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Media Content Analysis of the H1N1 Pandemic:

Deliverables D2.1 and D2.2 (integrated report)

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1. Goal & Background

1.1. Project Goal
This project analyzes the international media coverage of the H1N1 epidemic in 2009. It addresses the public debate about the development of the disease, vaccination and other recommended measures, and key media events and stakeholders.

1.2. Background: Media reporting and public opinion regarding health epidemics
In modern society, the media not only determine to a great extent which health issues are on the minds of the public and discussed by the public; they are also likely to influence risk perceptions and health behaviour. Unfortunately, fairly little empirical evidence exists regarding the portrayal of health information in the news, and its relationship with public risk estimates, attitudes and health behaviour. Work package 2 fills this gap by providing a retrospective media content analysis regarding the 2009 H1N1 pandemic in the Czech Republic, Spain, and Germany.

Public health risk estimates and behavioural responses may be influenced by the extent and direction of media coverage, by the type of news coverage (e.g., factual versus debate) and by the dramatization of news events. Extensive media coverage regarding a health issue directs public attention toward particular risk problems, which may serve as a risk amplifier, independent of its accuracy or particular frame. Extensive media coverage increases the accessibility of a certain issue in the receiver mind, which, in turn, leads to risk overestimation. For instance, people's estimates of the principal causes of death are related to the amount of media coverage they receive (Kasperson et al., 1988). Extensive media coverage may also mobilize latent fears about a particular risk and enhance the recollection of previous problems and failures, such as the highly vivid DES-case. Once such fears arise, they are particularly hard to 'undo'. The reverse also holds: lack of media coverage regarding a certain health risk or health recommendations may result in the underestimation of risk and lack of public support regarding a certain health measure.

Next to the amount of media coverage, type of news coverage may also contribute to social amplification of risk. News coverage about debates among experts can heighten public uncertainty about important health facts, increase doubts, and decrease credibility of official spokespersons (Mazur, 1981). News about controversies and debates among different parties may thus decrease support for certain health measures. Finally, dramatization of news content is undoubtedly a powerful source of risk amplification. Dramatization may be evident from sensational headlines in the regular news media, or from erroneous information posted online. In the case of HPV vaccination, for instance, severe illnesses and deaths were erroneously reported in the news; such cases cannot be undone by factual correction, as they linger in the receiver mind, long after they have proven false (Kasperson et al., 1988).

Thus far, there is limited quantitative data that track media coverage and public responses to health issues over time. Such longitudinal media content analyses are fairly common in modern communication science regarding political issues (e.g., Oegema et al., 2010), but they have not been extended to the health domain. Also lacking are insights into the dynamics between media attention for health epidemics and the development of an epidemic in terms of affected citizens and casualties (epidemic curve). Do epidemiological laws coincide with journalistic laws, or is media attention for a health epidemic governed more by news value criteria? Such questions have become very urgent in a media-dominated Europe, but they have remained unanswered.

2. Literature Review

Spring 2009 brought the emergence of the first influenza pandemic since 1968, and with it the world verged on a swine flu panic. First discovered in Mexico, the new flu virus was sprawling around the globe - with two alarming characteristics: It was affecting the young and healthy, rather than the usual risk groups of the elderly and chronically ill, and it resembled the strain that had caused the fatal Spanish flu in 1918. Scary at the time, the 2009 pandemic retrospectively looks like much ado about nothing. The toll was far from matching early apprehensions about the scale it could reach. According to the World Health Organization (WHO), H1N1 influenza – as swine flu was later termed – caused approximately 18,000 deaths, compared to around 250,000-500,000 deaths seasonal influenza causes each year, and 40-100 million people that died of the Spanish flu (Taubenberger & Morens, 2006; WHO, 2009, 2010, 2012). What had happened? “Now I and my colleagues in the media are the ones accused of crying wolf”, observed Independent's health editor Jeremy Laurance (2009, May 2). Indeed many blamed the media of having created an artificial H1N1 hype or hysteria, blowing up the threat to bait for a bigger audience (Wagner-Egger et al., 2011). Are such accusations valid?

Although previous studies have examined media coverage of H1N1, very few studies have explicitly examined the one question asked by health professionals across the globe: whether the media dramatized H1N1. Media coverage about a health topic such as H1N1 can be defined as dramatizing or sensationalist if it exaggerates existing risks and portrays the issue primarily based on arousing or emotional language and formal features rather than factual ones (e.g., pictures; Grabe, Zhou, & Barnett, 2001; Kleemans & Vettehen, 2009). The purpose of the present report is to analyze what we know to this date about the question whether the media dramatized H1N1 in two ways: (1) by means of a systematic review of prior content-analytical studies on news coverage of H1N1, (2) by analyzing media reporting on H1N1 in Germany, Czech Republic and Spain.

2.1. Three Indicators of Dramatization

To date no quantitative content analyses directly and systematically examined if mass media coverage about H1N1 was dramatized. Yet, scrutinizing the empirical evidence provided by these studies through the lens of scientific theories on media sensationalism and dramatization, we distilled three indicators of dramatization: (a) the amount of media attention, (b) the content presented, particularly an overemphasis of threat while neglecting measures of self-protection, and (c) the tone of coverage.

We provide just a brief sketch of the scientific theories that we relied upon in the definition of these three indicators. Regarding (a) the amount of information, prior research found that extensive coverage on a risk, may serve as risk amplifier, regardless of its accuracy (Kasperson et al., 1988). Thus, the sheer volume of news coverage on H1N1 could have contributed to panic. Regarding (b) media content, research has provided ample evidence that specific types of information presented – or the lack thereof – can influence individuals' perceptions and health behaviours (Witte, 1994). For instance, information regarding the severity of a health risk without recommendations on how to reduce this risk may result in fear and maladaptive responses to risk (Rogers, 1983). Hence, the content of news on H1N1 may have influenced public perceptions of the threat posed by H1N1. Finally, regarding (c) tone of coverage, research demonstrated that an emotional tone of messages about health risks impacts message perception, and that negative affect can increase risk perceptions (Biener, Ji, Gilpin, & Albers, 2004). Therefore, the tone of media coverage on H1N1 may have contributed to heightened public risk perceptions.
In the following we describe our methods for finding and selection relevant studies.
Next we sketch our main findings. Since media generally react to real world developments, we start each result section off with a brief overview of key event in the H1N1 epidemiology.

2.2. Methods

Search Protocol

For the purpose of the present literature review, we identified relevant prior publications through a search in two computerized scientific databases (EBSCO Host, Web of Science) on Aug, 1st 2012. As empirical studies explicitly examining dramatization of H1N1 media coverage are rare, we decided to distil indicators of dramatization from a broader range of systematic empirical analyses of H1N1 coverage, which resulted in a broader search strategy. We combined the search term Media or Newspaper or Radio or TV or Online or Twitter or Facebook or YouTube or Blog* or "Content Analysis" or Framing with each of the search terms H1N1, "Swine Flu", or "Pandemic Influenza". Since Web of Science is a multidisciplinary database, we filtered out articles from unrelated disciplines. Our search resulted in a total of 285 articles (EBSCO Host database: 42, Web of Science: 243).

Inclusion and Exclusion Criteria

The 285 articles identified were sorted using a number of inclusion and exclusion criteria (Appendix 1). In the first step we excluded 15 duplicates. We then screened the remaining 270 articles and excluded 19 articles that were not peer-reviewed journal articles, 50 articles published before the H1N1 outbreak, and 12 articles not English-language. We further checked for relevance, considering two inclusion criteria: articles had to refer to the H1N1 pandemic (no other pandemic), and studies needed to analyze media content. We excluded 26 articles that addressed other influenza pandemics and 153 articles for not employing content analyses. Ten relevant articles remained. We searched in the reference lists of the obtained articles and contacted several researchers to identify further relevant articles. A closer inspection revealed two articles (Pandey, Patni, Singh, Sood, & Singh, 2010; Yu, Frohlich, Fougner, & Ren, 2011) that were not identified in the initial search, which we added to our systematic review. In sum, 12 articles containing content analyses of the mass media coverage of H1N1 were retrieved for the present literature review (see Appendix 2).

2.3. Results

A summary of the identified 12 articles that analyzed news coverage on the H1N1 influenza pandemic worldwide is presented in Table 2. All studies consisted of quantitative analyses. The majority (10) used no specific underlying theoretical framework but applied an inductive approach; two studies chose a deductive approach. Seven articles analyzed the content of H1N1-related news in traditional media outlets. Most studies analyzed print newspapers like The New York Times, Washington Post, or China Times, some tabloids such as The Sun, while few examined TV news. Six articles analyzed New media such as Twitter, YouTube, Wikipedia, and blogs. Altogether, the studies cover the media reporting in 31 European countries, Canada, the U.S., Taiwan, and Australia. However, except for the UK (Hilton & Hunt, 2011), news coverage in European countries was only analyzed for the first week of the H1N1 pandemic (Duncan, 2009).

Amount of Media Attention

Nine out of 12 studies analyzed how much media attention H1N1 received over the course of the pandemic. All found that the amount of coverage was immense. In the first four days of the pandemic (April 27 – 30, 2009), the three top newspapers of each of 31 European countries published around 650 – 800 articles on H1N1 per day. In the first week (April 27 – May 3) this summed up to a total of 3,463 articles, an enormous number considering the same media had only published 2,824 articles on various health-topics together in a period of one month (Duncan, 2009). An analysis of Australian TV found that in the first months of the pandemic, H1N1 was the leading health story for 8 of the 24 weeks analyzed (Rachul, Ries, & Caulfield, 2011). Media attention was similarly huge in the online sphere. A great deal of information was available on the video platform YouTube. In the first two months of the pandemic (April/May) a total of 142 videos contained relevant information about H1N1 influenza. In the early pandemic days, Twitter had over 50,000 tweets per day that mentioned H1N1 or swine flu (Chew & Eysenbach, 2010). Accordingly, these findings show that the H1N1 pandemic presented a major theme on the media agenda during the first weeks of the pandemic.

Development of Media Attention

The fact that studies all analyzed different time frames (ranging from 7 days–8 months) complicated finding overall patterns across studies. Still, when integrating findings, three peaks in news coverage on H1N1 emerged, all of which coincided with important real- world events.

1st Peak End of April/Start of May 09 - Pandemic Outbreak. On 24 April 2009, the WHO issued a first disease outbreak notice. Unlike before where there had only been single cases of H1N1 infections, by the end of April first community outbreaks in the U.S. and Mexico had occurred. By April 27 the H1N1 virus had spread to Canada and Europe, and during the early weeks of May continuously spread across most continents and first deaths occurred.

These real-world cues apparently triggered a rapid increase in H1N1-related news in U.S. and European media (Duncan, 2009; Goodall, Sabo, Cline, & Egbert, 2012; Hilton & Hunt, 2011; Tausczik, Faasse, Pennebaker, & Petrie, 2012; Yu et al., 2011). The heaviest coverage emerged in May 2009, i.e. during the first month of the epidemic, with a sudden sharp drop at the start of June. Online media showed an equivalent increase in media attention at the start of the H1N1 outbreak. On Twitter, by far the highest number of H1N1-related tweets

occurred right after the outbreak between April 30-May 1, namely 1% of the sample tweet volume (Signorini et al., 2011), or over 50,000 daily tweets (Chew & Eysenbach, 2010). Only a couple of days later activity abruptly dropped to around 2,000 tweets per day (Chew & Eysenbach, 2010). Blogs and Wikipedia activity showed similar patterns. The highest number of blog entries was found on May 1, around 1.500. The same day, Wikipedia also showed its highest peak with 6,000 – 7,000 visits to H1N1-related articles.

In sum, findings demonstrate that especially in the very beginning of the epidemic, media interest in the new threat was strong, but was short-lived. Traditional and online media attention on H1N1 already started to decline within in the first few days after the outbreak notice. Findings point to a close correlation between different media channels (Chew & Eysenbach, 2010).

2nd peak July-Sept 09 - Declaration of pandemic and first summer wave. June 11 was probably the most important day of the H1N1 pandemic. That day the WHO issued its declaration that H1N1 had reached the scale of a pandemic (level 6). The first wave of H1N1 infections also fell into these summer months.

Only four studies provide information on news volume in this period. All but one (Yu et al., 2011) indicate that the June events resulted in a second peak in H1N1 news coverage in summer 2009. Regarding the proportion of media attention compared to the earlier April/May peak, differences across countries emerged. For the UK media, this second peak in news coverage was even higher than the first peak in spring (Hilton & Hunt, 2011), while for the U.S. the opposite was true (Goodall et al., 2012; Yu at al., 2011). Such differences in peak intensities may be explained by differences in epidemiology. The UK was the first European country to claim a H1N1 victim and the majority of cases over the course of the pandemic occurred during these summer months. Findings on country differences hint to a local focus of news reporting in the case of an epidemic threat. Again, the online sphere revealed similar patterns. Chew and Eysenbach (2010) found that Twitter activity increased during summer 2009, with two short peaks in June and July. The study clearly documents that the surge in media attention was triggered by the WHO's declaration.

In sum, despite differences in the relative amount of media attention that H1N1 received across countries, all studies found a second peak in news coverage in summer, most likely triggered by the WHO's pandemic declaration paired with the first wave of H1N1 infections.

3rd Peak Oct/Nov 09 – Mass Vaccinations and Autumn Wave. On Sept 21, China was the first country to initiate a mass vaccination program and until October most countries had followed. In Oct/Nov, both North America and Europe were hit by a second wave of influenza cases (CDC, 2012; ECDC, 2010).

The start of mass vaccinations prompted a third peak in media attention on the H1N1 pandemic. Five studies investigated news coverage in this period, however, most with limitations. The UK media showed a last spark of attention in autumn, notably smaller than the previous peaks, that was elicited by the start of the local vaccination program (Hilton & Hunt, 2011). Yet, due to the specific epidemiology in the UK, these findings may arguably not be general-

isable to other European countries. For the U.S., two studies likewise point to an autumn peak, yet one of them analyzed news coverage only until October (Goodall et al., 2012; Yu et al., 2011). For Canada, one study found a similar surge in coverage in autumn, yet the study exclusively analyzed newspaper articles related to the H1N1 vaccine, not to swine flu in general (Rachul et al., 2011). In a comparable fashion to traditional media,Twitter showed an increase in activity end of October, which was minor to the two previous peaks. Twitter showed immediate responses to the arrival of vaccines in the U.S. on Oct 6; the event was followed by a rapid increase in tweet volume on vaccination experiences (Chew & Eysenbach, 2010).

In sum, under the premise of the described limitations, studies indicate a third peak in media attention in autumn 2009, which can be attributed to the start of mass vaccination programs and a second wave of H1N1 infections.

Media Content

Seven studies that we identified explicitly analyzed media content. Two out of the twelve studies chose a deductive approach in the development of content categories, both using as underlying framework the extended parallel process model (EPPM; Witte 1994, Witte & Allen 2000). The EPPM distinguishes between information on the severity of and individual susceptibility to a threat from information on preventive measures, their effectiveness (response efficacy) and the efficacy beliefs of the individual to perform these measures (self-efficacy). Witte's EPPM is a prominent model in health communication and there is evidence that people tend to experience fear when they are confronted with information on the severity of a health risk without recommendations on how to reduce this risk (Rogers, 1983). The ten reviewed studies applying an inductive approach found comparable content categories. Hence, it is worthwhile to use the EPPM distinction between threat and efficacy information as guideline for our analysis of the content-specific causes for dramatization.

Threat Information. Across countries and studies information on the severity of and susceptibility to H1N1, such as reference to the risk of hospitalization or death, the spread of the disease, and mortality tallies, was by far the leading theme in H1N1 news coverage. Goodall and colleagues (2012) reported that severity information was present in 86% of stories in U.S. news. Since individual studies differed in terms of the countries and specific research interests, noteworthy dissimilarities could be observed. Studies found differences in whether news focused on the severity of the threat versus individual susceptibility to it. For instance, U.S. news showed a much stronger focus on severity information (Goodall et al., 2012), while UK news showed a stronger focus on the individuals susceptibility, particularly on local infections (Hilton & Hunt, 2011). Chang (2012), who made an interesting addition by not only analyzing the presence of threat information but also noting whether messages sounded alarmed or stressed the need for alertness, also found that Taiwanese news focused on threat information. Yet, he reported that the main message was the need for enhanced alertness rather than sounding alarm.

In sum, all but one of the reviewed studies found that threat information accounted for the largest share of information provided in H1N1-related news. The only study that found efficacy information to exceed threat information was Yu and colleagues' (2011) study, possibly

due to the fact that they measured only severity and no susceptibility information. Results indicating whether severity or susceptibility information was presented more frequently were inconsistent; half the studies found severity, the other half susceptibility to be the predominant information.

Efficacy Information. Next to severity, the second most prominent theme in news coverage on H1N1 was personal protection against the disease, i.e. efficacy information (Goodall et al., 2012; Chang, 2012; Fogarty et al., 2011; Yu et al., 2011). A common finding across studies was that although news reports frequently included information on protective measures, they only rarely addressed the effectiveness of recommended actions, i.e. response efficacy. It has to be noted, though, that some studies entirely left out an analysis of such information (Fogarty et al., 2011; Hilton & Hunt, 2011) or did so only in regard to vaccination (Yu et al., 2011), which complicated conclusions on the prevalence of efficacy information.

Taken together, all but one study (Hilton & Hunt, 2011) found that efficacy information was the second most dominant information in news coverage on H1N1. However, while some studies provide no information on the amount of response efficacy information in news, those that do, find that it was only seldom mentioned.

Tone of Media Coverage

Studies that investigated tone of news coverage found little evidence of the media 'over-hyping' the H1N1 pandemic. Duncan (2009) reported that in the first week of the pandemic 70% of articles in European media portrayed factual information. Hilton and Hunt (2011) found the same for the further course of the pandemic (March 09-Feb 10): the majority of articles were factual, or neutral (82.6%). Some studies investigating changes in sentiment over time found there was considerable change in the language in newspapers and blogs within the first two weeks of the outbreak. With time, death-related or anxiety related words declined significantly, while positive emotion words, such as relief, inclined (Tausczik et al., 2012). Goodall et al. (2012) likewise found that the more time had passed since the outbreak, the less likely stories mentioned fear. Fogarty and colleagues (2011) report that many news reports encouraged the public to calm responses, included reassuring statements that the virus was not as severe as first feared, that the government was in control of the situation and that the level of fear was disproportionate. The only study that explicitly analyzed sensationalism, reported that only 5 percent of articles used loaded words such as “fatal” or “lethal”.

3. Content Analysis of European Media: Methods

3.1. Sample

News reporting during the epidemic outbreak in three European countries (Germany, Spain, Czech Republic) was analyzed. For each country two opinion-leading newspapers (one daily serious, and one daily tabloid newspaper), a main evening newscast, and a weekly news magazine were selected. The analyzed media set included for Germany *ARD Tagesschau, FAZ, Bild*, and *Spiegel,* for Spain, *TVE Telediario, El Pais, 20 minutos,* and *Tiempo* (Internet), and for Czech Republic, *CTV Udalosti, Lidove Noviny, Blesk,* and *Respekt*.

Table 1: Media Sample

	TV	Daily serious	Daily tabloid	Weekly
Germany	ARD Tages-schau	FAZ	Bild	Spiegel
Spain	TVE Telediario	El Pais	20 minutos	Tiempo (Internet)
Czech Republic	CTV Udalosti	Lidove Noviny	Blesk	Respekt

All news items published between April 1, 2009 and March 31, 2010 were included in the current analysis. Since the first cases of A/H1N1 infections emerged at the end of April, we chose this month as the starting point. We analyzed A/H1N1-related news reporting over the course of a whole year, which only one other study has done so far (Hilton & Hunt, 2011). The news items were located using the search terms "H1N1 and/or Swine flu and/or new virus" in the respective languages. All news items referring primarily to H1N1, swine flu or swine flu vaccination, were included. News stories were defined as primarily referring to H1N1 if the topic took up either (a) the greatest part, or (b) at least half of the news item (more than any other issue), or (c) was mentioned in the headline or (d) depicted in an illustration. Based on these inclusion criteria, 1941 articles remained for the present analysis. All news stories were fully manually coded on a statement-level, resulting in a sample of 49236 statements.

3.2. Coding instrument

For each statement the source (i.e., person making a statement), as well as the protagonist (i.e. the person, group, company, institution, or organization the statement is made about) were coded. For protagonists, the tonality of statements was coded on a 5er-scale from support to rejection, with an additional sixth category coding neutral tone. This scale was chosen to capture the difference between news reporting that was balanced, i.e. presenting positive and negative sentiments (= coded as ambivalent) and statements that were purely factual (=coded as neutral). Tone was coded on the explicit and implicit level. The purpose of this was to seize both, the manifest objective tone of news reporting, and the more subtle subjective tone. Explicit tone was rated based on the presence and value of clearly judgmental or evaluative language (e.g. "good", "bad", "ominous", "ridiculous", "brilliant"). Implicit tone was evaluated based on contextual information and its impact on the opinion readers form about the protagonist mentioned in the statement. For the two most central topics, namely any statements about either H1N1, or vaccination, tonality was coded in the same manner as described above. Further, for each statement the degree of certainty with which a statement is made was coded, i.e. was it expressed as fact, opinion, assumption or was uncertainty explicitly expressed.

Figure 1: Example of how media content was coded

3.3. Main topics of news reporting

Based on prior content analyses on media coverage of epidemics, and based on literature in health communication as well as risk communication we developed a set of predefined statements referring to eleven different topics and coded how often these were present in news stories. Topics included severity of the virus, the susceptibility to a virus infection, the mention of preventive measures, particularly vaccination but also other measures (e.g., hand-washing, avoiding crowds, facial mask) and efficacy statements about such measures. Further we coded societal-level (government) actions taken to prevent pandemic spread (e.g., vaccine development, mass vaccination programs), and secondary consequences, i.e. consequences of H1N1 beyond the primary health consequences (see Table 2 for an overview of the coded topics and descriptions).

Table 1: Summarized Coding Instrument - Main topics of news reporting

Topics	Description
Severity	Reference to how severe the H1N1 virus was, e.g., mention of symptoms, risk of death, mortality tallies
Susceptibility	*Reference to* the risk of getting infected by H1N1, e.g., description of the spread of the virus, infection rates
P*reventive measures*	Mention of p*reventive measures (*hand-washing, avoiding crowds, facial mask, …)
Self-efficacy (regarding preventive measures)	Reference to the possibility/ease to perform the mentioned precautionary measures;
Response efficacy (regarding preventive measures)	*R*eference to the effectiveness / probability of success of the mentioned precautionary measures
Vaccination	
Self-efficacy (of vaccination)	Reference to the ease with which vaccination can be accessed, such as the availability of vaccination, or the cost of vaccine
Response efficacy (of vaccination)	Reference to the effectiveness of vaccination
S*afety (of vaccination)*	Reference to the approval process, side effects

3.4. Emotionalisation of news

We defined five indicators of emotionalised media content (See Table 3). First, and probably most straightforward, we coded any statement or image that portrayed explicit emotion as emotional content. Second, Grabe and colleagues (2010) as well as Vettehen and colleagues (2005, 2008) suggest certain topics to be arousing, such as crime, police, riots, disasters. Accordingly, we defined a set of topics that - if H1N1 is portrayed in their context - portray H1N1 in an emotionalised manner. These include sex, violence, dead animal or human bodies, sport. Grabe and colleagues (2010) further define "scandal" as an indicator of sensationalism. In the context of the A/H1N1 pandemic we define accordingly conspiracy theories as arousing topic. Fourth, Vettehen and colleagues (2005) argue based on exemplification theory (e.g., Aust & Zillmann, 1996; Zillmann, 2006) that individual case histories, or interviews of laypeople in the news can induce emotion. Accordingly, personalization, and concreteness was coded as emotionalised content. Fifth, and finally, in line with Dudo, Dahlstrom and Brossard's (2007) analysis of sensationalist news reporting on avian influenza, we define descriptions of worst-case scenarios, that is the most extreme outcomes of an outbreak possible (e.g., "the A/H1N1 pandemic could kill millions"), as emotional content.

Emotionalizing formal features. In line with earlier studies, we defined a number of camera techniques, or accordingly for print, photographic features that contribute to an emotional style of reporting. These include close up on protagonist or close-up photos in print newspapers, slow motion, repeated images, or eyewitness camera (e.g., Grabe, Zhou, & Barnett, 2010; Vettehen, Nuijten, & Beentjes, 2005).

Table 2: Overview of emotionalising cues

Media attention	Content	Formal features
(a) Intense news waves	(a) Portrayal of H1N1 in connection with arousing topics such as sex, violence, dead animals or human bodies, sport in text or image (b) Personalisation/ individual cases (c) Concrete, graphic, vivid descriptions (d) Worst-case scenarios (e) Conspiracy theories (=scandal)	(a) Photo / video maneuvers (close-up of human faces in TV or print, zoom movements, eyewitness camera) (b) "Decorative effects" (fast pace-editing, no. of images, sound effects) (c) Explicitly emotional pictures (d) Emotionally loaded/charged language

4. Content Analysis of European Media: Results

4.1. Media attention

In total, we identified 1941 H1N1-related articles published between April 1, 2009 and March 31, 2010 across the 3 European countries. The amount of articles varied quite substantially between the different countries: Czech media published far more news items on H1N1 (N=839) than the other countries, while Germany (N=561) and Spain (N=541) show comparable numbers of H1N1-related news items (see Tables 4-6).

Table 4: Number of H1N1-related articles published in the different countries, and media

Country	No. (%) of all H1N1-related articles
Germany	561 (28.9%)
Spain	541 (27.9%)
Czech Republic	839 (43.2%)

Table 5: Amount of H1N1-related news items per country and media form

	Country of medium			Total
	Germany	Spain	Czech	
Main evening TV news	76	110	200	386
Daily newspaper high-quality	241	358	354	953
Daily newspaper tabloid	210	61	244	515
Weekly news magazine	34	12	41	87
Total	561	541	839	1941

4.2. Development of media attention over the course of the H1N1 pandemic

There are some comparable general patterns across all three countries in the development of media attention over the course of the pandemic, such as that all countries publish by far the highest number of articles at the very start at the pandemic outbreak with a rapid fade-away in media attention.

However, there are also apparent differences in the specific attention curve between the countries. Media attention in both Spain and Germany, comes in three intense news waves, but while in Spain the first news wave at the start of the pandemic outbreak lasted longest (3 weeks, April 20-May 4, 2009), the longest-lasting news wave was in autumn coinciding with mass vaccination programs (3 weeks, Oct 19-Nov 2, 2009). In Czech republic media attention came only in two intense waves, but similar to Germany the second wave in autumn was longer-lasting (see Figures 2-4).

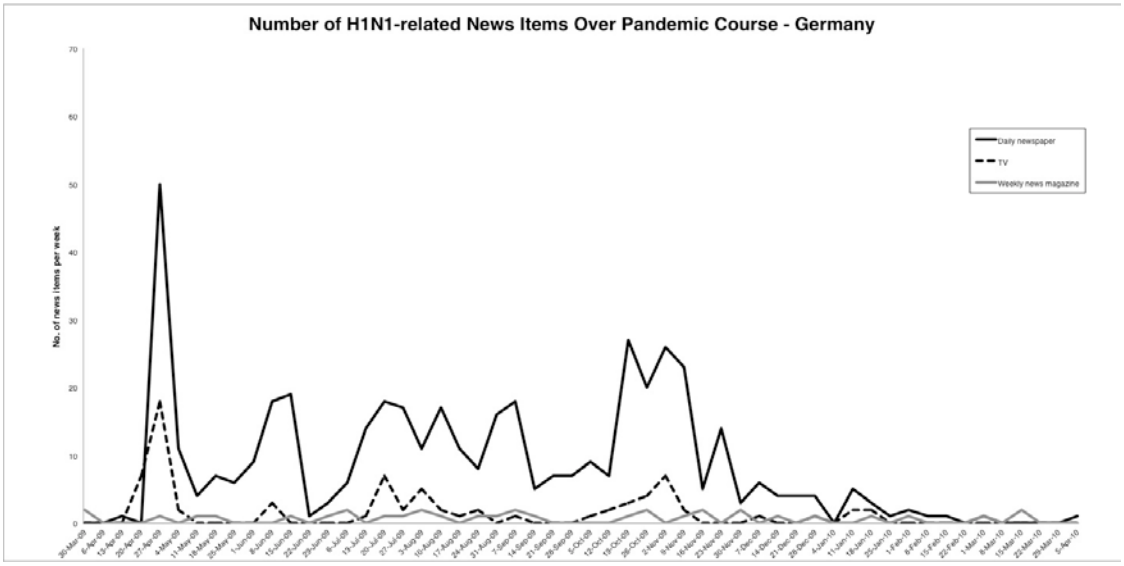

Figure 2: Media attention for H1N1 from March 2009- April 2010 in Germany

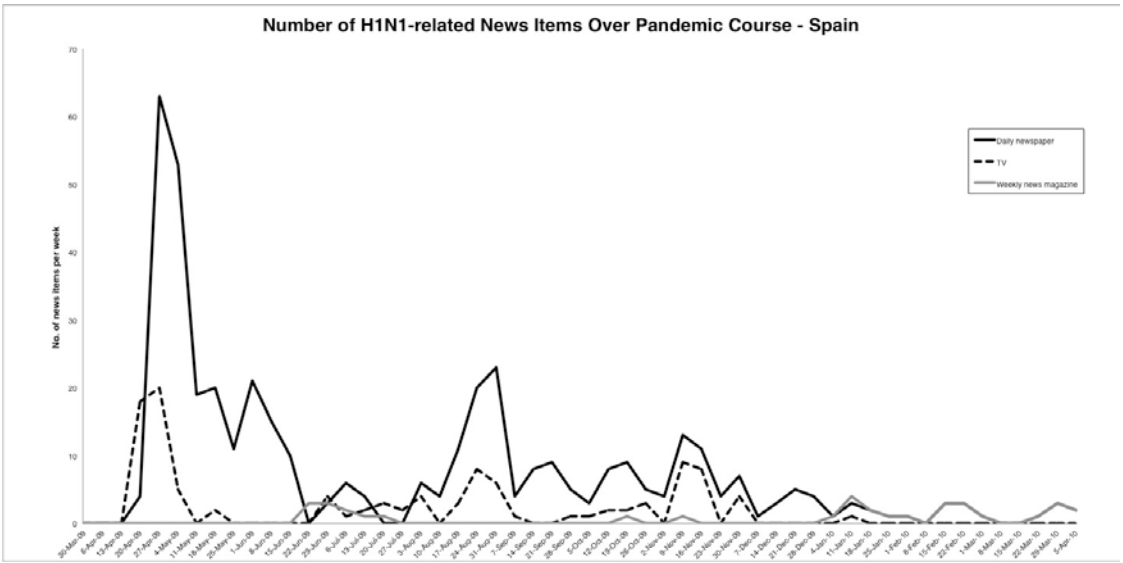

Figure 3: Media attention for H1N1 from March 2009- April 2010 in Spain

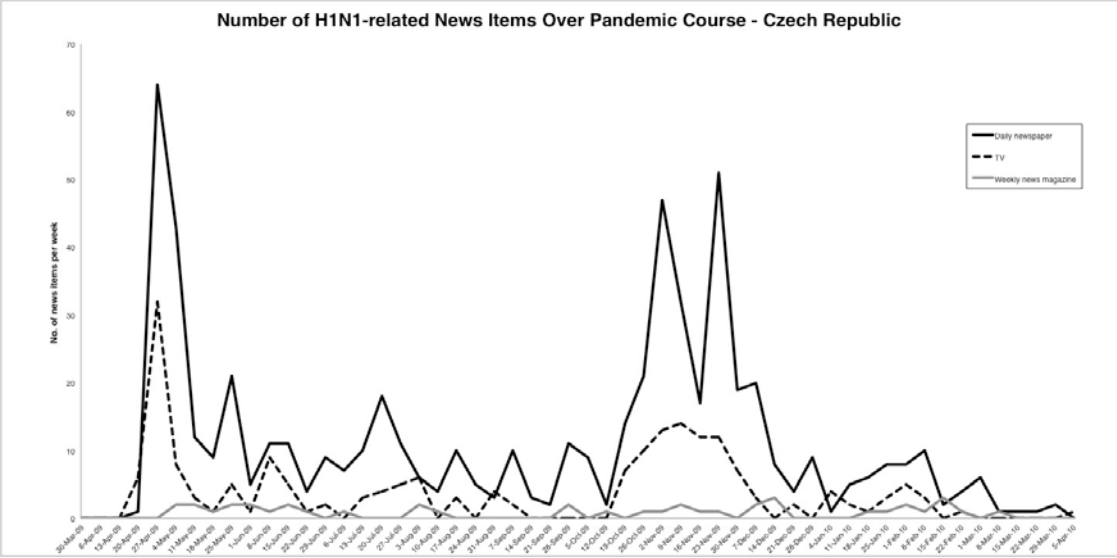

Figure 4: Media attention for H1N1 from March 2009- April 2010 in Czech republic

4.3. Main topics in news reporting

We analysed the main themes in H1N1 news across the different European countries. A large part of media articles focused on the threat of H1N1, both in terms of severity (how serious are the consequences?) and susceptibility (how likely is it that people will be affected?). Reports of H1N1 threat were present in 43% of all news reports. Also a large part of media articles was devoted to strategies of dealing with the H1N1 threat: mention of preventive measures, vaccine effectiveness and availability, and collective level preventive measures together account for 33% of all articles. Other categories reflect the debates surrounding the introduction of the vaccine, e.g., vaccine development, acceptance and safety. Most news topics pertained directly to health; only 7% of news articles referred to secondary consequences of the virus. See Figure 5.

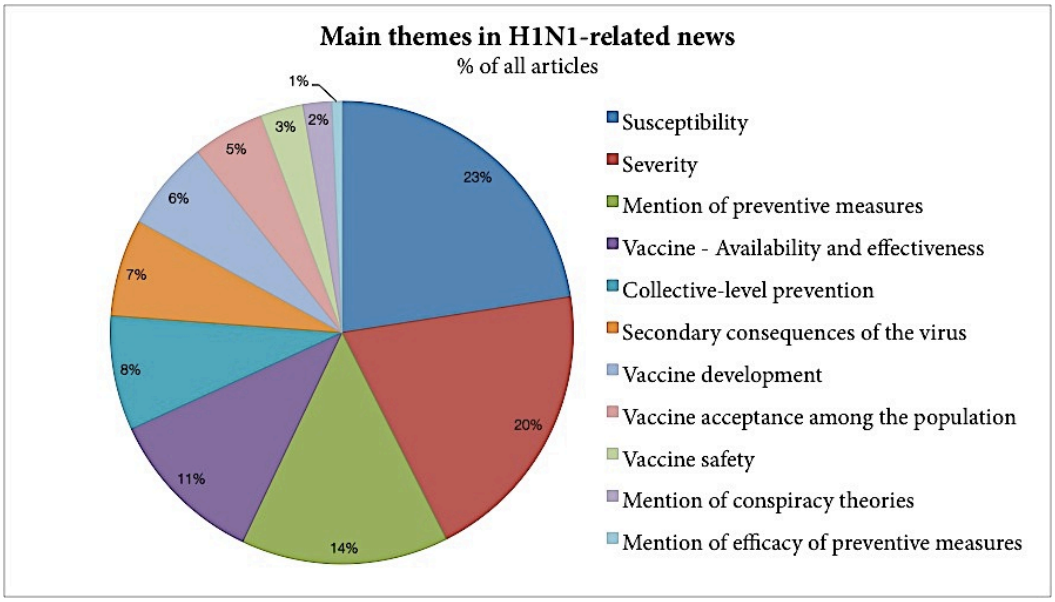

Figure 5: News topics across European countries

4.4.Stakeholders as sources of news or as news objects

The majority of statements (60%) originate with journalists themselves, without any reference to other sources. However, among the sources quoted health officials and politicians account for the highest amount of statements, with 13 and 8 percent respectively. Contrary to the general perception among journalism scholars that news increasingly personalizes by presenting accounts of affected victims or including personal testimonies, laypeople account only for 1 percent of all statements. Looking at the presence of laypeople as objects of statements, however, paints a completely different picture. With 24 percent of all statements, laypeople are one of the most prominent protagonists in the news. These findings indicate that H1N1-related news did feature laypeople, such as victims, prominently but in most cases journalists talked about them rather than "giving them a voice". Different than often feared, anti-vaccination groups feature have only marginal presence in the news; neither as sources nor as protagonist they gain any prominence.

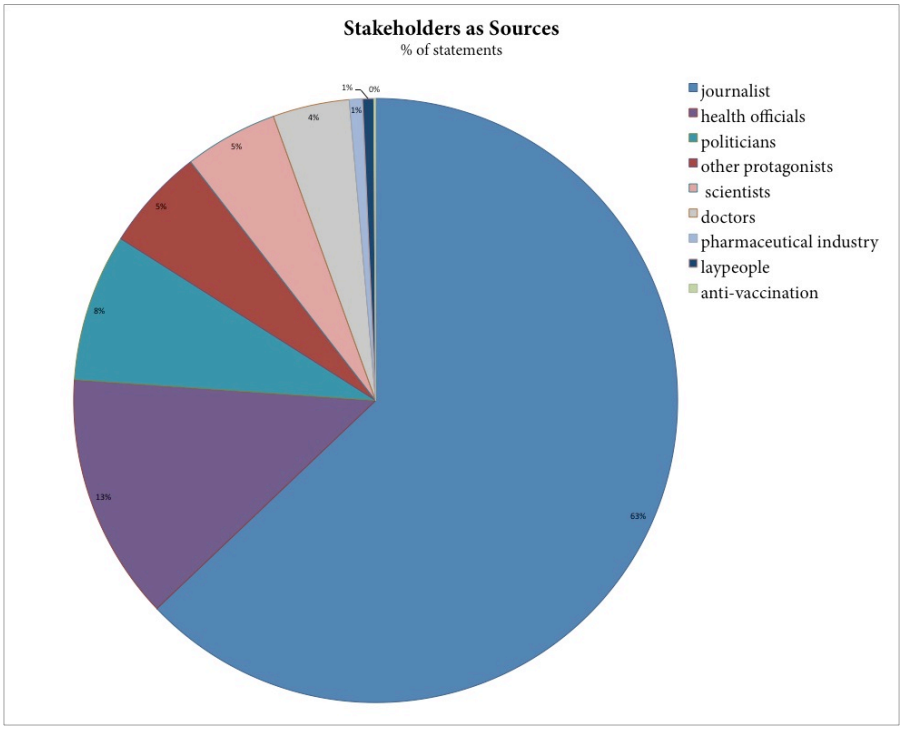

Figure 6: Stakeholders as sources of news

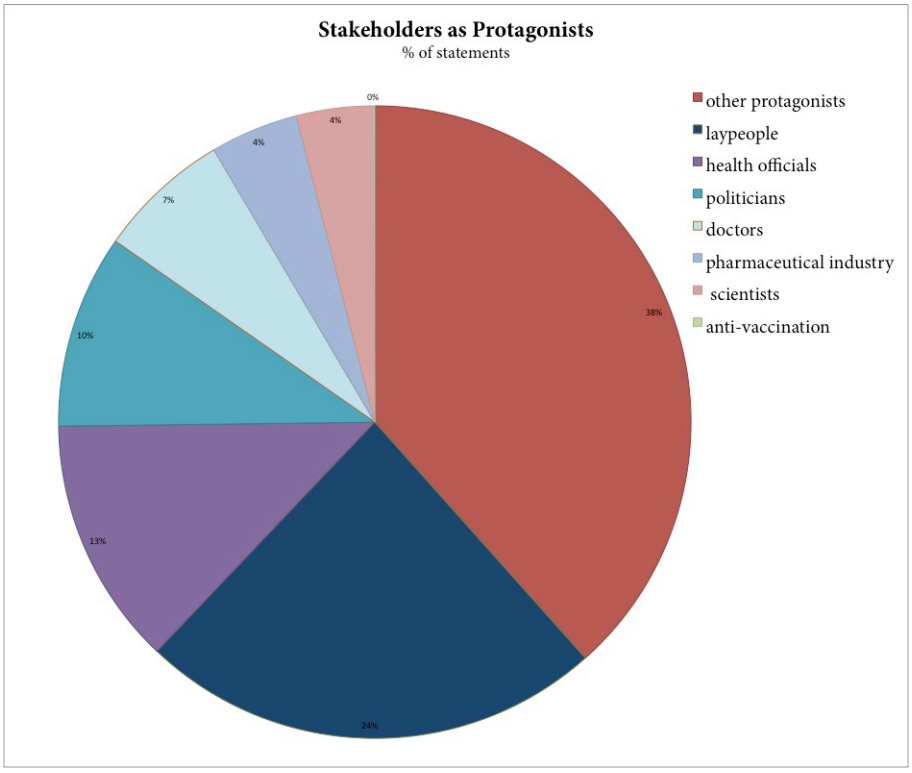

Figure 7: Stakeholder as news objects

4.5. Emotionalisation of news

Across all countries and media forms, 18.3% of print media included emotional content, and 22,6 % of print media included emotional formal features. For television, 7 % include some emotional content, whereas 20,7 % include some emotional formal features. Across different European countries, Czech Republic scores highest on all 3 factors. If we zoom in on the details of emotional news content we find that it is mostly sports-related. There is rarely any reference to personal stories of victims. With regard to formal features we find that most emotion is found in emotion-laden language (see Appendix 3).

4.6. Amount, severity, and emotionality of media coverage across H1N1 epidemic

When we analyse the amount of media attention and the number of high severity and emotional media reports across the 2009-2010 time span, we see that all three media curves generally follow the same pattern. There are no apparent cases where emotional or high severity media reports became disproportionally large or small, compared to the total number of media reports. These findings suggest that emotional media content does not vary systematically as a function of media amount or content, but rather represents a fairly stable proportion of entire media attention across content and time. See Figure 8.

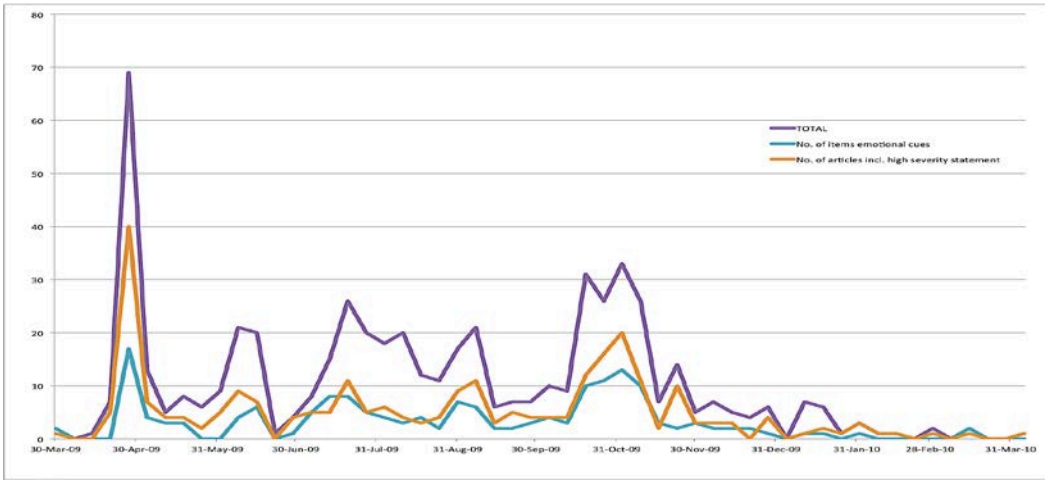

Figure 8: Total amount of media attention, number of articles with high severity statements and with emotional content across H1N1 epidemic

5. Conclusions

We examined previous research on global media coverage on H1N1 and media coverage in Germany, Spain and the Czech republic across the time frame of the H1N1 epidemic. We distilled specific features of H1N1 media coverage, namely amount of coverage, focus on threat versus efficacy information, and emotional tone of coverage, that we believe inform about dramatization.

5.1. Amount of Coverage

The 2009 H1N1 pandemic received immense media attention, as all of the 12 studies we reviewed found. Our review revealed that attention was not parallel to the trajectory of the epidemic, i.e. reflecting the number of infections, but was instead rather event-oriented.

Precisely, we identified three peaks in media attention triggered by real-world events: the start of the epidemic, WHO declaration of pandemic, and the introduction of the vaccine. A similar pattern was observed in our extensive analysis of media coverage in three European countries, although the Czech republic deviated with only two large news peaks. Overall, the findings show that media logic does not equate epidemiological logic: news attention does not increase with increased casualties or people affected by an epidemic, but rather follows the laws of news values, where severe cases that appear earlier in the epidemic and closer to home have higher news values than cases appearing later on and further away (simple because they are 'not news').

Findings also show that media attention for H1N1 was immense, especially in the onset of the epidemic, and especially in the Czech republic, compared with Germany and Spain. The sheer volume of information – regardless of its accuracy – may work as a spotlight to increase the accessibility of the specific risk in the recipient's mind, which, in turn, may lead to risk overestimation.

5.2. Media Content: Threat versus Efficacy News

As regards content-related causes of dramatization, our literature review showed that most stories featured the seriousness of and susceptibility to H1N1; efficacy information, despite being the second most prevalent information in news on H1N1, was far less prevalent than threat information. A similar pattern was observed in our own content analysis of European media: news that featured information about the threat of H1N1 was by far the most prominent, and information about strategies to deal with this threat again was second most prevalent. An emphasis on H1N1-related threat while neglecting efficacy information may increase public fear and maladaptive responses in the public (Rogers, 1983, Singer & Endreny, 1987 as cited by Kitzinger, 1999). As with the effects of sheer media amount, such effects should be regarded as a side effect of media coverage, as journalists cannot report about effective coping strategies until these have become available.

5.3. Tone of Media Coverage

Previous studies have hardly examined the tone of media coverage on H1N1. Specifically, none of the reviewed studies examined formal features such as images, language, personalized narratives, or camera effects. Formal features have been identified as a crucial component of dramatization (Grabe, Zhou, & Barnett, 2010; Vettehen, Nuijten, & Beentjes, 2005) and have in the context of other epidemics also been researched (e.g., Dudo, Dahlstrom, & Brossard, 2007). Our content analysis of European media included a thorough and extended analysis of emotional content and format features that suggest emotionalisation, such as the use of emotional words, case histories, and worst case scenarios. Findings showed a rather consistent amount of emotionalisation of H1N1, which represented less that one fifth of all news reports. Emotionalisation was higher in the Czech republic than in Spain and Germany. We found no indication of systematic variations as a function of media amount, content or time, suggesting that journalists do not emotionalise more for specific topics or in specific time frames (e.g., during peaks).

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Appendix 1: Selection process of eligible studies in literature review (Chapter 2)