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Revisiting the Gulf Coast: Hurricane Ike and Issues of Crisis Communication

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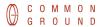Kenneth A. Lachlan, University of Massachusetts Boston, Massachusetts, USA

Abstract: This study compared differences in crisis preparation, information seeking patterns, and media use across ethnicity in the aftermath of Hurricane Ike. Surveys were collected from 691 individuals In the Houston area. The results indicated similar discrepancies in crisis preparation and information seeking to those documented two years earlier in the aftermath of Katrina. The results also demonstrated a continued need to create messages encouraging crisis preparation, especially among at-risk subpopulations. Discussion is given to the glaring necessity for emergency managers to both design and place multiple emergency messages and to form strong interpersonal bonds with members of historically underserved communities.

Keywords: Crisis Communication, Race, Emergency Management, Hurricane Ike

S PENCE, LACHLAN, & Griffin (2007) attempted to identify intercultural discrepancies across Katrina evacuees in terms of crisis preparations before the storm, media dependency during the storm, and patterns of information seeking during and after the evacuation. The results of their survey indicated that members of marginalized, African-American populations living at or near the poverty line expressed distinctly different informational needs than those falling into other social strata. In particular, this vulnerable population found themselves less well prepared for the eventuality of a catastrophic event, exhibited greater information seeking, and a greater need for information concerning health and safety issues. The authors concluded by offering that emergency managers should make efforts to appeal to multiple audiences, evaluate the level of preparedness of individuals across different cultural and social strata, and tailor multiple safety messages to multiple demassified audiences.

Two years later, another large hurricane, Hurricane Ike, struck the gulf coast region. Hurricane Ike was a Category 4 storm that affected several countries including Cuba, Haiti, and the United States. The hurricane caused 114 deaths and over $10 billion dollars in damages. Coastal communities in Texas, such as Galveston, experienced the brunt of the damage. Ike made landfall in the United States on September 13th 2007 as a Category 2 storm with winds of up 110mph. It was the third costliest hurricane in US history.

Hurricane Ike was a storm of great interest not only because of its size and destructive potential, but because of recent memories of the devastation associated with Hurricane Katrina two years earlier. Hurricane Katrina created a memorable media spectacle as residents who could not, or did not evacuate New Orleans waited on rooftops, in public centers, and

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in attics for relief amid toxic floodwaters, uncertain conditions, and shortages of food, drinking water, and medical services (Adams, 2005, Spence et al, 2007). In the aftermath of Katrina many expressed outrage at the government's response – or lack thereof – particularly in an area with such a high concentration of low-income minorities, specifically in the area of evacuation, information acquisition, relief and recovery. This article replicates the Spence, Lachlan, and Griffin (2007) study, specifically looking at the informational needs and uses of African Americans after Hurricane Ike. It then goes on to present data collected from individuals affected by Hurricane Ike, and explores how informational needs information seeking varied across differing ethnic population. The study concludes by discussing the implications of the findings, with particular attention drawn to comparisons between these data and data collected in the aftermath of Katrina.

Crisis Preparedness

A crisis can be defined as "a specific, unexpected, and non-routine event or series of events that create high levels of uncertainty and threaten or are perceived to threaten" high priority goals (Sellnow, Seeger, & Ulmer, 2002, p. 233). These goals may include the protection of personal and community life and property. Natural disasters such as Hurricanes fit this definition.

At no time in recent history have the vulnerabilities of many Americans been as personified as with the events of Hurricane Katrina. The aftermath outlined that a large portion of American society lives without the social and economic resources necessary to protect themselves and their families during a natural disaster. Several studies after Hurricane Katrina pointed to findings that a relationship between race and the decision or ability to evacuate existed. Some of the most common reasons that racial minorities choose not to evacuate are a lack of resources, inability to obtain transportation or mis-appraising the level of hazard the storm presented (Lachlan and Spence, 2007; Brodie et al, 2006).

Vulnerability to disasters is the result of several factors, including physical proximity to a threat, the characteristics of the home or neighborhood, education, financial assets, constraints, and choices made by an individual (Jaspers & Shoham, 1999; Morrow, 1999). Vulnerability is, to an extent, the product of social inequalities, the social factors that influence or shape the susceptibility of particular groups to harm, and factors that impede their ability to respond. Past research supports the contention that racial minorities are typically hit hardest during natural disasters and other cataclysmic events (Baker, 2001; Bolin & Bolton, 1986; Dash, Peacock, & Morrow, 1997; Peacock & Girard, 1997; Williams & Olaniran, 2002). One area where vulnerability is most obvious is in crisis preparations.

As noted by Forthergill et al (1999) preparedness is the stage of a crisis involving all pre-crisis preparation and efforts to mitigate in advance of a warning. Previous research has identified differences across race and class in terms of crisis preparation. For example, evacuation attempts before Hurricane Andrew were the lowest among African Americans and Hispanics (Gladwin & Peacock, 1997; Peacock, 2003; Sattler et al., 1995). This research suggests that individuals of higher socioeconomic status and non-minorities are typically better prepared for disasters and large-scale crises. Members of minority groups may be at greater risk in terms of crisis preparedness given that they are likely to have lower incomes, have fewer nonexpendable finances, and are more likely to be unemployed (Gladwin & Peacock, 1997). There is also often a geographic element of disaster. In an analysis on the

locations with the highest death toll after Hurricane Katrina, findings suggest that the storm had the largest impact on New Orleans' Black community (Sharkey, 2007). The neighborhoods hit hardest were not necessarily the poorest, but they were the most segregated in the city. Racial minorities are also less likely to have disaster education materials and opportunities in the pre-crisis stage (Faupel et al, 1992). In a study by Turner et al (1980) differences were found when examining race and crisis preparation at the household level, in that minorities were less likely to have a flashlight, a battery-operated radio, a first aid kid and stockpiled food and water.

Additionally, research is mixed concerning prior experience with Hurricanes as a predictor of willingness to take preparations. After Hurricane Katrina many who did not evacuate before the storm thought that their own vulnerability would be low based on previous experience (Eisenman, et al, 2007). However in the case of Hurricane Rita over 2.5 million people along the Gulf coast evacuated (Zachria & Patel, 2006). Although another study after Hurricane Katrina found that a substantial minority of respondents indicated that they would not evacuate if during the next month another major hurricane threatened their community. The recency of a hurricane alone might not be enough to motivate people to prepare or evacuate (Blendon, et al, 2007).

Because past studies have demonstrated a continued and repeated findings that minorities have been less likely or able to evacuate, the following research questions are offered:

RQ 1: Were minority populations less likely to evacuate before Hurricane Ike?
RQ2: What demographic differences existed in crisis preparation?

Media Use, Crises, and Information Seeking

In the case of natural disasters, information seeking is desired so that individuals can make informed choices about actions to take. With that said, often the public does not actively engage in information seeking during a crisis, nor do they in the time leading up to one. This lack of action can occur for several reasons, such as the presence of a disaster subculture (Helsloot & Ruitenberg, 2004), a knowledge gap based on socioeconomic factors (Lachlan, Spence, & Eith, 2007), or a simple lack of motivation. Moreover, the ability of individuals involved in crisis events to correctly process information and make reasoned decisions is often seriously reduced compared to individuals in everyday conditions.

Race has not been examined extensively as a predicator of information seeking. The small amount of research that has directly examined race and information seeking indicates that general nonminority populations are better prepared for disasters than others (Perry & Mushkatel, 1986; Tierney, 1989). After hurricane Katrina research found that African Americans were significantly more likely to engage in information seeking, specifically seeking out information concerning shelter and evacuation and other relational and task necessities (Spence et al, 2007). Past research has indicated that under normal, on-crisis conditions, individuals may be more likely to seek information from sources who are perceived to possess similar attributes (Ibarra, 1993, 1995); thus, it may be the case that members of minority groups will have fewer homophile others that are used for information gathering, and fewer mediated sources that are perceived as similar. Furthermore Mileti (1999) examines the differences between ethnic minorities in risk preparedness and he found that minorities search for information in different places other than the general population. Other lines of

research examining the attitudes of African Americans towards the mass media have indicated general distrust (Sherad, 1972). Racial and ethnic differences influence how minority groups obtain information regarding hazard information.

RQ 3: To what extent did information seeking during Hurricane Ike vary across racial demographics?

Past research has also indicated that members of minority groups may be less likely to ascribe credibility to risk and warning messages without first confirming those messages through interpersonal channels, leading to a delay in response time (Fothergill, Maestas, & Darlington, 1999; Lindell & Perry, 2004). After Hurricane Katrina a study found that interpersonal information networks were a more critical source of information to minorities as only 56.4% of the Caucasian respondents reported interpersonal information as very important, as opposed to 74.6% of the African American respondents and 77.1% of the other non-White respondents (Spence et al, 2007). Similar results were reported by Perry and Lindell (1991), their research found ethnic differences in the credibility of warning sources and in the warning confirmation process. Specifically minorities placed more credibility in social networks as a source than whites, and minorities attempting to confirm the warnings contacted a greater number of sources than did whites. These findings support the notion that a tendency exists in minority groups, specifically African Americans, to view information with a degree of skepticism. In a study examining emergency warnings three groups were examined (African Americans, Whites and Mexican-Americans). Results indicated Mexican-Americans found the mass media to be reliable, whereas blacks and whites found the media to be a less-reliable source. Whites with prior crisis experience strongly believed the warnings received, but this did not hold true for African Americans and Mexican-Americans (Perry & Mushkatel, 1986).

Although past research outlines differences between African Americans and others in the use of television for entertainment (Appiah, 2001; Initiative Media, 2003) no differences were found in the use of television as a primary means of obtaining information after Hurricane Katrina (Spence et al, 2007).

H1: There will be no differences between Caucasians and minorities in use of television as the primary medium used to learn about evacuation notices.
H2: Interpersonal channels will be reported as more important among minorities regarding evacuation information.

Obtaining information through new media is another area of limited study in crisis and race research. In the area of information seeking new media has emerged as a potentially useful source (see Spence et al, 2009) but still is limited in actual use and use by minorities in crises (Lachlan et al, 2007; Spence et al, 2007; 2008). In a study examining new media use after the IW-35 Bridge collapse, findings suggested that over 25% of respondents found out about the collapse through cellular phone (Spence et al, In Press). However, it has been more than three years since examining race and new media in the aftermath of Hurricane Katrina. Mobile technologies have become more sophisticated, less expensive and more reliable. Services are emerging that utilize new media for emergency messages. Some communities are setting up emergency text message notification systems and reverse 911 notifications

(see readysandiego.org). With new technologies and increases in the diffusion rate of technologies the following research question is offered:

RQ4: How important were new media and cellular telephones as means of information acquisition during Hurricane Ike?

Method

After Hurricane Ike, many residents of the Gulf Cost of Texas evacuated inland. Some stayed at hotels, some with friends, and others in government-sponsored relief centers. A non-random sample 691 respondents were recruited from hotels, relief centers and gas stations in the metropolitan Houston area. The nature of a natural disaster prohibits a more rigorous scientific sampling technique to be employed shortly after the event. The current sample over-represents minority respondents. The sample median age is 30, which is similar to the Texas median age of 33.1, and the sample income is similar to the Texas state income, slightly skewed towards the low end. Respondents were asked to fill out a 4 page self-report survey.

Embedded within the larger survey were a series of items designed to address the research questions of the current study. These included three simple yes or no items addressing the research questions related to preparation and evacuation; respondents were asked whether or not they were evacuated from their homes, whether or not they had any kind of emergency kit or supplies assembled in the event of such an emergency, and whether or not they had any kind of evacuation plan in place in the event of a flood or similar event.

To address the research question dealing with desired information, participants responded to a five point Likert scale asking what information they wanted in the time leading up to the storm; response categories ranged from "strongly disagree" to "strongly agree." Information categories included the scope of the storm's damage, government responses, food and water distribution, evacuation, shelters, rescue operations, the larger impact of the storm, who was affected by the storm, friends and family, and where to go for healthcare or medicine.

The additional hypothesis and research questions dealt with dependence on varying media. To tap these questions, a series of items asked respondents to list how important television, radio, the internet, and interpersonal exchanges as "very important," "somewhat important," or "not important." In addition to these items, a series of demographic identifiers asked respondents to report their age, sex, and ethnicity.

Results

Research questions one and two attempted to identify differences across ethnicity in terms of evacuating before the storm and crisis preparation. Crosstabulation analyses reveal substantive differences between African American, Caucasian, and other non-white evacuees. Approximately 12% of the African American respondents reported that they were forced to evacuate before the storm, as compared to only 3.2% of the Caucasian respondents, 8.3% of the Latino respondents, and 8.6% of the Asian respondents, χ^2 (4) = 13.60, p<.009, V =142. In terms of the presence or absence of an emergency kit, 49.4% of the African American respondents reported having some kind of emergency kit, as compared to 71.3% of the Caucasians, 64.8% of the Latinos, and 65.8% of the Asians, χ^2 (4) = 26.18, p<.001, V =.196. Differences were also detected across the variable addressing whether or not re-

spondents had an evacuation plan in place. While 57.6% of the Caucasian respondents had prepared an escape plan ahead of time, only 46.4% of the African American respondents, 49.2% of the Latinos, and 36.8% of the Asian respondents had done so, χ^2 (4) = 26.18, p<.001, V =.123.

Research question three addressed the extent to which information seeking habits might differ across ethnicity. A series of one-way ANOVA analyses examined differences in the mean scores across the items addressing the extent to which respondents placed importance on specific types of information. The results indicate significant differences for information seeking related to government response, F (4,656) = 2.66, p<.03, and evacuation efforts, F (4, 650) = 2.09, p<.05. Post hoc comparisons using Least Squared Difference revealed that African American respondents were more likely than Caucasian respondents to seek out information concerning government response, p<.02, and evacuation efforts, p<.05.

Hypothesis one posited that differences would not exist across ethnicity in terms of reliance on television as the primary means of obtaining information, while hypothesis two predicted that non-whites would report placing greater importance in interpersonal communication as a source of evacuation information. Crosstabulation analyses did not support hypothesis one; in fact, they produced findings that ran in exactly the opposite direction. Differences were not detected for the item asking whether respondents considered television to be "very important," "important," or "not important," as 49.6% of the African American respondents considered television "very important", as compared to only 74.6 percent of the Caucasian, 48.8 percent of the Latino, and 78.9% of the Asian respondents, χ^2 (8) = 18.28, p<.02, V =.117. However, the data do support hypothesis two, offering that interpersonal information may be a more critical source of information to minority victims, as only 37.1% of the Caucasian evacuees reported interpersonal information as "very important," as opposed to 49.6% of the African American respondents, 48.8% of the Latinos, and 65.8% of the Asian respondents, χ^2 (8) = 18.98, p<.01, V =.119.

Research question four investigated the importance of new media. Crosstabulation analyses failed to reveal differences across ethnicity for reliance on the internet for information, χ^2 (8) = 13.85, n.s.

Discussion

This study attempted to replicate and extend the inquiry posed by Spence, Lachlan, and Griffin (2007) following Hurricane Katrina. A revisit to these issues two years later reveals that little has changed in terms of discrepancies across subgroups in preparation, information seeking, and specific informational needs. Numerous past studies have attempted to identify variable analytic differences across ethnicity (Houston, 2002). The aim of this study, however, is not to emphasize differences in patterns of behavior across groups, but rather to demonstrate that a need exists to identify those who are most underserved by emergency messages and planning, the most needed messages under times of extreme duress, and the ideal means for targeting those messages.

These results provide information concerning crisis preparation, information needs and media after Hurricane Ike that may be useful to emergency planners and crisis communication practitioners. They also demonstrate that not much has changed since Katrina and a lack of learning from past crises on the part of emergency management. The data from this study provides further support to the notion that historically underserved groups are at a decided

disadvantage in terms of preparation and ability to evacuate. This is consistent with prior research supporting the notion that in general, non-minority populations are better prepared for disasters than others (Perry & Mushkatel, 1986; Spence, Lachlan, & Griffin, 2007; Tierney, 1989). The current data suggest the need for additional research on crisis prepared-ness and proactive disaster measures tailored to these underserved groups, given differences across race in terms of crisis preparedness and informational needs

The results for general information seeking indicate that African Americans were substan-tially more involved in the information seeking process during the storm. This is completely consistent with similar findings that emerged after Katrina. Further, they were more likely to seek out information concerning government response and evacuation efforts. These results complement those found by Spence, Lachlan, & Griffin (2007), and make sense on face value. These particular information seeking goals – government response and evacuation – are related to survival needs, but not nearly as dire as the survival related informational needs expressed by those displaced by Katrina (food and water). Previous research has suggested that African Americans are less likely than others to express trust and faith in institutions of government when it comes to their role in ensuring health and safety (Burby & Strong, 1997). In the Spence, Lachlan, and Griffin (2007) study, the conditions concerning Katrina led to an increased need for information related to health and safety. However, during Ike, the conditions were far less dire; the current data suggest that this distrust in the government may have instead manifested itself in overt desire for knowledge concerning government interventions and evacuation efforts, with the goal of knowing what the government is doing, which presumably would be coordinated by state and local authorities. Any situation in which a significant number of persons believe that they are being treated or have the potential to be treated unjustly will cause skepticism and uncertainty, which can influence information seeking. Because African Americans perceived inequality of treatment after Katrina, it is only reasonable that they would be skeptical about the response that might be accorded after Ike. Given that trust is an important part of crisis response, it is critical that emergency re-sponders form positive and trusting relationships with African American communities.

During Katrina, minorities and the poor were hit hardest; safety and physiological needs were likely more salient to these underserved subgroups, since wealthier strata already had the means of survival and/or evacuation in place (Maslow, 1954). Following Ike, the need for information concerning survival needs was not as salient, but the cultural memory of systems failures during Katrina may have motivated people to seek information concerning government response. Thus, the results suggest that even in an event without the same threats to life and safety, ethnicity and cultural differences in information need and response may be worth considering when designing and implementing crisis messages. Moreover, because respondents in wealthier strata presumably had more resources, they did not need to seek information concerning government response.

The first hypothesis posited that Caucasians and members of minority groups would both express heavy reliance on television in obtaining information about the storm, while hypo-thesis two argued that interpersonal channels would be more important to minorities. In a departure from Spence, Lachlan, and Griffin (2007), Caucasian and Asian respondents placed substantially more importance on television than did African American or Latino respondents. This finding is consistent with past research that suggests that minorities prefer social networks for disaster information (Perry & Mushkatel, 1986). Support was found for hypothesis two, in which Africa-American and Latino respondents expressed more reliance on interpersonal

information. Television is typically considered the dominant resource for the acquisition of information under duress (Murch, 1971, Spence et al, 2006), probably due to the fact that mass media are generally considered to be valuable and timely in their delivery (Heath, Liao, & Douglas, 1995). Caucasians respondents presumably do not have the history of distrust of government in the area of medical and safety concerns. Thus after turning to television, their informational needs were likely satisfied. African Americans and members of other minority groups may be less likely to accept a risk or warning message as credible without confirmation of the message interpersonal networks (Fothergill, Maestas, & Darlington, 1999; Lindell & Perry, 2004). Thus, television may have been rated as less important because of the emphasis on interpersonal networks in exchanging pertinent information; television reports and warnings may only have acted as a cue, motivating people to seek confirming information from interpersonal networks. This finding ads more evidence to the argument that local government agencies need to work with community leaders to aid the underserved by creating programs that use interpersonal networks to coordinate, prepare, and inform people of what to do in the event of an emergency.

Consistent with the findings from Katrina, differences were not detected across ethnicity for the propensity toward using the internet to obtain information. In fact, across the sample relatively few participants reported turning to the internet for information. However, unlike Katrina, where cell phones and internet access in New Orleans were knocked offline, the ecological parameters of Ike did not necessarily compromise the telecommunication infra-structure of metropolitan Houston. One possible explanation for this puzzling finding is that new media may not have yet matured into a medium that is viewed as timely and effective in the dissemination of critical information under conditions of duress. This perception may relate to issues of sources credibility, or it may be an issue of access. Familiarity with existing media that have performed this function for decades, such as television and terrestrial radio, may also be an explanation. Regardless, additional research should attempt to uncover the motives behind the relative non-use of the internet and other forms of new media for crisis and disaster information; so that these media can be better utilized in satisfying informational needs in the future.

Conclusion

There was much hope that lessons from the evacuation of Hurricane Katrina, in particular those concerning issues of race, class inequality, and the inadequacies of preparations, would lead to changes in the ways in which emergency managers consider diverse populations. Data suggests that little has changed. In fact, the need for effective crisis and risk messages is more evident than ever before. Crises are occurring more frequently and becoming larger in scope, frequency, and harm, yet the same historically underserved groups continue to be ill prepared and ill informed of the realities of disasters. The need for well-placed, specific, targeted messages cannot be overstated.

Policies and planning must begin to address the important influence of extended families and social networks through better community-based communication and preparation strategies. Substantial funds are expended annually on risk and crisis communication programs to promote hurricane preparedness. Despite these efforts, the level of preparedness within many communities has fallen short of expectations (Lindell & Whitney, 2000), leaving the same vulnerable to subsequent disasters. We cannot improve disaster response to diverse

communities without making fundamental changes in the way we conceptualize our obligations and priorities to individuals in need. Future crisis communication efforts, especially those targeted at predominantly African American communities, should begin at the community level, and focus on the utility of social capital in facilitating both awareness and action in disaster preparations and response. Crisis responders would be well advised to form grass roots relationships with community leaders in order to use interpersonal networks and social capital to adequately inform those who may be in harm's way. Communication plans that rely both on mediated messages and community leadership may prove to be far more successful than current campaigns, which deliver undifferentiated messages to people with differing informational needs, information access, resources, and trust of authority.

References

Adams, S. (2005). Learning the lessons of Katrina for the unexpected tomorrow. *Risk Management*, *52,* 24-30.

Appiah, O. (2001). Black, White, Hispanic and Asian American adolescents' responses toculturally embedded ads. *The Howard Journal of Communications*, *12*, 29–48.

Baker, G. (2001). Race and reputation: Restoring image beyond the crisis. In R Heath & G.Vasquez (Eds.), *Handbook of Public Relations*, (pp. 513-520). Thousand Oaks, CA: Sage.

Blendon, R.J., Benson, J.M., DesRoches, C.M., Lyon-Daniel, K., Mitchell, E.W. & Pollard, W.E. (2007). The public's preparedness for hurricanes in four affected regions. *Public Health Reports, 122*, 167-176.

Bolin, R.C., & Bolton, P. (1986). *Race, religion, and ethnicity in disaster recovery.*Boulder: University of Colorado Press.

Brodie, M., Weltzien, E., Altman, D., Blendon, R.J., & Benson, J.M. (2006) Experiences of Hurricane Katrina evacuees in Houston shelters: Implications for future planning. *American Journal of Public Health, 96,* 1402–1408.

Burby, R. & Strong, D. (1997). Coping with chemicals: Blacks, whites, planners, and industrial pollution. *Journal of American Planning Association, 63,* 469-480.

Dash, N., Peacock, W. G., & Morrow, B. H. (1997). And the poor get poorer: A neglected black community. In W. G. Peacock, B. H. Morrow, & H. Gladwin (Eds.) *Hurricane Andrew: Ethnicity, Gender and Sociology of Disasters*, (pp. 206-225), London: Routledge.

Eisnenman, David P., Kristina M. Cordasco, Steve Asch, Joya F. Golden, and Deborah Gilk. (2007). Disaster Planning and Risk Communication with Vulnerable Communities: Lessons from Hurricane Katrina. *American Journal of Public Health,* 97*:* S109-S115.

Faupel, Charles E., Susan P. Kelley, and Thomas Petee (1992). The Impact of Disaster Education on Household Preparedness for Hurricane Hugo. *International Journal of Mass Emergencies and Disasters,* 10 (1): 5–24.

Fothergill A, Maestas, E. G., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: a review of the literature. *Disasters*, *23*, 156-173.

Gladwin, H., & Peacock, W. G. (1997). Warning and evacuation: A night for hard houses. In W. G. Peacock, B. H. Morrow, & H. Gladwin (Eds.) *Hurricane Andrew: Ethnicity, Gender and Sociology of Disasters*, (pp. 52-74), London: Routledge.

Heath, Robert. L., Liao, S., and Douglas, W. (1995). Effects of Perceived Economic Harms and Benefits on Issue Involvement, Information Use and Action: A Study in Risk Communication. *Journal of Public Relations Research,* 7*:* 89-109.

Helsloot, I., & Ruitenberg, A. (2004). Citizen response to disasters: a survey of literature and some practical implications. *Journal of Contingencies and Crisis Management*, *12*, 98-110.

Ibarra, H. (1995). Race, opportunity, and diversity of social circles in managerial networks. *Academy of Management Journal*, *38*, 673-703.

Ibarra, H. (1993). Network Centrality, Power, and innovation involvement: Determinants of technical and administrative roles. *Academy of Management Journal*, *36*, 471-501.

Initiative Media. (2003). *African American television viewing study*. New York: Initiative Worldwide.

Jaspers, S, & Shoham, J. (1999), Targeting the vulnerable: A review of the necessity and feasibility of targeting vulnerable households. *Disasters*, *23,* 359-372.

Lachlan, K.A, & Spence, P.R. (2007). Hazard and outrage: Developing a psychometric instrument in the aftermath of Katrina. *Journal of Applied Communication Research,* 35 (1), 109-123.

Lachlan, K.A, Spence, P.R., & Eith, C.A. (2007). Access to mediated emergency messages: Differences in crisis knowledge across age, race, and socioeconomic status. In R.Swan & K. Bates (Eds.) *Through the eye of Katrina: Social justice in the United States* (pp. 203-219). Durham, NC: Carolina Academic Press.

Lachlan, K.A, Spence, P.R., Eith, C.A. & Keaster, M.R. (2007). Of storms and knowledge gaps: Differences in crisis knowledge across age, race, and socioeconomic status during Hurricane Katrina. Paper presented at the 91st annual meeting of the Western States Communication Association, Seattle, WA.

Lindell, M. K. & Perry, R. W. (2004). *Communicating environmental risk in multiethnic communities*. Thousand Oaks CA: Sage.

Lindell, M.K., & Whitney, DJ. (2000). Correlates of household seismic hazard adjustment adoption. *Risk Analysis*, *20,* 13-25.

Maslow, A. (1954). *Motivation and personality*. New York: Harper.

Miletti, D.S. (1999) *Disasters by design: A Reassessment of Natural Hazards in the United States.* Washington, D.C.: Joseph Henry Press.

Morrow, B.H. (1999). Identifying and mapping community vulnerability. *Disasters, 23,* 11–18.

Murch, A.W. (1971). Public concern for environmental pollution. *Public Opinion Quarterly, 35,*100-106.

Peacock, W. G. (2003). Hurricane mitigation status and factors influencing mitigation status among Florida's single-family homeowners. *Natural Hazards Review*, *4*, 149-158

Peacock, W. G., & Girard, G. (1997). Ethnic and racial inequalities in hurricane damage and insurance settlements. In W. G. Peacock, B. H. Morrow, & H. Gladwin (Eds.) *Hurricane Andrew: Ethnicity, Gender and Sociology of Disasters*, (pp.171-190), London: Routledge.

Perry, R.W., & Lindell, M.K. (1991). The effects of ethnicity on evacuation decision-making. *International Journal of Mass Emergencies and Disasters, 9* (1), 47-68.

Perry, R. W., & Mushkatel, A. H. (1986), *Minority citizens in disasters*, University of Georgia Press.

Sellnow, T., M. Seeger & Ulmer, R. R. (2002). Chaos theory, informational needs and the North Dakota floods. *Journal of Applied Communication Research*, *30*, 269-292.

Sharkey, P. (2007). Survival and death in New Orleans: An empirical look at the human impact of Katrina. *Journal of Black Studies*, *37*, 482-501.

Sherard, R. (1972). The attitudes of blacks toward the metropolitan press: A study of residents in a black community of Detroit, Michigan. Unpublished Master's Thesis, Michigan State University.

Spence, P.R., Westerman, D.K., Skalski, P., Seeger, M., Sellnow, T., & Ulmer, R. (2006). Gender and age effects on information seeking after 9/11. *Communication Research Reports*, *23*, 217-223

Spence, P.R., Lachlan, K.A, & Griffin, D. (2007). Crisis communication, race, and natural disasters. *Journal of Black Studies, 37* (4): 1-16.

Spence, P.R., Lachlan, K.A, & Shelton, A. (In Press). Age, gender, and information seeking patterns following an urban bridge collapse. *Journal of Emergency Management*.

Spence, P.R., Lachlan, K.A, & Burke, J. (2008). Crisis preparation, media use, and information seeking: Patterns across Katrina evacuees and lessons learned for crisis communication. *Journal of Emergency Management, 6* (1), 11-23.

Spence, P.R., Lachlan, K.A, & Burke, J. (2009). Differences in crisis knowledge across age, race, and socioeconomic status: Hurricane Ike. Paper presented at the 94th annual meeting of the National Communication Association, Chicago, IL.

Tierney, K. J. (1989). The social and community contexts of disaster, In R. Gist & R. Lubin (Eds), Psychosocial Aspects of Disaster. New York: John Wiley and Sons.

Turner, R.H., Nigg, J.M., Paz, D.H., & Young, B.S. (1981) *Community response to earthquake threat in southern California*. Institute for Social Science Research, University of California, Los Angeles.

Williams, D.E. & Olaniran, B.A. (2002). Crisis communication in racial issues. *Journal of Applied Communication Research, 30* (4), 293-313.

Zacharia, A. & Patel, B. (2006). Deaths Related to Hurricane Rita and Mass Evacuation. *CHEST, 4*, 124S.

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