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## International media coverage promotes donations to a climate disaster

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### Abstract

The Australian bushfires in 2019-2020 triggered massive amounts of charitable giving from the community. We applied agenda-setting theory to examine if and how disaster news coverage influenced public donations in response to the crisis. A survey of 949 Australians found that people perceived news coverage of the event to be a strong influence on the amount they donated to bushfire appeals, over and above past giving levels. Furthermore, media coverage was more influential in participants' charity selection than both peer influence and direct communication from the charities. Next, we conducted a textual analysis of international news coverage of the event ( $N=30,239$  unique articles). Compared to a control corpus of text, news coverage of the disaster used words related to 'money' and 'support' at disproportionately high frequencies. Together, the studies suggest that the media play an agenda-setting role in determining how and to what extent people give to disaster appeals.

**Keywords:** climate change, charitable giving, agenda-setting, donations, disasters

### Introduction

In late 2019 and early 2020, a combination of heatwave temperatures and ongoing drought led to bushfires<sup>1</sup> that burned for months over 12 million hectares of land in Australia, killing 34 people and over 1 billion animals (Werner and Lyons, 2020). The fires were of such unprecedented scale and severity that they captured global media attention and led to Australia being described as "ground zero" for climate change (Cox, 2020). The event also led to a generous outpouring of support from the community: for example, the Australian Red Cross received \$242 million in donations (Australian Red Cross, 2021). The bushfire crisis therefore provides an opportunity to examine if news coverage can influence public donation decisions to nonprofits responding to disasters.

Charitable giving is the voluntary donation of money to benefit non-kin others (Bekkers and Wiepking, 2011a). Disasters have been shown to create a distinct psychological context for giving (Zagefka and James, 2015), and donation responses to disasters are particularly influenced by media coverage of the event (Simon, 1997). The current research presents two studies (a survey of 949 community members and a textual analysis of 30,239 news articles about the Australian bushfire crisis) that demonstrate the relative influence that news coverage exerts over individual giving

decisions in response to a climate disaster. Using agenda-setting theory, our data demonstrate the media's agenda-setting function by showing that people believe that news coverage of the disaster influences both whether they give and which charities they donate through (Study 1). Further, Study 2 suggests that this agenda-setting is achieved by highlighting particular attributes relevant to the event: prioritizing stories about money and support and therefore indicating people should respond by donating.

### **Charitable Giving in Response to Disasters**

Giving can be motivated by many factors, including: awareness of need (i.e., knowing that help is needed), personal experience (i.e., being impacted by the problem or knowing people that were), altruism (i.e., wishing to alleviate the suffering of others), social norms (i.e., what others do or approve of), and donor demographics (e.g., Bekkers and Wiepking, 2011a, Bekkers and Wiepking, 2011b, Chapman et al., 2020, Konrath and Handy, 2018). The particular motives people have for donating, however, can also be influenced by the giving context (Chapman, 2019), which can include the type of beneficiary, the cause in question, and whether the need is acute (i.e., a disaster) or chronic. This paper focuses on people's giving responses and motives for giving in response to a climate disaster: the Australian bushfire crisis.

Disaster giving is argued to be a distinct subset of charitable giving, with some unique psychological considerations (Zagefka and James, 2015). Hanna Zagefka and her colleagues have been particularly attentive to the disaster giving context. For example, they have found that people give more to disaster victims from their own country, when they are familiar with or physically proximate to the disaster location, or when the disaster has natural (vs human) causes (James and Zagefka, 2017, Zagefka, 2018, Zagefka et al., 2013, Zagefka et al., 2011, Zagefka et al., 2012). In their review article on the topic, Zagefka and James (2015) highlight the importance of factors like perceived need, victim blame, donations by others, and degree of media exposure in affecting giving in response to disasters. In this paper, we focus in particular on the role of media coverage.

### **The Role of Media Coverage in Promoting Donations to Disasters**

One factor that seems to influence the amount of money that will be raised to respond to a disaster is the extent of media coverage the disaster receives (Simon, 1997). Researchers have typically taken one of two approaches for examining the impact of news coverage on donation rates. The dominant approach has been to examine data at the macro-level: measuring the amount of news coverage (e.g., seconds of TV coverage, number of articles) and cross-referencing that with aggregate giving data. This research has shown broadly that the extent of news coverage of a disaster is positively correlated with the amount of money raised to respond to the disaster (e.g., Lobb et al., 2012, Waters, 2013, Waters and Tindall, 2011). For example, Simon (1997) investigated fundraising success for 22 earthquake disaster appeals around the world and found a correlation between the number of seconds of news coverage that the disaster received and the amount of public donations that were distributed by the American Red Cross to respond to the disaster. Brown and Minty (2008) showed that both the number of minutes of nightly news coverage and the number of words dedicated to print news of the 2004 Asian Tsunami were positively correlated with the value of donations received by five major relief organizations. Einolf and colleagues (2013) also found a positive correlation between the extent of media coverage of 19 national fundraising campaigns in the United States and the amount of money they raised. Together, these studies demonstrate that

fundraising outcomes will be positively associated with the extent of media coverage a disaster receives (as long as people are paying attention to the news coverage; see Bennett and Kottasz, 2000, Martin, 2013).

A less common approach – and the one adopted in Study 1 of this manuscript – is to ask individuals to reflect on the role of media coverage in their own giving practices. One limitation of the individual-level approach is that it examines subjective (rather than objective) reports of media exposure and giving. However, there are also important upsides to this approach: the individual-level approach can quantify the (perceived) relationship between media coverage and giving, while controlling for other individual-level factors that might impact giving (e.g., personal relevance of the disaster, the influence of friends and family, and people’s prior history of giving). The benefit of this is that one can reduce the statistical noise associated with archival data and drill down into the specific contribution of media coverage.

We are aware of only a few studies that have considered the relationships between media coverage and giving at the individual level. First, Bennett and Kottasz (2000) interviewed 200 Londoners about the factors most likely to encourage them to make a generous donation to a disaster relief appeal. Those authors found that a significant number of people perceived different elements of the news coverage to be influential in their donation decisions. However, that study reported only descriptive data, talked about disaster giving in general (vs to a specific event), and did not analyze the relative influence of the media against other factors. Next, Oosterhof and colleagues (2009) surveyed 290 visitors to the website of a specific charity in the Netherlands: *Tearfund*. They found no correlation ( $r = -.02, p > .05$ ) between the amount of time participants reported taking notice of the news and their intentions to donate to disaster campaigns in the coming year. These first two studies both employed relatively small samples and hypothetical measures of giving. Though it did not look at giving specifically, a further study found a significant positive association between participants saying they had followed news of Canada’s 2016 Fort McMurray wildfire on social media and indicating that they had “been involved in any effort to help residents or first responders” (Boulianne et al., 2018).

The final study was an improvement both in terms of power and because of its focus on reports of actual (vs hypothetical) giving. Martin (2013) re-analyzed secondary data from three nationally representative telephone surveys of the U.S. population (combined  $N = 3,510$ ). These surveys examined responses to three specific disasters: the 2004 Indian Ocean tsunami, the 2010 Haiti earthquake, and the 2011 tsunami and earthquake in Japan. Across those three studies, Martin found that people who reported paying closer attention to news coverage of the particular disaster were also more likely to report having donated to that disaster’s response appeal. While several demographic factors were controlled for, those three studies did not compare the influence of news attention to other potential reasons for giving and did not consider alternative explanations, such as the scale or the personal impact of the disaster (e.g., Wei and Marinova, 2016). Finally, the donation measure used in those studies was rather crude: participants were asked simply if they or someone in their household had donated at all to the disaster appeal. Thus, these studies conflated individual attention to news with collective household giving and did not examine degrees of generosity (i.e., the value of donations).

### **Agenda-Setting Theory: How Can the Media Influence Behavior?**

Agenda-setting theory is the key theoretical framework that can help to explain the relationship between media coverage and disaster giving. According to agenda-setting theory (McCombs and Shaw, 1972), the news media set the agenda for what the public think about: when people are asked about the key issues facing society today they almost exclusively cite issues that have received significant air-time in the news media. In fact, the correlation between news coverage and public reports of issue importance has been found to be as high as .97 (McCombs and Shaw, 1972). It has been proposed that the way that the news achieves its influence on the public's agenda is simply by making some ideas or information chronically accessible (Iyengar, 1990). In other words, when ideas or issues have been frequently discussed in the news it is simply easier for people to bring these to mind.

Much of the research on agenda-setting theory has been conducted in the context of politics (Iyengar, 1990, Ghorpade, 1986, McCombs et al., 1997, e.g., Feezell, 2018), but evidence also shows that news can set the public agenda in other contexts too, such as foreign relations (Wanta et al., 2004) and attitudes toward nonprofits (Jones et al., 2019). Agenda-setting research has usually focused on the agenda-setting function of the traditional news media, but news distributed through social media channels like Facebook can also influence the public agenda (Feezell, 2018).

As a consequence of its agenda-setting function, news media can strongly influence overall public opinion (e.g., McCombs and Shaw, 1972, Wanta et al., 2004). For example, in one study the more negative news coverage a country received in the United States, the more likely Americans were to think negatively about that nation (Wanta et al., 2004). Theoretically, the agenda-setting function of the news will have consequences for a range of observable behaviors (as well as opinions), although less research has been conducted in this area (McCombs, 2005). Most relevant to the current research was a recent study of the impact of news coverage of charity scandals on public attitudes toward nonprofits and intentions to donate (Jones et al., 2019). Jones and colleagues surveyed 655 Americans approximately 3 years after the Tampa Bay Times published a damning article titled "America's Worst Charities". Almost half the sample remembered the report; of those, three-quarters reported that the article made them more skeptical about charities in general and 70% said it made them more cautious about donating to charity. These results suggest that news coverage can influence charitable giving, in part by setting the agenda for how the public think about nonprofits.

Although the original formulation of agenda-setting theory focused on the role of the news in telling people *which issues* to think about (McCombs and Shaw, 1972), the theory has since been extended to focus also on the role of the news in telling people *how to think about those issues*. This latter process is referred to as second-level or attribute agenda-setting (McCombs, 2005, Wanta et al., 2004, McCombs et al., 1997). According to the theory, the relative attention that the media give to attributes of an issue can set the agenda for the way that the public process and think about the wider issue itself. In many ways, attribute agenda-setting is similar to the process of framing, whereby the way an issue is discussed serves to stress specific values, perspectives, or facts, while potentially downplaying others (Scheufele, 2000). Over time, the issues and issue attributes that are given greater emphasis in the news media will come to be more prominent in the public mind.

## **The Current Research**

The primary goal of this research is to understand the relative influence that news coverage exerts over individual giving decisions in response to a climate disaster. We have discussed how news can set the public agenda in two ways: by telling people both which issues to think about and also *how* to think about those issues. Using a mixed-methods approach, we seek to understand both whether news coverage shapes public giving behavior (Study 1) and which attributes the news coverage highlights about the disaster in order to understand *how* media coverage may affect giving behavior (Study 2).

Specifically, we surveyed 949 Australians about the factors that they believe have motivated their responses to the bushfire disaster and associated fundraising appeals. We followed this up with a textual analysis of 30,239 international news articles about the bushfire crisis. The textual analysis provides a high-level snapshot of the way the bushfires were discussed in the media and serves to provide a more “macro” understanding of how news coverage guides the public towards acts of generosity.

The current research makes five methodological and theoretical advances to our understanding of the relationship between news coverage and disaster giving. First, by using survey data, we can compare the relative perceived influence of news coverage to other factors that may influence giving (i.e., demographics, past giving, scale of the disaster, personal impact of the disaster, and the influence of friends and family). Second, we examine for the first time how news coverage may influence which charities people choose to give through. Third, by asking people to self-report the factors affecting their giving we tap into “folk theories” about the role of media coverage in giving. Fourth, as far as we are aware no study has previously examined the full text of media reports nor examined an international sample of this size to understand the types of words most used in news coverage of a particular disaster. Though preliminary, our textual analysis is therefore poised to advance our understanding of Agenda-Setting Theory by examining the themes advanced by global media in relation to disasters. Fifth, we apply extended Agenda-Setting Theory to the contexts of disasters and charitable giving for the first time. While most research has focused on the way agenda-setting influences public *thinking*, we highlight here the impact of agenda-setting on generosity *behavior*.

### **Study 1**

In Study 1, we surveyed Australian donors about their giving to bushfire appeals and examined their self-reported drivers of generosity. The purpose of this study was to examine the influence of the media on giving, relative to other factors that may affect generosity (e.g., demographics, past giving, scale of the disaster, and personal impact). We consider the self-reported role of media coverage in influencing both how much an individual donated to bushfire appeals and which charity they elected to donate through.

The goal of our research approach in Study 1 is to examine people’s “folk theories” of why they give rather than merely correlating their news consumption with their giving responses. The folk theory approach was also adopted by Bennett and Kottasz (2000) in the study on disaster giving outlined above. This approach also has precedent in the general nonprofit literature. For example, Konrath and Handy’s (2018) ‘Motives to Donate’ scale asks people to reflect on a range of potential motives for giving and the degree to which each one applies to them. The ‘Volunteer Functions

Inventory' takes the same approach to understand motives for volunteering (Clary et al., 1998). Our method therefore asks people to self-reflect on the factors that influenced their giving to bushfire appeals, and then compares the relative influence of the media to other motivating factors.

## **Method**

We analyzed secondary data that were collected by More Strategic, a fundraising consultancy, and the Fundraising Institute of Australia (see report: More Strategic, 2020). Data were shared with the researchers free of charge for scholarly purposes, and we received no payment for our work with these data.

### **Participants and Procedure**

A sample of 949 Australians completed an online survey in January 2020. Participants were sourced through the online panel Qualtrics and were paid for completing a 15-minute survey. Efforts were made to achieve a sample that was broadly representative of the 18+ Australian population in terms of gender, age, and state of residence. The final sample consisted of 498 women and 451 men. Participants ranged in age from 18 to over 75 years (14% aged 18-24; 17% aged 25-34; 17% aged 35-44; 14% aged 45-54; 16% aged 55-64; 17% aged 65-74; and 5% aged 75 and over). Of the sample, 57% reported having donated to a bushfire appeal ( $M_{donation} = \$88.69$ ,  $SD = \$108.57$ ,  $range = \$5-$  \$500).

### **Measures**

Below we outline the focal measures that were analyzed for the current study. The full questionnaire is available on the Open Science Framework (OSF; <https://osf.io/c8qra/>).

**Demographics.** Participants were asked their *age* ("Which age band are you in?") and *gender*, with response categories outlined above. *Education* was measured on an ordinal scale ("What is the highest level of education you have attained?"; 1 = Didn't finish High School, 2 = High school certificate or equivalent, 3 = Trade certificate or vocational training, 4 = University of college degree, 5 = Postgraduate degree/diploma). Participants also indicated the kind of area they lived in, from urban to *rural* ("Would you describe the area you live as:" 1 = In the city, 2 = In the suburbs, 3 = In a [large or small] country town, 4 = In a rural area).

**Past donation value.** Participants were asked "How much would you estimate you donated to charity in the past 12 months, excluding the recent bushfire appeals?" and could indicate dollar values. As is typical with charitable giving, responses ranged from \$0 to \$5,000 with a strong positive skew. To normalize the data, we applied the common approach and log transformed donation value responses for the analyses that follow.

**Influences on giving.** Participants indicated what influenced their decision to give ("Which of these would you say most inspired you to donate to the bushfire appeal?). Options were *scale* ("The sheer scale of the fires"), *personal impact* (represented by selecting "I or people I know were impacted", "I am concerned the fires may impact me and my family one day", or selecting both statements), *climate change beliefs* ("The belief that climate change is impacting our environments"), *news* ("The dramatic footage in the news") and *stories* ("The stories from people impacted"). Participants could select all influences that applied and responses to each were dummy coded (1 = selected, 0 = not selected).

**Bushfire donation value.** The focal dependent measure was how much the participants donated to the bushfire appeals ("In total, how much have you donated to the bushfire appeal in the last 4

months?"). Participants indicated a dollar value. Participants who did not donate to a bushfire appeal were coded as 0. Again, responses were log transformed to reduce skew.

**Influence on charity selection.** Finally, participants indicated "How did you decide who to give to?" Response options included *mainstream media*<sup>2</sup> ("I decided based on what I learnt through public broadcaster ABC [online, radio & TV]"), "I decided based on what I learnt through other TV networks [Channel 7, 9 & 10 etc]", or "I decided based on what I read in the news [newspapers or online publications]"; *direct from charity* ("I heard directly from the charity"); *local businesses* ("I decided based on the charity supported by my local supermarket or bank etc"); *friends and family* ("I decided based on the charities, causes and people that my friends and family were supporting"); and *social media* ("I decided based on those I saw in social media"). Participants could select all options that applied.

### Results & Discussion

Means, standard deviations, and bivariate correlations are reported in Table 1. Hierarchical regression was used to investigate the key influences on the value of donations made to bushfire appeals. Demographic controls—gender, age, education, and urban-rural location were entered at Step 1, past giving value was entered at Step 2, and the key influences on donation value were entered at Step 3.

Demographics significantly explained 8% of the variance in donations to bushfire appeals,  $F(4,944) = 19.55, p < .001$ . Gender was not associated with donation value ( $\beta = .03, p = .353$ ). However, older participants ( $\beta = -.10, p = .002$ ) and those living in more rural settings ( $\beta = -.12, p < .001$ ) reported giving less to bushfire appeals, while more educated participants reported giving more ( $\beta = .19, p < .001$ ).

The addition of past giving value significantly improved the model and explained an additional 20% of the variance in bushfire donation value,  $F_{ch.} (1,943) = 269.41, p < .001$ . Participants who reported giving more to charity in the previous 12 months also reported giving more to bushfire appeals ( $\beta = .47, p < .001$ ). This suggests that, to some extent, bushfire donors were drawn from the community of existing donors.

When we included self-reported influences on participants' decision to give at Step 3, these influences explained an additional 55% of variance in bushfire giving value,  $F_{ch.} (5,938) = 611.32, p < .001$ . All of the influences were significant unique predictors of giving value: the scale of the disaster ( $\beta = .65, p < .001$ ), actual or anticipated personal impact of the fires ( $\beta = .52, p < .001$ ), belief that climate change is impacting the environment ( $\beta = .39, p < .001$ ), dramatic footage in the news ( $\beta = .43, p < .001$ ), and stories from those affected ( $\beta = .56, p < .001$ ) were all positively associated with the self-reported value of donations made to bushfire appeals. Of focal interest here is the fact that participants reported that news footage significantly—and uniquely—explained the value of their disaster giving. In addition, stories of victims (likely reported in the news) and the scale of the disaster (again documented in the news coverage) also both uniquely predicted donation value.<sup>3</sup> The final model (summarized in Table 2) explained 83% of the variance in bushfire donations,  $F(10, 938) = 462.30, p < .001$ .

As a final consideration, we also examined participants' self-reported influences on which charities to donate through. Responses show that 24.3% of participants identified mainstream media as an influence. This was the strongest influence considered in the study, even more influential than friends and family (18.1%) and appeals directly received from the charity (10.7%). Charity selection was also sometimes influenced by local businesses (9.0%) and social media (9.2%).

If social media is combined with mainstream media, 30.1% of participants indicated that media influenced their choice of charity to donate through.

In sum, Study 1 showed that news coverage of the disaster is perceived to influence donation responses in two ways. First, news footage and dissemination of stories positively influenced the value of money participants reported donating to bushfire appeals: people who said they were influenced by the news coverage also said they donated more to bushfire appeals. Second, the mainstream media were mentioned by a quarter of participants as being the key influence on who to donate through. According to respondents, the media coverage was more influential in their charity selection than both peer influence and communications directly from the charities.



**Table 1.** Means, standard deviations, and bivariate correlations between all variables in Study 1.

	<i>M</i>	<i>SD</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
1 Female (0/1)	0.52	0.50										
2 Age (1-7)	3.71	1.83	-.08**									
3 Education (1-5)	3.05	1.33	-.05	-.05								
4 Rural (1-4)	2.08	0.72	.05	.26***	-.14***							
5 Past donation value	211.62	409.60	-.06	.01	-.12***	-.12***						
6 Scale of disaster (0/1)	0.19	0.39	.02	.00	.03	-.04	.18***					
7 Personal impact (0/1)	0.10	0.30	.00	-.08*	.10**	.02	.11***	-.16***				
8 Belief in climate change (0/1)	0.05	0.23	.06	-.13***	.10**	-.09**	.12***	-.12***	-.08*			
9 News footage (0/1)	0.08	0.26	.02	-.02	-.02	-.04	.08*	-.14***	-.10**	-.07*		
10 Stories of people affected (0/1)	0.13	0.34	-.02	-.08*	.07*	-.13***	.14***	-.19***	-.13	-.09**	-.11***	
11 Bushfire donation value	50.37	92.85	.02	-.15***	.21***	-.17***	.49***	.38***	.29***	.21***	.21***	.31***

*N* = 949 (Listwise). *Note.* *M*(*SD*) for donation values are based on raw values, while correlations apply to log-transformed donation values.

\**p* < .05, \*\**p* < .001, \*\*\**p* < .001

**Table 2.** Hierarchical regressions considering factors influencing the amount donated to bushfire appeals (Study 1).

	Bushfire Donation Value ( $\beta$ )		
	Step 1	Step 2	Step 3
<b>Demographics</b>			
Female	-.03	.05	.00
Age	-.10**	-.12***	.00
Education	.19***	.09**	.04*
Rural	-.12***	-.07*	-.03*
<b>Past Giving</b>			
Past donation value		.47***	.15***
<b>Key Influences of Giving</b>			
Scale of disaster			.65***
Personal impact			.52***
Belief in climate change			.39***
News footage			.43***
Stories of people affected			.56***
<i>R<sup>2</sup> ch.</i>		.20***	.55***
<i>Model R<sup>2</sup></i>	.08***	.28***	.83***

Note.  $N = 949$

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

## Study 2

Study 1 shows that media coverage is perceived to influence both the value of the donations people make to disaster appeals and their choice of charities. These data were not equipped to examine what it was about the media reporting that triggered these giving responses. However, it seems likely that one of the active ingredients was the communication of emergency: detailing the destruction to habitats and the loss of life may have facilitated an empathic, helping response toward animals and humans. This explanation tallies with both common sense and with previous research documenting the relationship between perceived need and donation behavior (van Leeuwen and Wiepking, 2013, Zagefka et al., 2012, Bekkers and Wiepking, 2011a).

It is also possible, however, that a separate mechanism was at play: that the media were “nudging” the public to donate by directly communicating the importance of giving, support, and aid (e.g., running donation appeals). Study 2 was designed to investigate this question, opening up the “black box” of how the media spoke about the Australian bushfire crisis, and quantifying the prevalence of the theme of ‘support’ relative to themes like ‘loss’ and ‘emergency’. In Study 2, we therefore examine the actual content of the international news coverage of the bushfire disaster.

Using textual analysis, we apply the extended agenda-setting theory to look at the attributes (or themes) being featured in media coverage of the disaster. To do so, we analyze the full texts of a large corpus of international news articles about the bushfires that were published online during a 3-month window. The analysis was largely descriptive, but one question we asked in this analysis was

the extent to which the media coverage focused directly on themes of support (e.g., aid, donations, charity) which were potentially implicated in triggering disaster-related charitable giving.

## **Method**

### **Data Search and Extraction**

We searched the Factiva global news database (Dow Jones, 2021) for all media articles published between 1st November 2019 and 31st January 2020 that related to the Australian bushfires. For Australian media, we used the search term 'bushfire\*'. For international media, we used search terms 'bushfire\* OR wildfire\*'. Our searches returned a total of 30,239 unique articles: 25,403 from Australia and 4,836 from the rest of the world. The final corpus was then downloaded and converted into individual files in preparation for textual analysis.

### **Textual Analysis**

We used Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015) software to analyze the full article text of all 30,239 articles. LIWC software extracts information about the linguistic features of texts by assessing the text of a given corpus against multiple pre-defined word categories. The software counts the presence and frequency of words within the pre-defined word categories to produce an output score for each text analyzed. The output score represents the percentage of LIWC words found in each category. Pre-defined word categories have been developed through a staged process by the LIWC development team (see Pennebaker et al., 2015) and have been validated through prior research (see reviews by Pennebaker and Chung, 2014, Tausczik and Pennebaker, 2009). In addition, LIWC includes the 2015 Dictionary Corpus, which is used to calculate dictionary means for each LIWC word category. The Dictionary Corpus is composed of 100,000 text files, gathered from multiple communication genres, and allows for comparison between the frequency of words occurring in our dataset and their frequency across general written language. Due to these advantages, LIWC software has been widely adopted across the social sciences (Chung and Pennebaker, 2018).

In addition to the LIWC pre-defined word categories, researchers can create bespoke 'dictionaries' based on their own relevant coding schemes (e.g., Ji and Raney, 2020, Graham and Haidt, 2012). For this study, we sought to identify the occurrence of words related to several word categories that we believed could be focal in media coverage of the disaster: climate change, human loss, support, heroes, animals, loss, and emergency. We undertook a three-stage process to create dictionaries associated with each of these topics. First, the fourth author generated a word list compiled from words associated with each category found in text within the corpus (see Nassar, 2020 for a similar approach). Second, following Pennebaker et al. (2015), all authors then rated whether each word should be included or excluded from the dictionary, or whether additional words should be added. Third, all authors agreed on each word to retain and finalized the 7 bespoke dictionaries. In addition, we included three related pre-defined LIWC dictionaries: 'death', 'money', and 'risk'.

Table 3 summarizes the dictionaries used in the current analysis; full word lists for each bespoke dictionary are also available on the OSF. For simplicity, in the analyses that follow we refer to these bespoke dictionaries and LIWC pre-defined word categories as 'themes'.

**Table 3.** Summary of LIWC and bespoke dictionaries applied for the textual analysis (Study 2)

<b>Type</b>	<b>Dictionary</b>	<b>Number of words included</b>	<b>Example words included in dictionary</b>	<b>LIWC 2015 Dictionary Mean</b>
Bespoke	Animals	17	Livestock, sheep, species, koala*	
	Climate change	26	Climate change, global warming, emission*	
	Emergency	10	Crisis, emergenc*, disaster, catastroph*	
	Heroes	13	Rescue*, hero*, responders, firefight*	
	Human loss	10	Victim*, survivor*, death toll, griev*	
	Loss	8	Loss, death, died, injur*	
	Support	15	Donat*, help*, support*, aid, fund*	
LIWC	Death	74	Bury, coffin, kill	0.16
	Money	226	Audit, cash, owe	0.68
	Risk	103	Risk, danger, doubt	0.47

*Note.* The LIWC Dictionary Mean refers to the prevalence of words in that category across the dictionary text corpus. For example, a mean of 0.47 means that 0.47% of words across the dictionary text corpus were in the 'Risk' category.

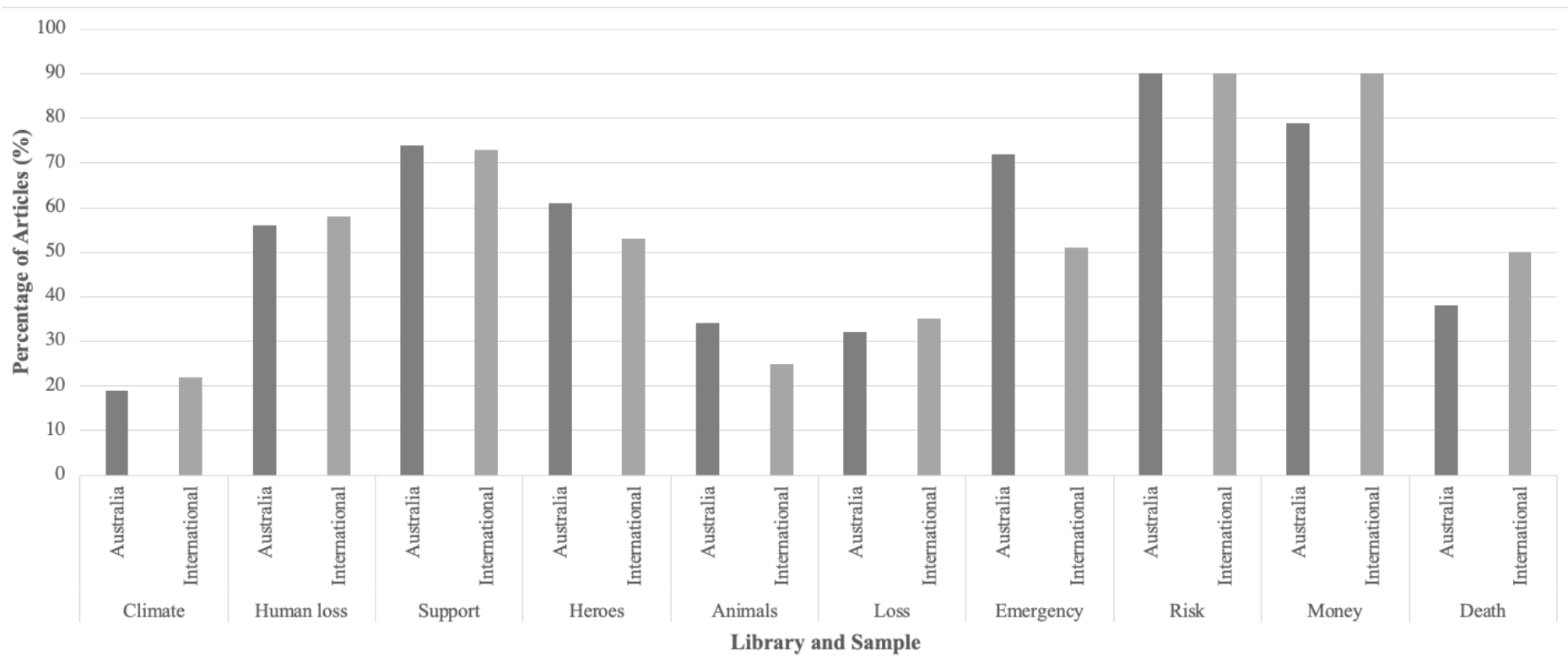


Figure 1. Frequency with which themes were evoked in Australian and International media coverage of the Australian bushfires. N = 30,239 media articles. (Study 2)

## Results & Discussion

Figure 1 presents the frequency of words associated with each of the themes in both the Australian and the international news coverage. As can be seen, in many ways coverage was similar across geographic contexts. However, we note that Australian coverage was more likely to evoke heroes, highlight the emergency nature of the situation, and discuss the impact on animals. On the other hand, international coverage was more likely to use words associated with money and death.

As the sample contained many more articles from the Australian media, the overall frequencies in the corpus lean more toward the pattern observed in Australian coverage (see Table 4). We considered the absolute frequency of word use for both bespoke and LIWC dictionaries as well as the relative frequency of words used (compared to general written language) for the LIWC dictionaries.

**Table 4.** Frequency of themes in overall sample and comparison with LIWC means (Study 2)

Dictionary	Frequency	Comparison to LIWC mean
Animals	32%	
Climate	19%	
Emergency	69%	
Heroes	60%	
Human loss	56%	
Loss	32%	
Support	74%	
Death	40%	115%
Money	80%	186%
Risk	90%	218%

*Note.* Comparisons with LIWC means compare the frequency of topic use to a sample of general written language.

**Bespoke dictionaries.** Of the bespoke dictionaries, the most common themes evoked in the media coverage were ‘support’ (74%) and ‘emergency’ (69%). The ‘support’ dictionary included words related to donations and helping, such as *donat\**, *donor*, *help\**, *fund\**, and *aid*. These two most common themes were followed by words associated with other themes commonly evoked in relation to crises: ‘heroes’ (60%) and ‘human loss’ (56%). ‘Animals’ (32%) and general ‘loss’ (32%) were less common themes. Finally, despite a widespread sentiment that the bushfires were linked to climate change, only 19% of articles evoked the theme of ‘climate change’ in their coverage of the disaster. Notably, articles were almost four times more likely to use words related to the ‘support’ theme than words related to ‘climate change’.

**LIWC word categories.** The pre-defined LIWC dictionaries typically contained a larger number of words ( $M_{LIWC} = 134$  vs  $M_{bespoke} = 14$ ), and it is therefore not surprising that the frequencies of LIWC themes were higher. An advantage of the LIWC dictionaries is that we had the ability to compare theme frequency in our news media sample against the occurrence of these themes in general written language. When doing so, we found that words associated with ‘risk’ were used 218% as frequently in our sample of bushfire media compared to the LIWC dictionary corpus. Similarly, words associated with ‘money’ and ‘death’ were used 186% and 115% as frequently, respectively, as in the

LIWC dictionary corpus. The high prevalence of words associated with 'money' is echoed by the finding that words relating to 'support' (including words like donation and fund) were also used at high rates in the articles.

Many of the findings of Study 2 are intuitive. Given the news articles were communicating information related to a disaster event, it is not surprising that the themes highlighted most commonly related to 'emergency', 'risk', 'human loss', 'heroes', and 'death'. More interesting is the relative emphasis on 'support' and 'money' in relation to the disaster. Words relating to 'money' were used at almost double the typical rate found in the LIWC 2015 comparison dictionary, while words associated with 'support' (including donations, appeal, and fund) were the most frequently used of all the bespoke themes developed for the study.

These results are descriptive and therefore remain indicative rather than predictive. We have shown which kinds of words were more commonly used in media coverage of the bushfire disaster. However, we do not know if and how these words influenced public perceptions of the disaster. Results are consistent, though, with the notion that the media coverage of the Australian bushfires may have served an attribute agenda-setting function by drawing public attention to attributes of the disaster and the disaster response that related to active helping and donations.

### **General Discussion**

Using survey data from 949 Australians, we show that people report that news coverage of a climate disaster strongly influenced both the value of donations to bushfire appeals and their selection of which nonprofits to donate through. To follow up, a textual analysis of 30,239 news articles revealed that the media coverage frequently used words evoking the concepts of 'money' and 'support' in relation to the crisis. Words in our bespoke 'support' dictionary occurred in 74% of news articles, while words in the LIWC 'money' dictionary were used at almost twice the rate they appear in general written language. These findings suggest that news coverage may have helped to set the agenda for public responses to this climate change disaster by telling people what to think about: in this case, how they could help.

A primary contribution of this research is to apply extended Agenda-Setting Theory (McCombs, 2005) to the contexts of disasters and charitable giving. While most research has focused on the way agenda-setting influences public *thinking*, we highlight here the impact of agenda-setting on generosity *behavior*. We expand the boundaries of knowledge on agenda-setting by demonstrating several new aspects. First, we analyze subjective evaluations of whether news coverage influences behavior by asking people directly whether news coverage shaped their generosity responses. This approach complements what has been done in the past, which has either correlated overall extent of news coverage with overall funds raised (e.g., Simon, 1997) or looked at the individual level but without considering alternative influences (e.g., Martin, 2013). Second, we also examine – for the first time – the impact of news coverage on both the value of an individual's donations and the selection of which charity to donate through. Third, we provide a detailed description of the content of a very large corpus of news coverage of a single event to provide an elaborated view of the issue attributes that are highlighted by the media.

Our data do not allow us to test psychological mechanisms directly, but a discussion of potential explanations for the observed association could be fruitful for future research. One way that the news coverage can influence charitable giving is by drawing attention to need. Donors are more likely to give when they have an awareness of need and greater perceived need is associated

with higher donation values (van Leeuwen and Wiepking, 2013, Zagefka et al., 2012, Bekkers and Wiepking, 2011a). The simplest explanation for the agenda-setting influence of the media is therefore that news coverage makes need apparent, and the awareness of need is the proximal predictor of giving. Future research may wish to test this awareness mechanism for first-level (issue) agenda-setting using experimental methods.

A second potential mechanism, and one which speaks directly to the attribute-level agenda-setting function of the news media, is through social norms. Norms refer to perceptions of what important others approve of or do (Cialdini et al., 1990). Social norms have been shown to motivate charitable giving: people generally give more when they perceive others in their group also give or perceive that others endorse giving (e.g., Croson and Shang, 2008, Smith and McSweeney, 2007, Nook et al., 2016). In the case of the bushfire appeals, the news coverage frequently used words related to money and support. This focus perhaps served to promote giving and supportive action as the normative response to the crisis. In other words, we suggest that the news coverage promoted norms of helping, and these norms were the proximal predictors of giving. Future research may also wish to test the normative mechanism for second-level (attribute) agenda-setting using experimental methods.

### **Strengths and Limitations**

Both studies benefit from large samples: in Study 1 we analyzed data from a survey of almost one thousand Australians about their giving and in Study 2 we analyzed the full-texts of a large corpus of English-language global media coverage of the bushfire disaster. These strengths allow us to be relatively confident in our findings.

On the other hand, both studies have limitations. Study 1 relied on self-reports of giving, which may be prone to social desirability biases (Lee and Sargeant, 2011). Our data therefore may include inflated numbers of donors and values of giving. Future research should therefore look for ways to capture actual giving behavior, where possible. Study 1 was also focused on “folk theories” about giving, or people’s self-reflection on the reasons they gave. While this approach has precedent (e.g., Bennett and Kottasz, 2000, Konrath and Handy, 2018), future individual-level research may wish to evaluate media consumption and giving responses separately and correlate them (following Oosterhof et al., 2009, Martin, 2013). The sheer scale of the corpus in Study 2 meant we needed to rely on textual analysis software. Manual analysis may have allowed for greater nuance and granularity; however, it would be impractical for a corpus of the scale we were analyzing. LIWC is ideal for understanding the types of words most frequently used in a very large dataset of news media, as we have done here. Nevertheless, future research would benefit from a deeper dive into the content of the articles of this or future disaster coverage corpora to better explore the disaster donation agendas present in the media coverage.

### **Practical Implications**

We analyzed the full texts of news articles about the Australian bushfire disaster and self-reported motives for Australians’ giving to bushfire appeals. In combination, results suggest that news coverage serves an agenda-setting function by teaching the public how to think about crisis events. In this particular case, the news highlighted support and money in relation to the disaster, possibly setting an expectation that donating was a normative response to the crisis. Perhaps for this reason Australians reported that the news coverage shaped their choices of whether to give and which



charities to donate through. For these reasons, nonprofits that are responding to disasters may wish to lobby news agencies to promote their work in media coverage. It is likely that being featured as direct responders in news coverage—especially when calls to action or opportunities to donate are incorporated into the news article—would result in significant increases in funds raised for disaster appeals.

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### **Data Availability Statement**

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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### **Notes**

<sup>1</sup> Some countries, particularly the United States, prefer the term ‘wildfires’; however, we have elected to adopt the terminology used within Australia.

<sup>2</sup> There are five major free-to-air television providers in Australia: ABC, SBS, Seven, Channel 9, and TEN. Each of these have a range of offshoot channels operating under their umbrella brand (e.g., Seven also has 7TWO, 7Mate, 7food, 7Flix). Two of these providers (ABC and SBS) are public broadcasters; the others are privately owned.

<sup>3</sup> Although stories of victims and the scale of the disaster were likely also communicated in news coverage, we cannot be certain that media coverage was the *only* way participants learned about victims and scale. For example, some stories of people impacted may have been received through word-of-mouth or discussions with friends or family who were affected. Likewise, the perceived scale of the disaster could also be influenced by word-of-mouth or social media reports. To be conservative, we have therefore retained each item as distinct in the analyses. For readers’ interest, however, when we combine these two items with the “dramatic footage in the news” item to create an overall measure of media influence, the overall effect size is much larger ( $\beta = .80, p < .001$ ).

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