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ABSTRACT

The COVID-19 pandemic presents an unparalleled global crisis impacting both public and private life. In the situation of uncertainty, emotions run high and might compromise the public acceptance of and compliance with countermeasures tackling the crisis. Mass media play an integral part in communicating crisis measures and provide an institutionalised channel to diffuse relevant information to a broad audience. This is especially true for digital outlets of legacy media given the greater immediacy of coverage. In addition, digital news offers the unique opportunity for readers to engage with the news contents, allowing an analysis of the dynamics of emotional reactions to crisis news coverage. We explore the case of Austria as an early COVID-19 hotspot. We analyse digital news coverage of two high-circulation newspapers and the emotionality it prompted in user comments, based on a unique dataset comprising 38,253 articles and around 1.6 Million comments from 1 January 2020 to 30 June 2020. Results show increased emotionality during lockdown and towards the government. With reference to the rally around-the-flag literature, we interpret this as emotional rallying behind the responsible political crisis managers.

Introduction

Public crises are situations of great uncertainty with insecure future prospects and impending, often acute danger that needs to be tackled fast (Boin, 't Hart, and McConnell 2009). Naturally, such crises induce emotions with those affected. Such emotions can be both negative and positive, depending on how the crisis develops and what measures are taken to tackle it. Emotions impact on trust in institutions, both positively (Gross, Brewer, and Aday 2009) or negatively (Myers and Tingley 2016) and may result in non-compliant behaviour. This could limit the effectiveness of political crisis mitigation measures, which is why emotionality and its dynamics are crucial

factors for political crisis managers to consider. Crisis managers, oftentimes executive politicians, are in dire need to understand the dynamics of emotional responses to the crisis and their crisis management.

The COVID-19 pandemic presents a crisis in the form of an unparalleled global challenge to politics, health systems, economies, and social life in general. In the first wave of the pandemic in spring 2020, Austria became an early COVID-19 hotspot for the whole of Europe due to a high number of infections originating in the Ischgl skiing resort. In response, the government implemented an early and far-reaching lockdown in mid-March (Pollak, Kowarz, and Partheymüller 2020). Public information needs considerably increased and citizens were vigilant about executives' announcements regarding crisis measures. Mirroring this, research shows that news consumption, especially TV and digital news, increased in the pandemic as people drew on easily available news from sources offering more immediate coverage (Van Aelst et al. 2021). Especially legacy mass media are an integral part of political crisis management, serving as an institutionalised channel for communicating relevant information about crises to a broad audience (Davidson and Wallack 2004; Reynolds and Seeger 2005). Digital news outlets, in addition to information provision, promote user engagement through interactivity features, such as commenting sections, which encourage news readers to express their own opinions, experiences and emotions (Ksiazek and Springer 2018). Hence, online media form a basic channel for crisis managers to communicate with the audience, and at the same time serve as a platform for the expression of emotions as well as a source of information about dynamics of public emotionality.

Our study connects these aspects and explores how crisis communication in legacy media's digital news coverage of the COVID-19 pandemic influences public emotional expressions in user comments. Prior research has explored the effects of incivility and disinformation on emotions (Kunst et al. 2021; Rösner, Winter, and Krämer 2016). Others have extensively analysed crisis coverage (e.g., Chouliaraki et al. 2017; Rezza et al. 2004). However, we have little systematic knowledge on the link between crisis coverage and users' emotionality. Our study explores this connection, assuming that specific characteristics of crisis communication trigger emotionality in user comments (see Ksiazek 2018). An analysis of the interplay between digital news and responding comments can provide a deeper understanding of the factors that influence commenting behaviour in times of crisis and shed light on the dynamics of public emotionality in response to the crisis (e.g., Hong and Cameron 2018).

Our analysis is guided by the following research question: *What characteristics of COVID-19 online news coverage explain emotionality in user comments?* We use a unique and large dataset to analyse news coverage and user comments on two popular Austrian online news sites for the first half of 2020. This time frame allows us to explore different phases of the crisis (pre-lockdown, lockdown, and post-lockdown). We analyse digital outlets of legacy media that, as opposed to digital-born media, operate both online and offline media resources and rely on long-standing organisational practices and readership (e.g., Vara-Miguel 2020). The selected news sources are online outlets of two high-circulation newspapers with different journalistic routines, ideological alignment of readers, and a very active commenting community. Overall,

our study offers important new insights into the unfolding dynamics of mediated crisis communication and emotional responses. An analysis of such dynamics helps crisis managers to understand emotional dynamics and evaluate crisis communication. It also helps journalists to reflect on how the way a crisis is covered may have real consequences, as emotions are likely to affect responses to mitigation measures, whereby they also influence how the crisis develops.

Dynamics of Journalism and Emotional Responses in Times of Crisis

Online Commenting and Emotionality

To establish a more interactive connection with audiences and users, news websites are designed to incentivise audience engagement: Interactivity features, such as commenting sections, social media plug-ins for sharing and liking, infinite scrolls and live tickers maximise audience attention (Ksiazek 2018). Institutionalised legacy news media generate digital content and allow their audiences to directly react to it from a lay-person, non-institutionalised perspective. Such comment sections are likely to attract a particular segment of users: People commenting on news websites are characterised by lower levels of trust in news and a high interest in hard news (Kalogeropoulos et al. 2017). Furthermore, people who engage with online content are self-actualizing, using interactivity features to "assert their political significance as people with something to say" (Coleman 2013, 219).

While not all readers actively comment on articles, passive readers are found to value these public discussion spaces (Ksiazek 2018, 651) and to be impacted by them in their own perception of public opinion (Hsueh, Yogeeswaran, and Malinen 2015; Lee 2012). For crisis communication in particular, online comments influence readers' opinions regarding crisis responsibility (Hong and Cameron 2018). Comment sections therefore enable researchers to 'zoom into' processes of political opinion formation and public contestation about specific topics (Cinalli et al. 2021, 56) in terms of how elite information is received and responded to, or even further processed in citizens' own discussions. Particularly during crises, citizens may be influenced in their perception of the crisis and its management by how other users respond to crisis news.

Accordingly, user comments also allow for an assessment of readers' emotionality in response to political (crisis) news. Scholarly interest in the role of emotions for participatory politics has increased considerably in the last decade. Originally, research of comments dominantly focussed on their normative quality, for example, to assess their compliance with deliberative ideals such as civility, and rationality (see Ksiazek 2018). However, expressions going beyond this, such as emotions, affect or sentiment are now also studied as factors that shape the quality of public discourse (e.g., Ziegele et al. 2020). Regarding legacy news media, research has shown that journalistic narratives have always contained emotions and do not contradict journalistic professional norms such as objectivity (Wahl-Jorgensen 2013). Emotional narration might even increase the significance for readers and make content more relatable and engaging (Choi, Lee, and Ji 2020; Hermida 2014, 53–54). Therefore, emotions are considered as important elements of public debate (Wessler 2018, also Papacharissi 2014, 134; Wahl-Jorgensen 2019). The increasingly important role of publicly expressed emotions is

further underscored by developments such as Facebook's emotional expression buttons, encouraging users to react to content with joy, fear, or anger (e.g., Eberl et al. 2020). In sum, commenting sections provide a unique perspective on how mediated elite crisis discourse triggers public emotionality.

Emotionality in Comments to COVID-19 News Media Coverage

Based on the considerations just discussed, we focus on emotional expressions in comment sections of digital legacy news media during the first COVID-19 lockdown in Austria. We regard such emotional expressions as a crucial component of public debate and contestation in a crisis. We narrowly define emotions as the demonstration of a feeling (e.g., Coppin and Sander 2016; Shouse 2005), discursively manifested in emotional expressions in the comments, considering both negative and positive emotions. Emotions are not mutually exclusive, especially not during crises. Very different emotions may temporarily overlap: Anger as a consequence of restrictions of taken-for-granted or constitutionally guaranteed freedoms and privileges suspended during crisis, fear as a reaction to the overall uncertainty and the difficulty to anticipate consequences, hope for a good outcome, joy about having achieved a certain goal in tackling the crisis, solidarity, and a feeling of community, but also disaster fatigue (e.g., Jin and Pang 2010; Prainsack et al. 2020).

Generally, the topics of news stories and their format (e.g., inclusion of multimedia features) have been identified as crucial explaining the degree and quality of commenting (Ksiazek 2018). Hard news, such as politics, receives more comments but also more incivility (Coe, Kenski, and Rains 2014). Certain subtopics of politics are prone to prompt less civil or even more hostile user comments, such as government inefficiency or stories about politicians' character traits or personality (Ksiazek 2018). In general, users are motivated to comment when they want to express their personal opinion on the topic covered in the article (Canter 2013) and/or when they are aroused and want to give an emotional response (Barnes 2015). Mirroring this, the crisis management literature emphasises the importance of information about crises to reduce uncertainties and enable citizens to help themselves (Holladay 2010). Communicating crisis managers, e.g., the government, thereby act as coping facilitators regarding public emotions developing in response to the crisis and the mitigation measures (e.g., Jin, Pang, and Cameron 2012). Hence the topical structure of crisis news, including also the development of the crisis and mitigation measures, may shape the degree to which emotional responses occur.

Quotes of political actors in digital news increase incivility in user commenting (Coe, Kenski, and Rains 2014), which may be interpreted as an expression of anger or frustration. In contrast to this, however, times of crises have also been found to trigger a so called 'rally round-the-flag' (RRTF) effect expressed in a temporary surge of approval rates for political decision-makers (Bol et al. 2021; Cunningham 2020; Feinstein 2020; Partheymüller, Plescia, and Kritzinger 2020; Mueller 1970). Ideological differences are set aside in an, usually short-term, increase of public support for executive crisis managers. The RRTF effect is then also influenced by the media who support
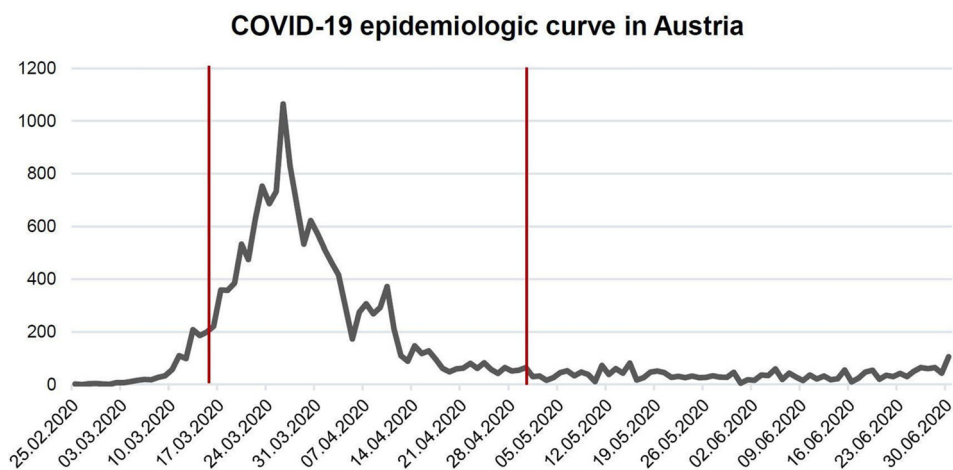
Figure 1. COVID-19 epidemiologic curve in Austria. Note: Number of newly registered cases per day; vertical lines mark the start and the end of the lockdown. Data source: Federal Ministry for Social Affairs, Health, Care and Consumer Protection.

political leadership in times of crisis (Baker and Oneal 2001). Overall, the appearance of executive actors in crisis news may be expected to shape emotional responses.

Drawing on these insights, we explore the emotionality in user comments as a reaction to characteristics of digital COVID-19 news coverage. First, we focus on (1) *crisis-specific issues*, such as news on political decisions about mitigation measures (e.g., restrictions on businesses), consequences (e.g., support for businesses and cultural institutions), information or research about the virus, and the ending of restrictions. Second, we look into (2) the visibility of national-level *political actors* in online news coverage tasked with tackling the crisis as a possible explanation of users' emotionality expressed in comments to digital COVID-19 news coverage.

The First Wave of the COVID-19 Pandemic in Austria

With the first positive COVID-19 case registered in Austria on 25 February 2020, the strict measures introduced in mid-March and relatively quick containment of the infection rate during the first phase of the pandemic (see Figure 1), Austria's response to the spread of the virus has often been portrayed as exemplary (Desson et al. 2020).

Starting from the beginning of March, almost daily press conferences by the government served as the main platform to announce the COVID-19 related measures that rapidly limited the social and economic activity in the country. In the first half of March, the Austrian ski resort Ischgl emerged as an early virus hotspot. In the second and the third week of March the Austrian government introduced health checks on the border to Italy, closed all educational institutions imposing distance learning, implemented major restrictions on movement, large gatherings, and events combined with social distancing and announced the closure of non-essential businesses and the hospitality industry. The swift introduction of restrictions to social and economic life appeared rather drastic in comparison with other European countries (Czypionka, Reiss, and Pham 2020). The extensive lockdown from March 16 to May one largely

brought Austria to a standstill. Only basic supply shops and supermarkets, pharmacies, post offices and banks remained open,. All but essential workforce switched to working from home.

In the beginning of April, as the epidemiological curve started to flatten, the government announced first loosening measures, though at the same time extending the obligation to wear face masks to public transport. From mid-April to mid-May, the government gradually relaxed the lockdown measures and re-opened businesses and educational institutions. Last restrictions on businesses were lifted at the end of May, allowing hotels and gyms to re-open. The removal of border checks restoring free movement of people followed on June 15.

While quick enforcement of lockdown measures and closure of businesses had helped to curb the spread of the virus, the economic consequences of the lockdown led to growing unemployment and significant changes to the employment models in the country with short-time work becoming widespread (Statistik Austria 2020). Nevertheless, the actions of the government found support among the population. According to the surveys conducted by the Austrian Corona Panel (Kittel et al. 2021) in several waves, an average of 70–75% of respondents supported the COVID-19 related policies (Waibel, Schiestl, and Kalleitner 2020). From the beginning of March, the government provided updates on the situation in almost daily press conferences, allowing it not only to control the message, but also potentially achieving broad public support and compliance to the announced measures. The perceived swift and effective response to the COVID-19 crisis as well as its centralised communication, make Austria an interesting case for the analysis of emotional responses to crisis news coverage.

Methodology

Data: Online News Contents and User Comments

The analysis of commenting below news content offers a unique opportunity to study directly observable user reactions to news coverage about a crisis situation. Specifically, we investigate emotionality in comments as reactions to institutionalised, professional digital news coverage of the COVID-19 pandemic in Austria. We utilise a unique data set on COVID-19 coverage and commenting on two online newspapers, derStandard.at and krone.at.[1] These sources are digital news outlets of high-circulation newspapers with different journalistic routines (broadsheet vs. tabloid), ideological profiles of readers and a very active user community (see Table 1). Tabloid newspapers are usually found to elicit sensationalism, with less focus on political news and more space dedicated to soft news, such as celebrities or sports (Reinemann et al. 2012). While this style of reporting is often criticised as one-sided and simplistic, tabloid journalism is also ascribed more attractiveness and accessibility, providing room for identification and emotional bonding (Bek 2004). Quality newspapers, in contrast, usually publish more political news, focussing on serious and sober reporting that explains complex matters and contextualises them (Jandura and Friedrich 2014). Research comparing online and offline news contents of legacy news, then, has generally not found significant differences regarding the mobilising potential of online in comparison to

Table 1. Information on article and comments samples.

	derstandard.at	derstandard.at Live Ticker	krone.at
Journalistic routine	Broadsheet		Tabloid
Political alignment	Leftist-Liberal		Rightist-Conservative
Articles			
Total items	8,479	16,074	13,700
Avg. word count (sd)	483.0 (334.0)	88.3 (60.1)	282.0 (280.0)
Avg. articles per day (sd)	49.8 (33.1)	89.3 (57.1)[a]	79.7 (56.8)
Avg. comments per item	472.0 (2,353.0)	139.0 (259.0)	65.2 (175.0)
Avg. top level comments	68.0 (127.0)	48.6 (58.4)	32.5 (69.5)
Comments			
Direct comments	520,675	771,899	376,315
Avg. word count (sd)	38.0 (31.0)	15.8 (16.5)	30.6 (27.0)
Daily comments (sd)	3,099 (1,998.0)	4,288 (3,879.2)	2,187.9 (1,591.2)
Unique users	28,640	17,769	12,591

[a]Live updated articles are not published daily. This is the average amount of ticker update over a total of 210 live updated articles

offline news (Hoffman 2006) or the influence of the digitalisation of news regarding political actors' adaptation to the media logic (Haßler, Maurer, and Oschatz 2014). A study of online and offline coverage of Austrian legacy news (Jacobi, Kleinen-von Königslöw, and Ruigrok 2016) found that broadsheet newspapers covered political news to a greater extent online while popular newspapers covered it less. Regarding the newspapers in our sample specifically, a stronger focus on political leaders was found for the online Kronen Zeitung than for the offline version while the opposite was found for Der Standard; in both cases online coverage was less emotionalised than in the print version.

Both newspapers employ moderation policies to control the contents of comments regarding hate speech in particular and employ computer-assisted spam protection systems (DerStandard.at 2017; Krone.at 2019). *Der Standard* differs from *Kronen Zeitung* in terms of COVID-19 crisis coverage in that it also has a temporary 'live ticker' in which, for example, press conferences of the government, measures in Austria and abroad or new numbers of positive cases are covered in real time and users can discuss every single news item on the ticker.

We limit our analysis to top-level comments to articles only, thus excluding replies to comments, since we are interested in the direct reactions to crisis coverage. Criticism posted as a reaction to a comment, in our view, could distort our analysis since the emotion expressed there would not be a reaction towards coverage directly (for a similar argument see Diakopoulos and Naaman 2011). The dataset used for this analysis consists of 38,253 news items and 1.6 Million top-level comments posted on newspapers' online pages for the time frame 1 January 2020 to 30 June 2020, thereby covering pre-lockdown, lockdown and post-lockdown periods (see Table 1 for an overview). Data was scraped with a collection of python scripts that run daily and store it in a local SQLite database. While the articles are collected within the same day of being published, the live ticker updates and comments were collected with a delay of 2 and 7 days respectively, after the original article appeared, to ensure the discussion revolving around a story had time to settle.

Analysing Crisis News Coverage

For news articles, we are interested in how they covered the COVID-19 crisis and its political management. We rely on automated content analysis, allowing us to

effectively inspect the large quantities of data available and map evolving dynamics in detail. We use a dictionary approach with Lucene syntax search strings to map coverage in terms of COVID-19 related policies as well as the actors discussed. See Appendix for an overview of the variables coded in news media coverage.

For Austria's main parties and party leaders, we rely on dictionaries developed for the Austrian National Election Study 2019 (Litvyak, Fischeneder, and Boomgaarden, forthcoming). These dictionaries were validated against an extensive set of manually coded articles ($n > 1000$), resulting in satisfactory recall and precision values.

Furthermore, additional search strings were developed to measure coverage of COVID-19 related issues. A set of initial search strings was created and adapted in several rounds before the validation. This adaptation involved extending the search strings with synonyms and additional key terms and experimenting with word distances, negations, and operators. After each variation, the performance of the dictionaries was tested against a random set of 50 articles. This procedure was repeated until no change in performance was achieved. The search strings were again adapted once more to include input following the inter-coder reliability test.

To validate the new dictionaries, their performance was tested against a new set of manually coded articles. Before coding the validation set ($n = 300$), all coders participated in an inter-coder reliability test ($n = 100$) to control for coherent coding. As the first inter-coder reliability test did not achieve satisfactory results for some variables, we discussed ambiguities among the coders and performed an additional inter-coder reliability test ($n = 50$) for this subset of variables afterwards. The results of the inter-coder reliability tests are included in Table A4 in the Appendix. All article sets included only articles with COVID-19 content. To ensure a sufficient number of occurrences for each variable, we used the initial versions of the dictionaries for oversampling. For inter-coder reliability and validation coding, the share of oversampled articles accounted for 60% and 30% respectively. The validation led to satisfactory recall (all above 0.9) and precision (all above 0.85) values for all search strings on the aggregated level (see Appendix Tables A3 and A4 for further information on the aggregation and validation of issue and actor variables).

In addition, we also identified the positive and negative sentiment (tone) of articles. The analysis was based on the respective translated NRC Lexica for positive and negative sentiment which in this case are "polarity associations" of words and indicate whether a word is associated with either a positive or a negative meaning (Mohammad and Turney 2013, 11).

Analysing Emotionality in Articles and Comments

Emotionality conveyed in posted articles and comments was analysed using the German translation of the *NRC Word-Emotion Association Lexicon* (Mohammad and Turney 2013), that is based on Plutchik's (1980) theory of eight basic emotions, thus using an aggregate measure based on separate analyses of anger, anticipation, disgust, fear, joy, sadness, surprise, and trust in comments. For that purpose, the user composed text of the comments underwent a short series of pre-processing steps.

First, the text was tokenised, lemmatised, and stop words were removed using *udpipe*[2] and *corpustools* (Straka and Straková 2017; Welbers and van Atteveldt 2020).

Given that the emotion lexicon was machine translated from English to German, it was manually reviewed by the authors to improve dictionary performance (see Lind et al. 2019). A native speaker evaluated all translations and some terms were improved. Additionally, certain terms that could skew the results were removed[3] (e.g., 'virus').

For the emotions calculation, we vectorised the texts using the NRC Lexicon and the TfidfVectorizer function from SciKitlearn python library (Pedregosa et al. 2011) to create the "term frequency-inverse document frequency" matrix. This function distinguishes words that are important to define one document (in our case one comment or article) by scaling down the terms that appear very often in the whole corpus. After we had the number of words corresponding to a certain emotion for every document, we divided the sum of the emotional words with the total length of the comment and then multiplied it by 100 to get the final score for every emotion. Summary statistics on the results of the emotions coding are available in the Appendix Table A5.

Regression Analysis

Regarding our dependent variable, emotions are usually not seen as mutually exclusive but as appearing in mixtures and combinations, especially when they are examined as public (discursive) phenomena (Fiehler 2002). In that sense, we measure our dependent variable as aggregate emotionality by calculating the number of top level comments to an article in which emotions were detected. As the measure includes all emotions, both positive and negative, identified by the automated coding with NRC Lexicon, it reflects the overall emotionality of the comments that an article has received.

The first main block of independent variables includes the variables that capture the presence or absence of one of the four COVID-19 related issues discussed earlier. The second main block of independent variables comprises the main political actors: government, opposition and Kurz. Moreover, to control for whether negative or positive news coverage triggers an emotional reaction, we include the overall negativity or positivity score of an article that we label sentiment (for a similar approach see Brader, Valentino, and Suhay 2008). Considering further potentially emotions-sparking content characteristics, we include the mention of social media as well as the text/picture ratio (e.g., Grabe and Bucy 2009) to account for the presence of visuals in articles. To consider the context of the COVID-19 crisis coverage, we introduce a dummy variable for lockdown that indicates whether the article appeared in the lockdown period (16 March – one May). We further control for the medium in which an article appeared, distinguishing between Der Standard, Der Standard live ticker (used in the model as reference category), and Kronen Zeitung.

The absence of emotional comments to some articles results in a high number of zeroes and over-dispersion of our dependent variable. Therefore, we employ Negative Binomial Regression Analysis, as it accounts for overdispersed count data. We use the glm.nb function in R 3.6.3 (R Core Team 2020) package MASS v7.3-53 (Venables and

Ripley 2002) to estimate four different models. The first model includes the dependent and independent variables, other models explore interaction effects between the lockdown and each political actor: government, opposition, and Kurz. All these models include live ticker as a reference category. Please refer to Appendix Tables A1 and A2 for an overview and summary statistics for all variables included in the regression analysis. To control for potential differences between the media outlets, we tested additional models for each media outlet and live ticker. These models revealed overall similar results to the models presented in the article that include all the media outlets. The results of the media-specific models are reported in Appendix Table A7.

Results and Discussion

Discussing first the characteristics of news contents, the salience of COVID-19 crisis-specific issues reflects the real-life circumstances and political developments. Mitigation, information, and research, as well as consequences of the lockdown become increasingly prominent right before and peak after the beginning of the lockdown. The coverage of measures for rebooting the economy and societal life intensifies with the end of lockdown, coinciding with a spark in attention to consequences of the lockdown and mitigation measures. Overall, the coverage reveals an emphasis on communicating issues that are immediately important for tackling the crisis (mitigation, information and research), while the consequences of the lockdown and reboot received less news attention.

Turning to the visibility of political actors as responsible crisis managers, we see a fast increase in the salience of the government just before lockdown, gradually decreasing after. The opposition's visibility rises more slowly and reaches a high only after the lockdown. The visibility of Sebastian Kurz as chief crisis manager follows a similar curve as the government's, yet it flattens faster. These results reveal the visibility bias, i.e., unbalanced reporting on actors, during the lockdown towards the government, the main actor responsible for tackling the crisis. While media visibility biases towards powerful actors have been observed by previous research (e.g., Eberl, Wagner, and Boomgaarden 2017), our results reveal its dynamics in a crisis context.

The analysis shows that over the whole period COVID-19 coverage was dominated by positive sentiment rather than negative. Though somewhat surprising for crisis news, this finding might be related to a 'rally round-the-flag' effect, expressed in heightened support for, and thus possibly more positive reporting on, political leadership in the crisis (see discussion below).

Overall, article sentiment curves are very similar to that of emotionality in the comments, with both sentiment and emotionality increasing during the lockdown period, and slowly declining after its end. Figure 2 demonstrates a steady increase in user emotionality in February, even before Austria was directly hit by the pandemic, followed by a clear peak during the lockdown period. In the post-lockdown period emotionality steadily declined almost to the level of January 2020. Thus, with restrictions of face-to-face communication, commenting sections enabled people to react to this news coverage from their living rooms – and in that sense engage in a collective, news-informed discussion of the crisis. Commenters' emotionality can, thus, be
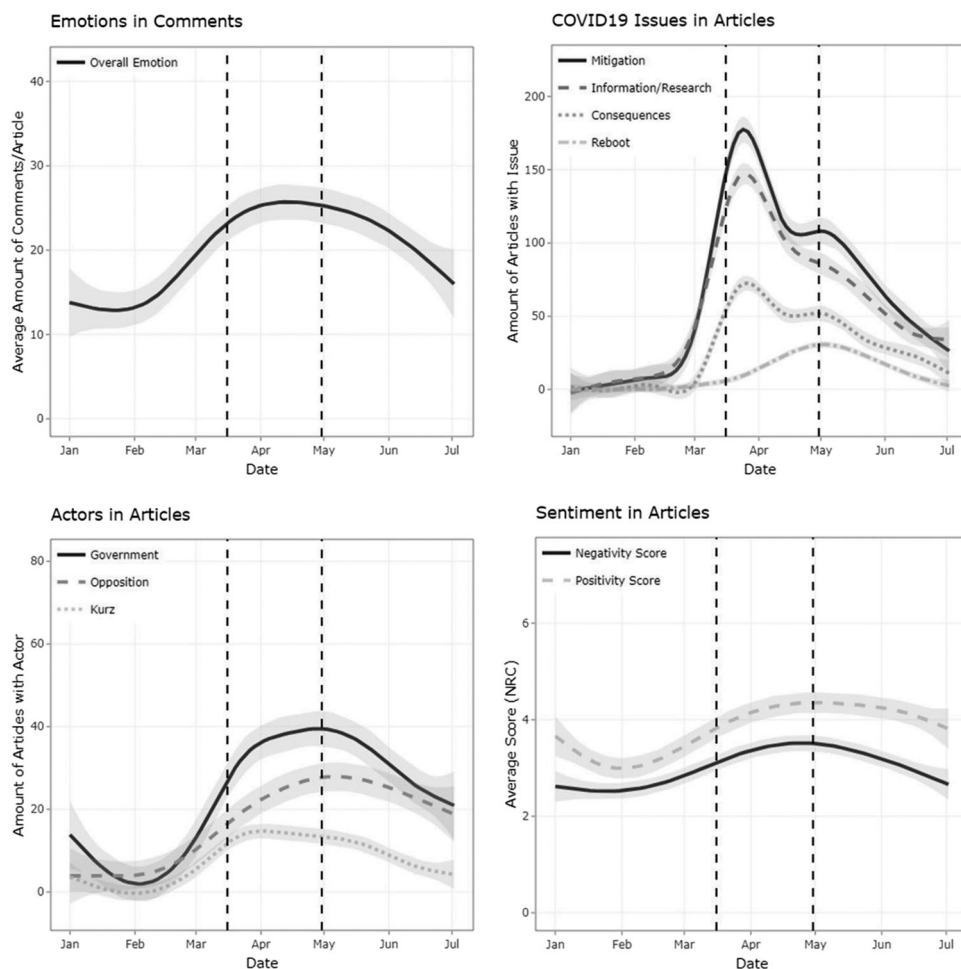
Figure 2. Development over time for emotionality in comments; COVID-19 Issues, Actors, and Sentiment in Articles. Note: Smoothing of results via GAM; vertical dashed lines indicate period of lockdown. Plots based on full dataset.

interpreted as a process of collective sense-making of their personal experiences and emotional reaction to the extraordinary circumstances of the lockdown. Such might, for example, be a feeling of uncertainty and dependency on political decisions, of personal loss or gloomy future prospects as well as of hope and joy. We extend earlier research showing that uncertainty and personal relevance trigger online news commenting (Ziegele, Breiner, and Quiring 2014) by demonstrating that in the COVID-19 crisis, commenting functions were used for affective responses and thereby potentially provided an important means for venting, searching reassurance, and more generally, coping with the situation.

The results of the negative binomial regression analysis (see Figure 3) show that article content during lockdown leads to increased emotionality. News about COVID-19 measures all boost emotionality of comments, though the reporting on mitigation measures has slightly higher impact than all other issues and reboot has the lowest impact.
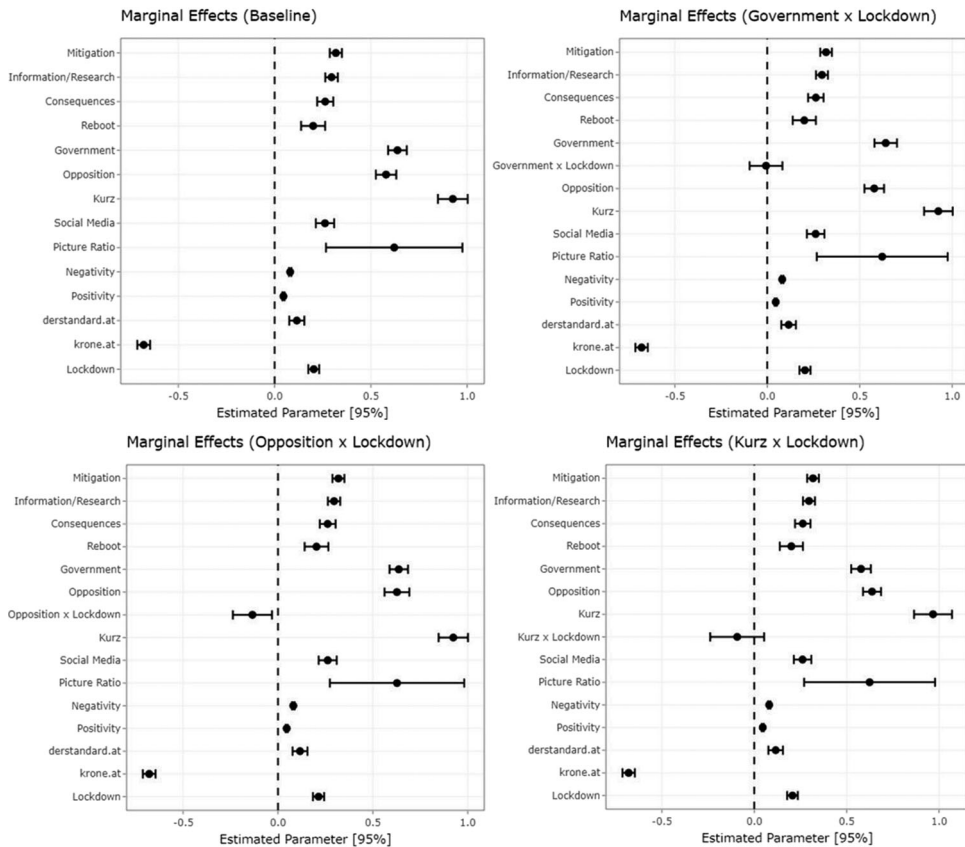
Figure 3. Marginal effects plots after negative binomial regression for full model and three interaction effects models. Note: See Appendix Table A6 for full regression tables; due to missing values, the number of observations is reduced to $N = 37,925$.

The results demonstrate that the effect of the mentions of political actors is stronger than of the actual crisis measures. Thus, commenters reacted more emotionally to the coverage on responsible decision-makers, not to the actual policy measures they decided to implement. In that sense, we observe an 'emotional rally' among commenters, manifested in intensifying emotionality towards political crisis managers in the exceptional situation of the lockdown. Of all political actors, the mentions of the federal Chancellor Sebastian Kurz influenced emotionality the most, followed by mentions of the government, and the opposition. Thus, despite lower visibility in the news coverage of COVID-19, Kurz triggered more emotional reactions than other political actors. As we know from previous research, the presence of quotes of political actors in online news incite incivility in user comments (Coe, Kenski, and Rains 2014). Our findings extend the literature by showing that even the visibility of high-profile political actors in online crisis coverage provokes emotional responses in comments.

Resonating with similar findings (see Ksiazek 2018), the mention of social media and a greater presence of pictures posted with the article increase emotionality as well. Compared to other news outlets, images particularly strongly influence emotions

in comments to the Live ticker (see Appendix Table A7). References to social media and images contribute to the feeling of personal relevance of reporting that provokes more commenting (Ziegele, Breiner, and Quiring 2014). Our results on the impact of pictures on emotionality in the comments, therefore, confirm previous findings that images contribute to emotional involvement with news content (e.g., Graber 1996; Pfau et al. 2006).

Negativity and positivity of the article, on the contrary, show very weak effects, suggesting a limited influence of the article sentiment on emotionality in commenting. Though previous research has argued that negative news provokes stronger audience reactions (e.g., Soroka and McAdams 2015; Ziegele, Breiner, and Quiring 2014), we find almost no difference between the impact of negative and positive coverage. Compared to the Live ticker, we observe slightly higher emotionality in response to derstandard.at articles while articles posted on krone.at receive less emotional comments.

Regarding the implications of the lockdown, our results suggest that it induced emotionality in comments. With social interaction severely restricted, digital news media were not only able to report on the COVID-19 crisis, but also provided an outlet for readers' emotional responses. Building and extending earlier research, we may assume that the lockdown increased the arousal caused by COVID-19 news and thus the need for emotional responses to the news covered (Barnes 2015; Canter 2013).

Our interaction models show a significant negative effect for the lockdown and the visibility of the opposition on emotionality of the comments, thus confirming our earlier observation of the visibility bias in the media coverage during lockdown. The effects for the interaction of lockdown and other political actors, the government, and Chancellor Kurz, are negative, but not significant in our model. Findings overall demonstrate a stronger effect on emotionality in comments towards the mentions of political actors than towards news about crisis-related measures, supporting the notion of an "emotional rally" among commenters. Our results further point to the dominant influence of political decision-makers as crisis managers as the analysis reveals a typical tendency during a crisis: A decrease of voices that are critical of government decisions (e.g., Merkel 2020) and, consequently, the slowing down of public contestation in favour of a fast provision of often acutely needed information. As discussed earlier, research concerning the RRTF effect points to increased public and media support during crises (Baker and Oneal 2001; Bol et al. 2021; Partheymüller, Plescia, and Kritzinger 2020; Mueller 1970). Early studies of COVID-19 dynamics indicate that this might also have been the case during the COVID-19 pandemic (Bol et al. 2021).

Our results for Austria indicate that news coverage in mainstream media and visibility bias towards the main crisis managers backed political decision-making during the lockdown: News coverage is slightly more positive, though positivity has slightly less impact on the emotionality than negativity. Thus, a crisis becomes the 'hour of the executive', as critical voices from opposition parties and the news media as watchdogs become marginal (Merkel 2020). Our analysis suggests that this was also the case during the spring 2020 COVID-19 lockdown in Austria. The combination of factors, i.e., the visibility of the government and Sebastian Kurz in particular, the less visible opposition and the slightly more positive article tone, can point to the RRTF effect

when it comes to news coverage. Although our analysis does not aim to comprehensively investigate a potential RRTF effect, it is in line with previous research showing an increase in public support for the Austrian government in March (Partheymüller, Plescia, and Kritzinger 2020), as well as for other institutions (Kowarz and Pollak 2020). While media visibility biases towards powerful actors have been observed by previous research (e.g., Eberl, Wagner, and Boomgaarden 2017), our results reveal its dynamics in the crisis context.

Overall, the analysis sheds a unique light on the immediate reactions of commenters to a crisis situation. While crises, and the COVID-19 pandemic in particular, are very exceptional and challenging situations, findings resonate with earlier research in that real-world developments covered in the news, but also journalistic choices in terms of formatting and sourcing shape users' responses (Ksiazek 2018). Our results confirm at least two important aspects for emotionality in user comments during the first wave of the COVID-19 crisis in Austria: first, political decision-makers play a central role in triggering emotionality; second, digital news sources are not only platforms for quick information provision but actively engage users in collective expressions of emotionality, especially in their evaluation of political leaders and their performance.

Conclusion

The aim of this article was to investigate and explain emotionality in comments as reactions to digital news coverage during the COVID-19 pandemic in Austria. We argued that comments below online news enabled us to 'zoom into' the emotionality of audiences, as social life was forced under lockdown: Given these unprecedented circumstances, people's emotions as a reaction to the high uncertainty of the situation and their dependence on political decisions are important aspects to consider for political crisis management as they might compromise the compliance to crisis mitigation measures. Emotions are also an under-researched factor of public debates in general, which is another reason why research should address emotional expressions and emotionality beyond the focus on deliberation or the quality of public discourse. In addition, such research may inform journalists on how their work in crisis situations would spark emotionality among their readership.

Emotions do play a crucial role in response to online news dynamics; yet, it seems that digital media are more of an enabling framework while crisis dynamics unfold between users and politicians covered in news. Emotionality, while here only looked at in times of crisis, is thus a crucial factor to consider in order to understand the nature of online interactivity and engagement with news contents. It should not be neglected or dismissed in digital journalism research (Wahl-Jorgensen 2019), nor when it comes to (online) civic engagement (Papacharissi 2014).

In sum, our analysis sheds light on the dynamics between institutionalised digital news journalism and bottom-up reactions in a specific segment of the public, that is readers of online outlets of legacy media in Austria. We only focussed on the first wave of the pandemic and therefore could only provide tentative results as to the overall dynamics of the COVID-19 crisis. Exploring user commenting, we were also somewhat limited in the selection of sources as not all online news sites do have an

(active) commenting community or even provide an option to comment. Furthermore, the potential presence of irony poses a known challenge in assessing emotions not only for automated approaches, but also for manual coding techniques (Mohammad 2017; Taboada 2016). Irony is highly dependent on context and expectations and thus an important nuance that needs further attention (Wallace 2015). Notwithstanding these limitations, our study has provided insights into the emotional highs and lows in reactions to crisis reporting and what might trigger them. In addition, our analysis complements the discussion on the RRTF effect with a discursive perspective, thus offering insights for future research beyond the attitudinal dimension of political support.

Future research should delve deeper into the differences between media outlets and provide further large-scale empirical analysis of the role and effects of the media in times of crisis, especially when looking at the potentially different roles of sensationalist/tabloid and quality news. Furthermore, examining longer time periods and different countries would provide a more comprehensive picture of the emotional and discursive dynamics during this unprecedented pandemic. Yet, we would expect to observe similar results on emotionality of user comments in connection to political actors and COVID-19 measures in countries that employed comparable restrictions to tackle the pandemic. Finally, frameworks and research foci combining rational and emotional expressions will help to better understand public discourse and political support, especially in the current climate of political polarisation, populism, uncertainty, and digital journalism in 'crisis-mode'.

Notes

1. Articles with COVID19 news coverage were automatically pre-selected with the following search string: corona* covid* epidemie lungenkrankheit sars* nCoV "SARS-CoV-2" pandemi*.
2. Used model: german-gsd-ud-2.5-191206.
3. The removed terms are grün (verdant, green), Pandemie (pandemic), Epidemie (epidemic), Lungenentzündung (pneumonia), krank (sick, ill), Krankheit (sickness, disease, illness), Krankenwagen (ambulance), erkrankt (diseased), Erkrankung (disorder), Krankenhaus (hospital), and Virus (virus).

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References

Baker, William D., and John R. Oneal. 2001. "Patriotism or Opinion Leadership?: The Nature and Origins of the 'Rally 'Round the Flag' Effect." *Journal of Conflict Resolution* 45 (5): 661–687.

Barnes, Renee. 2015. "Understanding the Affective Investment Produced through Commenting on Australian Alternative Journalism Website New Matilda." *New Media & Society* 17 (5): 810–826.

Bek, Mine Gencel. 2004. "Research Note: Tabloidization of News Media: An Analysis of Television News in Turkey." *European Journal of Communication* 19 (3): 371–386..

Boin, Arjen, Paul 't Hart, and Allan McConnell. 2009. "Crisis Exploitation: Political and Policy Impacts of Framing Contests." *Journal of European Public Policy* 16 (1): 81–106..

Bol, Damien, Marco Giani, André Blais, and Peter John Loewen. 2021. "The Effect of COVID-19 Lockdowns on Political Support: Some Good News for Democracy?" *European Journal of Political Research* 60 (2): 497–505..

Brader, Ted, Nicholas A. Valentino, and Elizabeth Suhay. 2008. "What Triggers Public Opposition to Immigration? Anxiety, Group Cues, and Immigration Threat." *American Journal of Political Science* 52 (4): 959–978..

Canter, Lily. 2013. "The Misconception of Online Comment Threads." *Journalism Practice* 7 (5): 604–619.

Choi, Jihyang, Sang Yup Lee, and Sung Wook Ji. 2020. "Engagement in Emotional News on Social Media: Intensity and Type of Emotions." *Journalism & Mass Communication Quarterly*. https://doi.org/10.1177/1077699020959718

Chouliaraki, Lilie, Myria Georgiou, Rafal Zaborowski, and Wouter Oomen. 2017. *The European "Migration Crisis" and the Media - A Cross-European Press Content Analysis. Project Report*. London: London School of Economics and Political Science. https://dspace.library.uu.nl/bitstream/handle/1874/358069/migration.pdf?sequence=1

Cinalli, Manilo, Hans-Jörg Trenz, Verena K. Brändle, Olga Eisele, and Christian Lahusen. 2021. *Solidarity in the Media and Public Contention over Refugees in Europe : Debating Solidarity across Borders*. 1st ed. London: Routledge. https://doi.org/10.4324/9780367817169.

Coe, Kevin, Kate Kenski, and Stephen A. Rains. 2014. "Online and Uncivil? Patterns and Determinants of Incivility in Newspaper Website Comments." *Journal of Communication* 64 (4): 658–679..

Coleman, Stephen. 2013. *How Voters Feel*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139035354.

Coppin, Géraldine, and David Sander. 2016. "Theoretical Approaches to Emotion and Its Measurement." In *Emotion Measurement*, edited by Herbert L. Meiselman, 3–30. Sawston, Cambridge: Woodhead Publishing. https://doi.org/10.1016/B978-0-08-100508-8.00001-1.

Cunningham, Kevin. 2020. "The Rally-Round-the-Flag Effect and Covid-19." *UK in a Changing Europe*, May 28. https://ukandeu.ac.uk/the-rally-round-the-flag-effect-and-covid-19/

Czypionka, Thomas, Miriam Reiss, and Isabel Pham. 2020. "Austria's Response to Coronavirus Pandemic - A Second Perspective." *Cambridge Core Blog*, December 4. https://www.cambridge.org/core/blog/2020/04/12/austrias-response-to-the-coronavirus-pandemic-a-second-perspective/

Davidson, Anna E., and Lawrence Wallack. 2004. "A Content Analysis of Sexually Transmitted Diseases in the Print News Media." *Journal of Health Communication* 9 (2): 111–117..

DerStandard.at. 2017. "Community-Richtlinien." Accessed May 25, 2021. https://www.derstandard.at/communityrichtlinien

Desson, Zachary, Lisa Lambertz, Jan Willem Peters, Michelle Falkenbach, and Lukas Kauer. 2020. "Europe's Covid-19 Outliers: German, Austrian and Swiss Policy Responses during the Early Stages of the 2020 Pandemic." *Health Policy and Technology* 9 (4): 405–418..

Diakopoulos, Nicholas, and Mor Naaman. 2011. "Topicality, Time, and Sentiment in Online News Comments." In *CHI '11 Extended Abstracts on Human Factors in Computing Systems*, 1405–1410. CHI EA '11. New York, NY: Association for Computing Machinery..

Eberl, Jakob-Moritz, Petro Tolochko, Pablo Jost, Tobias Heidenreich, and Hajo G. Boomgaarden. 2020. "What's in a Post? How Sentiment and Issue Salience Affect Users' Emotional Reactions on Facebook." *Journal of Information Technology & Politics* 17 (1): 48–65..

Eberl, Jakob-Moritz, Markus Wagner, and Hajo G. Boomgaarden. 2017. "Are Perceptions of Candidate Traits Shaped by the Media? The Effects of Three Types of Media Bias." *The International Journal of Press/Politics* 22 (1): 111–132..

Feinstein, Yuval. 2020. "Applying Sociological Theories of Emotions to the Study of Mass Politics: The Rally-Round-the-Flag Phenomenon in the United States as a Test Case." *The Sociological Quarterly* 61 (3): 422–447..

Fiehler, Reinhard. 2002. "How to Do Emotions with Words: Emotionality in Conversations." In *The Verbal Communication of Emotions. Interdisciplinary Perspectives*, edited by Susan R. Fussell, translated by Harold B. Gill, 1st ed., 79–106. New York: Psychology Press..

Grabe, Maria Elizabeth, and Erik Page Bucy. 2009. *Image Bite Politics: News and the Visual Framing of Elections*. New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195372076.001.0001.

Graber, Doris A. 1996. "Say It with Pictures." *The Annals of the American Academy of Political and Social Science* 546 (1): 85–96.

Gross, Kimberly, Paul R. Brewer, and Sean Aday. 2009. "Confidence in Government and Emotional Responses to Terrorism after September 11, 2001." *American Politics Research* 37 (1): 107–128..

Haßler, Jörg, Marcus Maurer, and Corinna Oschatz. 2014. "Media Logic and Political Logic Online and Offline." *Journalism Practice* 8 (3): 326–341.

Hermida, Alfred. 2014. *Tell Everyone: Why We Share and Why It Matters*. Vancouver, BC: Doubleday Canada.

Hoffman, Lindsay H. 2006. "Is Internet Content Different after All? A Content Analysis of Mobilizing Information in Online and Print Newspapers." *Journalism & Mass Communication Quarterly* 83 (1): 58–76.

Holladay, Sherry J. 2010. "Are They Practicing What We Are Preaching? An Investigation of Crisis Communication Strategies in the Media Coverage of Chemical Accidents." In *The Handbook of Crisis Communication*, edited by Timothy W. Coombs and Sherry J. Holladay, 159–180. Oxford, UK: Wiley-Blackwell..

Hong, Seoyeon, and Glen T. Cameron. 2018. "Will Comments Change Your Opinion? The Persuasion Effects of Online Comments and Heuristic Cues in Crisis Communication." *Journal of Contingencies and Crisis Management* 26 (1): 173–182.

Hsueh, Mark, Kumar Yogeeswaran, and Sanna Malinen. 2015. "Leave Your Comment Below': Can Biased Online Comments Influence Our Own Prejudicial Attitudes and Behaviors?" *Human Communication Research* 41 (4): 557–576.

Jacobi, Carina, Katharina Kleinen-von Königslöw, and Nel Ruigrok. 2016. "Political News in Online and Print Newspapers." *Digital Journalism* 4 (6): 723–742.

Jandura, Olaf, and Katja Friedrich. 2014. "The Quality of Political Media Coverage." In *Political Communication*, edited by Carsten Reinemann, 351–374. Berlin: De Gruyter Mouton. https://doi.org/10.1515/9783110238174.351.

Jin, Yan, and Augustine Pang. 2010. "Future Directions of Crisis Communication Research: Emotions in Crisis – The Next Frontier." In *The Handbook of Crisis Communication*, edited by

Timothy W. Coombs and Sherry J. Holladay, 677–682. Oxford, UK: Wiley-Blackwell. https://doi.org/10.1002/9781444314885.ch33.

Jin, Yan, Augustine Pang, and Glen T. Cameron. 2012. "Toward a Publics-Driven, Emotion-Based Conceptualization in Crisis Communication: Unearthing Dominant Emotions in Multi-Staged Testing of the Integrated Crisis Mapping (ICM) Model." *Journal of Public Relations Research* 24 (3): 266–298..

Kalogeropoulos, Antonis, Samuel Negredo, Ike Picone, and Rasmus Kleis Nielsen. 2017. "Who Shares and Comments on News?: A Cross-National Comparative Analysis of Online and Social Media Participation." *Social Media + Society* 3 (4): 205630511773575..

Kittel, Bernhard, Sylvia Kritzinger, Hajo Boomgaarden, Barbara Prainsack, Jakob-Moritz Eberl, Fabian Kalleitner, Noëlle S. Lebernegg, et al. 2021. "The Austrian Corona Panel Project: Monitoring Individual and Societal Dynamics Amidst the COVID-19 Crisis." *European Political Science* 20 (2): 318–344..

Kowarz, Nikolaus, and Markus Pollak. 2020. "Wer vertraut dem Staat? Institutionenvertrauen in Zeiten von Corona." *Corona Blog*, July 29. https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog70/

Krone.at. 2019. "Community-Richtlinien: Unsere Netiquette." Accessed May 25, 2021. https://www.krone.at/514825

Ksiazek, Thomas B. 2018. "Commenting on the News." *Journalism Studies* 19 (5): 650–673..

Ksiazek, Thomas B., and Nina Springer. 2018. "User Comments in Digital Journalism : Current Research and Future Directions." In *The Routledge Handbook of Developments in Digital Journalism Studie*, edited by Scott E. Eldridge and Bob Franklin, 1st ed., 475–486. London: Routledge. https://doi.org/10.4324/9781315270449-37.

Kunst, Marlene, Pablo Porten-Cheé, Martin Emmer, and Christiane Eilders. 2021. "Do 'Good Citizens' Fight Hate Speech Online? Effects of Solidarity Citizenship Norms on User Responses to Hate Comments." *Journal of Information Technology & Politics* 18 (3): 258–273.

Lee, Eun-Ju. 2012. "That's Not the Way It Is: How User-Generated Comments on the News Affect Perceived Media Bias." *Journal of Computer-Mediated Communication* 18 (1): 32–45.

Lind, Fabienne, Jakob-Moritz Eberl, Tobias Heidenreich, and Hajo G. Boomgaarden. 2019. "Computational Communication Science| When the Journey Is as Important as the Goal: A Roadmap to Multilingual Dictionary Construction." *International Journal of Communication* 13: 21.

Litvyak, Olga, Andreas Fischeneder, and Hajo G. Boomgaarden. Forthcoming. "AUTNES Automatic Content Analysis of the Media Coverage 2019 Documentation. (Edition 1.0.0)."

Merkel, Wolfgang. 2020. "Who Governs in Deep Crises?: The Case of Germany." *Democratic Theory* 7 (2): 1–11..

Mohammad, Saif M. 2017. "Challenges in Sentiment Analysis." In *A Practical Guide to Sentiment Analysis*, edited by Erik Cambria, Dipankar Das, Sivaji Bandyopadhyay, and Antonio Feraco, 61–83. Socio-Affective Computing. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-55394-8_4.

Mohammad, Saif M., and Peter D. Turney. 2013. "Crowdsourcing a Word–Emotion Association Lexicon." *Computational Intelligence* 29 (3): 436–465..

Mueller, John E. 1970. "Presidential Popularity from Truman to Johnson." *American Political Science Review* 64 (1): 18–34..

Myers, C. Daniel, and Dustin Tingley. 2016. "The Influence of Emotion on Trust." *Political Analysis* 24 (4): 492–500.

Papacharissi, Zizi. 2014. *Affective Publics: Sentiment, Technology, and Politics. Oxford Studies in Digital Politics*. New York: Oxford University Press..

Partheymüller, Julia, Carolina Plescia, and Sylvia Kritzinger. 2020. "Von Der Krisenbedingten 'Rally-around-the-Flag' Zurück Zur Politischen Normalität: Das Vertrauen in Die Bundesregierung im Verlauf Der Corona-Krise." Corona Blog, May 25. https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog45/

Pedregosa, Fabian, Gaël Varoquaux, Alexandre Gramfort, Vincent Michel, Bertrand Thirion, Olivier Grisel, Mathieu Blondel, et al. 2011. "Scikit-Learn: Machine Learning in Python." *Journal of Machine Learning Research* 12 (85): 2825–2830.

Pfau, Michael, Michel Haigh, Andeelynn Fifrick, Douglas Holl, Allison Tedesco, Jay Cope, David Nunnally, et al. 2006. "The Effects of Print News Photographs of the Casualties of War." *Journalism & Mass Communication Quarterly* 83 (1): 150–168..

Plutchik, Robert. 1980. "A General Psychoevolutionary Theory of Emotion." In *Theories of Emotion*, edited by Robert Plutchik and Henry Kellerman, 3–33. Cambridge, MA: Academic Press. https://doi.org/10.1016/B978-0-12-558701-3.50007-7.

Pollak, Markus, Nikolaus Kowarz, and Julia Partheymüller. 2020. "Chronologie zur Corona-Krise in Österreich – Teil 1: Vorgeschichte, der Weg in den Lockdown, die akute Phase und wirtschaftliche Folgen." *Corona Blog*, March 6. https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog51/

Prainsack, Barbara, Bernhard Kittel, Sylvia Kritzinger, and Hajo Boomgaarden. 2020. "From Acute Crisis to Long-Term Coping?" *Medium* (Blog), January 5. https://bprainsack.medium.com/from-acute-crisis-to-long-term-coping-b36d0cefd0ef

R Core Team. 2020. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. https://www.R-project.org/

Reinemann, Carsten, James Stanyer, Sebastian Scherr, and Guido Legnante. 2012. "Hard and Soft News: A Review of Concepts, Operationalizations and Key Findings." *Journalism* 13 (2): 221–239..

Reynolds, Barbara, and Matthew W. Seeger. 2005. "Crisis and Emergency Risk Communication as an Integrative Model." *Journal of Health Communication* 10 (1): 43–55..

Rezza, Giovanni, Raffaella Marino, Francesca Farchi, Mirella Taranto, Superiore Istituto, Sanità di, and Rome Italy. 2004. "SARS Epidemic in the Press." *Emerging Infectious Diseases* 10 (2): 381–382. 10.3201/eid1002.030743

Rösner, Leonie, Stephan Winter, and Nicole C. Krämer. 2016. "Dangerous Minds? Effects of Uncivil Online Comments on Aggressive Cognitions, Emotions, and Behavior." *Computers in Human Behavior* 58: 461–470.

Shouse, Eric. 2005. "Feeling, Emotion, Affect." *M/C Journal* 8 (6). https://doi.org/10.5204/mcj.2443

Soroka, Stuart, and Stephen McAdams. 2015. "News, Politics, and Negativity." *Political Communication* 32 (1): 1–22..

Statistik, Austria. 2020. "Pressemitteilung: 12.229-069/20." Accessed May 25, 2021. https://www.statistik.at/web_de/presse/122993.html

Straka, Milan, and Jana Straková. 2017. "Tokenizing, POS Tagging, Lemmatizing and Parsing UD 2.0 with UDPipe." In Proceedings of the CoNLL 2017 Shared Task: Multilingual Parsing from Raw Text to Universal Dependencies, 88–99. Vancouver, Canada: Association for Computational Linguistics..

Taboada, Maite. 2016. "Sentiment Analysis: An Overview from Linguistics." *Annual Review of Linguistics* 2 (1): 325–347..

Van Aelst, Peter, Fanni Toth, Laia Castro, Václav Štětka, Claes de Vreese, Toril Aalberg, Ana Sofia Cardenal, et al. 2021. "Does a Crisis Change News Habits? A Comparative Study of the Effects of COVID-19 on News Media Use in 17 European Countries." *Digital Journalism* 1–31. https://doi.org/10.1080/21670811.2021.1943481

Vara-Miguel, Alfonso. 2020. "Cross-National Similarities and Differences between Legacy and Digital-Born News Media Audiences." *Media and Communication* 8 (2): 16–27..

Venables, William N., and Brian D. Ripley. 2002. *Modern Applied Statistics with S. 4th ed. Statistics and Computing*. New York: Springer-Verlag. https://doi.org/10.1007/978-0-387-21706-2.

Wahl-Jorgensen, Karin. 2013. "The Strategic Ritual of Emotionality: A Case Study of Pulitzer Prize-Winning Articles." *Journalism* 14 (1): 129–145..

Wahl-Jorgensen, Karin. 2019. "Questioning the Ideal of the Public Sphere: The Emotional Turn." *Social Media + Society* 5 (3): 205630511985217..

Waibel, Marvin, David W. Schiestl, and Fabian Kalleitner 2020. "Waren die Maßnahmen ein Fehler? Die Mehrheit der österreichischen Bevölkerung sieht das nicht so." *Corona Blog*, August 6. https://viecer.univie.ac.at/corona-blog/corona-blog-beitraege/blog54/

Wallace, Byron C. 2015. "Computational Irony: A Survey and New Perspectives." *Artificial Intelligence Review* 43 (4): 467–483..

Welbers, Kasper, and Wouter van Atteveldt. 2020. "Corpustools: Managing, Querying and Analyzing Tokenized Text." https://cran.r-project.org/package=corpustools

Wessler, Hartmut. 2018. *Habermas and the Media*. Cambridge, UK: Polity Press.

Ziegele, Marc, Timo Breiner, and Oliver Quiring. 2014. "What Creates Interactivity in Online News Discussions? An Exploratory Analysis of Discussion Factors in User Comments on News Items." *Journal of Communication* 64 (6): 1111–1138..

Ziegele, Marc, Oliver Quiring, Katharina Esau, and Dennis Friess. 2020. "Linking News Value Theory with Online Deliberation: How News Factors and Illustration Factors in News Articles Affect the Deliberative Quality of User Discussions in SNS' Comment Sections." *Communication Research* 47 (6): 860–890..

Appendix

Table A1. Overview of variables.

Variable Function + Name	Description
DV: Emotionality of Comments	Count of top level emotional comments to an article
IV: Mitigation	Mention (yes/no) of COVID-19 issue 'mitigation measures' in articles
IV: Information and research	Mention (yes/no) of COVID-19 issue 'information and research' in articles
IV: Consequences	Mention (yes/no) of COVID-19 issue 'consequences of lockdown' in articles
IV: Reboot	Mention (yes/no) of COVID-19 issue 'reboot' in articles
IV: Government	Mention (yes/no) of at least one government party (ÖVP, Greens) in articles
IV: Opposition	Mention (yes/no) of at least one opposition party (SPÖ, FPÖ, NEOS) in articles
IV: Kurz	Mention (yes/no) of Chancellor Kurz in articles
IV: Positive sentiment	Positivity score of articles
IV: Negative sentiment	Negativity score of articles
IV: Mention of social media	Reference to Social Media in articles (yes/no)
IV: Text/Picture Ratio	Ratio of number of pictures / words in article
IV: Standard.at	Article published on derstandard.at (not live ticker)
IV: Krone.at	Article published on krone.at
IV: Lockdown	Article published during lockdown (yes/no)

Table A2. Main summary statistics of variables.

	Standard live ticker (N = 15,883)	derstandard.at (N = 8,342)	krone.at (N = 13,700)	Overall (N = 37,925)
Overall Emotion (Count Comments)				
Mean (SD)	17.6 (20.8)	39.6 (80.3)	16.2 (40.3)	21.9 (47.7)
Median [Min, Max]	13.0 [0, 756]	10.0 [0, 2250]	3.00 [0, 772]	8.00 [0, 2250]
COVID19 Issue: Mitigation				
0	12,901 (81.2%)	4904 (58.8%)	7997 (58.4%)	25,802 (68.0%)
1	2982 (18.8%)	3438 (41.2%)	5703 (41.6%)	12,123 (32.0%)
COVID19 Issue: Information/ Research				
0	12,934 (81.4%)	5767 (69.1%)	8776 (64.1%)	27,477 (72.5%)
1	2949 (18.6%)	2575 (30.9%)	4924 (35.9%)	10,448 (27.5%)
COVID19 Issue: Consequences				
0	14,759 (92.9%)	6374 (76.4%)	11,793 (86.1%)	32,926 (86.8%)
1	1124 (7.1%)	1968 (23.6%)	1907 (13.9%)	4999 (13.2%)
COVID19 Issue: Reboot				
0	15,349 (96.6%)	7779 (93.3%)	12,821 (93.6%)	35,949 (94.8%)
1	534 (3.4%)	563 (6.7%)	879 (6.4%)	1976 (5.2%)
Actor: Government				
0	14,565 (91.7%)	6997 (83.9%)	12,184 (88.9%)	33,746 (89.0%)
1	1318 (8.3%)	1345 (16.1%)	1516 (11.1%)	4179 (11.0%)
Actor: Opposition				
0	14,826 (93.3%)	7323 (87.8%)	12,678 (92.5%)	34,827 (91.8%)
1	1057 (6.7%)	1019 (12.2%)	1022 (7.5%)	3098 (8.2%)
Actor: Kurz				
0	15,516 (97.7%)	7766 (93.1%)	13,276 (96.9%)	36,558 (96.4%)
1	367 (2.3%)	576 (6.9%)	424 (3.1%)	1367 (3.6%)
Article: Social Media				
0	15,238 (95.9%)	6893 (82.6%)	12,183 (88.9%)	34,314 (90.5%)
1	645 (4.1%)	1449 (17.4%)	1517 (11.1%)	3611 (9.5%)
Article: Picture Ratio				
Mean (SD)	0.00187 (0.0110)	0.00638 (0.0797)	0.00903 (0.0050)	0.00545 (0.0383)
Median [Min, Max]	0 [0, 0.333]	0.0031 [0, 5.00]	0.0084 [0, 0.091]	0.0027 [0, 5.00]
Article: Negativity				
Mean (SD)	2.57 (2.60)	3.75 (1.89)	3.49 (2.00)	3.16 (2.31)
Median [Min, Max]	2.17 [0, 42.9]	3.63 [0, 22.2]	3.28 [0, 22.8]	2.99 [0, 42.9]
Article: Positivity				
Mean (SD)	3.23 (2.86)	4.85 (2.22)	4.40 (2.30)	4.01 (2.62)
Median [Min, Max]	2.86 [0, 25.0]	4.68 [0, 19.0]	4.20 [0, 24.0]	3.85 [0, 25.0]
Medium				
Standard live ticker	15,883 (100%)	0 (0%)	0 (0%)	15,883 (41.9%)
derstandard.at	0 (0%)	8342 (100%)	0 (0%)	8342 (22.0%)
krone.at	0 (0%)	0 (0%)	13,700 (100%)	13,700 (36.1%)
Lockdown				
0	9932 (62.5%)	4591 (55.0%)	7072 (51.6%)	21,595 (56.9%)
1	5951 (37.5%)	3751 (45.0%)	6628 (48.4%)	16,330 (43.1%)

Table A3. Aggregation and validation of actor and issue variables.

Group	Aggregate	Variable	Validation
Actors	*Government*	ÖVP	AUTNES 2019
		Grüne	AUTNES 2019
	Opposition	SPÖ	AUTNES 2019
		FPÖ	AUTNES 2019
		NEOS	AUTNES 2019
	Kurz	Sebastian Kurz	AUTNES 2019
COVID19 issues	*Mitigation*	Quarantine regulations and curfews	COVID-19-Study
		Border closures	COVID-19-Study
		Social distancing	COVID-19-Study
		Closure of educational institutions	COVID-19-Study
		Restrictions on business	COVID-19-Study
		(Mandatory) Face masks	COVID-19-Study
		Restrictions on gatherings	COVID-19-Study
		Non-compliance and scandals	COVID-19-Study
	Consequences of lockdown	Consequences for the labour market	COVID-19-Study
		Support for companies	COVID-19-Study
		Support for cultural institutions/artists	COVID-19-Study
	Information & Research	Information campaigns and hotlines	COVID-19-Study
		Statistics, medical equipment, research	COVID-19-Study
		Contact tracing & COVID-apps	COVID-19-Study
	Reboot	Reopening of educational institutions	COVID-19-Study
		Reopening of business	COVID-19-Study
		Allow gatherings again	COVID-19-Study
		Border openings	COVID-19-Study

Table A4. COVID-19-study validation results.

Variable	Krippendorff's alpha	Precision	Recall
Mitigation (aggregated)		0.94	0.95
Quarantine regulations and curfews	0.80	0.88	0.97
Border closures	0.82	0.84	0.84
Social distancing	0.84	0.95	0.85
Closure of educational institutions	0.84	1.00	0.92
Restrictions on business	0.86	0.88	0.81
(Mandatory) Face masks	0.76	0.90	0.93
Restrictions on gatherings	0.83	0.98	0.78
Non-compliance and scandals	0.78	0.77	0.81
Consequences of lockdown (aggregated)		0.92	0.93
Consequences for the labour market	0.73	0.93	0.93
Support for companies	0.75	0.80	0.85
Support for cultural institutions/artists	0.92	0.83	0.91
Information/Research (aggregated)		0.92	0.92
Information campaigns and hotlines	0.93	1.00	0.85
Statistics, medical equipment, research	0.75	0.85	0.88
Contact tracing & COVID-apps	0.78	1.00	0.92
Reboot (aggregated)		0.88	0.90
Reopening of educational institutions	0.87	0.96	0.83
Reopening of business	0.83	0.80	0.88
Allow gatherings again	0.93	0.91	0.83
Border openings	0.81	0.92	0.86

Table A5. Results of automated emotion coding.

Comments	derstandard.at		Standard live ticker		krone.at	
	Mean (sd)	%	Mean (sd)	%	Mean (sd)	%
Anger	0.7 (2.28)	23.2	0.56 (4.35)	8.4	0.73 (2.29)	19.6
Sadness	1.04 (2.61)	35.0	0.92 (12.92)	13.7	1.12 (2.94)	29.9
Joy	0.78 (2.24)	25.9	0.65 (2.89)	10.5	0.81 (2.4)	21.7
Disgust	0.53 (2.05)	16.6	0.48 (4.28)	6.8	0.52 (2.02)	13.5
Surprise	0.49 (1.7)	16.8	0.38 (2.15)	6.5	0.5 (1.81)	13.8
Trust	1.68 (3.2)	58.3	1.31 (5.53)	21.4	1.7 (3.43)	47.6
Anticipation	1.04 (2.57)	35.0	0.94 (4.68)	15.2	1.04 (2.7)	28.3
Fear	1.16 (2.78)	30.6	0.94 (6.39)	12.9	1.33 (3.15)	28.0
Positivity	2.84 (4.07)	53.3	2.3 (6.59)	28.6	2.79 (4.22)	47.1
Negativity	2.25 (4.12)	47.1	1.92 (7.66)	23.4	2.31 (4.21)	41.9
Articles						
Positivity	4.85 (2.21)	98.8	3.24 (2.86)	75.7	4.40 (2.30)	97.7
Negativity	3.76 (1.89)	97.8	2.56 (2.60)	68.8	3.49 (2.00)	96.4

Note: The table shows the average measurement (mean) of each emotion with standard deviation. Additionally, the proportion of comments where each emotion was detected.

Table A6. Results of negative binomial regression models.

	Baseline model	Government x Lockdown	Opposition x Lockdown	Kurz x Lockdown
(Intercept)	2.13***	2.13***	2.13***	2.13***
	(0.02)	(0.02)	(0.02)	(0.02)
COVID19 Issue: Mitigation	0.32***	0.32***	0.32***	0.32***
	(0.02)	(0.02)	(0.02)	(0.02)
COVID19 Issue: Information/Research	0.30***	0.30***	0.30***	0.30***
	(0.02)	(0.02)	(0.02)	(0.02)
COVID19 Issue: Consequences	0.26***	0.26***	0.26***	0.26***
	(0.02)	(0.02)	(0.02)	(0.02)
COVID19 Issue: Reboot	0.20***	0.20***	0.20***	0.20***
	(0.03)	(0.03)	(0.03)	(0.03)
Actor: Government	0.64***	0.64***	0.64***	0.64***
	(0.02)	(0.03)	(0.02)	(0.02)
Government x Lockdown		−0.01		
		(0.05)		
Actor: Opposition	0.58***	0.58***	0.63***	0.58***
	(0.03)	(0.03)	(0.03)	(0.03)
Opposition x Lockdown			−0.13*	
			(0.05)	
Actor: Kurz	0.93***	0.93***	0.92***	0.97***
	(0.04)	(0.04)	(0.04)	(0.05)
Kurz x Lockdown				−0.09
				(0.07)
Article: Social Media	0.26***	0.26***	0.26***	0.26***
	(0.02)	(0.02)	(0.02)	(0.02)
Article: Picture Ratio	0.62***	0.62***	0.63***	0.62***
	(0.18)	(0.18)	(0.18)	(0.18)
Article: Negativity	0.08***	0.08***	0.08***	0.08***
	(0.00)	(0.00)	(0.00)	(0.00)
Article: Positivity	0.05***	0.05***	0.05***	0.05***
	(0.00)	(0.00)	(0.00)	(0.00)
Medium: derstandard.at	0.12***	0.12***	0.12***	0.12***
	(0.02)	(0.02)	(0.02)	(0.02)
Medium: krone.at	−0.68***	−0.68***	−0.68***	−0.68***
	(0.02)	(0.02)	(0.02)	(0.02)
Context: Lockdown	0.20***	0.20***	0.21***	0.21***
	(0.01)	(0.02)	(0.02)	(0.01)
N	37,925	37,925	37,925	37,925
AIC	287,151.93	287,153.91	287,147.45	287,152.39
BIC	287,288.62	287,299.14	287,292.69	287,297.63
Pseudo R2	0.21	0.21	0.21	0.21

Negative binomial regression, SE in (). *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A7. Results of separate negative binomial regression models for each media outlet.

	Without standard live ticker	Standard live ticker	derstandard.at	krone.at
(Intercept)	1.99***	2.24***	1.90***	1.23***
	(0.04)	(0.02)	(0.05)	(0.05)
COVID19 Issue: Mitigation	0.33***	0.27***	0.24***	0.40***
	(0.02)	(0.02)	(0.04)	(0.03)
COVID19 Issue: Information/Research	0.30***	0.17***	0.18***	0.38***
	(0.02)	(0.02)	(0.04)	(0.03)
COVID19 Issue: Consequences	0.26***	0.14***	0.22***	0.30***
	(0.03)	(0.03)	(0.04)	(0.04)
COVID19 Issue: Reboot	0.18***	0.19***	0.13*	0.22 ***
	(0.04)	(0.04)	(0.07)	(0.06)
Actor: Government	0.76***	0.21***	0.62***	0.85***
	(0.04)	(0.03)	(0.05)	(0.05)
Actor: Opposition	0.69***	0.27***	0.48***	0.88***
	(0.04)	(0.03)	(0.06)	(0.06)
Actor: Kurz	0.93***	0.62***	0.72***	1.21***
	(0.06)	(0.05)	(0.07)	(0.09)
Article: Social Media	0.24***	0.26***	0.29***	0.20***
	(0.03)	(0.04)	(0.04)	(0.05)
Article: Picture Ratio	0.13	8.24***	0.12	3.73
	(0.22)	(0.70)	(0.21)	(2.91)
Article: Negativity	0.15***	0.02***	0.17***	0.14***
	(0.01)	(0.00)	(0.01)	(0.01)
Article: Positivity	0.05***	0.03***	0.09***	0.03***
	(0.00)	(0.00)	(0.01)	(0.01)
Medium: krone.at	−0.74***	NA	NA	NA
	(0.02)			
Medium: derstandard.at	NA	NA	NA	NA
Context: Lockdown	−0.01	0.55***	−0.04	0.02
	(0.02)	(0.02)	(0.03)	(0.03)
N	22,179	16,074	8479	13,700
AIC	160,477.32	122,465.09	71,395.13	88,869.63
BIC	160,597.43	122,572.68	71,493.77	88,974.98
Pseudo R2	0.22	0.14	0.17	0.18

Negative binomial regression, SE in (). *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.