Bridging Social Capital through the Techno-subsystem: A Qualitative Analysis of GoFundMe Requests for Hurricane Relief

Monica Bixby Radu
Southeast Missouri State University, mradu@semo.edu

Lisa McManus
North Carolina State University, lmcmanu@ncsu.edu

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Families often rely on their kin networks during times of natural disasters, as governmental response and community preparedness may be lacking during extreme weather conditions, such as hurricanes and other natural disasters. Cutter and colleagues (2006) define natural disasters as major adverse events that result from natural processes of the earth, and hurricanes are included in this definition. Hurricanes may create community crisis and present challenges for social institutions, including schools, neighborhoods, and families (Howat, 2018). Loss of loved ones contribute to the extreme stress associated with surviving a natural disaster (Hobfoll, Freedy, Green, & Solomon, 1996). Natural disasters also contribute to a sense of hopelessness, as individuals may lose their roles in their communities (Walsh, 2006). Natural disasters have the capacity to cause macro-level infrastructure damage, as well as individual-level property damage. Survivors of natural disasters may face mental and physical health issues and may experience displacement and homelessness in the aftermath of a disaster (Neria et al., 2008). The immediate and long-term negative consequences associated with natural disasters stress the importance of understanding how individuals and families cope with these catastrophic events.

Studies suggest that natural disasters do not affect all people equally. Storms and other natural disasters tend to exasperate inequality, as disadvantaged groups of people often face the most difficulties accessing resources in the aftermath of these events (Neumayer & Plümper, 2008). Additionally, mortality from disasters tends to be highest in low-income and disadvantaged areas (Guha-Sapir, 1991). Deaths among lower-income individuals and communities are largely attributable to difficulties finding adequate shelter during and after a storm (Mathbor et al., 1993). Mathbor (2007) argued that the devastating losses during and following Hurricane Katrina exposed this issue because many socially disadvantaged individuals and families lacked resources to evacuate their homes and take shelter in safe housing conditions. Other scholars identify that certain social and demographic characteristics place individuals at a

higher risk for experiencing negative outcomes following a natural disaster. For example, Gordon-Hollingsworth and colleagues (2018) found being female, having lower levels of paternal education, and residing in a rural community were associated with higher rates of mental health issues following a storm. In addition, drawing from a sample of African American and White survivors of Hurricane Katrina (N = 1,294), Elliot and Pais (2006) found racial differences in regards to individual-level responses and outcomes following the storm. African Americans were more likely to report drawing support from their religious beliefs in the aftermath of the hurricane, while whites reported relying on family members and friends. Consequently, because African Americans' family members and friends were more likely to have been affected by the storm, the authors argue that their social networks may have been a source of strain, rather than a basis of support. In terms of employment, African Americans were four times more likely than whites to lose their jobs following Hurricane Katrina (Elliot & Pais, 2006). Taken together, these findings reiterate that natural disasters do not affect all individuals and communities in the same ways.

Social capital is important during and in the aftermath of natural disasters, such as hurricanes. Families often rely on each other in difficult times, but what happens when families do not have adequate resources to provide support for themselves and other family members? *Ecological systems theory* stresses the importance of multiple contexts, and we argue that the techno-subsystem is one context where families may draw support for relief following a storm. Requesting financial assistance online via crowdfunding has emerged as an alternative method for seeking economic assistance after a hurricane. Therefore, drawing from literature on social capital and ecological systems theory, we qualitatively explore how individuals justify their requests for their family members via the crowdfunding website, *GoFundMe.com*. We discuss the implications of these framings and consider how social capital from multiple ecological social systems are valuable for family resiliency after a hurricane.

Literature Review

Family Resiliency and Social Capital

Researchers recognize the importance of examining the coping strategies of families that have been affected by national disasters. Governmental responses can provide both immediate and effective relief to individuals and families affected by natural disasters (Skoufias, 2003). However, some scholars note that these responses may have long-term negative consequences that contribute to both social disadvantage and inequality in the years following a storm (Holzmann & Jorgensen, 2001). Therefore, how individuals and families cope with hurricanes is an area of grave concern.

From a family systems perspective, families are resilient, and family-level protective factors may help buffer against the negative consequences associated with catastrophic events. For example, Walsh (2006) suggests that a family's belief system, organizational patterns, and communication skills provide a foundation for resiliency. More recently, Hackbarth and colleagues (2012) argued that they found support for Walsh's *family resiliency theory* among their sample (N = 452) of individuals affected by Hurricane Katrina. They discovered that hope, the ability to operate under stress, and spirituality helped families cope after experiencing a natural disaster.

Other studies draw from *social capital perspective*, maintaining that family bonds are imperative for both positive family functioning and coping with traumatic life events. Social capital theory poses that social connectedness and bonds between family members are especially important in times of need (e.g., Marin, Bodin, Gelcich, & Crona, 2015; Mathbor, 2007). Social capital encompasses concepts, including (1) social networks, (2) social connectedness, (3) social cohesion, and (4) social solidarity. Following Coleman (1990), we use social capital theory as a framework for our study, suggesting that connections between and among individuals produce social outcomes, including financial assistance following a natural disaster. Individuals can draw from their social capital through various social networks because social capital also reflects

relationships between people and how individuals benefit through their relationships with others and participation in groups (Coleman, 1988; 1990; 1991; Putnam, 2000).

Social capital is imperative for helping to relieve some of the severe consequences associated with hurricanes. For example, social capital in the form of supportive relationships can help a community recover following a natural disaster (Marin, Bodin, Gelcich, & Crona, 2015). Mathbor (2007) identified three forms of social capital that are particularly useful in the aftermath of catastrophic events: (1) bonding within communities, (2) bridging communities, and (3) linking communities. *Bonding* within communities refers to sustained interaction among community members, coordination of community activities, and social cohesion and solidarity within a community. *Bridging* communities signifies partnerships between communities, and these relationships have the potential to identify the needs of a community and develop collaborative efforts to address them. *Linking* communities denotes how various social institutions and organizations within and among communities can work together to help provide relief for communities and the families that encompass them (Mathbor, 2007). Taking a qualitative approach, Hawkins and Maurer (2009) examined how these three types of social capital— *bonding*, *bridging*, and *linking*—were utilized by families following Hurricane Katrina in 2005 in New Orleans. They addressed how residents drew from their social networks to (1) survive the storm, (2) relocate following the storm, and (3) rebuild their lives and communities in the aftermath of the hurricane. Drawing from the experiences of 40 families, the authors found that among low-income families, reliance on all three forms of social capital were important for individual, family, and community survival. Participants described that *bonding* social capital was important for immediate support, while *bridging* and *linking* had implications for long-term rebuilding and subsistence. Additionally, more recently, Hikichi and colleagues (2018) found that bonding social capital and relocating community members together following a natural disaster helped preserve community ties and enhanced cognitive functioning among survivors.

Social capital operates at the community level as well as the individual level. Putnam's (2000) seminal work addresses how individuals participate in their communities through civic engagement and social connectedness. He argued that higher levels of social connectedness contribute to higher levels of trust, and the more people trust one another, the more likely they are to help one another in times of need. Social capital measured by group membership, perceived fairness, trust, and reciprocity proved to be important for low-income Mexican Americans in disaster prone coastal regions (Reininger et al., 2013). Reininger and colleagues found that when individuals had higher levels of trust, they were more likely to be better prepared for catastrophic events, even after controlling for age, gender, ethnicity, education, employment status, and income. Additionally, drawing from in-depth interviews among participants who had been affected by a natural disaster, Cheung, McColl-Kennedy, and Coote (2017) found that at the individual level, being tightly integrated within a social network helped promote well-being following a natural disaster. While social capital has the potential to reduce community distress, Snowden (2005) argues that the opposite is also true— community distress suppresses social capital. Natural disasters may disrupt (1) community engagement, (2) trust, and (3) reciprocity. For example, Albrecht (2018) found that natural disasters are associated with changes in social trust, particularly when fatalities are high following a disaster.

It is important to note that the concept of social capital has been critiqued across disciplines (e.g., Arneil, 2006; Daly & Silver, 2008; Navarro, 2002, Tzanakis, 2013). For example, Tzanakis (2013) argues that social capital means different things across the social sciences, and it is best suited as an individual-level concept. Daly and Silver (2008) suggest that the meaning of social capital is ambiguous, and Kushner and Sterk (2005) argue that social capital theorists often focus on social cohesion while neglecting the importance of class relations as a determinant for various outcomes. While these assessments are noteworthy, we follow numerous other scholars in arguing that the concept of social capital is useful for understanding the ways in which families can cope with traumatic life events (Aldrich & Meyer, 2014; Airriess et al.,

2008; Aldrich, 2012; Dynes, 2006; Cheung et al, 2017; Hawkins, 2010; C. Procopio & S. Procopio, 2007).

Social capital is fluid and changes over time at both an individual-level and structurally within communities. Consequently, natural disasters may present obstacles for the accessibility of social capital among families and within communities. In the following section, we argue that following a natural disaster, individuals and families may be required to draw from social capital beyond the microsystem to seek help through the various other levels of the ecological system.

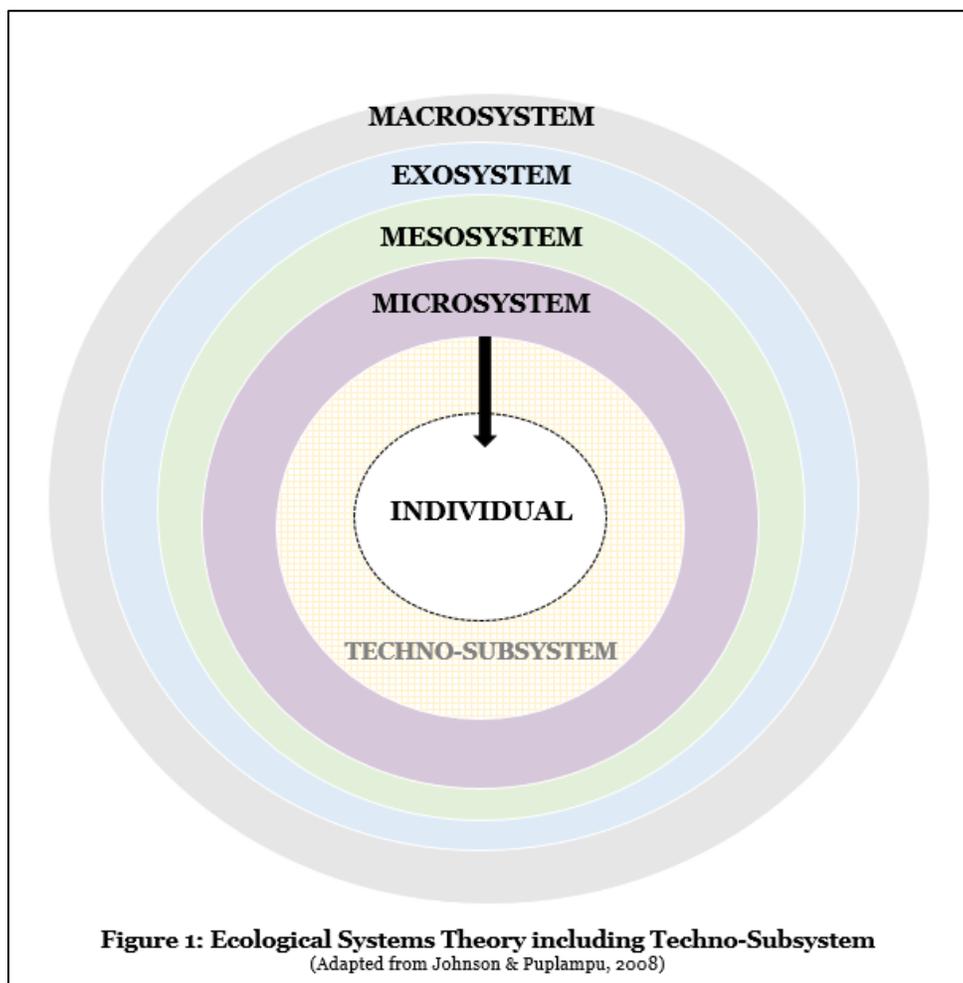## Ecological Systems Theory and Disaster Relief

Ecological systems theory underscores that individuals are embedded in multiple contexts and each context has the potential to influence individuals and families and the ways in which they cope with natural disasters. Bronfenbrenner (1974; 1979) conceptualized the ecological environment as a set of nested structures. The *microsystem* is an individual's immediate environment, consisting of patterns of activities, roles, and interpersonal relationships that individuals experience in each setting (Bronfenbrenner, 1979). The *mesosystem* comprises the interrelations among two or more settings in which individuals actively participate, such as relationships among home, community, work, and school. The *exosystem* reflects individuals' indirect environments, which may include friends of friends and extended family members. The *macrosystem* refers to lower-order systems that exist at the level of the subculture, including social and cultural values and belief systems (Bronfenbrenner, 1979). Applied to disaster relief, Howat (2018) argued that beyond youths' families, schools are important for disaster relief. Howat suggested that schools are valuable social institutions for helping with communication efforts before, during, and after a natural disaster. School personnel are often responsible for notifying families and their children of emergency response and evacuation plans. School districts may also help provide physical and mental health services following a storm, and these services may be difficult for many families to access on their own (Howat, 2018).

The importance of collaborative efforts among governmental agencies, non-profit organizations, schools, community members, families and individuals after a natural disaster demonstrate how the interconnectedness among and between contexts helps in providing immediate and long-term relief services. The significance of collaborative efforts is a common theme in natural disaster literature; yet, Calo-Blanco and colleagues (2017) argue that more research is needed to better understand the linkages between ecosystems and human societies following catastrophic storms. Technology, particularly the Internet, is part of the ecological *techno-subsystem* (Johnson & Puplampu, 2008), a subsystem found between the individual and the microsystem. Johnson and Puplampu (2008) proposed that the ecological techno-subsystem is a dimension of the microsystem where individuals interact with both human and nonhuman sources of information. For example, an individual may become aware of a family member's need through direct human-to-human communication, while also learning of this need through nonhuman sources of information. Additionally, Johnson and Puplampu (2008) argue that the use of technology through the techno-subsystem helps facilitate communication across families, schools, and communities. Interaction through the techno-subsystem allows for ongoing, reciprocal interaction (Johnson, 2010), which may be beneficial before, during, and following a natural disaster. Figure 1 visually displays ecological systems theory, demonstrating how technology is embedded within the microsystem of immediate social environments.

Techno-Subsystem and Crowdfunding

Crowdfunding is a method of raising capital through collective efforts, which often includes a large pool of individuals (Fundable, 2019). Online crowdfunding would not be possible without the reciprocal relationship between human and non-human communication within the techno-subsystem (Johnson, 2010). Crowdfunding primarily takes place online through social media and crowdfunding platforms (Fundable, 2019). The growing popularity of crowdfunding demonstrates that individuals are not only willing to collaborate their time or ideas to help address social problems, but they are also willing to draw from their own personal finances to help support social initiatives and issues within society

(Gleasure & Feller, 2016). Some argue that crowdfunding is not a particularly new phenomenon, as Howe (2008) argues that community fundraising is the backbone of America's political system. Yet, Gleasure and Feller (2016) argue that the growth of the Internet and the popularity of crowdfunding through social media has simplified and accelerated individuals' abilities to financially participate in social initiatives.

Figure 1: Ecological Systems Theory including Techno-Subsystem
(Adapted from Johnson & Puplampu, 2008)

The crowdfunding website GoFundMe.com helps provide financial support for social initiatives by reaching a large pool of potential funders through shares on social media pages, including Facebook, Instagram, and Twitter. Scholars note that social capital is particularly useful in

obtaining financial support through crowdfunding websites because higher levels of social connectedness leads to more online sharing and more potential contributors (Zheng et al., 2014). Online contributors through social media are more likely to contribute to some causes than others. Health-related causes that reflect immediate needs are often one of the most donated-to causes (Saxton & Wang, 2014). Saxton and Wang argue that certain social initiatives are deemed more "socially acceptable" than others, which explains why some crowdfunding efforts are highly successful and others receive little to no financial support. Recently, Klinenberg (2018) argued that the Internet and social media are important for human connectedness, as they allow individuals to share information with family and friends in real time. Through social media, individuals often share information ranging from their ordinary daily activities to their personal struggles and setbacks. While some research suggests that the Internet may have isolating effects, Klinenberg argued that the most reliable data shows that "social media has a positive effect on both the size and diversity of people's personal networks" (p. 42).

Variations in Social Capital by Race and Social Class

Social capital can benefit families in the aftermath of a storm. However, researchers identify that social capital tends to vary by demographic and social factors, including family structure, race/ethnicity, socioeconomic status, and intersections of these social identities. While the techno-system has the potential to connect individuals and families with wider social networks that may be able to help in times of need, it is also important to consider that the techno-subsystem may benefit some groups of individuals more than others depending on their social capital. For example, social capital tends to be stronger in two-parent families because there are two people to engage in child-rearing and socialization (Parcel & Bixby, 2016). Therefore, in two-parent families, the techno-subsystem may be more beneficial for obtaining financial assistance following a storm because there are two people to draw from their individual and collective social networks.

The relationship between race and social capital are conflicting. On one hand, some argue that African-American families may have less

social capital compared to White families. For example, Jackson, Kennedy, Bradbury and Karney (2014) found that African-American couples tend to enter marriage at a disadvantage relative to White couples because African American couples tend to have fewer close relationships. Additionally, Neighbors (1997) argued that African American couples' family members and friends tend to provide less financial support compared to White couples' social networks, which could be consequential for accessing financial help through the techno-subsystem in the aftermath of a catastrophic storm. On the other hand, scholars argue that African-American families may have *more* social capital compared to White families because of their tendency to draw support from their extended families (Johnson & Staples, 2004). Extended families are particularly important among African-American, Latino, and immigrant families, which may provide additional avenues of support beyond immediate family members in times of need.

Low-income individuals tend to have less social capital compared to their middle-class counterparts (Desmond, 2012). Low-income families are often embedded in small, dense social networks (Miller-Cribbs & Farber, 2008). Wellman and Potter (1999) argue that low-income single mothers may lack social capital because their social networks are localized, narrow, and oftentimes psychologically draining. This is supported by other studies, such as Dominguez and Watkins (2003) who found that low-income African-American women's friendship-based networks were inconsistent and emotionally draining due to manipulation and distrust. Family-based networks were also problematic due to intermittent levels of support, family tensions, and issues with reciprocity. As a result, some of the women in the study reported abandoning their family- and friend-based support in favor of institutional assistance, which was able to provide more consistent and reliable support.

Current Study

This study builds on prior research that suggests that social capital is imperative for family survival in the aftermath of devastating natural disasters, such as a hurricane. Drawing from ecological systems theory, we underscore the importance of the techno-subsystem as individuals and

families utilize crowdfunding as a mechanism for obtaining support following a hurricane. We argue that the extension of disaster relief to include crowdfunding through the techno-subsystem may help identify links between and among ecosystems that may be beneficial for immediate and long-term responses for families in the aftermath of devastating hurricanes.

Our study focuses on individuals and families affected by Hurricane Florence, which made landfall as a Category 1 hurricane on September 14, 2018. It severely damaged portions of North and South Carolina with damages estimated at $15 billion (World Vision, 2018). There were 51 fatalities associated with the storm and thousands of people experienced homelessness in the aftermath (World Vision, 2018). We chose Hurricane Florence because it was the deadliest and most costly tropical storm of 2018 (Payne, 2018). Our goal was not to provide an analysis generalizable to other comparable storms or natural disasters, but rather to explore how families in the context of this storm qualitatively justified their requests for financial assistance.

Methods

Data and Sample

We collect our data through the crowdfunding website, GoFundMe.com. GoFundMe is one of several crowdfunding platforms, including Razoo, Crowdfunder, RocketHub, Kickstarter, and PledgeMusic, among others. Crowdfunding platforms tend to specialize in different purposes, including individual financial needs, social issues, business and for-profit ventures, and startup companies (Kim, 2018). We chose GoFundMe because it is often utilized for individuals' immediate needs and emergencies, rather than providing on-going support for business endeavors (Kim, 2018).

Developed in 2010, GoFundMe is currently the largest social fundraising platform, facilitating the collection of over $4 billion from over 40 million donors (GoFundMe, 2010-2017). At its inception, GoFundMe profited from users' personal campaigns by charging a 5% fee of funds raised in the United States (Salinas & Fortt, 2018). In November 2017,

GoFundMe introduced a 0% platform fee for personal campaigns started in certain countries and currencies (e.g., U.S. dollars, Canadian dollars, British pounds, and most major European currencies) (GoFundMe, 2010-2017). Currently, GoFundMe is largely funded by donations, where users have the option to donate a portion of their earnings to the site (Salinas & Fortt, 2018).

GoFundMe hosts webpages created by individuals or organizations requesting monetary donations for specific causes that are searchable through their homepage: https://www.gofundme.com/. Each webpage provides a space for requesters to include: (a) a title, (b) an image, (c) a monetary goal, (d) the amount of money raised, (e) the number of times the page has been shared with others, (f) the number of times the page has been 'liked', (g) an individualized narrative that describes the nature of the request, (h) a cover photo, and (i) additional photos.

Because GoFundMe is a public platform, all data used in this study is publicly available; thus, IRB approval was not required. We removed all identifying information from the participants' quotations, including names, children's ages, and specific locations. We created our dataset by searching the term "Hurricane Florence" in December 2018 on the GoFundMe homepage. Following this, we entered the pages that fit our criteria into Dedoose qualitative software. Criteria included webpages that asked for financial assistance due to Hurricane Florence that would help (a) the requester directly, (b) the requester's family, or (c) other individuals and families. We obtained a comprehensive list of webpages designated to financial requests due to Hurricane Florence for a total sample of 26 requests for financial assistance.

We analyzed the ways in which individuals justified their financial requests on behalf of themselves or others through the process of coding and memoing. We utilized abductive reasoning and thematic analysis to develop a codebook with relevant patterns and themes. Theme analysis allowed us to identify common threads and underlying meanings within the requesters' narratives (Vaismoradi, Jones, Turunen, & Snelgrove, 2016). Through the systematic process of line-by-line coding, we uncovered

common points of reference. Coding using potential themes is a significant practice in thematic analysis, and this approach allowed us to identify how requesters' narratives clustered together in relation to one another (Vaismoradi et al., 2016). Additionally, abductive reasoning allowed us to position our findings within this field of study (Timmermans & Tavory, 2012). Unlike grounded theory, this approach suggests that researchers approach data with multi theories in mind, allowing for understanding of how data is new or surprising. The abductive strategy also allows for researchers to connect and integrate constructs and themes, which is central to interpretive understandings of the social world.

Findings

Our findings point to the importance of considering the various social systems in which individuals draw support in times of need. We identified two major themes that shaped individuals' requests for financial assistance in the aftermath of Hurricane Florence, *need-based reasoning* and *worthiness-based reasoning.* Within these themes, we found that requests for financial assistance were made by individuals who had been directly affected by the hurricane and people within individuals' microsystems or mesosystems. More specifically, of the 26 webpages requesting financial assistance due to Hurricane Florence, 8 were made by those in need for themselves and others, 16 were made by friends or family members on behalf of someone who had been affected by the storm (*microsystem*), and two requests were made by on behalf of individuals, couples, or families by co-workers or members of the same gym (*mesosystem*). In the following section, we describe the two main themes that emerged from the data.

Requesting Financial Assistance through Need-Based Reasoning

Need-based reasoning allowed requests to address the immediate and long-term financial setbacks that would be endured by those affected by the hurricane. Requests varied in the extent of detail provided regarding financial losses and costs individuals needed assistance with following the storm. We found that needs discussed included costs of evacuating, loss of wages, damage to homes, and other material goods.

The following excerpt demonstrates how individuals request assistance for the immediate costs involved with evacuating. Although this requestor does not specifically indicate who the funds are for, the requestor uses "we" multiple times throughout the request to demonstrate that the financial request is for the individual (requestor) and another person, rather than the individual alone.

> As you all know, we are currently going through hurricane Florence. Luckily, we have not sustained any major damages to our residence, and everyone is safe and unharmed. We are more than grateful for that. In the weeks to come, we will have clean-up, repairs, days to weeks without power, and as of now, we don't know when either of us will be able to return to work. So that's why we're turning to GoFundMe, to try to come up with any monetary donations that we can to help out with things such as buying a generator, which is one of our greatest hopes that we could be able to get, food since we are losing everything in our fridge and freezers because it's all defrosting with no power, money to help with upcoming bills while we are out of work.

Similarly, the following individual requests financial assistance on behalf of himself and his wife, explaining that their financial needs are associated with the immediate costs of evacuating their home and the uncertainties regarding the severity of damages to their home.

> My wife and I were evacuated due to Hurricane Florence. We've been staying in hotels for over a week and we're not sure when we will be able to go back home due to flooding/ damage on the roads. As of now, we're not certain of the damage the hurricane caused to our home and if we will have electricity or water when we return. As some may know, staying at a hotel is very pricey and having to eat out is becoming financially straining.

While accessing funds through crowdfunding is not guaranteed, the immediacy in which it can allow individuals to access funds can make it particularly useful for those who do not have savings or access to credit to cover the costs of evacuating. With 46% of Americans reporting that they do not have $400 available in emergency funds (Kahn, 2018), it is not surprising that many Americans would need to turn to alternative avenues to gain funds to help during a disaster.

Considering the financial insecurity that many Americans face, the greater costs associated with severe damage to homes and loss of material goods can place an even larger strain on families. Many requests are aimed at accessing help to repair damaged homes or replace material goods. For example,

> Our home has been demolished by Hurricane Florence, two trees have split our home. Trying to get at least a down payment for a apartment. Getting the donations to fully put all of them towards the apartment. Anything can help. Please share this with anyone you may know could be of help.

This requester specifies that the request is not for the individual alone, as they use "our home" rather than "my home" in their explanation of the damages caused by Hurricane Florence. They also ask that their request be shared with others, demonstrating *bridging social capital* through the techno-subsystem.

Further, requests also include discussions of long-term consequences of the disaster, often associated with lost wages. For example, the following excerpt is part of a requests that details the immediate damage to their parents' home and the cost of repairs.

> Additionally, severe damage was done to their boat which helmed their pontoon tour business Palm Coast Tours and was their main source of income. While I'm eternally grateful that they are unharmed and the damage was only financial and material, for the near future my Dad will be without income due to the loss of the tour business boat and the impact on tourism to the area if they're ever able to replace the boat. My Mom's ability to work has also been greatly affected due to having to take time off to be at home to assist in salvaging what they can from the home and business and begin to figure out how to restart things.

Discussions of lost wages help to remind potential donors that the costs of recovering from a natural disaster can extend beyond the immediate cost of repairs. In a similar example, the following request discusses the long-term implications of being unable to access funds to make needed home repairs.

> The house took on close to 4 feet of water and with it not being in a flood zone I didn't have flood insurance. I am in need of assistance or I will have to foreclose and more than likely file bankruptcy right after. If this happens I will probably lose my security clearance and be forced to get out of the military after serving for more than 12 years on active duty. Any help would be greatly appreciated by my family and me. The money raised would be used for new floors, walls, cabinets, appliances, electrical, AC unit, roof, and whatever other repairs that come up during demo. The house basically has to be gutted. Any assistance would be greatly appreciated. Thank you in advance.

By discussing the impact of bankruptcy, the requestor is explaining that donating to their cause is assisting in more than just home repairs, rather, it would help them maintain their economic livelihood. The request also specifies that the request is on behalf of themselves and their family ("my family and me").

Some requestors indicated the gravity of the situation by explicitly stating that their family would be unable to recover without receiving the financial assistance they were requesting. For example, "If you can assist in any way, my family would greatly appreciate your help—without your help, I'm not sure how we will recover from this." These explanations focus on the recipients' needs. In what follows, we describe how requestors demonstrate recipients' worthiness of financial assistance.

Requesting Financial Assistance through Worthiness-Based Reasoning

Beyond discussions of economic need for assistance, discussions of why recipients were worthy of financial help were often provided by the requestors. Worthiness is presented through explanations of why affected individuals are unable to recover without the assistance of crowdfunding. In both requests for self and others, there were discussions of the shortcoming of insurance. For example, in a request for her sister, brother-in-law and niece, the following requestor explains not only the damage done, but references reasons for why they are not covered by flood insurance.

> The devastation the flood waters caused was horrendous and the odors were even worse. Their home, buildings, automobiles, furnishings, clothing, and personal items were destroyed by the flood waters. When they entered their home, everything was already being consumed by mold and broken down by the corrosive waters. Since they did not live in the floodplain, they did not have flood insurance. They have literally lost everything.

Similarly, even those with flood insurance explain that they will still ensue financial strain because of the hurricane.

> They were recently affected by Hurricane Florence, although they have home insurance the amount of damage, deductibles, personal items, living arrangements, clothes, etc. They are needing some help. If anyone is willing and able to help my family everyone would greatly appreciate it.

Despite hurricanes being natural disasters, these explanations demonstrate that there may be social expectations that individuals are responsible for their own ability to withstand the consequences of Hurricane Florence. By discussing the limitations of insurance, requestors justify why individuals need financial assistance.

Requests of behalf of others utilize two additional strategies to explain individuals' worthiness of help: (a) the relationship the requestor has with the individual in need, and (b) descriptions of what makes the person in need a worthy recipient. For example,

> Both my family and the *[family name]* built our homes in [*location*] back in the summer of 2005. All four of our kids have grown up together and have been best friends ever since. Our homes hold so many unforgettable memories. Unfortunately, like many of us, the [*name*] family has experienced a devastating loss of their home during Hurricane Florence. They are not only our friends and neighbors, but they are our family and mean the world to us and we want to help. Please consider donating and helping them rebuild their home.

In this example, the requestor is acknowledging that they are asking others to assist them in assisting a loved-one. This emphasizes the social expectation that we help individuals not solely because they are in need but also because of the relationship we have with that person. The

following requestor also explains their relationship to the recipient and discusses the importance of this person within their social network.

> Professor [*name*] from [*university*] lost his home to Hurricane Florence on Friday morning. We are raising money to help him with a place to live and replace some of his belongings. Any help is greatly appreciated. God bless all the victims and their families as we continue to salvage our beloved town of [*location*], NC. [*Name*] is our gym's (*gym*) team name. I am the owner of [*gym*] [*name*] and have known [*recipient*] for 5 years. We are a tight knit group that sticks together. Please help our friend.

In this example, the requestor discusses not only their personal relationship to the recipient, but by referring to the gym members as a family is reinforcing the importance of the recipient within the social network of others. This may also speak to expectations of who is willing to contribute to specific requests for assistance. Individuals requesting on behalf of themselves may be sharing the link with those in their immediate social network and assume those contributing already know their situations. For those sharing on behalf of others, additional details help provide context regarding who needs assistance and why.

In conjunction, these discussions of worthiness frame discussions of who is worthy of help and who is not. Worthiness was represented as individuals and families being "good people" who deserve help themselves and who often help others in a time of need. For example, "For anyone that knows [*Name*] or [*Name*], you know what a wonderful couple they are and how giving they are to others."

In another example, in a request for others, the requestor highlights that the couple they are requesting funds for are worthy recipients because they are "hard-working" and they often help others through their work in the medical field.

> [*Name*] and her fiancé [*Name*] live in [*location*], NC. They are both extremely hard-working individuals, dedicating their lives to helping others in the medical field. In the aftermath of hurricane Florence with their wedding just 2 weeks away, they are facing flood damage costs to their belongings and their beloved home. I'm asking friends and colleagues to consider donating to help them cover the cost of the damages and their

displacement. They are both amazing people and they deserve all the love and help they can get during this devastating time.

Notably, requests also demonstrated worthiness by requestors discussing their relationships to the individuals or family in need *and* pointed to the gravity of the damages. For example, the following individual identifies that the request for financial assistance is for the requestor's "best friend" and her three children. The requestor also provides details regarding the damages from the storm and the events leading to the disaster.

> My best friend [*Name*] and her three kids [*Name*] [*Age*], [*Name*] [*Age*], and [*Name*] [*Age*] have lived in their home in [*location*], NC for the past 8 years. During Hurricane Florence their neighborhood was placed under an evacuation and they were able to safely leave the area to stay with family and myself in [*location*]. While all four of them are safe including their puppy, their home has suffered immense damage from Hurricane Florence. They were able to view drone footage of their home and unfortunately the water level in their neighborhood was up to the second floor of the home. As the road conditions are not safe to travel back into the area at this time they have not been able to assess the damage but only have received updates from people in the area. Since the home was not located in a flood zone, they had no flood insurance, and the damage will not be covered under her homeowner's policy. They currently face a long and expensive road to reestablishing their home. Please donate if you can anything will help!

The following individual requests assistance for a loved-one (parents), and worthiness of assistance is based on the level of destruction from the hurricane and loss of future income:

> The river waters flooded my parent's home and garage damaging or destroying all of their possessions and making their home uninhabitable due to bacteria, sewage and structural integrity damage. Additionally, severe damage was done to their boat which helmed their pontoon tour business [*name of business*] and was their main source of income. While I'm eternally grateful that they are unharmed and the damage was only financial and material, for the near future my Dad will be without income due to the loss of the tour."

Discussion

Our findings demonstrate that through *need-based reasoning* and *worthiness-based reasoning,* crowdfunding through the techno-subsystem may be utilized to bridge social capital between social systems within the ecological system. Individuals requesting financial assistance for themselves often framed their requests on behalf of their family, and no requests were made without reference to others. Therefore, we propose a modification to the Johnson and Puplampu (2008) figure by demonstrating that the techno-subsystem plays a role at different levels.

Figure 2: The Techno-Subsystem Operating through Various Levels of the Ecological System to Seek Disaster Relief
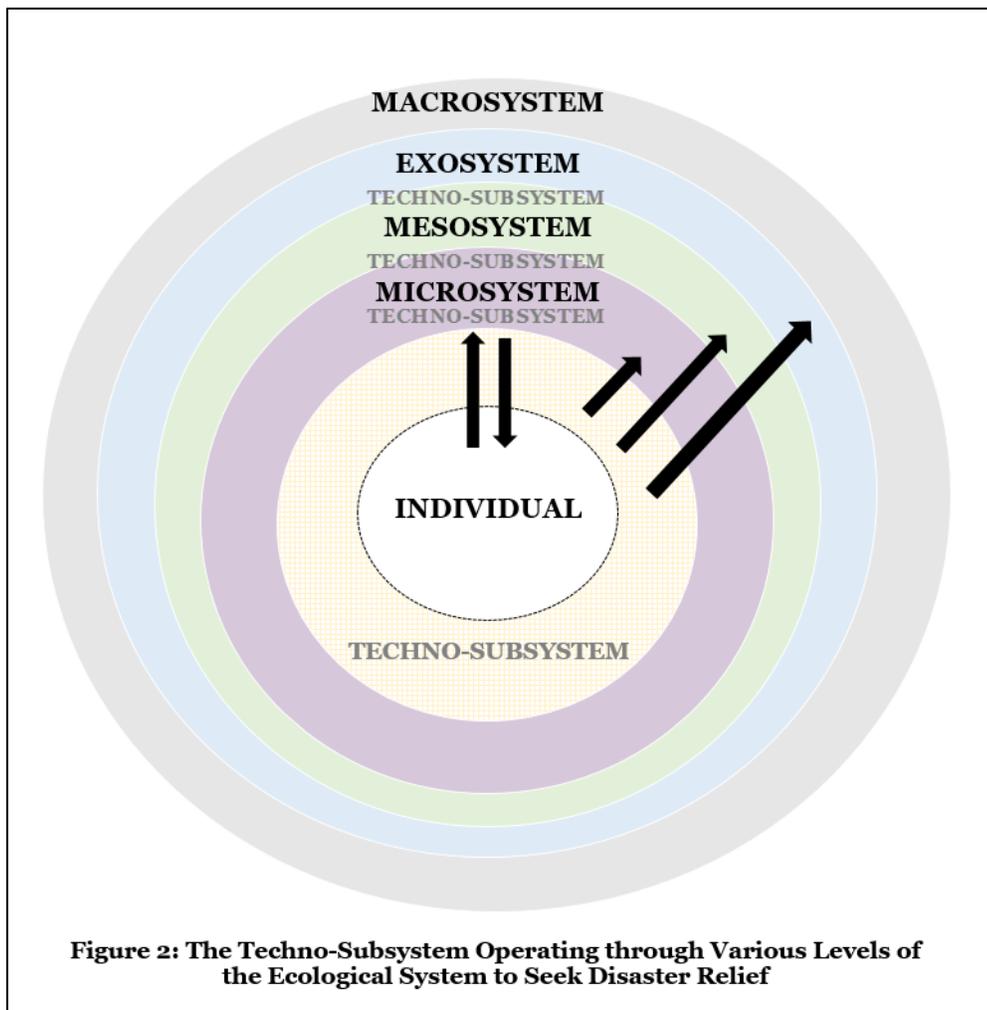
In Figure 2, we demonstrate that rather than individuals using the techno-subsystem to connect with others in their most immediate social system (the *microsystem*), most individuals in our sample utilized the techno-subsystem to request assistance *for others*, demonstrating the importance of the how the techno-subsystem operates through the meso- and ecosystems. When requests are made by others, it can provide access to a wider range of individuals who could potentially aid following a natural disaster. This suggests that crowdfunding through the techno-subsystem may be a method to bridge social capital between various levels of the ecological system.

Additionally, our findings suggest that utilizing GoFundMe to ask for help following a natural disaster may be a less stigmatizing way of seeking assistance. While precautionary measures can be taken, natural disasters are often unpredictable with unforeseen consequences for individuals, families, and communities. Yet, there is still stigma associated with needing and receiving help following a natural disaster (Fothergill, 2003). Potential helpers may question why victims failed to evacuate high-risk areas or purchase insurance. Consequently, "victim blaming" stigmas may deter individuals from seeking help from others (Fothergill, 2003). GoFundMe may provide an outlet for seeking assistance where individuals may feel less stigmatized because requestors' communication with potential helpers are mediated through the techno-subsystem. Through their requests for assistance, individuals can justify why they were unable to evacuate or afford insurance. In addition, individuals may avoid the stigma of seeking help for themselves by framing their requests in terms of themselves and others (e.g., "my family and me"). We find that many requestors follow this trend by highlighting their relationships with others and describing how the potential financial donation will benefit others in need.

Whether individuals ask for help is often determined by the perceived likelihood of obtaining help (Newark, Bohns, & Flynn, 2017). That is, if an individual thinks others may help them, they are more likely to request assistance. Additionally, embarrassment plays a role in individuals' decisions whether they will ask for help (Bohns & Flynn, 2010).

People often feel discomfort when seeking the help of others, because the potential helper may say "no" (Bohns & Flynn, 2015). It may be less awkward for someone to say (or hear) "no" if the request is made indirectly (Bohns, 2016). This may be why some people feel more comfortable seeking financial assistance through online crowdfunding rather than directly asking others for help. Requestors are often unaware who has seen their GoFundMe request, so they are unable to determine who has or has not indirectly said "no" to give towards their cause. Again, this may be a benefit of relying on the techno-subsystem to mediate the relationship between help seeker and potential helper. However, it is important to note that there may be embarrassment and shame attached to seeking help through GoFundMe (Radu & McManus, 2018).

Other literature suggests that there may be an "empathy gap"—a lack of understanding others' situations—that exists between individuals seeking help and potential helpers (Bohns & Flynn, 2015). The ability to provide a narrative justifying why an individual or family is in need of financial assistance following a natural disaster may be an advantage of seeking help through crowdfunding. Potential helpers may not fully understand both the short- and long-term consequences associated with disaster relief. Individuals may underestimate the time and money that is required to help others get back on their feet following a storm. This may be why requestors felt the need to detail their losses and convey a sense of hopelessness without the help of others (e.g., "…without your help, I'm not sure how we will recover from this"). These types of narratives may also be useful in demonstrating to others that precautionary measures are not always enough to prevent catastrophic destruction. The GoFundMe narratives may also bring attention to the limits of governmental and agency-based assistance in times of need.

Limitations and Future Research

While our findings are important for understanding how technological advances and crowdfunding mechanisms can assist individuals and families in the aftermath of a hurricane, our study is not without limitations. Currently, there is no way of confirming the identity of the person posting a request for financial assistance through the GoFundMe website. This

suggests that the validity of participants' posts is a limitation of our approach. Concerns about falsified requests on crowdfunding sites are important but beyond the implications of this study.

An additional limitation of our study was our inability to explore variations in crowdfunding use by race and ethnicity. Some studies suggest that there are racial and ethnic differences regarding help-seeking behaviors (Kaniasty & Norris, 2000). Requestors choose how much information to disclose about themselves and their families in their GoFundMe requests. As a result, unless the requestor eluded to their race or ethnicity, we were unable to identify these characteristics among requestors. While some of the GoFundMe webpages do include a picture or pictures, there was not enough information to determine how individuals identify in terms of their racial or ethnic identity.

Prior research suggests that there are long-term consequences of natural disasters, such as hurricanes. Individuals and families may need financial assistance in the months and even years following a storm. Therefore, there may be subsequent GoFundMe webpages created to assist individuals and their families in the aftermath of Hurricane Florence that our study cannot capture. In addition, our study does not address characteristics of crowdfunding pages that were most successful in obtaining financial assistance. We expect that some GoFundMe webpages were more successful in obtaining financial support following Hurricane Florence compared to others. Do individuals making requests for others through one's *microsystem* or *mesosystem* tend to gain more financial assistance compared to individuals requesting financial assistance for themselves? Does the social identity (race/ethnicity, nationality, age, gender, etc.) of the requestor influence the success of the crowdfunding campaign? These questions point to directions for future research.

Conclusion

While there may be benefits to seeking financial assistance through crowdfunding (Radu & McManus, 2018), the need to utilize this platform for financial assistance following a natural disaster points to limitations in

governmental and agency-based responses to disaster relief. Natural disasters call for a balance between preparedness and post-disaster relief (He & Zhuang, 2016). To develop resiliency and best practices for aiding survivors of natural disasters, organizations involved in recovery efforts and governmental programs should consider how individual, cultural, and structural factors influence how people cope with the aftermath of natural disasters (Gordon-Hollingsworth et al., 2015). Because governmental responses are not always effective in the preparation or aftermath of devastating storms, families may draw from resources from various contexts. In times of need, individuals often reach out to family members and friends for social and financial support. Natural disasters, such as hurricanes, are no exception. The immediate and long-term negative consequences of these storms may compel individuals to seek assistance from wider social networks.

The crowdfunding website GoFundMe.com allows individuals and families affected by hurricanes to draw social and financial support from others, even from individuals they may not personally know. GoFundMe provides the survivors of natural disasters with access to broader social networks, and individuals from one's extended social network may be willing and able to provide financial assistance. Crowdfunding through the techno-subsystem may be an alternative approach for obtaining help after a hurricane when a person's family or friends are unable to provide aid. Our findings suggest that requests made via GoFundMe were not used as a method for individuals to solely benefit from the financial donations of others. Instead, all the requests in our sample consisted of individuals requesting financial assistance for themselves in relation to others (e.g., "we need help"), or even more common, individuals' requesting financial assistance for others by framing their requests in terms of need and worthiness of assistance.

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