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# The burdens of social capital: How socially-involved people dealt with stress after Hurricane Katrina

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## ABSTRACT

Research shows that those with greater social capital enjoy better physical and mental health. The current study illuminates a paradox of social capital which may afflict those involved in traumatic events. Several years of survey data reveal a dynamic picture of the link between social capital and stress following Hurricane Katrina. Results reveal that initially after Katrina, those who were more socially embedded carried the greatest load with respect to helping the displaced population, thus experiencing more stress. But over time, the most socially-involved then snapped back from their stressful experiences more rapidly than isolates. This confirms that over the course of stressful events, social involvement first exposes people to more stress, but as time passes, provides them a significant buffer against negative psychosocial experiences.

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## 1. Introduction

One of the most common claims in the literature is that social capital is beneficial and that residents of communities with an abundance of social capital tend to live healthier and happier lives and are better able to withstand psychological distress. That is, people who have more active social lives, who participate more in group activities, who are more involved in community and civic affairs, and who interact comfortably with a wider range of people have better social support networks and deal with life's problems more easily than those who are more socially isolated. The empirical literature supporting this view is diverse in terms of the contexts in which the data are collected, the types of data analyzed, the methods of analysis used, and the outcomes explored. On its face, the body of evidence regarding the conventional view that social capital is a good thing seems fairly robust (see Berkman, 2000; Cobb, 1976; Ellaway and Macintyre, 2007; Folland, 2007; House et al., 1988; Kawachi et al., 1999; Mulvaney and Kendrick, 2005; Poortinga, 2005; Putnam, 2000).

However, a closer look reveals that the true contours of this relationship are in fact not very well understood, suggesting a need for additional research. For example, one major problem is that most of these studies describe and focus on fairly mundane situations and contexts. However, the argument can easily be made that the really interesting questions start to emerge when the supposed benefits of social capital are put to the test. That is, under non-routine situations, does social capital still produce better outcomes? If social capital is only beneficial in day-to-day circumstances, the implications for disaster research, especially research on recovery from disasters, are not promising. If, however, social capital does have a big payoff for those involved in recovery efforts, then this set of ideas may come to occupy a central place in the disaster literature (see Ritchie and Gill, 2007). A second major problem is that the effects of social capital might be expected to vary somewhat over time, in which case it may have both pro's and con's.

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At the individual level, for example, it seems reasonable to suppose that the very thing that helps socially-embedded people in ordinary times – their greater involvement with other people – will impose special burdens on them in times of crisis. These are the very same people who most carry the load of helping others, who feel most responsible for others, who do most to coordinate others' activities in recovering from crisis, and on whom others most rely. Socially-connected people are probably subjected to the same strains as social isolates during a crisis, but they carry extra burdens as well. Their homes and property may be subjected to the same damage; their jobs may be just as endangered; their families may be put under the same strains; they may be just as displaced. But they often have to put their own or their families' concerns aside as they care for others.

The current study addresses these two issues and reveals a dynamic story that involves an arc from a normal situation, through a crisis, and back to recovery. Our main storyline is that during a major disaster, people with high social capital pass through an initial period of greater stress, because emergency situations tend to mobilize them, placing disproportionate burdens on their shoulders. Later, however, they snap back from the stress more quickly during the period of recovery. The reason for this trajectory, ironically, is the same through each phase: their social embeddedness. Their embeddedness initially imposes greater strains and responsibilities on them; but ultimately, their social embeddedness gives them greater support and enables them to recover more quickly and fully than socially isolated people. Below we explicate the reasons for this arc more fully and then test this model with unique data collected in several waves after Hurricane Katrina.

## 2. Background and relevant literature

There is ample literature on social capital, which is characterized by well documented confusion and uncertainty regarding fundamental issues of conceptualization and operationalization (Almedom, 2005; Portes, 1998). We thus begin by clarifying our analytical focus. The present study focuses on the individual level of analysis, and not the aggregate or ecological level. Further, although we use the term 'social capital', our conceptualization is closely aligned with the social support approach which focuses on individuals. Our focus does not include the macro-level variants of social capital focusing on the resources existing in the structure of relations between people or on community stocks of social capital (cf. Berkman, 2000; Cobb, 1976; Coleman, 1988; Ensel and Lin, 1991; House et al., 1988; Kawachi et al., 1997; Mitchell and LaGory, 2002; Paxton, 1999; Perry et al., 2008; Putnam, 2000; Sampson et al., 1999).

Despite the wide range of definitions of social capital, a dominant interpretation comes from Putnam (2000) who conceptualizes social capital as a triad of (1) social networks (embeddedness or engagement in the community), (2) trust in others (the expectation that others will engage in actions beneficial to them or to their community) and (3) norms of reciprocity. At the outset, we point out that our analysis is limited to the first two legs of that triad; embeddedness and social trust. Our data set, though unique and obtained under difficult conditions following Hurricane Katrina, do not permit us to examine norms of reciprocity – the social expectation that other people will respond in kind to your actions.

Micro-level social capital perspectives have proliferated in the public health literature for quite some time (cf. Berkman, 2000; Cobb, 1976; House et al., 1988). These and other scholars have worked for decades to document that people with high social capital and more social supports enjoy better physical and mental health outcomes than those who experience a deficit of these resources (Cobb, 1976; House et al., 1988; Perry et al., 2008). The specific mechanisms underlying this relationship are varied, but often cited candidates include that the well integrated have more people to lend them a hand when facing personal challenges; that their embeddedness gives them greater access to information on mental or physical health care options; or that it gives them impetus to lead a healthier lifestyle.

In contrast to this optimistic view is the idea that social capital is not always a plus. There are numerous reasons to expect that the degree of integration and the resultant social capital can be expected to be associated with negative outcomes at both the micro and macrolevels of analysis. Portes (1998, pp. 15–18) argues that strong in-group ties resulting from *bonding capital* has an exclusionary capacity, where out-group members do not have access to resources or are discriminated against. Indeed, this may explain why tightly-knit, evangelical Christian communities are linked to elevated rates of crime. High rates of bonding capital among in-group members in these communities comes at the expense of between-group ties – or *bridging capital* – which can strengthen a community's organizational capacity to control crime (Beyerlein and Hipp, 2005; Lee and Bartkowski, 2004; Shihadeh and Winters, 2010; Shihadeh and Steffensmeier, 1994).

Moreover, an extremely high premium on conformity resulting from strong ties can create resentment and cause young members to leave the group, seeking alternative avenues for personal expression. The problem of 'downward leveling norms' is also apparent when members of a group – particularly minority groups or those facing adverse conditions – cultivate norms that are antagonistic to success through mainstream routes such as norms promoting a violent disposition as a route to status (Anderson, 1999). The same issues are evident in the public health literature. For example, Kushner and Sterk (2005) cite the high rate of suicide attempts by females and the high rates of suicide among members of the military as cases of fatalistic suicide – those suicides occurring under the yoke of extremely high levels of social integration and hence normative and moral regulation. The common theme in this literature is the overt recognition that high levels of participation or solidarity do not always generate wonderful outcomes.

With respect to the current paper, this begs the question of why those with the most social capital would be more stressed in the wake of a disaster. One possibility is through the social influence pathway (Berkman et al., 2000). Those who are highly embedded are close to others in their network and tend to compare their attitudes, feelings, and behaviors

with them and modify them to make them more aligned (Marsden and Friedkin, 1994). This is why those people who are strongly tied to others with positive health behaviors tend to exhibit them as well, and vice versa (see Almedom, 2005). Thus, deeply embedded people during a crisis are more likely to be exposed to and influenced by people who are stressed, resulting in a reinforcing cycle. In contrast, social isolates will be exposed to fewer people, and thus fewer stressed people, insulating them from the social influence effect.

In addition to this mechanism, Ferlander (2007) argues that social embeddedness itself can be stressful. This is because being supportive of other people with problems is in itself a stressful experience, especially to those who already face socio-economic or other challenges. In their study of 222 household decisions makers in socioeconomically disadvantaged environments, Mitchell and LaGory (2002) find that 'bonding capital' is associated with greater mental distress. When there are few resources available, network members get leaned on for various forms of support because there is nowhere else to turn.

Some research has illustrated how this may be the case for highly embedded women as well. For example, in a study of women in 43 families in Boston, Belle (1982) found that those with greater network size tended to be more stressed about their friends and relatives. In a study of 285 black households, young adult women who received more support from extended kin exhibited none of the expected benefits, a paradoxical finding the authors associated with a 'psychological cost' of being embedded; in this situation they are scrutinized more closely and expected to follow suggestions from others that they received support from (Dressler, 1985).

In light of this literature, we are obviously not the first to suggest that social involvement may be a double edged sword. On the one hand, there is clearly substantial evidence to suggest that sometimes the social capital effect for individuals is affiliated with positive outcomes. On the other hand, evidence also continues to accumulate on the dark side of social capital, the negative by-products of social involvement. Extending this to our interest in post-disaster recovery behavior, we see a clear opportunity to integrate these opposing viewpoints into a temporally informed sequence of events involving social embeddedness and stress. Our hypothesized trajectory should look something like this: Immediately following a major disaster, the more socially involved and connected will be most readily activated to help carry the load during the recovery effort, for example volunteering, donating resources, and other activities. Indeed, this assertion is supported by the important study by Brown and Ferris (2007), who draw on data from more than 29,000 respondents in the national Social Capital Community Benchmark Survey and document that network and normative based social capital are associated with more charitable giving and more volunteerism.

This also means that of the two legs of the social capital triad that we examine, social networks (or embeddedness) and social trust, we expect this hypothesized relationship to exist mainly for embeddedness but not for social trust. Being highly embedded in community organizations will, by its nature, invoke greater burdens on those who are more involved because it is the mobilization of those organizations that are critical for survival during disasters. But having a high degree of trust in others, in-and-of-itself, is not something that exacts a disproportionately heavy burden during times of disasters.

For these reasons, we expect that those who are most embedded will be the ones to experience the most negative feelings, the most stress, anger, depression, and so forth. However, it is likely that this will be relatively short lived. This is because over the long term the social supports associated with embeddedness will be beneficial. Henderson and Whiteford (2003, p. 506), in discussing social capital and mental health succinctly point out that "episode duration might be shorter in highly supportive environments". The evidence that recovery from physical illness is expedited among physically ill people with extensive social supports has accumulated for several decades (see reviews in Broadhead et al., 1983; Uchino et al., 1996). The evidence as it relates to more psychosocially oriented outcomes is in shorter supply, in large part because it does not appear that many studies have focused specifically on this question. However, the conceptual argument is sound and our data allow us to test the expectation that the most embedded will also be those most likely to recover from these stressors most quickly. Below, we describe in detail the data which allow us to assess these expectations.

### 3. Data, measures, and analytical methods

To test our dynamic model of social embeddedness and stress through the Hurricane Katrina period, we require individual level data on these measures for a random population sample taken at more than one point in time.

Our post-Katrina data come from a series of surveys that we launched roughly 30 days after Hurricane Katrina struck, and were collected in three waves covering an 18-month period after the storm. The interviews for these surveys were conducted from (a) September 27 to November 29, 2005 ( $N = 1349$ ), (b) February to April, 2006 ( $N = 1008$ ), and (c) March to April, 2007 ( $N = 603$ ). Notably, the fall 2005 survey was conducted over a 2-month time-span, a period it turns out, of very significant and rapid change. To be sure, we did not initially intend for this sampling phase to last so long, but we felt it was critical to begin interviewing as soon as possible after the Hurricane, given that we were on the ground and suspected the situation was fluid. Thus, when we started the study, we were actually still waiting to hear whether our request for research funding had been approved, a problem that disaster researchers routinely face. We used student interviewers throughout, but initially, they were volunteers, and we were only able to collect data at a slower rate than when we were able to pay them. This lengthy data collection turned out to be a benefit in disguise, because we found that some effects were only measurable in the early part of the interviewing period and would surely have been undetectable if we had waited until the funding was approved. In order to extract the maximum information from this initial wave, in the analyses that follow, we break the first

post-Katrina wave of surveys, in autumn 2005, into four sub-waves: (a) September 27 to October 11 ( $N = 308$ ), (b) October 12 to November 5 ( $N = 352$ ), (c) November 6 to 18 ( $N = 328$ ), (d) November 19 to 30 ( $N = 348$ ). Combining these four sub-waves with the later two waves in 2006 and 2007, gives us a total of six waves. As we will see, most of the dynamic change occurs within the first two stressful months. In fact, we would likely have captured even more change had we interviewed immediately after the storm.

All our data are based on random-digit-dialed telephone samples, representative of the general population age 18 and over in East Baton Rouge Parish, LA. The post-Katrina interviews were conducted *only with respondents who already lived in Baton Rouge before the Hurricane – i.e., no evacuees are included in the sample*. All samples are weighted in the analyses presented here to reflect the combined age–gender–race/hispanic distributions of the community, according to US Census estimates for the year of the survey. Thus, all time-series reported here are treated as repeated cross-sections, with the special exception of the Spring-Fall panel, for reasons explained below. Our analyses conducted in the course of weighting the samples suggest no important demographic differences among the samples. Thus, we do not believe that our substantive results are artifacts of sampling variations.<sup>1</sup>

By utilizing these various data sources, we are able to analyze over time the impact of social capital on stress, over a period of crisis, gradual recovery and return to ordinary conditions. Our questionnaire contains a series of (mostly validated) instruments to measure our hypotheses (the full questionnaires will be made available online). Most of the questions are replicated from national surveys, and except for the questions specific to the aftermath of Hurricane Katrina, most of the questions have already been asked in the prior surveys in Baton Rouge, and in established surveys at the national level. Thus, we have good benchmarks with which to measure change.

The original survey instruments and the items used in various scales are provided in [Appendix B](#). The main indicators utilized in the analysis may be summarized as follows. *Social capital* is conceptualized primarily as social embeddedness/participation in the community and trust in others. We thus create six scales adapted from Putnam's 2000 SCCB survey, which, in turn, were mostly replicated from previous national surveys. Four of the scales are linked to embeddedness: *Associational Involvement*, *Civic Leadership*, *Faith-Based Engagement* and *Informal Socializing*. The other two scales measure trust: *Interpersonal Trust* and *Inter-Racial Trust*.

We use a variety of indicators of *Stress*, also detailed in [Appendix B](#). We expected that the post-Katrina situation in Baton Rouge – the closest major center of evacuation, which almost doubled in size overnight – would be stressful in a number of ways, and we sought to measure them. For generalized *Emotional stress*, we asked if people felt depressed or angry. For stressful feelings regarding *Fear of Social Disorder and Evacuees*, we asked a question about their potential fear toward evacuees.<sup>2</sup> We also asked a series of questions about their feelings of aggravation about traffic congestion, crowding in neighborhoods, stores, and schools, telephone disruptions, and rudeness. All indices in this analysis (Social Capital and Stress Factors) were created using a principle components factor analysis with a varimax rotation. Communalities were greater than 0.69.

Finally, we include some *Control Variables* in our analyses, to control for possible spuriousness of results, which are also detailed in [Appendix B](#). These include how long the respondent had lived in Baton Rouge, educational level, family status (a “married with children” dummy variable), race (a black dummy variable, where Black = 1), whether the respondent did unpaid volunteer work for the evacuees, and whether evacuees had stayed at the respondent's house. The last two items are not trivial or rare occurrences. Our surveys showed that fully half of Baton Rouge households housed evacuees – almost entirely family and friends – and that 60% of respondents did volunteer relief work, most more than once, and most with faith-based organizations.

We use straight forward methods of data analysis: time series of Pearson's correlation coefficients, backed up by multiple regressions that include the control variables just described. As indicated, most of our variables are scales or indexes, including all the social capital scales. Even though they are computed from categorical variables, most of these scales contain a large number of categories. For this reason, we use Pearson's correlations and multiple regressions rather than nominal or ordinal-level statistics. We test our hypothesis in two ways. First, we do this visually by graphing at several points in time the correlation between the six forms of social capital and the three measures of stress. Second, using an inferential test of our hypothesis we run multivariate models with an interaction term in the presence of control variables. To recall, we hypothesize that those with most social capital will carry the largest burden following the storm, but they will also bounce back more quickly than those with low social capital. Accordingly, we interact social capital with time – the number of days after the storm the respondents were surveyed. A negative coefficient for the interaction term suggests that the association between social capital and stress grows more negative over time; meaning that as time progresses, those with *more* social capital experience *less* stress.

<sup>1</sup> We specifically designed the study to avoid the problem of selectivity bias. Our sample is only of long-term Baton Rouge residents, not evacuees from areas affected by the storm. None of our respondents were moving in or out of town, nor were they displaced by the storm. This is a post-Katrina survey of respondents who lived in Baton Rouge before the storm. No evacuees are included in the sample.

<sup>2</sup> Even the LSU Chancellor mistakenly repeated one of the rumors in a broadcast email to the campus. There was said to be an uprising downtown, and angry evacuees were said to be marching in the direction of the LSU campus, a couple miles away. As a result of this rumor and email, the campus immediately emptied, although the rumor proved entirely untrue. While the Chancellor apologized for his error, the episode revealed the extent of fear and stress at the time.

## 4. Findings

### 4.1. Background

The main descriptive findings of our post-Katrina Baton Rouge surveys provide an important backdrop to our analysis of the role that social capital played. The full descriptive results [*will be available online*]. The most important points can be summarized as follows: (a) People in Baton Rouge felt mainly compassion toward evacuees, mingled with negative feelings of fear and irritation, too. (b) Rumors of crime were initially widespread, but after initially spiking, fear of crime subsided fairly quickly. Fear of crime continued its years-long decline; and fear after Katrina was not as high or as sustained as it was during the period that a serial killer was active in Baton Rouge (see Lee and DeHart, 2007). (c) Crowding in Baton Rouge produced substantial problems and irritants, though these have mostly subsided somewhat over time. However, even as the situation improved, blame of government rose, especially of federal and state government. Local government was better regarded. (d) Baton Rougeans were understandably angry and depressed after the disaster – but notably, their levels of optimism were even higher. However, they felt more hopeful about improvement in the economy than about Baton Rouge as a place to live.

In Table 1, we list the first-order Pearson Correlations between social capital and stress. These correlations are for all waves combined and, thus, are not disaggregated by time after the storm. In this aggregated form, it appears that the first three forms of social capital have a positive (and significant) association with stress. Simply put, those who have more associational involvement, engage in more civic leadership and informal socializing, actually experience more stress. For instance, those who engage in civic leadership tend to be more depressed and angry (.07), experience more fear of evacuees (.08) and feel more problems/aggravation because of the storm (.16). This is the so-called “dark-side” of social capital, that it carries an emotional/psychological toll. But the other results reveal a murkier picture. Indeed, those who trust more (socially and racially) and are more religiously engaged, actually experience *less* emotional stress. But even these results are not entirely consistent. For instance, those with more faith-based engagement, while less depressed and angry as the result of the storm (–.07), feel *more* problems as the result of the storm. In our view, this muddiness emerges because these results do not take into account the evolving relationship between social capital and stress over time.

To get a visual sense of our central hypothesis, we disaggregate the correlations in Table 1 by time since the storm, and then plot these values in Fig. 1. The vertical line approximates the occurrence of Hurricane Katrina. The first plot in Fig. 1 reveals the relationship between six different forms of social capital and one specific indicator of stress, feeling depressed or angry as the result of the storm. All six plots reveal initial support for our hypothesis, that immediately after the storm, the link between social capital and stress is positive (more social capital means more stress), then eventually turns more negative (more social capital means less stress). Consider, for instance, civic leadership. Immediately following the storm the link between this form of social capital and stress is relatively high, roughly .32. This means that respondents who were engaged in civic leadership were under greater stress than those who were not. But, later during the recovery phase, that correlation decreased to the point where it became slightly negative 18 months after the storm. In plain terms, it implies that the stress among the civically engaged resolves more quickly compared to those who are not civically engaged. Indeed, all six curves go in the predicted direction. Socially-embedded people show more emotional stress immediately after the disaster – presumably as they care for the greater numbers of people in their social networks who need assistance. But they rebound faster, evincing less stress than social isolates – presumably because they have more social support to bring them back to their normal pattern in ordinary times. In other words, the link between social capital and stress is time sensitive and evolves over time.

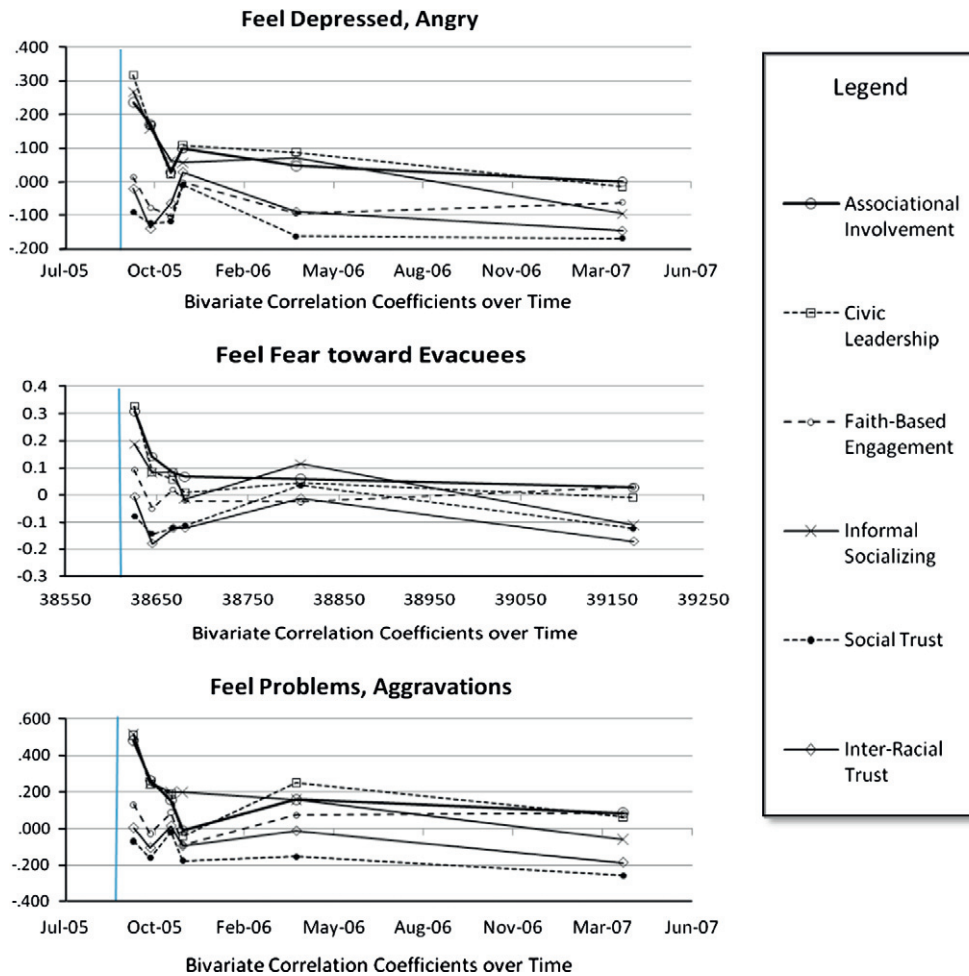
In the final phase of the analysis, we model social capital and stress in a multivariate context in the presence of relevant controls using OLS. To recall, there are three stress outcomes and six forms of social capital. Running a single model for each of these combinations (in the presence of controls) required 18 different regression models. For brevity we only report the coefficients for social capital main effect as well as the social capital – time interaction. However, to get a sense of the impact of the control variables, we list the full (and typical) results of one of the models in Appendix A. The appendix shows the coefficients for the model that predicts depression and anger when we include civic leadership as a form of social capital. The last two standardized coefficients in this model (and the other 17 models) are listed in Table 2.

**Table 1**  
Social capital and stress after Hurricane Katrina. Baton Rouge, 2005 (Pearson Correlations).

	Social capital					
	Associational involvement	Civic leadership	Informal socializing	Social trust	Inter-racial trust	Faith-based engagement
<i>Stress</i>						
Depressed-angry	.07**	.09**	.06*	–.09**	–.08**	–.07**
Fear evacuees	.08**	.06**	.05*	–.06**	–.09**	–.00
Feel problems due to Katrina	.16**	.19**	.16**	–.15**	–.07**	.05*

\*  $p < .05$ .

\*\*  $p < .01$ .



Sources of Chart Data:

2. September 27 to November 29, 2005, East Baton Rouge Parish (N=1,349), broken into 4 subsections
  - a. September 27 to October 11, 2005. N = 308.
  - b. October 12 to November 5, 2005. N = 352.
  - c. November 6 to 18, 2005. N = 328.
  - d. November 19 to 30, 2005. N = 348.
3. February to April, 2006, East Baton Rouge Parish. N = 1,008.
4. March to April, 2007, East Baton Rouge Parish. N = 603.

**Fig. 1.** Social capital and stress: depression, fear and aggravation, post-Katrina, over time.

The first row of Table 2 reports the main effect of civic leadership on three forms of stress. The first value (.144) is from the model that predicts depression and anger. As in Table 1, the link between civic leadership and depression/anger is positive, suggesting that more social capital leads to more stress. This appears also to be true regarding fear of evacuees (.087) and feelings of problems resulting from the storm (.244). But the next row demonstrates how the relationship varies with time. The first model, predicting depression and anger, reveals a statistically significant interaction coefficient of  $-.072$ . This suggests that the linear association between civic engagement and depression becomes more negative as time progresses. This provides an inferential test to what is revealed in Fig. 1, that the link between social capital and stress begins to invert over time. Those with strong connections to their community feel the greatest burden – and thus the greatest stress. But later, during the recovery phase, it is the social support of those who are embedded in networks of social capital that allows these individuals to recover more quickly. In other words, the negative side of social capital gives way to its positive side.

Likewise, social capital in the form of associational involvement and informal socializing reveals precisely the same pattern. This means that all three types of embeddedness create greater stress initially but then help individuals bounce back more quickly. On the other hand, the trust-based forms of social capital (social trust and racial trust) provide only limited support for this idea. Only one of the coefficients in the racial trust variable is significant, that which predicts feeling

**Table 2**  
Regression coefficients linking social capital with stressors.

Social capital	Stress		
	Depressed-angry	Fear evacuees	Problems from Katrina
Civic leadership	.144*	.087*	.244*
Civic leadership * time	-.072*	-.058*	-.054*
Associational involvement	.120*	.112*	.217*
Associational involvement * time	-.075*	-.069*	-.061*
Informal socializing	.127*	.113*	.280*
Informal socializing * time	-.287*	-.261*	-.440*
Inter-racial trust	-.032	-.075*	.010
Inter-racial trust * time	-.137	-.091	-.228*
Social trust	-.080*	-.084*	-.067*
Social trust * time	-.133	.001	-.258*
Faith-based engage	-.063*	-.015	.004
Faith-based engage * time	-.015	.021	.045

problems due to Katrina (–.228). Likewise, the social trust variable interaction term is only significant when predicting this form of stress. In other words, we do not find consistent support for the idea that social trust, as a dimension of social capital, follows the hypothesized trajectory. The only form of social capital that did not come out as predicted is the faith-based engagement. Specifically, the main effects for depression were negative, revealing that more such engagement equates with less depression, and the interaction terms were not significant, suggesting that this relationship does not alter significantly over time. We discuss the implication of these findings in the section that follows.

## 5. Discussion

Our analysis heeds the recent call by Tierney (2007) to begin bringing mainstream sociological concepts into the mostly applied field of disaster studies (see also Patterson et al., 2010, for another first step). To accomplish this, we analyzed post-Hurricane data for Baton Rouge, LA – a community significantly impacted by the evacuation of New Orleans following the flooding associated with Hurricane Katrina. The multi-wave nature of these data allows us to illustrate a paradox of social capital and social embeddedness that no other studies to date have captured. Most literature on social capital indicates that those who are socially active and engaged are happier and experience less stress than those who are socially isolated. However, this literature is limited in two ways; first, it almost exclusively addresses stress in ordinary, non-crisis conditions and, second, it does not examine dynamic change over time.

Relying on a growing body of research in the public health literature, we find that this picture should be modified for times of crisis and recovery. Unlike during ordinary times, during periods of crisis people who are socially active and engaged are actually likely to initially experience *greater stress* than the social isolates. This is because their embeddedness in the community imposes extra burdens on them. However, over time, these same people recover more quickly and become able to handle greater stress again, as they did before the crisis. The reasons for this pattern, we argue, are the same throughout the cycle. Those with greater social capital have greater social networks and social support during ordinary times that enable them to handle stress better. During the height of a crisis, this same social embeddedness places extraordinary demands and burdens on them, as they try to help and support their wide networks of family, friends, neighbors, colleagues, and community members. As the recovery from the crisis proceeds, those with greater social capital are able to snap back more effectively and handle stress better, as they begin to routinize their activities and once again rely more on their social networks for support.

Obviously, this process does not apply to disasters so severe that they completely undermine the community and its social ties. Such is the case in those communities in and around New Orleans that were permanently displaced by Katrina, and where the notion of social embeddedness no longer applies. Years earlier, this was poignantly described by Erikson (1976) in his seminal work on the Buffalo Creek Flood, where a dam burst and obliterated the town of Man, West Virginia in 1972. He describes the social aftermath as “a gradual realization that the community no longer exists as an effective source of social support... [and people] ... learn that they are isolated and alone and wholly dependent on their own individual resources” (Erikson, 1976, p. 154).

Given that more involved people carry a larger burden and hence are more stressed, this raises another key question: What can be done to make both individuals and communities more resilient? Our take on the post-Katrina situation, based on our front lines knowledge, the data we have collected, and the results from studies conducted by other scholars, is that individuals carried much of the burden of initial relief efforts because organizational efforts had a difficult time mobilizing. We suspect that the individual stressors began to subside when organizational efforts finally coalesced and were able to start addressing the recovery effort on the scale that it required. Thus our initial suggestion for greater success in future recovery efforts is the facilitation of ties between individuals across small, medium, and large scale organizations. By integrating individual social supports with systemically based structural forms of support, very large scale disaster recovery efforts, such as that required in the wake of Katrina, may provide the individual and community level resilience needed to carry recovery efforts through to completion.

There are two caveats in the findings: First, as we expected, of the two legs of social capital triad that we examine here, only networks, or embeddedness invokes the counter-intuitive hypothesized trajectory of great stress followed by quick recovery. We find only limited support that the social trust dimension of social capital follows this trajectory. Second, a major exception to the embeddedness findings is that social capital in the form of faith-based engagement does not follow the hypothesized trajectory. The first order correlations revealed that those who were involved in faith-based institutions did not experience more stress, or the dark side of capital, during the early stages of the Hurricane, but nor did they experience an accelerated recovery later in time. This suggests that faith-based engagement might invoke unique outcomes and, thus, it cannot be grouped readily with the other forms of social capital. Indeed, even the notion of faith-based engagement may be too generic to capture the complexities of religious involvement and other outcomes. For instance, Bartkowski and Xu (2007) found that not all forms religion-based social capital were associated with lower drug use among teens. Among the three forms of religion-based social capital considered in their study, the only one that was linked to lower teen drug use was integration within congregational networks (i.e., attending worship services). Thus, further research is required to better understand the link between faith-based social capital and the stress during a crisis.

There is an additional, theoretical implication of our study. This analysis illustrates that it can be very fruitful to inform the subfield of disaster studies with theoretical concepts from the mainstream of sociology. Ritchie and Gill (2007) recently argued that social capital theory had not yet found a place in the area of disaster research, but also illustrated that there were several different ways it could be used to inform various issues in that field; and Patterson et al. (2010) have begun the theoretical work of incorporating social capital and community conceptual models into disaster research.

In sum, our study demonstrates that social capital and embeddedness are not always beneficial. While social capital is an important resource, it also a handicap for those proximate to disasters and for those involved in disaster relief efforts. Future research should continue to build on this study by applying social capital ideas to those directly enmeshed in disasters themselves, to determine whether such individuals are more likely to help their friends and neighbors who have been affected, and whether such individuals recovery more quickly.

#### Appendix A. Full model results predicting stress (depressed/angry) with civic leadership

	<i>b</i>	Std. error	Beta	<i>t</i>	Sig.
Constant	-.044	.106		-.414	.679
Years lived in Baton Rouge	-.002	.001	-.066	-3.411	.001
Black (dummy var)	.081	.041	.039	1.996	.046
Education	-.032	.011	-.059	-2.886	.004
Married with children	-.174	.039	-.087	-4.499	.000
Done unpaid volunteer work for evacuees	.028	.012	.047	2.345	.019
Evacuees staying in your house now	.248	.060	.078	4.110	.000
Days since the storm landfall	-4.46E-005	.000	-.009	-.458	.647
Civic leadership	.146	.030	.144	4.952	.000
Civic leadership × Days	.000	.000	-.072	-2.539	.011

#### Appendix B. Survey instruments and scale construction

##### Social Capital Indicators

- **Associational Involvement.** [*Number of involvements*] Now I'd like to ask whether you have taken part in activities with different groups and organizations. I'm going to read a list; just answer YES if you have been involved in the past 12 months with this kind of group. An adult sports club or league, or an outdoor activity club, (How about) A youth organization like youth sports leagues, the scouts, 4 H clubs, and Boys & Girls Clubs, (How about) A parents' association, like the PTA or PTO, or other school support or service groups, Activities at your church or place of worship, other than attending services? This might include teaching Sunday school, serving on a committee, attending choir rehearsal or a retreat. Or working with any organization affiliated with religion, such as the Knights of Columbus or a bible study group, A neighborhood association, like a block association, a homeowner or tenant association, or a crime watch group, A charity or social welfare organization that provides services in such fields as health or service to the needy, A professional, trade, farm, or business association, Any other hobby, investment, or garden clubs or societies, And do you belong to any other kinds of clubs or organizations? Yes, No, Don't Know, Refused.
- **Civic Leadership.** [*Factor*] Associational Involvement [previous indicator]. "About how often have you . . . ? [IF NECESSARY PROBE WITH CATEGORIES]. Attended a club meeting, attended any public meeting in which there was discussion of town or school affairs? Every week (or more often), Almost every week, Once or twice a month, A few times per year, Less often than that, Never, Don't Know, Refused." "In the past twelve months, have you served as an officer or served on a committee of any local club or organization? Yes, No, Don't Know, Refused."



- **Informal Socializing.** [Average] About how often have you ...? [IF NECESSARY PROBE WITH CATEGORIES]. Had friends over to your home, Visited relatives in person or had them visit you, Socialized with co-workers outside of work, Played cards or board games with others, Hung out with friends at a park, shopping mall, or other public place? Every week (or more often), Almost every week, Once or twice a month, A few times per year, Less often than that, Never, Don't Know, Refused.
- **Social Trust.** [Average] "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people? Most people can be trusted, Can't be too careful, Other, depends (Volunteered), Don't Know, No answer." "Next, we'd like to know how much you trust different groups of people. First, think about [GROUP]. Generally speaking, would you say that you can trust them a lot, some, only a little, or not at all? People in your neighborhood, (How about) People you work with, People at your church or place of worship, People who work in the stores where you shop, The police in your local community. Trust them a lot, Trust them some, Trust them only a little, Trust them not at all, (VOLUNTEERED) Does not apply, Don't Know, Refused, (CLARIFY IF NECESSARY: How about in general?)"
- **Inter-Racial Trust.** [Average of groups R does not belong to] Next, we'd like to know how much you trust different groups of people. First, think about [GROUP]. Generally speaking, would you say that you can trust them a lot, some, only a little, or not at all? ... (How about) White people, What about African Americans or Blacks, What about Asian people, How about Hispanics or Latinos. Trust them a lot, Trust them some, Trust them only a little, Trust them not at all, (VOLUNTEERED) Does not apply, Don't Know, Refused, (CLARIFY IF NECESSARY: How about in general?)
- **Faith-Based Engagement.** [Average] "Are you a member of a local church, synagogue, or other religious or spiritual community? Yes, No, Don't Know, Refused." "Not including weddings and funerals, how often do you attend religious services? [IF NECESSARY PROBE WITH CATEGORIES]. Every week (or more often), Almost every week, Once or twice a month, A few times per year, Less often than that, Don't Know, Refused." "Now I'd like to ask whether you have taken part in activities with different groups and organizations. I'm going to read a list; just answer YES if you have been involved in the past 12 months with this kind of group. Activities at your church or place of worship, other than attending services? This might include teaching Sunday school, serving on a committee, attending choir rehearsal or a retreat. Or working with any organization affiliated with religion, such as the Knights of Columbus or a bible study group. Yes, No, Don't Know, Refused."

#### Stress Indicators

- **Feel Depressed, Angry.** [Factor] Have you yourself had any of the following feelings because of what's happened as a result of the Hurricanes? Depressed, Angry. Yes, Yes, just a little, No, Don't Know, No answer.
- **Feel Fear toward Evacuees.** [Factor] When you think of people displaced by the Hurricanes who are staying in Baton Rouge, do you have any of the following feelings? Irritation or bother, Fear or concern. Yes, Yes, just a little, No, Don't Know, No answer.
- **Feel Problems, Aggravations.** [Factor] How much of a problem has [NAME FIRST ITEM] been for you and your family lately [READ ANSWERS]? Traffic congestion, Commuting, Difficulties in shopping for groceries and household items, Crowding in your house or apartment, Crowding in your neighborhood, Crowding in the schools, Difficulties getting through on the telephone, People being rude or unfriendly. A very serious problem, A somewhat serious problem, A minor problem, Not a problem at all, Don't Know, No answer.

#### Control Variables in Multiple Regressions

- **Lived in Baton Rouge.** How long have you lived in Baton Rouge? [Record answer in years, if less than 1 year record 0.]. All my life, Don't Know, No answer.
- **Education.** What is the highest grade of schooling that you have completed? 8th Grade or less, Some high school, High School Diploma, Vocational/Technical school, Some College, College degree, Some graduate school, Graduate degree, Don't Know, No answer.
- **Married with Children Dummy.** "Are you currently married, living with a partner, separated, divorced, widowed, or have you never been married? Married, Living with partner, Separated, Divorced, Widowed, Single, never married, Don't Know, No answer." "Do you have children? How many? None, One, Two, Three, Four or more, Other answer, No answer."
- **RACE-Black Dummy.** Do you consider yourself to be: [READ RESPONSE OPTIONS]. White, Black, Asian, American Indian, Other, Don't Know, No answer.
- **Done Unpaid Volunteer Work for Evacuees.** Have you done unpaid volunteer work to help Hurricane evacuees since [date: six months prior]? [If yes] More than once since [date]? No, haven't done volunteer work since [date], Once, More than once, Don't Know, No answer. [If once] How about more than once at any time since the Hurricanes? Just Once, More than once, Don't Know, No answer. [If no] Did you do unpaid volunteer work to help Hurricane evacuees at any time since the Hurricanes? [If yes] More than once? No, haven't done volunteer work, Once, More than once, Don't Know, No answer.
- **Evacuees Staying at House Now.** [Recoded from previous] Do you NOW have people staying in your house or your own apartment who were displaced by the Hurricanes?

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