Public perceptions of the response to the *Deepwater Horizon* oil spill: Personal experiences, information sources, and social context

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ABSTRACT

The 2010 British Petroleum (BP) *Deepwater Horizon* oil spill highlighted long-standing questions about energy exploration and its social and environmental implications. Sociologists studying environmental disasters have documented the social impacts resulting from these events and dissatisfaction with government and industry responses. In this paper, we use data from a survey conducted during the Gulf of Mexico oil spill to examine how Louisiana and Florida residents' social backgrounds, experiences with the spill, and trust in information sources predict their perceptions of governmental and BP response efforts. We find that direct personal impacts and compensation strongly influence the evaluations of responding organizations. Age and place of residence also predict such assessments. Finally, levels of confidence in television news and BP as sources of information appear to shape Gulf Coast residents' opinions about the work of organizations responding to the *Deepwater Horizon* disaster.

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1. Introduction

1.1. Why study public perceptions of the response to the Gulf oil spill?

Environmental disasters have become increasingly prominent in the 21st century. These events capture the public's attention and bring to the fore questions about the capacity of public and private sector organizations to manage coupled social and environmental concerns (Beamish, 2010; Cheong, 2011; Comfort, 2007; Picou et al., 2004; Schneider, 2008; Somers and Svara, 2009). In the United States, no recent disaster better illustrates this trend than the explosion at the *Deepwater Horizon* drilling rig and subsequent oil spill in the Gulf of Mexico in April of 2010 (Freudenburg and Gramling, 2011; Kerr et al., 2010; Safina, 2011).

The various organizations linked to the *Deepwater Horizon* disaster quickly became a focus of the media's coverage of this event. The well operator, British Petroleum (BP), and its partners Transocean and Halliburton, were criticized for having inadequate

safety measures and for cutting corners in their maintenance activities. The U.S. federal government was faulted for its insufficient oversight and for emphasizing production rather than safety in its management of offshore drilling. Finally, state and local governments across the Gulf Coast were criticized for their lack of coordination and inconsistent approach to regulating energy exploration activities. These organizational critiques set the context for mitigation and clean-up efforts in which each of these actors needed to play a key role.

News accounts and public polling during the spill suggested that residents of the affected Gulf Coast region were concerned about both the spill itself and subsequent response efforts (ABC/Washington Post, 2010; Cave, 2010; Lovett, 2010; NOSC, 2011; Pew, 2010). However, these polls left important sociological questions unanswered. To what extent did direct personal impacts from the spill or compensation from BP influence residents' evaluations of response efforts? How did media coverage and BP's public relations campaign shape these assessments? What non-spill factors such as place of residence, social background characteristics, or ideological orientations might influence residents' views about the work of different organizational actors charged with responding to the spill?

Emerging research illustrates the organizational challenges faced by BP and governmental agencies as they attempted to address the social and environmental ramifications of the largest oil

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spill in U.S. history (Beamish, 2010; Birkland and DeYoung, 2011; Hoffman and Jennings, 2011; NOSC, 2011). In addition, recent studies have documented the profound impacts of the spill on both the mental health of Gulf Coast residents and communities dependent on marine resources (Abramson et al., 2010; Gill et al., 2012; Lee and Blanchard, 2012; Grattan et al., 2011). In this study, we build on these findings to consider how a range of social factors affect public perceptions of the organized response to the *Deepwater Horizon* disaster.

1.2. Social science and environmental disasters

Sociologists studying modern development have shown that highly complex and tightly coupled technological systems are so difficult to comprehend that anticipating failures is nearly impossible (Beck, 1999; Perrow, 1984; Freudenburg and Gramling, 2011). This makes technological disasters "normal" occurrences (Perrow, 1984). Sophisticated deep-ocean oil exploration is emblematic of a highly complex coupled system. The explosion and ensuing spill at the *Deepwater Horizon* rig illustrates both the normality of accidents associated with such systems and the challenges faced by the organizations responding to unforeseen disasters.

As high-tech development becomes more and more difficult to comprehend, society relies on governmental agencies and scientific experts to oversee these activities and ensure that they do not threaten human or environmental health (Beck, 1999; Comfort, 2007; Giddens, 1998). The inability of public sector actors and specialized scientific organizations to meet these broader societal responsibilities has been termed "recreancy" (Freudenburg, 1993, 2000). The failure to meet public trust obligations engenders feelings of contempt toward the entities who allow technological disasters to occur (Freudenburg, 1993, 2000; Giddens, 1998; Platt, 1999; Schwarz and Thompson, 1990; Wynne, 1992). Beliefs about recreancy not only influence perspectives about particular events, but also broader societal assessments of organizations engaged in development and environmental management activities (Freudenburg, 1993, 1997, 2000; Marshall and Goldstein, 2006; Picou et al., 2004).

Sociologists investigating environmental disasters have illustrated that beliefs about recreancy shape how the general public views responding organizations (Freudenburg, 2000; Freudenburg and Gramling, 2011). Nonetheless, internal norms within the public and private sector actors charged with responding to these events, rather than a clear understanding of public expectations, appear to dictate disaster response and communication strategies (Quarentelli, 1991; Tierney et al., 2001; Waugh, 1988). These asymmetries between public expectations and standard organizational practices can further erode trust and lead to disapproval of both the responsible parties and disaster management entities.

Confidence in the organizations confronting environmental disasters is not the only factor affecting public perceptions of response efforts. Direct impacts as well as the social contexts in which disasters occur also play key roles. In locales as diverse as Alaska and Korea, social scientists have illustrated that demographic characteristics, dependence on natural resources, and access to information affect how communities experience these events (Beamish, 2001; Cheong, 2011; Gill et al., 2012; Lee and Blanchard, 2012; Marshall et al., 2005; Ritchie and Gill, 2008).

Drawing upon this research, sociologists identified vulnerability as a key intervening factor (Cutter et al., 2003). In particular, locales that are socially, culturally, and economically tied to natural resources are more vulnerable to environmental disasters (Gill et al., 2012; Picou and Gill, 1996; Ritchie and Gill, 2008). Because of their social importance, perceptions about the real or potential loss of access to these resources can have corrosive effects on both individual and community well-being (Gill et al., 2012; Picou and Gill, 1996). Providing a deeper understanding of how beliefs about recreancy are intertwined with confidence in responding entities and ways in which trust might to some degree allay vulnerable groups' concerns about the social impacts from environmental disasters are areas in which sociologists can make important contributions to disaster science.

Because of their broad social implications, oil spills have been formative areas for sociological research exploring the organizational aspects of environmental disasters. Ground breaking work by Molotch (1970) related to the 1969 Santa Barbara oil spill, and subsequent studies of the *Exxon Valdez* and other spills, illustrated that both the organizational environment and messaging by the parties charged with responding to disasters can shape how communities experience oil spills and their perceptions of management actors (Freudenburg and Gramling, 1994, 2011; Gramling, 1996; Picou et al., 1997). Our analysis of the response to the Gulf spill seeks to expand sociological understanding of the organizational aspects of environmental disasters, while also illustrating ways social science can inform the work of responding entities.

2. Research design and methods

2.1. Surveying Gulf Coast residents about spill response efforts

Between July 29 and September 30, 2010, we conducted a random-digit telephone survey of 2023 residents in coastal parishes and counties of Louisiana and Florida affected by the spill. This time period coincided with the capping of the damaged wellhead that ended most of the oil flow on July 14, 2010, and completion of a final relief well on September 19, 2010. Our survey included questions about the human, environmental, and organizational aspects of the *Deepwater Horizon* spill as well as the social context in the region.

In this study we focus on a set of issues that dominated much of the media coverage: the organized response efforts of BP and federal, state, and local governments. Residents were asked to assess how well these four sets of actors were responding to this disaster. Which were rated highest and which lowest is only the starting point of the interest here. Deeper questions concern who rated the different actors high or low, and why? The survey included a variety of spill impact, location, occupation, political, and social-position indicators that make it possible to pursue this "who" question in some detail.

Telephone interviews were completed with 1017 residents living in Terrebonne and Plaquemines Parishes in Louisiana and 1006 more in Franklin, Gulf, and Bay Counties in Florida (Fig. 1). Probability weights were calculated following methods described by Lee and Forthofer (2006) to adjust for known sources of sampling or response bias, such as county population, household size and demographic characteristics (i.e. sex, race, and age). Response rates were 38% in Louisiana and 41% in Florida (RR4 standard, AAPOR, 2006).

Social and economic conditions vary across the area affected by the *Deepwater Horizon* spill. We selected the five parishes and counties based on demographic diversity and the presence of a range of industries that might be affected by the spill, such as oil exploration and services, commercial and sport fishing, and tourism. The economy of coastal Louisiana continues to be dominated by oil and gas production with one out of three jobs in the region related to this industry (Scott, 2007; State of Louisiana, 2010). Fishing is also a key part of the economy and social life of coastal towns in Terrebonne and Plaquemines Parishes (LDWF, 2010; Mabus, 2010; NOAA, 2005b). Given the cyclical nature of
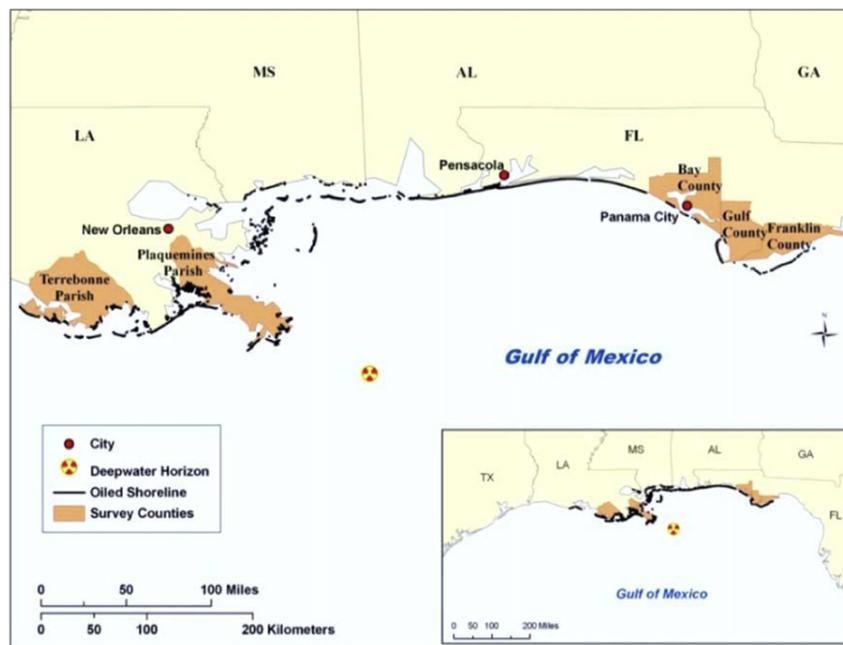
Fig. 1. Gulf Coast Survey Counties and Parishes in relation to *Deepwater Horizon* and to shoreline oiled by the spill.

fishing, some fishers and their crews also work part-time in oil-related jobs, further complicating impacts from this disaster.

Tourism is the principal economic activity in Gulf Coast Florida, but in areas like Franklin County the fishing industry thrives and accounts for one out of every four jobs (Gaither and Worthen, 2010; Mabus, 2010; NOAA, 2005a). In addition, Gulf Coast residents of Louisiana and Florida filed more *Deepwater Horizon*-related compensation claims than any other states, illustrating both the impact of the spill on these areas and their connection to response interventions (Alderstein, 2010; NOSC, 2011). Finally, these two states have historically taken very different approaches to managing oil and gas development (Freudenburg and Gramling, 2011). Louisiana has actively partnered with industry to develop offshore energy resources, while Florida has opposed such activities. Both the social characteristics of residents in the two states and these differences in management approaches make the targeted regions ideal for this study.

3. Survey results and analysis

3.1. Gauging public perceptions of the Gulf oil spill

While covering the human and environmental implications of the *Deepwater Horizon* disaster, news organizations and public policy researchers polled Americans to capture their opinions about the efficacy of response efforts. These national polls found that respondents viewed the spill–mitigation activities of both the federal government and BP negatively (ABC News/Washington Post, 2010; Pew, 2010). Results from our survey show similar trends in the assessment of federal and BP response activities, while also highlighting marked differences in Gulf Coast residents' evaluations of state and local government actors (Fig. 2).

Among our respondents, 77% rated the federal government's response to the spill as either fair or poor. Similarly, 70% viewed BP's efforts negatively. Opinions about state and local government involvement in spill response were less critical. 51% of Gulf Coast residents rated the job their state government was doing as good or

excellent, and 61% had positive views of local governments' responses.[3]

Given this divergence, whereby residents view federal and BP efforts negatively on the one hand and state and local governments positively on the other, more in-depth analysis is needed. Our survey provides a resource for exploring the relative importance of individual background and place-related characteristics in shaping opinions about the activities of responding organizations. In addition, since we queried residents about their self-assessed knowledge about the *Deepwater Horizon* disaster, how the spill affected them personally, whether they received compensation from BP, and how much they trust television news and BP as sources of information about the spill, we can test whether these variables also predict how Gulf Coast residents assess spill response activities.

Table 1 defines our independent variables and gives weighted response percentages for each item. Our dependent variables, defined in terms of "good" or "excellent" evaluations of the job BP or government actors are doing responding to the spill, appear in Table 2. Table 3 presents results from weighted binomial logistic regressions of the evaluations of different actors on individual background, place, spill experience, and information-related factors.

3.2. Social background characteristics and spill response assessments

We queried survey respondents about a range of background or social-position factors that have been widely related to beliefs about environmental problems and disasters (Cheong, 2011; Davis, 1996; Rivera and Miller, 2010; Hamilton et al., 2012; Safford and Hamilton, 2012; Schneider, 2011). Among background factors, gender, education, and employment in the tourism or fishing industries had no significant effects on perceptions of the work of different organizational actors engaged in spill response activities.

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[3] The differences between all reported percentages are statistically significant at the $p < .05$ level as determined by Chi–Square tests of independence.
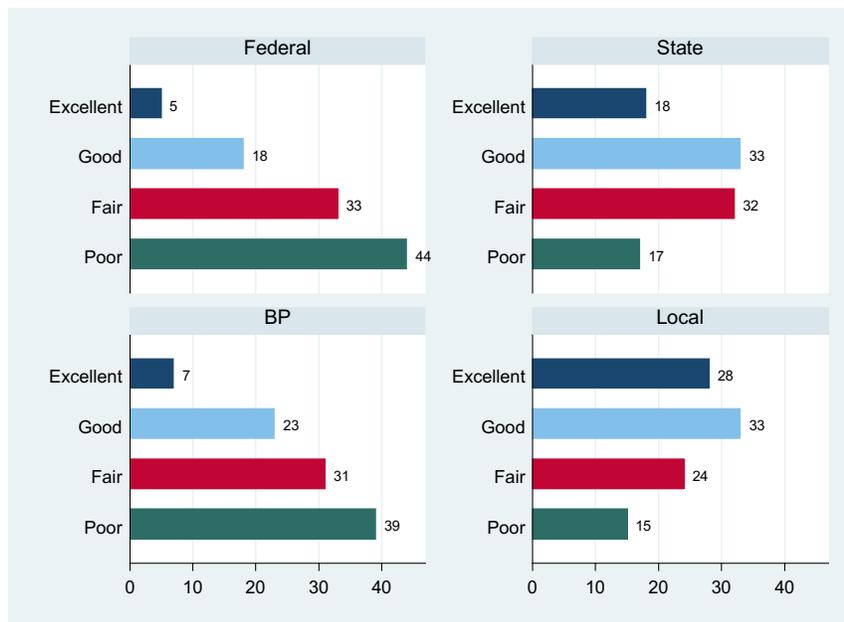
Fig. 2. "Would you say that the following institutions have been doing an excellent …good …fair … or poor job responding to the oil spill in the Gulf of Mexico?" (Weighted percent of respondents).

The adverse impacts of the spill on commercial fishing and tourism were extensively reported by the media and individuals employed in these industries emerged as vocal critics of response efforts (NOSC, 2011; Reuters, 2010). Recent studies illustrate that

residents of Gulf Coast communities dependent on marine resources, and individuals employed in fishing, were more likely to experience negative impacts from the *Deepwater Horizon* disaster (Gill et al., 2012; Grattan et al., 2011; Lee and Blanchard, 2012). Respondents who reported personal or family impacts from the spill more often disapproved of the work of governmental actors and BP. Controlling for such impacts, fisheries or tourism employment, in and of themselves, had no net effects.

Age positively affected evaluations of state, local, and BP responses. Older individuals more often thought that these actors were doing a good job addressing the spill. This finding is consistent with other social science research showing that older individuals are more prone to view oil drilling as safe (Michaud et al., 2008; Smith, 2002; Smith and Garcia, 1995). These beliefs likely resulted from these individuals' lifelong experiences with oil and gas development and previous efforts to mitigate problems like spills (Gramling and Freudenburg, 2006; Smith, 2002; Smith and Garcia, 1995). Familiarity with response and recovery activities can also lead to more receptivity to messaging about disasters and stronger affinities for responding organizations who previously assisted affected communities (Basolo et al., 2009; Gray-Graves et al., 2011; Shambaugh et al., 2010).

Table 1
Independent variables used in analyses, with probability-weighted summaries (N = 2023; summaries based on non-missing values).

Individual background and demographic variables:
Gender: 1 if female (52%); 0 if male (48%).
Age: age in years (range 18–96, mean = 46).
Race: 1 if non-white (22%); 0 if non-Hispanic white (78%).
Income: 1 if less than 20 K (14%); 2 if $20 K–40 K (18%); 3 if $40 K–60 K (16%); 4 if $60 K–90 K (23%); 5 if $90 K–160 K (20%); 6 if greater than $160 K (8%) (mean = 3.2, or $40–60 K).
Education: 1 if high school or less (39%); 2 if some college or technical school (26%); 3 if college graduate (24%); 4 if postgraduate (12%).
Party: 1 if Democrat (36%); 2 if Independent (15%); 3 if Republican (49%).
Oil job: 1 if someone in respondent's household works in oil or gas industry (21%); 0 otherwise (79%).
Tourism job: 1 if someone in respondent's household works in tourism industry (8%); 0 if otherwise (92%).
Fishing job: 1 if someone in respondent's household works in commercial or sport fishing industry (12%); 0 if otherwise (88%).
Place related variable:
State: 1 if Louisiana (50%); 0 if Florida (50%).
Spill experience variables:
Family impact: 1 if respondent perceives major effects from the spill on their family's economic wellbeing (38%); 0 if the respondent perceives minor or no effects (62%).
BP compensation: 1 if respondent has been compensated or expects to be compensated by BP as a result of the spill (19%); 0 if respondent has not been compensated and does not expect to be (81%).
Information related variables:
Spill knowledge: 1 if respondent feels they understand a moderate or great deal about the spill (86%); 0 if respondent feels they understand nothing or very little (14%).
Don't trust T.V.: 1 if respondent trusts network television news as a source of information about the spill (25%); 2 if unsure or don't know (31%); 3 if don't trust (44%).
Don't trust BP: 1 if respondent trusts BP as a source of information about the spill (17%); 2 if unsure or don't know (23%); 3 if don't trust (60%).

Table 2
Dependent variables used in analyses, with probability-weighted summaries (N = 2023; summaries based on non-missing values).

Perceptions of organizational responses to *Deepwater Horizon* spill:
Federal response: 1 if respondent thinks the federal government has been doing a good or excellent job responding to the spill (23%); 0 if respondent thinks that the federal government has been doing a poor or fair job (77%).
State response: 1 if respondent thinks their state government has been doing a good or excellent job responding to the spill (51%); 0 if respondent thinks that their state government has been doing a poor or fair job (49%).
Local response: 1 if respondent thinks their local government has been doing a good or excellent job responding to the spill (61%); 0 if respondent thinks that their local government has been doing a poor or fair job (39%).
BP response: 1 if respondent thinks BP has been doing a good or excellent job responding to the spill (30%); 0 if respondent thinks that BP has been doing a poor or fair job (70%).

Table 3
Predictors of perceived effectiveness ("good" or "excellent" job) of governmental and BP spill response. Odds ratios from weighted logistic regression with linearized standard errors and t-tests. (Significant findings are in bold).

Predictor	Dependent variables			
	Federal	State	Local	BP
Background				
Gender (female)	.88 (.18)	1.16 (.19)	1.24 (.21)	.94 (.17)
Age (in years)	1.00 (.01)	**1.01 (.01)***	**1.01 (.01)***	**1.02 (.01)****
Race (non-white)	**2.39 (.58)*****	.70 (.16)	.70 (.16)	1.02 (.27)
Income (1 < 20 k, 6 > 120 k)	1.00 (.08)	1.09 (.07)	**1.20 (.07)****	**.84 (.06)***
Education (1 HS, 4 grad)	1.12 (.11)	1.10 (.10)	.99 (.09)	1.10 (.11)
Party (1 Dem, 3 Rep)	**.47 (.06)*****	.91 (.09)	.98 (.10)	1.09 (.12)
Oil job	1.34 (.40)	**1.79 (.43)***	1.32 (.33)	**2.53(.66)*****
Tourism job	1.20 (.52)	.82 (.27)	1.24 (.44)	.64 (.24)
Fishing Job	.86 (.29)	.61 (.17)	.75 (.20)	.67 (.22)
Place				
Louisiana	.84 (.19)	**2.43 (.44)*****	**1.71 (.33)****	.76 (.15)
Spill Experience				
Family impact	**.45 (.11)****	.86 (.16)	**.68 (.13)***	**.61 (.13)***
BP compensation	1.61 (.46)	1.06 (.23)	1.24 (.29)	**2.47(.67)****
Information				
Spill knowledge	1.15 (.39)	1.55 (.36)	1.64 (.43)	.85 (.29)
Don't trust T.V.	**.63 (.07)*****	**.67 (.07)*****	**.69 (.07)****	1.08 (.12)
Don't trust BP	**.67 (.08)****	**.75 (.08)****	.92 (.10)	**.34 (.04)*****
Estimation sample	$n = 1385$	$n = 1367$	$n = 1347$	$n = 1331$

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

Socio-economic status also influenced public opinions. Higher-income respondents tended to look more favorably on local-governmental efforts, and less approvingly on the work of BP. Affluent individuals often are more engaged in local politics and find it more responsive to their needs; this may account for their greater appreciation for local government efforts (Oliver, 2000; Verba et al., 1993). Negative views of BP's work may in part be a reflection of wealthy coastal homeowners' displeasure with the impacts of the spill on the natural amenities of the area.

One of the most intriguing findings of our research was that non-whites, independent of social background and political party affiliation, were much more likely (139% higher odds) to believe that the federal government was doing a capable job with spill response. In addition, non-whites were somewhat more likely to view state and local government response efforts negatively, although those effects are not statistically significant. Previous studies have found that minorities are more vulnerable to environmental disasters, less able to access government assistance, and often fear unequal treatment during response and recovery efforts (Forgette et al., 2008; Hines, 2001; Jones and Rainey, 2006; Rivera and Miller, 2010; Wray et al., 2008).

Our discovery that non-whites approved of the federal response, while still looking disapprovingly on state and local government efforts, appears to run contrary to this literature. Among our non-white respondents, 56% identified themselves as African–Americans. One possible explanation for this anomaly in our findings could be linked to African–Americans strong support for the Obama administration. Polling in Louisiana, Florida, and the U.S. as whole around the time of the spill showed marked differences in evaluations of President Obama, with African–Americans being the most likely to approve of his work and Whites the least (Jones, 2011; PPP, 2010a, 2010b, 2010c; Saad, 2011).

Recent studies have also demonstrated that President Obama's race is a key factor shaping opinions about the work of his administration (Abrajano and Burnett, 2012; Cohen and Panagopolous, 2011). In particular, Abrajano and Burnett (2012) showed that African–Americans were significantly more likely

than Whites to look favorably upon President Obama, independent of political party affiliation and other social background characteristics. They suggest that African Americans' racial pride and solidarity with President Obama are important elements shaping this support (Abrajano and Burnett, 2012). Since the President was visibly involved in the federal response, it is plausible that non-whites' opinions about the work of federal actors may have been influenced by this type of solidarity, while that of state and local actors was not. Our data do not allow us to definitively establish the origins of non-white's more favorable views about the federal response to the Gulf spill, but these intriguing patterns invite further study.

Party affiliation also predicted how people perceived the federal response. The odds of viewing the work of the federal response as good or excellent were 53% lower among Republicans compared with Independents, or 78% lower compared with Democrats. This finding likely reflects, in part, the generalized good or bad views of the federal government and contrasting opinions of the Obama administration. More and more, elected officials take center stage during environmental disasters, leading the public to view these events in political rather than technical terms (Birkland and DeYoung, 2011; Hoffman and Jennings, 2011; Schneider, 2008; Somers and Svara, 2009; Waugh, 1988). Our results are also consistent with recent studies showing that Americans view a range of local through global-scale environmental concerns through an ideological lens (e.g., Dunlap et al., 2001; Hamilton et al., 2012; Safford and Hamilton, 2012).

Employment in the oil industry also affects the odds that respondents approve of the work of responding organizations. The directionality of our regression results shows that oil workers generally see the efforts of all the responding entities, and especially BP, as effective. Although the federal government's temporary moratorium on deepwater drilling likely affected this group, offshore oil production was not halted, and other interventions had minimal impact on the industry as a whole. Oil workers also took a more favorable view of state efforts. Since most individuals employed in the oil industry reside in Louisiana, this result likely reflects the strong ties between that state's government and energy firms, and specifically Louisiana's efforts to ensure an oil industry-friendly response to the spill (Freudenburg and Gramling, 2011).

For related reasons, respondents' state of residence also proved to be a strong predictor of opinions about the work of state and local governments. Louisianans generally had more positive assessments of state and local government response efforts and had significantly higher odds of viewing these organizational actors as doing a good job. Other Gulf spill-related research shows that Louisianans working in the fishing and oil industries were more likely to experience negative psychological effects from this disaster (Lee and Blanchard, 2012). State and local officials in Louisiana actively sought to minimize disruption of the state's oil and gas activities, while also making concerted efforts to secure compensation for affected groups like fishermen (NOSC, 2011; State of Louisiana, 2010). Given that these organizational actors were championing the needs of these impacted industries, it is not surprising that respondents from Louisiana approved of their work.

3.3. Disaster-specific factors and spill response assessments

The effects described above suggest that residents' social characteristics and ideological outlooks color their views of the actual work of organizations responding to the *Deepwater Horizon* spill. Nonetheless, other social science research has illustrated that event-specific experiences can influence public perceptions about environmental disasters (Basolo et al., 2009; Birkland and DeYoung, 2011; Cheong, 2011; Hoffman and Jennings, 2011; Ritchie and Gill,

2008). Our survey found that respondents whose family had been directly impacted by the Gulf spill took a more critical view of all the response efforts. Conversely, those receiving compensation tended to look more favorably on responding organizations, and they were significantly more likely to view BP as doing a good job.

While neither of these finding surprises, it is interesting that evaluations of BP were so strongly influenced by economic reparations. Other studies of oil spills have pointed to uncertainty regarding compensation and the stress of litigation as having a corrosive impact on affected individuals and communities (Cheong, 2011; Gill et al., 2012; Picou et al., 2004). The fact that BP admitted responsibility and began compensating impacted parties may have helped engender more positive views about this corporation's response. However, the influence of compensation on assessments of response effectiveness is likely not static. On-going issues related to BP's administration of the compensation fund, differences in the timing and value of reparations received, and the nature of long-term impacts on Gulf Coast communities may mean that these effects could shift over time (Gill et al., 2012; Ramseur, 2011).

Sociologists investigating environmental disasters have shown that the entities charged with responding to oil spills make conscious efforts to frame mitigation activities in ways that engender confidence, and they rely on the media to convey their messages (Basolo et al., 2009; Beamish, 2001; Birkland and DeYoung, 2011; Freudenburg and Gramling, 2011; Hoffman and Jennings, 2011; Maestas et al., 2008; Schneider, 2008). The intensive media coverage along with outreach efforts by governmental agencies appears to have left Gulf Coast residents well informed about the *Deepwater Horizon* spill. 86% of residents of Louisiana and Florida involved in our study stated they knew a moderate or great deal about the spill but, those with a good understanding of the disaster were no more or less likely to view the activities of the responding organizations positively. However, levels of confidence in different information providers did affect perceptions of response efforts.

Given the extensive news coverage and active involvement of BP in shaping the discourse surrounding the Gulf spill, we examined how trust in these sources of information influenced perceptions of responding entities (see Table 1). Survey respondents who did not trust TV news accounts were significantly more likely to have low opinions of the work of federal, state, and local governments, implying an "anti-establishment" mindset. These results also suggest that the government-oriented media coverage of the spill did not provide assurance to many Gulf Coast residents. While these are important trends, further investigation of public opinion about particular types of news outlets and government messaging is needed to fully understand how trust and access to information shape perceptions of actors charged with responding to the spill.

Finally, among individuals who distrusted BP as a source of information, we find higher odds of encountering unfavorable views about federal and state government response activities, as well as BP's. These results raise questions about the institutional logic behind BP's public relations campaign and demonstrate the importance of trust in different information sources in shaping opinions about environmental disasters. Our multivariate analyses show that public perceptions of the organizational actors responding to the *Deepwater Horizon* spill are multi-faceted and reflect the influence of both spill-specific and broader social forces.

4. Discussion

4.1. Societal expectations and responses to environmental disasters

In the wake of the explosion at the *Deepwater Horizon* oil rig, Gulf Coast communities looked to governmental authorities and BP to minimize both human and environmental impacts from this disaster. The ensuing response illustrated limits in the capacity of these organizational actors to meet these objectives. A series of failed attempts to cap the leaking well, images of oiled birds and beaches, along with devastating impacts on the Gulf Coast economy eroded local confidence and bred contempt for all actors involved in the spill cleanup. Politicians took center stage as they attempted to address public concerns, and BP rolled out a public relations effort aimed at minimizing damage to its corporate image. Our study shows that, while the specific nature of the events of the summer of 2010 played a role in shaping perceptions of the work of responding organizations, so did the social context in which they occurred.

One clear finding is that the historical roles of particular organizational actors matter. Energy-related development dominates much of the Gulf Coast economy and while the responding entities sought to mitigate environmental impacts they also avoided disrupting this vital industry. The fact that older residents, those employed in the oil industry, and Louisianans were all significantly more likely to view state actors positively appears linked to Louisiana's long-standing efforts to support energy development.

The visible presence of Louisiana Governor Bobby Jindal and the focus of his administration on minimizing disruption of oil-related activities and championing the needs of affected fishermen also likely played a role in assessments of the state's efforts. Similarly, our finding that affluence increased the odds that individuals viewed the work of local governments positively and BP's negatively may reflect the greater access wealthy individuals have had to local officials and these politicians' efforts to hold BP accountable for impacting coastal land owners. These results highlight an important "organizational" dimension of social vulnerability to environmental disasters. The institutional needs of marginalized groups may be neglected in contexts like the Gulf, where the strength of social ties between responding entities and dominant industries and individuals of higher socioeconomic status may lead to a privileging of their interests during response efforts.

While Gulf Coast residents viewed the federal response to the *Deepwater Horizon* spill as poor by a wide margin, non-whites were a noteworthy outlier. As we control for the effects of political party affiliation, income, and education in our analyses, this finding appears linked to respondents' racial identity. Among racial groups, African–Americans in Louisiana and Florida are the strongest supporters of the Obama administration (Jones, 2011; PPP, 2010a, 2010b, 2010c; Saad, 2011). It appears that this general backing, along with African American's affinities with President Obama, may have influenced their views of the federal response effort (Abrajano and Burnett, 2012; Cohen and Panagopolous, 2011). As previous disaster research has consistently found that minorities tend to hold more negative views about responding entities, the effects of race in our data merits further study (Forgette et al., 2008; Hines, 2001; Jones and Rainey, 2006; Rivera and Miller, 2010; Wray et al., 2008).

Political party affiliation provides a final illustration of the importance of broader social forces in shaping evaluations of responding organizations. Republicans had the highest odds of viewing the federal response as poor. During the spill, federal actors focused on discussing mitigation efforts in technical terms and emphasized their work assisting impacted communities. Nonetheless, the fact that party affiliation is such a strong predictor in our models suggests that residents may have primarily viewed these activities as the work of a Democratic administration that has low support in the affected region. Given the well documented politicization of environmental concerns, managers and responding entities need to recognize that demonstrating the technical rationale for disaster response activities will not ensure support for

their efforts (Dunlap et al., 2001; Hamilton et al., 2012; Safford and Hamilton, 2012).

Our results illustrating the importance of social background and ideological factors does not mean the actions of the responding organizations themselves did not influence public perceptions of the response to the *Deepwater Horizon* disaster. While the majority of Gulf Coast residents look disapprovingly on governments' and BP's response, those who received reparations were substantially more likely to view it favorably. Further, the strong relationship between compensation for damages and positive assessments of BP shows that individual interests play important roles in shaping views of responding entities.

However, the sociological literature shows that the impacts of oil spills on vulnerable individuals and communities are often most severe many years after disaster events occur (Arata et al., 2000; Freudenburg, 2000; Gill et al., 2012; Picou et al., 1997). In the case of the *Deepwater Horizon* disaster, it is unclear how marginalized communities and groups such as fishermen, whose connections to oiled resources are social and cultural as well as economic, will view responding entities that focused on near-term economic compensation in the years to come. Longitudinal research in the Gulf region will be needed to understand how reparations influence perceptions of responding entities and the social impacts of the spill over time.

After the rapid and extensive dissemination of spill-related information, it is surprising that the public's level of understanding about the *Deepwater Horizon* disaster did not influence individual opinions about the responding actors. However, given the importance of contextual factors and partisan ideology in shaping public perceptions, this finding becomes less surprising. What may be difficult for management actors to comprehend is that communication strategies focused on informing the public about the technical aspects of the spill and the rationale behind different interventions may have been falling on deaf ears. Assessments of the responding entities appear to reflect public opinion about BP and governmental actors as much as knowledge about the effectiveness of booming or the use of dispersants.

Although self-assessed knowledge does not influence the odds that residents will view responding entities positively, their degree of trust in television news and BP does. Individuals who have lost confidence in these purveyors of spill-related information tend to have higher odds of looking disapprovingly on responding actors. In the case of BP, two-thirds of our respondents did not trust this corporation as a source of information about the *Deepwater Horizon* disaster. Clearly, early missteps by BP's leadership contributed to this distrust. However, the company's carefully crafted public relations campaign also seems to have missed the mark for most Gulf Coast residents. In fact, it may have undermined a more positive assessment engendered through BP's effort to quickly compensate affected individuals and businesses.

Results from our study also show that residents question the validity of information provided by the media. This skepticism appears linked to negative feelings about governmental actors. News sources are increasingly diverse, so it is important to not over-generalize from our question about trust in television network news. Nonetheless, if we interpret this pattern in conjunction with our results related to political party, it is plausible that messaging in the news is more fractious and partisan. This may shape beliefs about recreancy and undermine support for government actors. In the past, organizational norms have led public officials to rely on the news media as a platform for disseminating information about their work. Results from the *Deepwater Horizon* spill suggest they may need to use an alternative approach, as a significant portion of residents interpret news portrayals as unreliable.

5. Conclusion

5.1. Organizations, technology, and environmental disasters

Incentivized by government, modern technological advances like those in the energy sector have provided myriad benefits to society. Along with these positive outcomes, however, have come unexpected, but no longer surprising, social and environmental problems. This creates a conundrum for those charged with public trust responsibilities. Environmental regulation is often seen to be at odds with economic growth, and the public increasingly views these as political rather than technical concerns. Federal, state, and local government actors, along with industry, simultaneously shape the discourse surrounding trade-offs between economic needs and environmental protection, leading to a flood of information, but not necessarily increased public confidence or reduced concern about potential risks (Beck, 1996, 1999).

Environmental disasters such as the *Deepwater Horizon* oil spill provide formative moments when society can evaluate the capacities, interests, and trustworthiness of these various actors that all claim to be working for the public good. Our study shows that individual assessments are complex and that beliefs about recreancy apply unevenly to different government or industry actors. Sociologists studying environmental concerns have illustrated that social connections to natural resources and vulnerability play central roles in shaping the way both individuals and communities experience disasters (Arata et al., 2000; Cutter et al., 2003; Freudenburg, 2000; Gill et al., 2012; Picou et al., 1997). Providing expanded understanding of how the actions and involvement of different organizational actors in disaster response might mitigate or exacerbate the social impacts of events like the *Deepwater Horizon* oil spill is an area where sociologists can make important contributions to social science research focused on disasters.

Responding to environmental disasters is a highly technical activity whose success depends on sound science-based approaches. Nonetheless, since government is primarily responsible for leading these efforts, society logically views the work of responding entities through the lens of their lived experiences with governmental actors and partisan ideology, as much as science. While the work of environmental managers and disaster responders is fundamentally technical, a failure to understand and "respond" to the social, institutional, and political context in which they operate could limit their effectiveness and inhibit their ability to serve affected communities. Physical and natural scientists play critical roles during environmental disasters, providing objective information and insights to responding entities. Sociologists may be equally important contributors. As social scientists, they can diagnose the social causes and consequences of these disasters while also informing the organization of response efforts. This study of the organized response to the *Deepwater Horizon* oil spill is limited in its scope, but it illustrates an important applied line of inquiry for future sociological contribution to the study of environmental disasters and management.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jenvman.2012.08.022.

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