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Article

Emotionalization in the Media Coverage of Honey Bee Colony Losses

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Abstract

Emotionalization is increasingly used in the daily news. However, communication scholars have only just begun to explore how journalists use emotionalization in coverage of scientific and environmental topics. This study contributes to filling this research gap by investigating emotionalization in reporting on honey bee colony losses. The aim of the study is to analyze the amount of emotionalization that took place, as well as to observe changes over time. Emotionalization is assessed in two ways; by analyzing to what extent journalists (1) *explicitly mentioned* discrete emotions in news stories (joy, hope, fear, anger, etc.) and/or (2) used *rhetorical devices* to evoke emotions (affective vocabulary, metaphors, colloquial language, superlatives, etc.). Results from a quantitative content analysis of four Austrian newspapers in 2010/2011, 2013/2014, and 2017/2018 show that the coverage is highly emotionalized across all three time periods studied. Emotionalization occurs far more often by using rhetorical devices than by explicitly mentioning positive or negative emotions. Interestingly, the incorporation of emotional elements and scientific expertise in the news items do not exclude one another. Hence, there seems to be no strict dichotomy between rational/objective and emotional reporting.

Keywords

content analysis; emotionalization; emotions; environmental communication; quality newspapers; science communication; tabloid newspapers

Issue

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1. Introduction

Journalism has the potential to contribute to a well-informed and proactive citizenry by reporting on environmental issues. Accordingly, communication scholars are interested in investigating what kind of media coverage is best-suited for presenting information in a comprehensible way and for fostering engagement. For instance, research on climate change media reporting shows that journalists use adjectives and personal vignettes to generate feelings (Han, Sun, & Lu, 2017), and that emotions evoked by media coverage on climate change can influence one’s willingness to make sacrifices for climate change (Bilandzic, Kalch, & Soentgen, 2017). Hence, it is important to know the precise details

on how media coverage on environmental issues is presented. However, surprisingly little is known so far in this regard. This is where our study comes in. We analyze emotionalization in media reporting on environmental issues by using the case of the colony collapse disorder (CCD). CCD describes the syndrome of “large-scale, unexplained losses of managed honey bee (*Apis mellifera* L.) colonies” (vanEngelsdorp et al., 2009, p. 1). The case of the CCD is especially interesting as it is less researched than other environmental topics that call for action such as climate change (Cho, 2010; Smith & Saunders, 2016; Suryanarayanan & Kleinman, 2012).

Recent research shows increasing emotionalization in daily news (Donsbach & Büttner, 2005; Magin, 2017). Accordingly, this study aims to investigate whether this is

also true for media coverage on honey bee colony losses. More specifically, this article aims to show how emotionalized the media coverage on honey bee colony losses is and whether changes can be observed over time as well as differences between the newspaper analyzed. To do so, we conducted a quantitative content analysis of news stories in Austrian daily newspapers from 2010 to 2018. In the following, we elaborate on the theoretical concept of emotionalization before presenting and discussing the empirical results.

2. Emotionalization

2.1. Emotionalization of Media Content

Emotionalization can be defined as the “intentional evoking of emotions” (Flemming, Cress, Kimmig, Brandt, & Kimmeler, 2018, p. 3). Communication scholars are interested in investigating how journalists (and other societal actors) evoke emotions and how it affects several outcomes (for an overview, see Schramm & Wirth, 2006). For instance, emotionalization has been studied as a news value (Eilders, 1997; Schulz, 1977), as an indicator of tabloidization (Donsbach & Büttner, 2005; Magin, 2017), as well as in specific thematic contexts such as political communication (Brosda, 2002), natural disaster reporting (Zeller, Arlt, & Wolling, 2014) or news reporting on terrorism (Cho et al., 2003; Gerhards, Schäfer, Al Jabiri, & Seifert, 2011). Research suggests that emotions are a common feature in news coverage. For example, Uribe and Gunter (2007) showed that in 2002/2003, around 40% of British daily TV news stories contained verbal emotionality. Similarly, Leidenberger (2015) found that in 2010, 43% of German TV news items had textual emotionalization. However, the levels of emotionalization seem to vary between media outlets. For instance, Gerhards et al. (2011) found differences regarding the type of emotions used in the news coverage between the German public TV broadcast and private TV broadcasts; the private one included more positive emotions—such as hope—than the public one. The public TV broadcast entailed more sadness than the private one. Leidenberger (2015) identified differences in the use of rhetorical categories to evoke emotions. For instance, the private TV broadcast showed higher levels of colloquial language than the public one. When it comes to the printed media, it is interesting to what extent differences can be observed between elite newspapers and tabloids.

Research also reveals that journalists increasingly incorporate emotional elements in news stories. Donsbach and Büttner (2005) analyzed German TV news between 1983 and 1998 and found that while overall news contained a higher proportion of factually than emotionally presented news, the use of emotionalized elements in the news stories analyzed has significantly increased over time. Similarly, a study investigating emotionalization in German and Austrian newspapers between 1945 and 2009 shows that headlines are predominantly unemo-

tional. The emotional vocabulary in the headlines nevertheless doubled from every hundredth to every fiftieth word in both countries (Magin, 2017). The increasing emotionalization of media content is evaluated differently by communication scholars. Some scholars speak of emotionalization as a danger and worry that rises in emotionalization, personalization and conflicts in the news might make it even harder for less-involved and less-motivated people to extract valuable information from the news (Donsbach & Büttner, 2005; Kowalewski, 2009). Other scholars criticize how the concept of emotions is treated dismissively when discussed in relation to journalism. Pantti (2010) argues that journalism’s relationship with expressing emotions is a complex one on account of the challenge it poses to the key professional value of objectivity, and that equating more emotions with less journalistic quality is too simplistic. Peters (2011) states that diverse emotional styles in presenting news might help to engage disparate audiences, and goes on to call the traditional news dichotomy (rational/objective vs. emotional) into question. Indeed, research has revealed that scientific findings and emotional elements are sometimes combined in news stories. For instance, Wilms (1994) found that news stories on technology often start with negative emotions in the thematic context of uncertainty. However, in the second paragraph, journalists often subsequently present scientific findings on the topic. These findings suggest that news stories containing emotional elements are not necessarily dominated by emotions throughout the whole story.

Empirical findings on the effects of emotionalized content show no clear picture. While emotionalization has been shown to have negative effects on certain outcomes such as recall (e.g., Brosius, 1993), studies have also found positive effects (e.g., Swim & Bloodhart, 2015). Brosius (1993) showed that emotional pictures led to recall errors and to an overestimation of numbers given in the news text. Brosius argued that these errors occur because emotional pictures focus viewers’ attention on specific parts of the news item. Perceptual judgments that are generalized from these specific parts are used when recalling a news item. Schultheiss and Jenzowsky’s (2000) study revealed that TV infotainment shows with high levels of emotionalization (emotional pictures, music, emotional language) are perceived as less credible than those not containing emotionalizing elements. Meanwhile, contrary to that finding, Brosius and Kayser (1991) found that the information quality of news was rated better when accompanied by emotional pictures. Research also shows that emotional pictures can have a mobilizing effect. More specifically, a study on climate change communication revealed that emotional pictures (polar bears harmed by climate change) motivated participants who developed an empathic perspective toward the animals to donate money to environmental activist groups (Swim & Bloodhart, 2015). Interestingly, fearful messages on climate change

have been found to be an effective tool for increasing elaboration on information (Meijnders, Midden, & Wilke, 2001) and attracting people's attention to climate change (O'Neill & Nicholson-Cole, 2009), but do not foster engagement because people feel helpless and overwhelmed. Hence, if scare tactics are used, they should be accompanied by practical advice on the actions that can be taken as a remedy (Reser & Bradley, 2017). In addition, it also depends on the level of fearfulness. Research indicates that readers who got exposed to a high-fear appeal text on climate change were less likely to engage in pro-environmental behavior than those who read a low-fear appeal text (M.-F. Chen, 2016).

2.2. Textual Emotionalization

Leidenberger (2015) identifies three forms of emotionalization: visual emotionalization, textual emotionalization, and emotionalization transmitted through music. In our study, we focus on textual emotionalization. Textual emotionalization in the context of media coverage can be defined as journalists' use of written language to evoke emotions by including discrete emotions in the text, by using rhetorical devices that evoke emotions, or by reporting on individual cases (Donsbach & Büttner, 2005; Flemming et al., 2018). Accordingly, scholars used different approaches to capture textual emotionalization. While some analyzed emotions that are *explicitly mentioned* in news articles (e.g., Wilms, 1994; Zeller et al., 2014), others also considered *rhetorical devices* used by journalists to evoke emotions (e.g., Leidenberger, 2015; Wittwen, 1995).

When analyzing *explicitly mentioned emotions*, scholars typically use a list of terms containing positive and negative emotions. Emotions can be approached from two different perspectives: there is (1) the dimensional perspective of emotions (Barrett et al., 2007; Rubin & Talarico, 2009; Smith & Ellsworth, 1985) and discrete emotions (Ekman, 1992; Izard, 1977; Panksepp, 1998). The latter is used when investigating explicitly mentioned discrete emotion in news stories. Scholars refer to the psychological concept of primary emotions or basic emotions, i.e., emotions that are "innate, universal, and distinct affective states which evolved to serve adaptive functions" (Piórkowska & Wrobel, 2017, p. 1). Communication scholars are interested in testing whether positive or negative emotions are dominant in the reporting on specific topics or fields. For their part, for instance, Gerhards et al. (2011) investigated the reporting on terrorism and distinguished between positive (e.g., hope), negative (e.g., fear, sadness, anger) and ambivalent emotions (e.g., defiance, astonishment). Not surprisingly, negative emotions were prevalent in news reporting on terrorism. However, this is also true for some other topics that are not inherently negative. For instance, Wilms (1994) analyzed media reports on technology and found that negative emotions are dominant in the news stories analyzed.

Based on literature from linguistics, emotionalization can also be assessed by analyzing *rhetorical devices* that evoke emotions. A very common rhetorical device for evoking emotions in news stories is the elliptical construction. Elliptical construction means that in a given sentence, some words are omitted (W. Chen, 2016)—for example "Merkel in Paris" instead of "Angela Merkel is in Paris." Another common rhetorical device uses affective vocabulary such as "martial," "attack," "brutal," "murder," "malicious," etc. (Leidenberger, 2015; Mende, 1996). Journalists also use metaphors to evoke emotions in news stories. According to Knowles and Moon (2006), metaphors—the "use of language to refer to something other what it was originally applied to" (p. 3)—constitute a powerful tool in the communication of emotion because they allow writers to present meaning in a more open-ended fashion and they likewise allow readers to extract less narrow interpretations. Metaphors are often used in relation to emotions since emotions are rather abstract and figurative speech facilitates expression of emotions (Foolen, 2012). For instance, one can use "you make my blood boil" as metaphor for anger, or "my heart is on fire" as a metaphor for love (Sandström, 2006). Colloquial language is a rhetorical device characterized by expressivity and vividness (Wittwen, 1995). Finally, superlatives are common devices in journalism often used in headlines (e.g., "the best," "the worst," "the most dramatic").

2.3. Research Questions and Hypotheses

Informed by this literature, we formulate research questions and hypotheses. Prior research has shown that with a share of around 40%, emotions are a common feature in news stories (Leidenberger, 2015; Uribe & Gunter, 2007). We are interested in investigating the extent to which the coverage on honey bee colony losses is emotionalized.

RQ1: To what extent is textual emotionalization used in media coverage of honey bee colony losses?

Research has revealed differences in the levels of emotionalization between media outlets (Gerhards et al., 2011; Leidenberger, 2015). Since emotionalization is described as one of the central characteristics of tabloid journalism (Bruck & Stocker, 1996; Reinemann, Stanyer, Scherr, & Legnante, 2011), we expect tabloids to show higher levels of emotionalization than quality papers. We thus formulate the following hypothesis.

H1: Tabloid papers will show higher levels of textual emotionalization in comparison to quality papers.

Prior research has shown that emotionalization has increased in daily news (Donsbach & Büttner, 2005; Magin, 2017). We test whether this likewise applies to the coverage on honey bee colony losses:

H2: The use of textual emotionalization will increase over time.

Finally, we aim to investigate how journalists use emotional and scientific elements in the coverage on honey bee colony losses:

RQ2: To what extent do journalists combine rational/evidence-based elements (scientific findings, scientific expert statements) and emotional elements within news stories?

3. Method

3.1. Sample

To study our research question, we conducted a quantitative content analysis of news stories in Austrian daily newspapers. We selected the two largest daily newspapers in the quality segment in terms of reach (*Der Standard*: 7.8% and *Die Presse*: 4.6%) and the two largest daily tabloids in terms of reach (*Kronen Zeitung*: 27.2% and *Heute*: 11.6%; see Media Analyse, 2018). We investigated three discrete time periods: (1) 2010/2011, (2) 2013/2014, and (3) 2017/2018. While the first two time periods were selected because of their proximity to important policy decisions related to bees and pesticides, the last time period was selected based on its proximity to the study date. More specifically, the starting point was chosen because in that month, the EU announced a budget increase of financial support for beekeeping (European Commission, 2010). The second relevant date was Austria's vote against the pesticide ban in the EU in 2013. As a last point in time, the current year at the time of the data collection was chosen. By using a keyword search ("bee death") in the digital newspaper archive database "APA Online Manager Library," we identified 287 relevant news stories. The original keyword in German was "Bienensterben" which is the commonly and predominantly used term in the public debate. 56.8% of all articles appeared in the tabloid *Kronen Zeitung*, 18.8% in the quality paper *Der Standard*, 17.8% in the quality paper *Die Presse* and 6.6% in the tabloid *Heute*. For an overview of the newspaper articles analyzed, see Table 1.

3.2. Measurement

Building on prior research, we included 48 categories in our codebook. Besides formal categories (ID, news-

paper, date, headline, genre, division, topic, etc.), we used the following categories to capture emotionalization in detail.

Explicit mention of discrete emotions: Prior research has led to several lists of discrete emotions. Scant agreement however exists on how many emotions constitute basic ones. The number of emotions included in the list of basic emotions varies thus accordingly (e.g., Ekman, 1992; Izard, 1977; Panksepp, 2007; Plutchik, 2003; Scherer, 2005; Strapparava & Mihalcea, 2010; Turner & Stets, 2005; for criticism of the basic emotions approach, see Cohen, 2005; Ortony & Turner, 1990). We expand on lists that have hitherto been applied in communication research (Gerhards et al., 2011; Renaud & Unz, 2006; Saxer & Märki-Koepp, 1992; Wilms, 1994; Zeller et al., 2014). Building on this literature, we have created a list of positive and negative emotions. Positive emotions include pride, hope, joy, pleasure, compassion, calm, longing, affection, satisfaction, fascination, emotion, surprise, courage. Negative emotions include guilt, fear, anxiety, grief, anger, rage, dislike, aggression, restlessness, disgust, contempt. In addition, positive or negative emotions found in the texts that were not listed were entered into an open-ended category. For example, our list of negative emotions contained the word "fear." In the text, the coder found the word "panic," which means "a sudden strong feeling of fear" (panic, n.d.) and hence could be clearly identified as an emotion by the coder. The coder then entered "panic" into the open-ended category. In addition, the category "negative emotion" was coded as "yes." Hence, emotions deduced from the text were treated the same as emotions coded based on the list. The goal was to be able to capture the full range of possible emotions encapsulated in news stories.

Rhetorical devices that evoke emotions: We coded rhetorical categories that evoke emotions developed by Wittwen (1995). The list of the rhetorical devices contained the following eight types: affective vocabulary (e.g., "dramatic," "disastrous"), colloquial language (e.g., "Yeah!"), superlatives (e.g., "best," "worst"), metaphors (e.g. honey as the "sweet gold"), exclamation marks for emphasizing something (!), expressive word order (e.g., "no money, no hope"), elliptical construction (e.g., Crocuses in November!), and colon construction (e.g., "or: no more bees!"). We added two types from the study of Leidenberger (2015): we-construction (e.g., "our bees," "our nature") and neologism (creating a new word or expression, e.g., "Bienenpapst," translation: "Pope of the bees"). For each rhetorical category, we coded yes/no.

Table 1. Investigation period.

Investigation period	Years	Exact date	n
1	2010/2011	01.09.2010–01.09.2011	40
2	2013/2014	01.05.2013–01.05.2014	186
3	2017/2018	01.09.2017–01.09.2018	61
Total			287

Reference to science: We coded whether journalists referred to scientific findings or included statements from scientific experts in the news stories.

Intercoder reliability: All news stories were coded manually by two coders. Intercoder reliability between the two coders was calculated using Holsti’s formula of inter-coder agreement. Intercoder reliability ranges from .69 (we-construction) to 1.00 (formal categories). Given that the study at hand also contained exploratory elements, coefficients of .70 are appropriate (Lombard, Snyder-Duch, & Bracken, 2002).

4. Results

In total, 287 articles were analyzed. Results show that in 198 articles (69%), honey bee colony losses were reported as the main topic of the article. Moreover, in 39 articles (13.6%), they were incorporated as a subtopic, and in 50 articles (17.4%), journalists just referenced the term “bee death” without going into details. Articles belonging to the latter category were excluded by further steps of analysis.

The first research question (RQ1) asked how emotionalized the media coverage on honey bee colony losses is. Results show that 94.5% of the 237 articles coded contained emotionalizing elements. Regardless of whether honey bee colony losses were reported as a main topic or as a subtopic—the share of articles containing emotionalization is very similar for both types of reporting (main topic: 94.4%; subtopic: 94.9%; $p = 1.000$; Fisher’s Exact Test).

Interestingly, emotionalization occurred far more often by using rhetorical devices rather than by explicitly mentioning positive or negative emotions. Only in 38.4% of the articles coded did journalists *explicitly mention emotions*. More specifically, 17.3% of all articles mentioned only positive emotions, whilst 21.1% of all coded articles mentioned only negative emotions, and 4.2% included both positive and negative emotions. Table 2 shows examples of how positive and negative emotions were used in the media coverage.

Besides explicitly mentioning positive or negative emotions, journalists also used different *rhetorical devices* to evoke emotions. For instance, we identified a broad range of different metaphors (e.g., honey described as “sweet gold,” or “beekeepers show heart for bees”) and neologisms (e.g., “bee killer” or “bee disaster”). Journalists also applied “humanization” of bees by describing bees as “hard-working staff,” by writing that “Maja the bee is finally able to laugh again,” or by stating that “the bees say thank you.”

The next hypothesis (H1) expected higher levels of emotionalization in the tabloids analyzed compared to the quality newspapers. Results in Table 3 show that indeed tabloids feature a higher share of articles containing any kind of emotional element compared to quality papers. Hence, our data support H1.

Interestingly, *explicitly* mentioning emotions occurs in a similar amount in quality and tabloid papers (quality papers: 40.5% vs. tabloid: 37.5%, $\chi^2 = .238$, $df = 1$, $p = .626$). It is the use of *rhetorical devices* to evoke emotions where tabloids show higher levels than quality pa-

Table 2. Examples of how journalists incorporated positive and negative emotions in news stories.

Emotion	Sentences used in media reports
Positive Emotions	
Hope	Hope for increased bee protection
Joy	Maja the bee would have enjoyed it
Love	Austrians love nature
Luck	Luckily, such a horror scenario is a long way off
Sympathy	Beekeepers feel people’s sympathy towards bees
Negative Emotions	
Fear	Beekeepers fear honey bee colony losses
Worry	Beekeepers are worried
Sadness	The sad future awaiting our kids
Outrage	Citizens are outraged
Despair	A desperate push by local environmentalists to save our bees
Panic	Panic reaction by the European Commission

Table 3. Emotionalization in quality and tabloid papers.

Emotionalization	Quality papers	Tabloid papers	Total
Yes	89.3% (75)	97.4% (149)	94.5% (224)
No	10.7% (9)	2.6% (4)	5.5% (13)
Total	100% (84)	100% (153)	100% (237)

Notes: Table reports percentages and number of cases (in parentheses). $p = .014$; Fisher’s Exact Test; sig. 2-sided.

Table 4. The use of rhetorical devices in quality and tabloid papers.

	Rhetorical device	Quality papers	Tabloid papers	Total	Chi ²	df	p
1	Affective vocabulary	63.1% (53)	65.4% (100)	64.6% (153)	.122	1	.727
2	Colloquial language	25.0% (21)	37.9% (58)	33.3% (79)	4.066	1	.044
3	Superlatives	9.5% (8)	21.6% (33)	17.3% (41)	5.499	1	.019
4	Metaphors	57.1% (48)	67.3% (103)	63.7% (151)	2.430	1	.119
5	Appeal/exclamation/question	20.2% (17)	45.1% (69)	36.3% (86)	14.496	1	.001
6	Expressive word order	4.8% (4)	5.9% (9)	5.5% (13)	—	—	1.000
7	Elliptical construction	8.3% (7)	19.0% (29)	15.2% (36)	4.748	1	.029
8	Colon construction	34.5% (29)	35.3% (54)	35.0% (83)	.014	1	.905
9	'We' construction	6.0% (5)	19.0% (29)	14.3% (34)	7.460	1	.006
10	Neologism	28.6% (24)	29.4% (45)	29.1% (69)	.019	1	.892

Notes: Table reports percentages and number of cases (in parentheses). n = 237 articles; Pearson Chi-Square Test (exc. for line 6: Fisher's Exact Test); sig. 2-sided.

pers. Results in Table 4 show that tabloid papers used colloquial language, superlatives, exclamation marks, elliptical constructions and a "we" construction more often to evoke emotions than quality papers did.

The next hypothesis (H2) stated that emotionalization will increase over time. Results shown in Table 5 do not support H2. Emotionalization remains at very similar levels in all three time periods investigated; it even decreases slightly in the last period of investigation. However, this decrease is not statistically significant.

Finally, the last research question (RQ2) asked to what extent emotions and scientific findings or scientific expert statements are combined in articles. Table 6 shows that 19.41% of all 237 articles contained both emotionalizing elements and scientific findings and/or statements from scientific experts. Hence, references to science and the use of emotions do not necessarily exclude one another. However, results in Table 6 also reveal that three quarters of all articles contained only emotionalization and no reference to science at all. The other way around constitutes the exception; only 0.84% of all articles contained references to science but no emotionalization.

The following examples illustrate two possibilities for how emotionalization and references to science can be combined in an article: (1) a journalist combined the two elements by reporting on new scientific findings related to the honey bee colony losses and also by using rhetorical devices to evoke emotions, or (2) the statement of the scientist includes rhetorical devices for evoking emotions. For example, a biologist said in an interview: "I think you've never held a bee in your hand that has been poisoned....puts out its feelers to you and looks at you while dying." In this case, the scientist was the one to evoke emotions.

5. Conclusions

This study investigated emotionalization in media reporting on honey bee colony losses. Results from content analysis of news stories in Austrian newspapers indicate that the media coverage of honey bee colony losses was highly emotionalized across all three time periods of focus. There was no significant increase over time. While prior research found an increase of emotionalization in the daily news (Donsbach & Büttner, 2005; Magin, 2017),

Table 5. Emotionalization over time.

Emotionalization	2010/2011	2013/2014	2017/2018	Total
Yes	97.0% (32)	94.9% (150)	91.3% (42)	94.5% (224)
No	3.0% (1)	5.1% (8)	8.7% (4)	5.5% (13)
Total	100% (33)	100% (158)	100% (46)	100% (237)

Notes: Table reports percentages and number of cases (in parentheses). p = .571; Fisher's Exact Test; sig. 2-sided.

Table 6. The use of emotionalization and references to science in the articles analyzed.

Emotionalization	Reference to science	% of articles that contain...
x	x	19.41%
x		75.11%
	x	0.84%
		4.64%

Notes: n = 237 articles; "x" indicates that the element applies to this type of coverage.

this seems not to apply for science news (Berg, 2018) or for environmental topics as the one studied in the current paper.

Emotionalization occurred far more often by using rhetorical devices than by explicitly mentioning discrete positive or negative emotions. Emotion and scientific expertise did not exclude one another. Interestingly, we also found an example where a statement from a scientific expert contained emotional elements. Hence, future studies could have a closer look at such expert statements and investigate how and to what extent scientists are used as “opportune witnesses” (Hagen, 1992) to evoke emotions in news stories on scientific and environmental stories.

This study does not come without limitations. To capture explicitly mentioned emotions, we coded whether or not an article contained positive or negative emotions but did not count the numbers of emotions mentioned within each article. Future studies should assess it more precisely in order to give a more nuanced understanding of the level of emotionalization within each article. Moreover, when interpreting the results, one should be aware that while the first two time periods were selected based on important policy decisions related to bees, the last time period was selected based on its proximity to the study date. Hence, the slightly lower levels of emotionalization (statistically non-significant) in the last time period have to be seen in light of these selection criteria and point toward interesting questions for future research. That is, for example, how do different triggers influence levels of emotionalization in the news stories? And is the emotionalization of the coverage at such a high level because the topic is highly politicized in the Austrian context? Similarly, the search term (German: *Bienensterben*; translation: “bee death”) used in this study is problematic to some extent. Although it is the predominantly used term in public debate and hence a very effective term for identifying relevant articles, it might have biased the sample since it is an emotionalized term in itself. Hence, while the use of the term “bee” might be too vague, combination of search terms such as “bee*” AND “loss” etc. could be applied. Cross-cultural research is needed to determine whether or not we are talking about a possibly specifically Austrian phenomenon. Hence, it would be worth analyzing the coverage on this topic in other countries as well as on other environmental topics such as bark beetles or species extinction.

This relates to the next limitation concerning the selection of media outlets, which is that we focused on daily newspapers in Austria. Readers should keep in mind that tabloids dominate the Austrian newspaper market (see Media Analyse, 2018) and that in the specific case of the honey bee colony losses, the tabloid *Kronen Zeitung* had by far the most coverage (56.8% of all articles analyzed appeared in this newspaper) and positioned themselves as clearly in favor of “saving the bees.” Hence, analyzing newspaper coverage on the same topic

in other countries where quality papers are more influential might show different results. Similarly, analyzing TV and radio news might reveal additional relevant findings, since further strategies for evoking emotions can be analyzed there (visual emotionalization, musical emotionalization). While we focused on analyzing the text, we think that it would be relevant for exploring visual components of printed news stories. Research is needed to capture the power of pictures in evoking emotions in media coverage of science and environmental topics. During the coding process, we noticed that news stories were illustrated by using the same recurring pictures (Maja the bee, a nice big flower with a bee on it, a smiling woman holding a glass of honey, etc.). There seems to be sort of a discrepancy between the text that deals with a serious topic and the positive, beautiful pictures. Experimental studies should investigate whether or not bees might have a similarly mobilizing effect in the fight against the use of pesticides as polar bears have when it comes to sacrifice for environmental protection pursuits (Swim & Bloodhart, 2015). Moreover, future experimental studies on the effects of emotions in science and environmental issues should take into account participants’ emotions as mediators (e.g., Bilandzic et al., 2017; Lecheler, Schuck, & de Vreese, 2013).

Despite these limitations, this study provides interesting insights on how journalists evoke emotions when reporting on environmental issues. The study differentiated between explicitly mentioning positive or negative emotions in a news story and using rhetorical devices to evoke emotions. In addition, the study shows that in some cases, emotional and scientific elements are combined in news stories.

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Conflict of Interests

The authors declare no conflict of interests.

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