic information environment: framing and authoritative voice *Centers for Disease Control (CDC) and primetime broadcast news media communications during the 2014 Ebola outbreak. Soc. Sci. Med. 169, 42–49.*

Kourlaba, G., Kourkouni, E., Maistreli, S., Tsopela, C.-G., Molocha, N.-M., Triantafyllou, C., . . . Maroudi-Manta, S. (2021). Willingness of Greek general population to get a COVID-19 vaccine. *Global health research and policy, 6*(1), 1.

Kramer, A., & Kramer, K. Z. (2020). The potential impact of the Covid-19 pandemic on occupational status, work from home, and occupational mobility. *Journal of Vocational Behavior, 119*.

Kuhlmann, C., Schumann, C., & Wolling, J. (2014). „Ich will davon nichts mehr sehen und hören!"Exploration des Phänomens Themenverdrossenheit. *M&K Medien & Kommunikationswissenschaft, 62*(1), 20. doi:10.5771/1615-634x-2014-1-5.

Lazarus, J. V., Ratzan, S. C., Palayew, A., Gostin, L. O., Larson, H. J., Rabin, K., . . . El-Mohandes, A. (2021). A global survey of potential acceptance of a COVID-19 vaccine. *Nature medicine, 27*(2), 225-228.

Lee, J. R. (1977). Rallying around the flag: Foreign policy events and presidential popularity. *Presidential Studies Quarterly, 7*(4), 252-256.

Lilleholt, L., Zettler, I., Betsch, C., & Böhm, R. (2020). Correlates and Outcomes of Pandemic Fatigue. doi:10.31234/osf.io/2xvbr.

Liu, H., Liu, W., Yoganathan, V., & Osburg, V.-S. (2021). COVID-19 information overload and generation Z's social media discontinuance intention during the pandemic lockdown. *Technological Forecasting and Social Change, 166*(C).

Lovari, A. (2020). Spreading (dis) trust: Covid-19 misinformation and government intervention in Italy. *Media and Communication, 8*(2), 458-461.

Maier, C., Laumer, S., Eckhardt, A., & Weitzel, T. (2015). Giving too much social support: social overload on social networking sites. *European Journal of Information Systems, 24*(5), 447-464.

Maier, C., Laumer, S., Weinert, C., & Weitzel, T. (2015). The effects of technostress and switching stress on discontinued use of social networking services: a study of Facebook use. *Information Systems Journal, 25*(3), 275-308.

Malik, A. A., McFadden, S. M., Elharake, J., & Omer, S. B. (2020). Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine, 26*, 100495.

Manivannan, M., Jogalekar, M. P., Kavitha, M. S., Maran, B. A. V., & Gangadaran, P. (2021). A mini-review on the effects of COVID-19 on younger individuals. *Experimental Biology and Medicine, 246*(3), 293-297. doi:10.1177/1535370220975118.

Meichtry, S., Sugden, J., & Barnett, A. (2020). Pandemic Fatigue Is Real… and It's Spreading. *Wall Street Journal [Internet]*.

Michie, S., West, R., & Harvey, N. (2020). The concept of "fatigue" in tackling covid-19. *bmj, 371*. doi:10.1136/bmj.m4171.

Murphy, J., Vallières, F., Bentall, R. P., Shevlin, M., McBride, O., Hartman, T. K., . . . Gibson-Miller, J. (2021). Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nature communications, 12*(1), 1-15. doi:10.1038/s41467-020-20226-9.

Naidoo, R. (2020). A multi-level influence model of COVID-19 themed cybercrime. *European Journal of Information Systems, 29*(3), 306-321.

National Research Council. (1989). Improving risk communication. 21.

Neumann-Böhme, S., Varghese, N. E., Sabat, I., Barros, P. P., Brouwer, W., van Exel, J., . . . Stargardt, T. (2020). Once we have it, will we use it? A European survey on willingness to be vaccinated against COVID-19. In: Springer.

Nutbeam, D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health. Promot. Int., 15*(3), 259–267. doi:doi.org/10.1093/heapro/15.3.259.

Ong, J. J., Bharatendu, C., Goh, Y., Tang, J. Z., Sooi, K. W., Tan, Y. L., . . . Allen, D. M. (2020). Headaches associated with personal protective equipment–A cross-sectional study among frontline healthcare workers during COVID-19. *Headache: The Journal of Head and Face Pain, 60*(5), 864-877.

Osborne, S. P., Radnor, Z., & Strokosch, K. (2016). Co-production and the co-creation of value in public services: a suitable case for treatment? *Public management review, 18*(5), 639-653. doi:10.1080/14719037.2015.1111927.

Osborne, S. P., & Strokosch, K. (2013). It takes Two to Tango? Understanding the C o-production of Public Services by Integrating the Services Management and Public Administration Perspectives. *British Journal of Management, 24*, S31-S47. doi:10.1111/1467-8551.12010.

Perrotta, D., Grow, A., Rampazzo, F., Cimentada, J., Del Fava, E., Gil-Clavel, S., & Zagheni, E. (2021). Behaviours and attitudes in response to the COVID-19 pandemic: insights from a cross-national Facebook survey. *EPJ data science, 10*(1), 1-13.

Petherick, A., Goldszmidt, R. G., Andrade, E. B., Furst, R., Pott, A., & Wood, A. (2021). A worldwide assessment of COVID-19 pandemic-policy fatigue. doi:10.2139/ssrn.3774252.

Petzold, M. B., Plag, J., & Ströhle, A. (2020). Umgang mit psychischer Belastung bei Gesundheitsfachkräften im Rahmen der COVID-19-Pandemie. *Der Nervenarzt, 91*(5), 417-421. doi:10.1007/s00115-020-00905-0.

Rai, A. (2020). Editor's comments: The COVID-19 pandemic: Building resilience with IS research. *Management Information Systems Quarterly, 44*(2), 3-7.

Rieger, M. O., & Wang, M. (2020). Trust in Government Actions during the COVID-19 Crisis. In (pp. 21).

Rosa, A., Marolla, G., & Benvenuto, M. (2020). The value-based health care model: a possible response to Covid-19 management. *Mecosan*(113).

Rose, G. (1985). Sick Individuals and Sick Populations. *International journal of epidemiology, 14*(1), 32-38. doi:10.1093/ije/14.1.32.

Ryan, J., & Sysko, J. (2007). The contingency of patient preferences for involvement in health decision making. *Health Care Management Review, 32*(1), 30-36.

Sallam, M. (2021). COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates. *Vaccines, 9*(2).

Sarasty, O., Carpio, C. E., Hudson, D., Guerrero-Ochoa, P. A., & Borja, I. (2020). The demand for a COVID-19 vaccine in Ecuador. *Vaccine, 38*(51), 8090-8098.

Schäfer, S. (2020). Illusion of knowledge through Facebook news? Effects of snack news in a news feed on perceived knowledge, attitude strength, and willingness for discussions. *Comput. Hum. Behav., 103*, 1-12. doi:doi.org/10.1016/j.chb.2019.08.031.

Schema Design. (2020). Searching for Covid-19. Retrieved from https://searchingcovid19.com

Schumann, C. (2018). Is topic fatigue an international problem?: four theses. *Global Media Journal-German Edition, 8*(2). doi:https://doi.org/10.22032/dbt.37780.

Shehata, A. (2020). Health Information behaviour during COVID-19 outbreak among Egyptian library and information science undergraduate students. *Information Development*. doi:10.1177/0266666920976181.

Sibley, C. G., Greaves, L. M., Satherley, N., Wilson, M. S., Overall, N. C., Lee, C. H., . . . Milfont, T. L. (2020). Effects of the COVID-19 pandemic and nationwide lockdown on trust, attitudes toward government, and well-being. *American Psychologist*. doi:http://dx.doi.org/10.1037/amp0000662.

Smith, R. D. (2006). Responding to global infectious disease outbreaks: lessons from SARS on the role of risk perception, communication and management. *Social science & medicine, 63*(12), 3113-3123.

Soroya, S. H., Farooq, A., Mahmood, K., Isoaho, J., & Zara, S.-e. (2021). From information seeking to information avoidance: Understanding the health information behavior during a global health crisis. *Information Processing & Management, 58*(2).

Stafford, N. (2020). Covid-19: Why Germany's case fatality rate seems so low. *bmj, 369*. doi:10.1136/bmj.m1395.

Tang, Z., Miller, A. S., Zhou, Z., & Warkentin, M. (2021). Does government social media promote users' information security behavior towards COVID-19 scams? Cultivation effects and protective motivations. *Government Information Quarterly, 38*(2).

Tangherlini, T. R., Roychowdhury, V., Glenn, B., Crespi, C. M., Bandari, R., Wadia, A., . . . Bastani, R. (2016). "Mommy blogs" and the vaccination exemption narrative: results from a machine-learning approach for story aggregation on parenting social media sites. *JMIR public health and surveillance, 2*(2).

The Lancet Public Health. (2020). COVID-19 in Spain: a predictable storm? *The Lancet. Public Health, 5*(11), e568. doi:10.1016/S2468-2667(20)30239-5.

Thome, J., Coogan, A. N., Fischer, M., Tucha, O., & Faltraco, F. (2020). Challenges for mental health services during the 2020 COVID-19 outbreak in Germany. *Psychiatry and clinical neurosciences*. doi:10.1111/pcn.13019.

van der Heide, I., Wang, J., Droomers, M., Spreeuwenberg, P., Rademakers, J., & Uiters, E. (2013). The Relationship Between Health, Education, and Health Literacy: Results From the Dutch Adult Literacy and Life Skills Survey. *Journal of Health Communication, 18*(sup1), 172-184. doi:10.1080/10810730.2013.825668.

Villani, L., McKee, M., Cascini, F., Ricciardi, W., & Boccia, S. (2020). Comparison of deaths rates for COVID-19 across Europe during the first wave of the COVID-19 pandemic. *Frontiers in public health, 8*. doi:10.3389/fpubh.2020.620416.

Viola, C., Toma, P., Manta, F., & Benvenuto, M. (2021). The more you know, the better you act? Institutional communication in Covid-19 crisis management. *Technological Forecasting and Social Change*, 120929.

Waisbord, S. (2016). *Disconnections: Media sociology and communication across differences*. Paper presented at the Conference of the International Communication Association, Fukuoka, Japan.

Wang, C., Chudzicka-Czupała, A., Grabowski, D., Pan, R., Adamus, K., Wan, X., . . . Xu, L. (2020). The association between physical and mental health and face mask use during the COVID-19 pandemic: a comparison of two countries with different views and practices. *Frontiers in psychiatry, 11*, 901.

Wang, K., Wong, E. L.-Y., Ho, K.-F., Cheung, A. W.-L., Yau, P. S.-Y., Dong, D., . . . Yeoh, E.-K. (2021). Change of willingness to accept COVID-19 vaccine and reasons of vaccine hesitancy of working people at different waves of local epidemic in Hong Kong, China: Repeated cross-sectional surveys. *Vaccines, 9*(1). doi:10.3390/vaccines9010062.

Wong, L. P., Alias, H., Wong, P.-F., Lee, H. Y., & AbuBakar, S. (2020). The use of the health belief model to assess predictors of intent to receive the COVID-19 vaccine and willingness to pay. *Human vaccines & immunotherapeutics, 16*(9), 2204-2214.

World Health Organization. (2020). Risk communication and community engagement readiness and response to coronavirus disease (COVID-19): interim guidance, 19 March 2020. Retrieved from https://apps.who.int/iris/handle/10665/331513;

World Health Organization. (2021). Coronavirus disease (COVID-19) advice for the public. Retrieved from https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public.

Xie, Z., Nacioglu, A., & Or, C. (2018). Prevalence, demographic correlates, and perceived impacts of mobile health app use amongst Chinese adults: cross-sectional survey study. *JMIR mHealth and uHealth, 6*(4), e9002.

Yin, R. K. (2014). *Case Study Research: Design and Methods* (V ed.). London: Sage publications Ltd.

Zhao, J., Lee, M., Ghader, S., Younes, H., Darzi, A., Xiong, C., & Zhang, L. (2020). Quarantine Fatigue: first-ever decrease in social distancing measures after the COVID-19 pandemic outbreak before reopening United States. *arXiv preprint arXiv:2006.03716*.

Zhu, W., Wei, J., & Zhao, D. (2016). Anti-nuclear behavioral intentions: The role of perceived knowledge, information processing, and risk perception. *Energy Policy, 88*, 168–177. doi:10.1016/j.enpol.2015.10.009.

<u>APPENDICES</u>

Questionnaire

1. Are you younger than 35 years old?

- Yes
- No (Survey finished)

2. Please estimate your daily average of news consumption about the coronavirus at the moment.

- Less than 5 minutes
- 5-20 minutes
- 20 minutes to 1 hour
- 1-2 hours
- more than 2 hours

**3. Please tick the box corresponding to how much you informed yourself about corona in the past months.
There are some events in italy noted next to the months as small reminders.**

	inform myself a lot	inform myself rather much	Inform myself rather less	Don't inform myself
january (first cases)				
february (first school closings)				
march (strict restrictions)				
april (cases declining)				
may (most restrictions lifted)				
june (borders are opened)				
july (low new infections)				
august (restrictions on social life)				
september (new infections surge)				
october (2nd wave)				
november (massive restrictions)				
december (heavy restrictions)				

4. How trustworthy are the following sources of information for you?

	very trustworthy	rather trustworthy	undecided	rather not trustworthy	not trustworthy at all
news websites (from serious publishers)					
websites/posts/tweets from tabloid press/yellow press					

6.   What is your gender?

- female
- male
- diverse

7.   How old are you?

- under 15 years
- 15 to 19 years
- 20 to 24 years
- 25 to 29 years
- 30 to 34 years

8.   Where do you currently live?

- Germany
- Italy
- Other_____

9.   What is the highest degree or level of education you have completed?

- Secondary school certificate (Scuola Secondaria)
- High School Graduation (Liceo)
- Bachelor's Degree
- Master's Degree
- Ph. D. (Doktor) or higher

10. Have you finished your academic education?

- *yes*
- *no*