Journal of Cross-Cultural Psychology

Who Explains Hurricane Katrina and the Chilean Earthquake as an Act of God? The Experience of Extreme Hardship Predicts Religious Meaning-Making

Nicole M. Stephens, Stephanie A. Fryberg, Hazel Rose Markus and MarYam G. Hamedani

The online version of this article can be found at:

Published by:

⑤SAGE

On behalf of:

↯ IACCP

Additional services and information for *Journal of Cross-Cultural Psychology* can be found at:

Email Alerts: http://jcc.sagepub.com/cgi/alerts

Subscriptions: http://jcc.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

>> OnlineFirst Version of Record - Aug 20, 2012

What is This?

Who Explains Hurricane Katrina and the Chilean Earthquake as an Act of God? The Experience of Extreme Hardship Predicts Religious Meaning-Making

Nicole M. Stephens[1], Stephanie A. Fryberg[2],
Hazel Rose Markus[3], and MarYam G. Hamedani[4]

Abstract

Two studies utilized firsthand accounts from survivors of two major natural disasters—Hurricane Katrina in 2005 and the Chilean earthquake in 2010—to investigate (1) how people make sense of their disaster experiences and (2) who understands these events in religious terms. We found that describing the disasters as an act of God was among the most common explanations. More-over, the degree to which survivors encountered *extreme hardship*—unpredictable, disruptive, and uncontrollable experiences—predicted explanations of the events as an act of God. These findings held even after controlling for demographic factors (educational attainment and race/ethnicity) known to be associated with religiosity. Notably, objective experiences (e.g., seeing dead bodies) were better predictors of religious meaning-making than relatively subjective psychological reactions to those experiences (e.g., fear). These studies extend the literature by examining how experiences of hardship in real-world contexts underlie religious meaning-making and suggest that religiosity emerges, in part, from variation in individual experience.

Keywords

religion/morality, cultural psychology, values, attitudes, beliefs

> If you look at it as a blessing, that what happened has nothing to do with you being a bad person or good person, it's just it's an act of God that prompted it all. And we have no control over that.
>
> Female, age 29, Hurricane Katrina survivor

[1]Kellogg School of Management, Northwestern University, Evanston, IL, USA
[2]Department of Psychology, University of Arizona, Tucson, AZ, USA
[3]Department of Psychology, Stanford University, Stanford, CA, USA
[4]School of Education, Stanford University, Stanford, CA, USA

Corresponding Author:
Nicole M. Stephens, Kellogg School of Management, Jacobs Center, 394, 2001 Sheridan Road, Evanston, IL 60201, USA.
Email: n-stephens@kellogg.northwestern.edu

The earthquake had to be. It was God's will. We don't know which things will happen, what God will send us. God knows what happens and where He will bring us. But we must remain blind.

Female, age 46, Chilean earthquake survivor

Overview

Hurricane Katrina and the Chilean earthquake were both devastating tragedies that destroyed the lives and the livelihoods of thousands of people. In the aftermath of the disasters, survivors, the media, and government officials struggled to explain the extreme suffering and loss that people experienced. In response to these circumstances, many people asked, "Why did this happen?" and "Why did this happen to me and not other people?" As the two quotes above illustrate, some survivors answered these questions by interpreting the events as acts of God. The current article utilizes survivors' firsthand accounts of two different types of natural disasters from two different nations—Hurricane Katrina in 2005 and the Chilean earthquake in 2010—to examine how people explain their disaster experiences and who understands these events as an act of God.

Why do some people, but not others, see God as the causal force underlying their disaster-related experiences? Prior research suggests that demographic factors such as educational attainment and race/ethnicity may play an important role. Specifically, people with lower levels of educational attainment and racial/ethnic minorities (e.g., African Americans) report higher levels of religiosity than people with higher levels of educational attainment and White Americans, respectively (Levin, Taylor, & Chatters, 1994; Sahgal & Smith, 2009), suggesting that the former groups may be more likely to explain life events as an act of God.

We propose, however, that religious meaning-making is not simply a product of demographic factors, such as education or race/ethnicity, or whether individuals identify as religious. Instead, we theorize that religious meaning-making is a dynamic, ongoing process afforded by the nature of people's life experiences. To test this hypothesis, the current research examines the relationship between survivors' personal disaster experiences and their explanations for the disaster—namely, whether they explained the event as an act of God. Extending laboratory research on the experiential antecedents of religiosity (e.g., loss of control, uncertainty; Laurin, Kay, & Moscovitch, 2008; Whitson & Galinksy, 2008), we hypothesize that survivors who confront the most *extreme hardship*—defined here as unpredictable, uncontrollable, and disruptive experiences—will be most likely to explain a natural disaster as an act of God.

Meaning-Making in the Context of Natural Disasters

Natural disaster contexts provide a unique opportunity to examine how people explain significant life events outside the realm of human agency. Typically, people do not believe that they themselves, or that someone else (e.g., an enemy), caused a natural disaster. Moreover, given that people vary substantially in the degree of hardship that they experience, natural disasters provide an important context for examining how people's disaster experiences relate to how they understand such events. Specifically, the current research examines how both people's objective disaster experiences (e.g., whether their belongings are destroyed) and their subjective psychological reactions to those experiences (e.g., whether they interpret the experience as distressing) relate to their explanations of natural disasters.

Natural disasters can pose a threat to psychological needs, such as control, purpose, and meaning (Park, 2010; Proulx & Heine, 2006; Seligman, 1975). In experimental settings, researchers have identified how threats to these psychological needs can promote religiosity. For example, research using laboratory experiments has shown that the desire to avoid the

belief that the world is random or chaotic increases self-reported religiosity (Laurin et al., 2008) and leads people to look for patterns in unrelated stimuli (Whitson & Galinksy, 2008). These studies provide important insight into the situational factors (e.g., loss of control, uncertainty) that are likely to promote religiosity. What is missing, however, is an analysis of whether these factors provoke religious meaning-making in significant, real-world contexts (e.g., natural disasters; see Park, 2010). The current studies fill this gap by using disaster survivors' firsthand accounts to examine how people's actual life experiences relate to patterns of religious meaning-making.

Why God Is a Meaningful Explanation

To understand why people utilize God as an explanation for events, it is important to first consider why God is a meaningful explanation. Prior research reveals that when people experience random or uncontrollable events, they seek to transform these events into something that has meaning or purpose (Gray & Wegner, 2010). One way to create a sense of meaning or purpose is to find a causal agent that can be held responsible for such events (Barrett, 2004). For example, survivors of traumatic life events often maintain a sense of control by assuming personal responsibility and blaming themselves for causing the events (Janoff-Bulman, Lang, & Johnston, 1979; see also Stephens & Levine, 2011).

When a human agent cannot be held responsible for these types of events, however, people are especially likely to turn to nonhuman agents such as God (Boyer, 2003; Kelemen, 1999). Explaining one's life experiences as an act of God—a tendency that we refer to as *religious meaning-making*—can be useful for transforming seemingly random or uncontrollable life events (e.g., a natural disaster) into something that has meaning and purpose. Invoking God as a causal force has been shown to be an effective means for maintaining a sense of control and for alleviating anxiety in the face of uncertainty (Kay, Gaucher, McGregor, & Nash, 2010; Whitson & Galinsky, 2008). Turning to God has also been shown to facilitate coping with negative life events, such as the death of a loved one or the diagnosis of a terminal illness (McIntosh, Poulin, Silver, & Holman, 2011; McIntosh, Silver, & Wortman, 1993).

Research Objectives and Hypotheses

The current research examines whether extreme hardship predicts religious meaning-making in the context of two distinct natural disasters of catastrophic proportions: Hurricane Katrina and the Chilean earthquake. These events provoked suffering on a massive scale, captured worldwide attention, and elicited challenging questions about why these events occurred and who was responsible for the suffering that ensued. Utilizing opportunity samples of survivors who experienced devastating natural disasters in two distinct cultural contexts, these studies provide a unique opportunity to examine (1) whether previous laboratory research, which finds an association between a lack of control or the experience of uncertainty and religiosity, applies to significant life events outside the laboratory, and (2) whether previous research, all of which has been conducted in the United States and Canada, extends to Chilean cultural contexts, which differ in meaningful ways from U.S. cultural contexts.

The United States and Chile differ along many important cultural dimensions (e.g., religious tradition, racial diversity). One noteworthy difference between these contexts lies in the prevalent cultural norms that are likely to guide behavior. For example, while norms such as autonomy, personal choice, and control more often guide behavior in the United States, norms such as familismo (i.e., solidarity with one's family) and simpatía (i.e., a desire for harmonious and positive interpersonal relationships) more often guide behavior in Chile (cf., Garcia, 2009; Holloway,

Waldrip, & Ickes, 2009). Chile therefore provides a theoretically meaningful cultural comparison to the United States.

The current research explores how people's experiences with natural disasters in two distinct cultural contexts affect religious meaning-making. While culture could shape the types of experiences that contribute to religious meaning-making, given the extreme nature of these natural disasters, as well as prior laboratory research that illuminates the experiential factors that promote religiosity (Laurin et al., 2008; Whitson & Galinksy, 2008), we expect that people's disaster responses across the two contexts will be similar. Specifically, in both the United States and Chile, we expect that the degree to which survivors encounter extreme hardship will predict their tendency to explain the disaster as an act of God and that this effect will hold even after controlling for demographic factors associated with religiosity.

To test these predictions, we conducted interviews with Hurricane Katrina survivors (Study 1) and Chilean earthquake survivors (Study 2) within 4 months of each of the disasters. During the interviews, participants were first asked to describe their disaster experiences and then to explain why the disaster occurred. The interviews were designed to capture survivors' firsthand accounts of their disaster experiences and how these experiences related to their explanations of the disasters.

Study 1

Method

Participants. Three months after Hurricane Katrina occurred, participants were recruited using mailing lists and Internet forums from New Orleans, San Antonio, and Houston (see Stephens, Hamedani, Markus, Bergsieker, & Eloul, 2009, for additional details). Seventy-five socioeconomically diverse Hurricane Katrina survivors (*M* age = 43.2 years; 70.7% female, 29.3% male) participated in the interviews. In terms of race/ethnicity, 53.3% of participants self-identified as White and 46.7% identified as African American. All interviews were audio-taped and then transcribed. Participants were paid $50 for their participation.

Interviews. In the interviews, participants were asked two open-ended questions. To capture the nature of survivors' disaster experiences, participants were asked to describe their hurricane-related experiences: "Please start from the beginning. I'd like to hear what happened before and after the hurricane." Then, to capture survivors' explanations for the hurricane, we asked them, "Why do you think that Hurricane Katrina happened?" After the open-ended portion of the interview, participants answered two questions designed to assess religiosity (see Brim & Featherman, 1998). On scales from 1 (*not at all*) to 4 (*very*), survivors were asked, "How religious are you?" and "How important is religion in your life?" The mean of these two items served as a measure of *religiosity* (α = .81; *M* = 3.4, *SD* = .7). Finally, participants reported their demographic information.

Coding Procedures

Two separate coding schemes were developed to capture survivors' individual disaster experiences (*disaster experience* coding scheme) and their explanations of why the disaster occurred (*disaster explanations* coding scheme). Only themes occurring in more than 5% of responses were included in the final coding schemes. The coding schemes were not mutually exclusive, meaning that more than one code from the coding schemes could be applied to a single participant's response.

Disaster experiences coding scheme. To develop the disaster experiences coding scheme, two research assistants, blind to hypotheses and to participants' backgrounds, read survivors'

Table 1. Disaster Experience Coding Scheme Utilized in Study 1 (*N* = 75)

Code	Sample Response	% Mention
Objective disaster experiences		
Persistent hardship: one month beyond hurricane	When I went to see what I could salvage from my house. It was close to two months when I went back to New Orleans.	51
Belongings destroyed	We lost everything. All of the important memories in my cedar chest were gone.	49
Seeing dead bodies	Just to see the bodies floating in the water. We pushed bodies out of the way.	21
Watching people die	The young men tried to jump in the water and save him, but he was panicking so bad that he had to let him go. He drowned.	15
Subjective psychological reactions		
Distress: stress or worry	Me, my momma, my daddy, we were just completely losing it.	41
Fear: fear or panic	I was so frightened. I was panicking, because I'm like, how can I bring my baby through the water?	35
Anger: anger or frustration	I felt my anger coming. It was really frustrating because no one was taking me seriously.	29

descriptions of their experiences twice. First, they identified survivors' descriptions of personal encounters with *extreme hardship*—unpredictable, uncontrollable, and disruptive disaster experiences. The categories that emerged were the following: *watching people die, seeing dead bodies, belongings destroyed*, and *persistent hardship*. Second, the coders identified survivors' self-reported *subjective psychological reactions* to their disaster experiences. The categories that emerged were the following: *fear, anger*, and *distress* (see Table 1).

Disaster explanations coding scheme. To develop the disaster explanations coding scheme, two different research assistants read survivors' explanations of why the hurricane occurred and identified the most common themes that emerged. The final coding scheme included the following coding categories: *act of God, act of nature, cleanse city, refocus attention, chance, happened for a reason*, and *bring people together* (see Table 2).

After the two coding schemes were developed, the same two research assistants (i.e., those who helped to develop the coding scheme) independently applied the codes to the interview transcripts. The coding for both *disaster experiences* (*M* Kappa = .8) and *explanations of disaster* (*M* Kappa = .9) was highly reliable. After the reliability was assessed, the two research assistants discussed any remaining disagreements until they reached consensus.

Results

Explanations for Hurricane Katrina. Supporting our hypothesis, given that all participants recently encountered an uncontrollable natural disaster, *act of God* was one of the most common explanations for the hurricane (35%). A comparable number of participants (36%) described the hurricane as an *act of nature* (see Table 2 for other common explanations).

Demographic factors and religiosity. To understand who explained the event as an *act of God*, we first examined the role of demographic factors—educational attainment and race/ethnicity—known to be associated with religiosity. For educational attainment, participants received a "1" if they had less than a high school degree, "2" if they had a high school degree, or "3" if they had

Table 2. Explanations of Disaster Coding Scheme Utilized in Study 1 (*N* = 75)

Code	Sample Response	% Mention
Act of nature	These storms are meant to bring warm air from the equator up to the North Pole to balance out the atmosphere.	36
Act of God	It was all God's doing. I think it was God's way of slowing some of that down.	35
Cleanse city	It was time to clean up the city 'cause everything was corrupted. Politicians, everything was corrupted.	31
Refocus attention	I think it just gave people a better appreciation of what they have and what's important.	19
Chance	We were unfortunate and got hit with a major hurricane.	16
Happened for a reason	I don't know what the reason was, but everything happens for a reason.	12
Bring people together	To bring families back together. … It was for a reason.	8

some college or more. As expected, a series of logistic regressions revealed that educational attainment, race/ethnicity, and religiosity predicted religious meaning-making. Specifically, lower levels of educational attainment (B = –0.8), Wald, $\chi^2(1, N = 75) = 5.2$, $p = .02$, self-identification as African American (B = 2.0), Wald, $\chi^2(1, N = 75) = 13.1$, $p = .000$, and greater endorsement of religiosity (B = 1.6), Wald, $\chi^2(1, N = 75) = 6.8$, $p = .009$, predicted the tendency to explain the hurricane as an *act of God*.

Objective experiences: Extreme hardship. Next, we examined whether extreme hardship predicted religious meaning-making. As expected, each of the four extreme hardship codes predicted religious explanations for the hurricane, such that each individual occurrence of hardship increased the likelihood of explaining the event as an *act of God*. For ease of presentation, we summed the four hardship codes—*watching people die, seeing dead bodies, belongings destroyed*, and *persistent hardship*—to create an index of extreme hardship (*M* = 1.4, *SD* = 1.2).

Supporting the primary hypothesis, we found that, even after controlling for demographic factors (i.e., religiosity, educational attainment, and race/ethnicity), a logistic regression revealed that the extreme hardship index predicted the tendency to explain the hurricane as an *act of God* (B = 1.0), Wald, $\chi^2(1, N = 75) = 10.8$, $p = .001$, such that greater experience of hardship was associated with a greater likelihood of explaining the event in terms of God. In this regression analysis, race/ethnicity remained significant (B = 1.6), Wald, $\chi^2(1, N = 75) = 4.8$, $p = .03$, while religiosity (B = 1.4), Wald, $\chi^2(1, N = 75) = 3.3$, $p = .07$, and education (B = –.03), Wald, $\chi^2(1, N = 75) = .004$, $p = .95$, became no longer significant.

Subjective psychological reactions. Finally, we examined whether survivors' relatively subjective psychological reactions to their disaster experiences predicted the likelihood that they explained the event as an *act of God*. Specifically, after controlling for demographic factors (i.e., religiosity, educational attainment, and race/ethnicity), three separate logistic regressions revealed that *anger* (B = –0.6), Wald, $\chi^2(1, N = 75) = .9$, $p = .34$, *distress* (B = –0.1), Wald, $\chi^2(1, N = 75) = .04$, $p = .83$, and *fear* (B = 0.7), Wald, $\chi^2(1, N = 75) = 1.2$, $p = .27$, were not significantly related to the tendency to describe the hurricane as an *act of God*.

Discussion

Study 1 examined how people explain natural disasters and who explains such disasters as an *act of God*. As expected, we found that invoking God was among the most common explanations of the hurricane. Supporting the primary research hypothesis, we also found that the degree to which people experience unpredictable, disruptive, and uncontrollable disaster-related events (e.g., watching people die) predicted religious meaning-making, even after controlling for demographic factors (i.e., educational attainment, race/ethnicity) known to be associated with religiosity. However, people's subjective psychological reactions—the extent to which they mentioned anger, distress, or fear in their firsthand accounts—did not predict the tendency to invoke God to explain their experiences.

These findings suggest that for extreme events outside the realm of human agency, people's objective experiences may be just as important, if not more important, than their subjective psychological reactions to those experiences. Although the psychological literature on health and stress has shown that the consequences of life events are often mediated by cognitive processes such as people's appraisals of how stressful the events are (Cohen, Kamarck, & Mermelstein, 1983; Lazarus, DeLongis, Folkman, & Gruen, 1985; Lazarus & Folkman, 1984), our results suggest that objective life experiences may also directly affect how people interpret their experiences—in particular, whether they rely on religious meaning-making. When people are faced with extreme life events (e.g., seeing dead bodies), as is often the case in natural disasters, there may be little space for individual variation in interpretation and reaction to these types of events.

Study 2

Study 1 revealed that findings from laboratory research on the experiential antecedents of religious meaning-making apply to real-world life events outside of the laboratory. Study 2 extends this research by asking whether these laboratory findings, a product of research conducted in the United States and Canada, extend to a different type of natural disaster (i.e., an earthquake) and to a different cultural context (i.e., Chile).

Method

Participants. Four months after the 2010 Chilean earthquake, Chilean university students, who had volunteered to construct emergency housing near Talca, conducted short audio-taped interviews with earthquake survivors in the nearby area. Ninety-six socioeconomically diverse survivors of the Chilean earthquake (*M* age = 39.8; 61% female, 39% male) participated in the interview study. As an indirect form of compensation, the researchers made a donation to the earthquake relief efforts.

Interviews. In the interviews, participants were asked two open-ended questions in Spanish. First, to capture the nature of survivors' disaster experiences, participants were asked to describe their earthquake-related experiences: "Please tell us your story. I'd like to hear what happened during and after the earthquake." Second, to capture survivors' explanations for the earthquake, they were asked, "Why do you think that the earthquake happened?" After the open-ended portion of the interview, participants answered the same two questions about religiosity as in Study 1 (α = .9; *M* = 3.1, *SD* = .9) and reported demographic information.

Coding Procedures

Using the same coding procedures used in Study 1, separate coding schemes were developed to capture both survivors' actual disaster experiences (*disaster experiences* coding scheme) and

Table 3. Disaster Experience Coding Scheme Utilized in Study 2 (*N* = 96)

Code	Sample Response	% Mention
Objective disaster experiences		
Belongings destroyed	The books fell here, the television fell there, and all the drawers fell out. We went back inside and found everything inside had been broken.	52
Homeless	We had no place to go and were here sleeping outside under a covered walkway.	29
Persistent hardship: one month beyond earthquake	We had nowhere to go for more than a month.	8
Subjective psychological reactions		
Fear: fear or panic	In that moment, all I felt was fear. I felt such great fear.	45
Distress: stress or worry	Afterwards I went crazy with worry. The whole family was in a panic.	24

their explanations of why the disaster occurred (*disaster explanations* coding scheme). Two research assistants who were fluent in Spanish developed the coding schemes and coded the interview responses in Spanish.

Disaster experiences coding scheme. The disaster experience coding scheme, which is presented here in English, included the following categories: (1) extreme hardship (*homeless, belongings destroyed*, and *persistent hardship*) and (2) subjective psychological reactions (*fear* and *distress*) (*M* Kappa = .9). Most of the codes were identical to those utilized in Study 1, but given the different cultural context, some of the codes differed (see Table 3). For example, anger was common among Americans but was not expressed by the Chilean respondents (cf., Ellsworth, 1994; Kitayama, Mesquita, & Karasawa, 2006; Markus & Kitayama, 1991).

Disaster explanations coding scheme. The disaster explanations coding scheme included the following categories: *act of nature, act of God, it was time, land of earthquakes, bring people together, global warming, fate, teach lesson*, and *other people's opinions* (*M* Kappa = .9; see Table 4). In Chile, the number of times that people invoked God proved to be more sensitive to people's disaster experiences than did a categorical code of whether they mentioned God or not. Thus, instead of using a categorical measure (yes or no), Study 2 utilized a continuous measure of how many times people mentioned that God played a role in the disaster.

Results

Earthquake explanations. As expected, given that all participants recently encountered an uncontrollable natural disaster, *act of God* was one of the most common explanations for the earthquake. Specifically, 34% of participants explained the earthquake as an *act of God*—a number that was consistent with our findings in Study 1.

Demographic factors and religiosity. To understand who explained the event in religious terms, we first examined the role of educational attainment and religiosity.[1] We used the same categories of educational attainment as in Study 1. A series of linear regressions revealed that lower levels of education predicted explanations of the earthquake as an *act of God* (ß = –.33, *t* = –3.4, *p* = .001), but unlike Study 1, self-reported religiosity did not significantly predict religious explanations (ß = .15, *t* = 1.4, *p* = .16).

Table 4. Explanations of Disaster Coding Scheme Utilized in Study 2 (*N* = 96)

Code	Sample Response	% Mention
Act of nature	Because the tectonic plates shifted.	58
Act of God	When God wants to, he moves us.	34
It was time	Every 20 to 30 years there is a gigantic earthquake in Chile, so it was time.	17
Land of earthquakes	Because we're a country of earthquakes. Chile is in a seismic place.	15
Bring people together	I had neighbors who I had never seen … and thanks to the earthquake I got to know them.	14
Global warming	I imagine the sun is lower, the rays of the sun are stronger than before, and before it wasn't so hot.	13
Fate	Well the earthquake was announced and had to be so. It had to happen.	13
Teach lesson	I think that they are lessons that you have to learn in life.	12
Other people's opinions	My grandmother thinks they are God's punishment.	12

Objective experiences: Extreme hardship. We then examined whether the experience of extreme hardship predicted explanations of the earthquake as an *act of God*. As in Study 1, each of the hardship codes individually predicted explanations of the hurricane as an *act of God*. We therefore summed the experiential indicators to create an index of extreme hardship (*M* = .8, *SD* = .8). Replicating Study 1, we found that, after controlling for religiosity and educational attainment, the extreme hardship index predicted religious meaning-making (ß = .22, *t* = 2.3, *p* = .02), such that greater experience of hardship was associated with more frequent mentions of God. In this analysis, education remained significant (ß = –.31, *t* = –3.3, *p* = .002), and religiosity remained nonsignificant (ß = .10, *t* = 1.0, *p* = .3).

Subjective psychological reactions. Next, we examined whether survivors' subjective psychological reactions to their disaster experiences predicted the tendency to explain the event as an *act of God*. As in Study 1, after controlling for religiosity and educational attainment, we found that *fear* (ß = .1, *t* = 1.4, *p* = .2) and *distress* (ß = .1, *t* = 1.4, *p* = .2) did not significantly predict explanations of the earthquake as an *act of God*.

Discussion

Replicating Study 1, Study 2 revealed that previous laboratory findings on the experiential antecedents of religiosity extend beyond the United States to Chile. Overall, the findings from the Chilean earthquake survivors were consistent with the findings from the Hurricane Katrina survivors. Supporting the primary hypothesis, survivors' experiences of extreme hardship predicted the likelihood that they would explain the event as an *act of God*. This effect held even after controlling for demographic factors commonly linked with religious meaning-making (i.e., educational attainment and religiosity). Likewise, survivors' objective experiences of extreme hardship predicted religious meaning-making, while their subjective psychological reactions did not.

While the results for the effects of hardship on meaning-making were similar in the United States and Chile, one difference (beyond the fact that Chileans did not express anger in their narratives) between the two contexts emerged. Unlike the survivors in the United States, Chileans' self-reported religiosity did not significantly predict the tendency to explain the earthquake as an *act of God*.

One possible explanation for this difference is that the Chilean survivors more often identified as "highly religious" and therefore displayed less variance in their responses than the American survivors did. The data reveal, however, that this was not the case. After experiencing the natural disaster, the American sample ($M = 3.4$, $SD = .7$) reported being more religious than the Chilean sample ($M = 3.1$, $SD = .9$), and there was less variance in the American responses compared to the Chilean responses. One likely explanation for this difference is that identifying oneself as a religious person has a different meaning in the United States compared to in Chile. Research suggests that Americans tend to view religion as an individual choice (cf., Cohen, Hall, Koenig, & Meador, 2005; Snibbe & Markus, 2003). In the United States, personal identification as religious may therefore be more predictive of whether people rely on religious meaning-making to interpret important life experiences compared to Chile. On the other hand, given prevalent cultural norms in Chile (e.g., familismo and simpatía), religiosity may be perceived as more of a group expectation rather than an individual choice. As a consequence, personal identification as religious may be less predictive of religious meaning-making in Chile compared to the United States.

General Discussion

Why do some people, but not others, see God as the causal force underlying their disaster-related experiences? Consistent with the suggestion of previous research, we found that demographic factors such as educational attainment and race/ethnicity play an important role in who explains life events as an *act of God*. Yet we also found consistent evidence—across two natural disasters and two distinct cultural contexts—to suggest that religious meaning-making is also a dynamic, ongoing process afforded by the nature of people's life experiences. In both the United States and Chile, we found that disaster survivors who confronted the most extreme hardship were more likely to explain a natural disaster as an *act of God*. These results held even after controlling for demographic factors commonly linked to religious meaning-making, including educational attainment, race/ethnicity, and religiosity. Although a more in-depth interview may have revealed further differences in how survivors from these relatively diverse cultural contexts made meaning of their experiences, we found a clear cross-cultural similarity in the link between extreme hardship and religious meaning-making.

Theoretical Contribution

These findings from survivors' firsthand accounts of two significant natural disasters extend the social psychological literature on the antecedents of religious meaning-making in two important ways. First, these findings reveal how people explain real world phenomena, in this case, naturally occurring yet uncontrollable life events that are outside the realm of human agency. Specifically, we found that *act of God* was among the most common explanations employed for the events, a pattern that was consistent across two types of natural disasters. Second, for the first time, these studies provide initial evidence that typical findings from United States laboratory studies (e.g., a lack of control provokes endorsement of religiosity; cf., Whitson & Galinsky, 2008) extend to people's real-world experiences outside the laboratory and to another culturally distinct context.

The current findings also contribute to the literature that examines how people's appraisals of life events affect stress. Specifically, we found that more objective experiences of extreme hardship (e.g., seeing dead bodies) predicted the tendency to explain the disasters as an *act of God*. In contrast, people's more subjective psychological reactions to these experiences did not predict religious meaning-making. This pattern held across cultural contexts, suggesting that objective life experiences—such as whether people confronted death—are more powerful predictors of

religious meaning-making than people's relatively subjective psychological reactions to those experiences (e.g., fear). These findings underscore the importance of objective life experiences in addition to subjective stress in shaping people's responses to extreme life challenges.

Implications

These findings have important implications for understanding how life experiences can contribute to religiosity. Specifically, the results suggest that people who experience the most hardship in natural disaster contexts are more likely to understand their disaster experiences as an *act of God*. Given that people with lower social class status and racial/ethnic minorities more frequently confront uncertainty and hardship in their everyday lives (Brady & Matthews, 2002; Evans, 2004; Lachman & Weaver, 1998; McLeod & Kessler, 1990), the accumulation of difficult life experiences may be one explanation for why low-status groups (e.g., working-class Americans and African Americans) are more religious than individuals who have higher social standing in society. Specifically, we theorize that low-status groups in American society may be more likely to turn to God as a source of meaning because they frequently confront the types of difficult life experiences (e.g., loss of control) that are likely to promote religiosity (Inzlicht, McGregor, Hirsh, & Nash, 2009; Kay, Gaucher, Napier, Callan, & Laurin, 2008).

This study also suggests one possible answer to the question of why difficult experiences foster religious meaning-making. We theorize that invoking God is effective for explaining the types of stressful, uncertain, unpredictable, and uncontrollable experiences that people confront during and after natural disasters (Kay et al., 2008; Whitson & Galinsky, 2008). Prior research reveals that difficult life experiences often lead to questions about whether one's life has meaning and why some people suffer more than others (Bulman & Wortman, 1977; Park, 2005; Updegraff, Silver, & Holman, 2008). Religion offers more *personally* meaningful answers to these existential questions than other potential frameworks and can thereby serve to sustain the belief that one's life has order, meaning, and purpose in the face of hardship (Becker, 1973; Evans-Pritchard, 1965; Jonas & Fischer, 2006; Pepitone & Saffiotti, 1997).

Limitations and Future Research

The current research addresses the question of how people explain uncontrollable life events and who explains these events in religious terms, but it also has limitations. Although we theorize that experiences of extreme hardship played a causal role in promoting religious explanation, rather than the reverse, these data are correlational and do not establish causation. In light of the laboratory studies on this topic, which identify factors that promote religiosity (e.g., Laurin et al., 2008), the explanation that hardship promotes religious meaning-making seems more plausible than the explanation that religious explanation produces life challenges. Moreover, our data do not allow us to specify the mechanisms through which extreme hardship promotes religious meaning-making. Future laboratory research is needed to pinpoint the psychological processes through which difficult experiences promote religious meaning-making.

Conclusion

Given the universality of religious belief in all societies (Atran & Norenzayan, 2004), and religion's well documented effects on behavior, physical health, and well-being (Levin & Chatters, 1998; Maton & Wells, 1995; Taylor, Chatters, & Levin, 2004), understanding the sources and functions of religious meaning-making is critically important. The current study suggests that one reason religious meaning-making is useful is that it allows people to translate seemingly

random or uncontrollable life events into experiences with meaning and purpose. The current study also highlights the important role of individual experience as a precursor to religious meaning-making. This research suggests that people from specific demographic groups, or those who identify as "religious people," do not uniformly explain life events in terms of God. Instead, irrespective of individuals' race, educational attainment, or even self-reported religiosity, people rely on religious meaning-making when their life experiences call for it.

Note

1. We did not ask about race because it was not a relevant social category in Chile.

References

Atran, S., & Norenzayan, A. (2004). Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioral and Brain Sciences, 27*(6), 713-770.

Barrett, J. L. (2004). *Why would anyone believe in God?* Walnut Creek, CA: Altamira Press.

Becker, E. (1973). *The denial of death*. New York: Free Press.

Boyer, P. (2003). Religious thought and behavior as by-products of brain function. *Trends in Cognitive Sciences, 7*(3), 119-124.

Brady, S. S., & Matthews, K. A. (2002). The influence of socioeconomic status and ethnicity on adolescents' exposure to stressful life events. *Journal of Pediatric Psychology, 27*(7), 575-583.

Brim, O. G., & Featherman, D. L. (1998). *Surveying midlife development in the United States*. Unpublished manuscript.

Bulman, R. J., & Wortman, C. B. (1977). Attributions of blame and coping in the "real world": Severe accident victims react to their lot. *Journal of Personality and Social Psychology, 35*(5), 351-363.

Cohen, A. B., Hall, D. E., Koenig, H. G., & Meador, K. G. (2005). Social versus individual motivation: Implications for normative definitions of religious orientation. *Personality and Social Psychology Review, 9*(1), 48-61.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396.

Ellsworth, P. C. (1994). Sense, culture, and sensibility. In S. Kitayama & H. R. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 23-50). Washington, DC: American Psychological Association.

Evans, G. W. (2004). The environment of childhood poverty. *American Psychologist, 59*(2), 77-92.

Evans-Pritchard, E. E. (1965). *Theories of primitive religion*. Oxford, UK: Clarendon Press.

Garcia, A. (2009). Contextual pathways to Latino child welfare involvement: A theoretical model located in the intersections of place, culture, and socio-structural factors. *Children and Youth Services Review, 31*, 1240-1250.

Gray, K., & Wegner, D. M. (2010). Blaming God for our pain: Human suffering and the divine mind. *Personality and Social Psychology Review, 14*(1), 7-16.

Holloway, R. A., Waldrip, A. M., & Ickes, W. (2009). Evidence that a simpático self-schema accounts for differences in the self-concepts and social behavior of Latinos versus Whites (and Blacks). *Journal of Personality and Social Psychology, 96*(5), 1012-1028.

Inzlicht, M., McGregor, I., Hirsh, J. B., & Nash, K. (2009). Neural markers of religious conviction. *Psychological Science, 20*(3), 385-392.

Janoff-Bulman, R., Lang, L., & Johnston, D. (1979). Participant-observer differences in attributions for an ambiguous victimization. *Personality and Social Psychology Bulletin, 5*(3), 335-339.

Jonas, E., & Fischer, P. (2006). Terror management and religion: Evidence that intrinsic religiousness mitigates worldview defense following mortality salience. *Journal of Personality and Social Psychology, 91(3),* 553-567.

Kay, A. C., Gaucher, D., McGregor, I., & Nash, K. (2010). Religious belief as compensatory control. *Personality and Social Psychology Review, 14*(1), 37-48.

Kay, A. C., Gaucher, D., Napier, J. L., Callan, M. J., & Laurin, K. (2008). God and the government: Testing a compensatory control mechanism for the support of external systems. *Journal of Personality and Social Psychology, 95*(1), 18-35.

Kelemen, D. (1999). Function, goals and intention: Children's teleological reasoning about objects. *Trends in Cognitive Sciences, 3*(12), 461-468.

Kitayama, S., Mesquita, B., & Karasawa, M. (2006). Cultural affordances and emotional experience: Socially engaging and disengaging emotions in Japan and the United States. *Journal of Personality and Social Psychology, 91*(5), 890-903.

Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology, 74*(3), 763-773.

Laurin, K., Kay, A. C., & Moscovitch, D. A. (2008). On the belief in God: Towards an understanding of the emotional substrates of compensatory control. *Journal of Experimental Social Psychology, 44*(6), 1559-1562.

Lazarus, R. S., DeLongis, A., Folkman, S., & Gruen, R. (1985). Stress and adaptational outcomes: The problem of confounded measures. *American Psychologist, 40*(7), 770-779.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing.

Levin, J. S., & Chatters, L. M. (1998). Research on religion and mental health: An overview of empirical findings and theoretical issues. In H. G. Koenig (Ed.), *Handbook of religion and mental health* (pp. 33-50). San Diego, CA: Academic Press.

Levin, J. S., Taylor, R. J., & Chatters, L. M. (1994). Race and gender differences in religiosity among older adults: Findings from four national surveys. *Journal of Gerontology, 49*(3), 137-145.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.

Maton, K. I., & Wells, E. A. (1995). Religion as a community resource for well-being: Prevention, healing, and empowerment pathways. *Journal of Social Issues, 51*(2), 177-193.

McIntosh, D. N., Poulin, M. J., Silver, R. C., & Holman, E. A. (2011). The distinct roles of spirituality and religiosity in physical and mental health after collective trauma: A national longitudinal study of responses to the 9/11 attacks. *Journal of Behavioral Medicine, 34*(6), 497-507.

McIntosh, D. N., Silver, R. C., & Wortman, C. B. (1993). Religion's role in adjustment to a negative life event: Coping with the loss of a child. *Journal of Personality and Social Psychology, 65*(4), 812-821.

McLeod, J. D., & Kessler, R. C. (1990). Socioeconomic status differences in vulnerability to undesirable life events. *Journal of Health and Social Behavior, 31*(2), 162-172.

Park, C. L. (2005). Religion as a meaning-making framework in coping with life stress. *Journal of Social Issues, 61*(4), 707-729.

Park, C. L. (2010). Making sense of the meaning literature: An integrative review of meaning making and its effects on adjustment to stressful life events. *Psychological Bulletin, 136*(2), 257-301.

Pepitone, A., & Saffiotti, L. (1997). The selectivity of nonmaterial beliefs in interpreting life events. *European Journal of Social Psychology, 27*(1), 23-35.

Proulx, T., & Heine, S. J. (2006). Death and black diamonds: Meaning, mortality, and the meaning maintenance model. *Psychological Inquiry, 17*(4), 309-318.

Sahgal, N., & Smith, G. (2009). A religious portrait of African Americans. In *The Pew Forum on religion and Public Life* (Vol. 389). Washington, DC: The Pew Research Center.

Seligman, M. E. P. (1975). *Helplessness: On depression, development and death*. New York: Freeman.

Snibbe, A. C., & Markus, H. R. (2003). The psychology of religion and the religion of psychology. *Psychological Inquiry, 13*, 229-234.

Stephens, N. M., Hamedani, M. G., Markus, H. R., Bergsieker, H. B., & Eloul, L. (2009). Why did they "choose" to stay? Perspectives of Hurricane Katrina observers and survivors. *Psychological Science, 20*(7), 878-886.

Stephens, N. M., & Levine, C. S. (2011). Opting out or denying discrimination? How the framework of free choice in American society influences perceptions of gender inequality. *Psychological Science, 22*(10), 1231-1236.

Taylor, R. J., Chatters, L. M., & Levin, J. S. (2004). *Religion in the lives of African Americans: Social, psychological, and health perspectives.* Thousand Oaks, CA: Sage.

Updegraff, J. A., Silver, R. C., & Holman, E. A. (2008). Searching for and finding meaning in collective trauma: Results from a national longitudinal study of the 9/11 terrorist attacks. *Journal of Personality and Social Psychology, 95*(3), 709-722.

Whitson, J. A., & Galinsky, A. D. (2008). Lacking control increases illusory pattern perception. *Science, 322*(5898), 115-117.