

# American Journal of Orthopsychiatry

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Online First Publication, January 24, 2019. <http://dx.doi.org/10.1037/ort0000398>

### CITATION

Manove, E. E., Lowe, S. R., Bonumwezi, J., Preston, J., Waters, M. C., & Rhodes, J. E. (2019, January 24). Posttraumatic Growth in Low-Income Black Mothers Who Survived Hurricane Katrina. *American Journal of Orthopsychiatry*. Advance online publication. <http://dx.doi.org/10.1037/ort0000398>

# Posttraumatic Growth in Low-Income Black Mothers Who Survived Hurricane Katrina

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This mixed-methods study aimed to gain knowledge of the lived experience of posttraumatic growth (PTG) in 32 low-income Black mothers whose New Orleans' homes were damaged or destroyed by Hurricane Katrina, and half of whom had relocated indefinitely to Houston. Data from in-depth interviews with participants were examined in conjunction with quantitative scores on the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). Participants were interviewed face-to-face on a range of postdisaster experiences, including positive changes, in 2009. Participants also completed the PTGI via a telephone survey within six months of being interviewed. Most (26 out of 32) participants described experiencing PTG within the 5 domains of the PTGI, with the domains most frequently coded, in descending order, being New Possibilities, Relating to Others, Personal Strength, Appreciation for Life, and Spiritual Change. PTG stemmed heavily from exposure to opportunities in survivors' postdisaster communities, including increased racial diversity, improved neighborhoods, and new educational and economic opportunities. Participants' frequency of all PTG codes was associated with their overall PTGI scores with a small-to-moderate effect size ( $r = .32$ ;  $p = .078$ ) in a relationship that trended toward significance. Without minimizing the catastrophic losses they entail, disasters may in some cases create spaces for PTG for survivors, including through new opportunities in areas where survivors formerly experienced oppression. Policymakers should examine how to make such opportunities available, visible and accessible to individuals absent a disaster.

## ***Public Policy Relevance Statement***

This study suggests that although natural disasters disproportionately negatively impact individuals with oppressed statuses predisaster—for example, in the United States, women, Blacks, and low-income individuals are much more severely harmed by disasters—in some cases, natural disasters and subsequent relocation can also shake loose some of the entrenched structures of oppression and allow for posttraumatic growth (PTG) related to a reduction in experiences of race-, gender-, and socioeconomic-based oppression. This study highlights that along with more intra- and interpersonally driven growth in the 4 PTG domains of Relating to Others, Personal Strength, Appreciation for Life, and Spiritual Change, Hurricane Katrina precipitated PTG in the New Possibilities domain for our participants that was related to postdisaster experiences of greater equality. Policymakers, clinicians, and others should be attentive to ways in which the aftermath of disasters can provide space to create, and to make visible and accessible, opportunities for oppressed and underserved populations aimed at reducing the impact of racism, sexism and poverty-related oppression. More broadly, this study points to the pressing need to create such policies, absent a trauma or disaster, to assist individuals facing the same obstacles as our participants in accessing similar opportunities.

*Supplemental materials:* <http://dx.doi.org/10.1037/ort0000398.supp>

**R**esearchers have consistently demonstrated that exposure to natural disasters has a negative impact on individual psychological functioning, including increases in post-traumatic stress, depression, and anxiety symptoms (e.g., Brewin, Andrews, & Valentine, 2000; Gibbs, 1989; Ginexi, Weihs, Simmens, & Hoyt, 2000), and that low-income individuals, women, and Blacks are at increased risk for postdisaster adjustment problems (e.g., Gibbs, 1989; Morrow, 1997; Rubonis & Bickman, 1991). More recently, researchers have broadened their focus to examine the positive changes resulting from trauma including disasters. Little is known, however, if low-resourced populations experience any positive changes from disasters. To shed light on this issue, we examined the experience of posttraumatic growth through qualitative analysis with in-depth interviews in a sample of low-income Black mothers whose homes in New Orleans were damaged or destroyed by Hurricane Katrina in 2005 and who were interviewed in 2009. Half of these women relocated permanently to Houston, Texas, after the storm.

### Hurricane Katrina: Impact on New Orleans

Hurricane Katrina made landfall just east to the city of New Orleans on August 29, 2005, with winds of up to 185 mph (Logan, 2008). Hurricane Katrina remains one of the most damaging natural disasters in U.S. history, leading to almost 2,000 deaths and the displacement of more than 650,000 people (Knabb, Rhome, & Brown, 2006; U.S. Department of Commerce, 2006). Eighty percent of the city of New Orleans was submerged, caused primarily by flooding due to the storm surge and breach of the city's levees and floodwalls (Andersen et al., 2007; Fussell, 2015). Seventy-one percent of New Orleans' housing units were damaged (Fussell, 2015).

### Katrina's Disproportionate Impact

Race, gender, and socioeconomic status (SES) are critical predictors of vulnerability to disaster (Cutter et al., 2006). Katrina disproportionately harmed low-income Black residents, especially women (e.g., Ruscher, 2006; Seager, 2012; Weems et al., 2007). Indeed, Logan (2008) found that although 53% of non-Blacks living in New Orleans city according to the 2000 Census saw their homes flooded, 82% of Blacks living in New Orleans had flooded homes. Logan (2008) also noted that majority-Black districts were the most heavily damaged, even though these districts ranged in terms of income and homeowner status. As Rivlin (2016) summarized, a "Black homeowner in New Orleans was more than three

times as likely to have been flooded as a White homeowner. That wasn't due to bad luck; because of racially discriminatory housing practices, the high-ground was taken by the time banks started loaning money to African Americans who wanted to buy a home."

### Evacuation and Relocation

About 70% of the 452,000 residents of New Orleans Parish, which comprises the City of New Orleans, evacuated prior to Katrina striking the city pursuant to a mandatory evacuation order (Fussell, 2015). By March 2006, more than 160,000 households were relocated from their original address in Orleans Parish (Logan, 2008). Two-thirds of those displaced had relocated out-of-state, with the greatest number in Houston (27,000), followed by Dallas (14,000) and Atlanta (8,000; Logan, 2008). Nearly all residents had to relocate until the end of September 2005 at a minimum, as New Orleans was deemed largely uninhabitable (Logan, 2008). After this period, former New Orleans residents with low resources often continued to experience relocation as forcible because of their lack of resources to repair their home and return to New Orleans (Logan, 2008), as well as due to the lack of services in New Orleans, particularly in poor neighborhoods including daycares and public schools, that lasted for many years postflood (Fussell, 2015).

### New Orleans' Recovery From Katrina

Blacks, particularly those with the lowest incomes, were displaced the farthest from their pre-Katrina homes and were less likely to return to New Orleans than Whites; 40% Blacks had returned by December 2005, compared to 67% of Whites (Logan, 2008). Only 54 of the 128 pre-Katrina public schools had reopened by fall 2006, with almost none of them in the heavily Black neighborhoods of the Lower Ninth Ward and New Orleans East (Logan, 2008). By late January 2006, the New Orleans population had returned to about 200,000, less than half of what it was before the storm (Stone, Grant, & Weaver, 2006). Public transportation, medical care and daycare continued to be severely impacted as of late 2006, thus limiting return options for low-income individuals, especially those with children (Liu, Fellowes, & Mabanta, 2006; Picou, Brunsmma, & Overfelt, 2010).

Since 2006, New Orleans' recovery has continued to be divided along race and class lines. Whereas 21 neighborhoods in New Orleans have today surpassed pre-Katrina population levels, four areas that were almost entirely Black before the storm still have less than half their pre-Katrina populations, including the Lower Ninth Ward (Rivlin, 2016). Indeed, many researchers have noted that Katrina had the effect of driving out individuals most oppressed by racism and poverty, and making the city "Whiter and wealthier" (Fussell, 2015, p. 1241, citing Frey et al., 2007). The child poverty rate in New Orleans in 2016 was 4% higher than before Katrina, and more than twice the national average (Rivlin, 2016). In New Orleans in 2013, the median Black household income was \$30,000, which equates to \$5,000 less than it was before Katrina in 2000, adjusted for inflation (Rivlin, 2016). In contrast, median White household income in 2013 was over \$60,000, reflecting an increase of 40% from 2000 to 2013 (Rivlin, 2016). New Orleans in 2016 was deemed to have one of the

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greatest levels of income inequality of any major U.S. city (Chetty & Hendren, 2016). In terms of economic opportunity, recent research indicated that residence in the New Orleans metropolitan area has a causal effect of reducing the income that a girl would receive in adulthood by 18.6% compared to if she were residing in an “average” city. New Orleans ranked 99th out of 100 cities in terms of having the greatest negative effect on the ability of a child to achieve an average income in adulthood, and scholars believe this is due to the level of racism, sexism, and socioeconomic oppression present there (Chetty & Hendren, 2016).

### Government Assistance

Nearly 400,000 of pre-Katrina residents of Orleans Parish applied for government assistance related to Katrina (Logan, 2008). New Orleans residents who lived in government-subsidized housing prior to the storm received rent assistance when they relocated. This assistance appeared in fact to be greater for relocators who maintained their Head of Household status, which granted them additional assistance, than for returners to New Orleans who moved back in with family members (Bosick, 2015). Thus, although relocation removed many social and structural supports for our participants, these were replaced for many to some extent by more portable cash and housing assistance.

### Disasters and Mental Health: The Impact of Katrina

Exposure to natural disasters has a negative impact on mental health, resulting in elevations in posttraumatic stress, depression and anxiety levels (e.g., Fergusson, Horwood, Boden, & Mulder, 2014). In keeping with the increased negative impact on people identifying as being poor, female gender, or a racial minority, studies have shown elevated rates of mental health distress and disorders among poor Black women post-Katrina compared to other groups (e.g., Elliott & Pais, 2006). In a multiwave longitudinal study of low-income Black mothers who survived Hurricane Katrina (Waters, 2016), 36% of participants at 1-year post-Katrina reported sufficient general psychological distress (depressive and anxiety symptoms) to be indicative of a disorder, up from 24% before Katrina. Even 4 to 5 years after Katrina, 30% of this sample still reported enough distress to indicate a disorder (Waters, 2016). Nearly half of participants showed symptoms of posttraumatic stress one year after Katrina, and about one third still met criteria for probable PTSD four years later (Lowe, Manove, & Rhodes, 2013).

### Disasters and Posttraumatic Growth

Studies that focus only on the negative effects of disasters, however, may miss the broader picture, which in some cases includes self-reported positive psychological changes known as posttraumatic growth (PTG). The concept of personal growth through suffering is an ancient one, expounded on by writers through the ages, from Ancient Greek playwrights like Aeschylus, to the biblical stories of Job, to Nietzsche. After the Second World War, existentialist and humanist writers such as psychiatrist Viktor Frankl, who lived through the concentration camps, noted that

making meaning out of suffering was central to successful human adaptation (Frankl, 1963). Subsequent theorists such as Janoff-Bulman (1992) described growth resulting from cognitive processing wherein trauma survivors sought to rebuild their “assumptive worlds” that had been shattered by trauma so as to establish safety and meaning. Tedeschi and Calhoun (1995) drew upon these theories and their own empirical and clinical work to develop their model of PTG, which is one of the most prevalent today.

Tedeschi and Calhoun (2004, 2007) posited that PTG consists of positive psychological changes that arise from experiencing new opportunities that come to light as a result of a traumatic experience, as well as through the cognitive and emotional processing of trauma-related thoughts, sensations, emotions and memories. Tedeschi and Calhoun (2004) and Calhoun, Cann, and Tedeschi (2010) have specified that PTG is developed in both an intra- and interpersonal context heavily influenced by sociocultural factors. Tedeschi and Calhoun (1995, 1996) identified five domains of PTG that they included as subscales in their PTG assessment instrument, the now widely used Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1995). These five domains are improved relating to others, enhanced spirituality, and a greater sense of personal strength, new possibilities, and appreciation for life.

Four of these five domains (improved relating to others, enhanced spirituality, and a greater sense of personal strength and appreciation for life) typically stem from intra- and interpersonal cognitive and emotional processing of traumatic experiences. The New Possibilities domain of PTG also includes growth stemming from the experience of newly sensed opportunities that would not have been pursued “but for” the trauma, even if this growth does not result directly from the cognitive-emotional processing of the traumatic experiences themselves (Tedeschi & Calhoun, 2007). Specifically, such New Possibilities PTG can sometimes come from the trauma’s shaking loose entrenched socially constructed restrictions grounded in sexism, racism, oppression due to poverty, and other discrimination. For instance, in a paragraph entitled “New Possibilities,” Tedeschi and Calhoun (2007, pp. 32–33) describe women in the 1980s learning new gender nonconforming skills after their husbands died and feeling proud of that, as an example of PTG that falls under the New Possibilities domain:

The experience of a group of widows (Calhoun & Tedeschi, 1989–1990) illustrates the way in which bereavement, along with the distress it typically produces, can, for some people, lead to the opening of new doors in life. Many found themselves faced with tasks that their husbands had taken in their traditional marriages. Some widows reported handling finances and doing physical labor, even working on cars—things they had never done before. They felt good about finding that they had these abilities (Tedeschi & Calhoun, 2007, pp. 32–33).

Certainly, the bereaved spouse could have learned to fix a car without her spouse dying and would have likely felt some pride in it. However, the reality at the time the trauma occurred was that social constructions based in gender roles meant that the surviving spouse would not have chosen, or possibly been free to choose, to avail herself of these opportunities absent the trauma. Tedeschi and Calhoun therefore considered this “but for the trauma” growth as fitting under the New Possibilities domain of PTG. In sum, PTG in the New Possibilities domain can in some cases include liberation from pretrauma restrictions grounded in discrimination (e.g., Tedeschi & Calhoun, 2004, 2007).

## PTG in Black Women

The most commonly used instrument in PTG research, the PTGI, has been validated across many different populations (Weiss & Berger, 2010). PTG has also been reported across many cultures and countries (e.g., Dekel, Ein-Dor, & Solomon, 2012; Nalipay, Bernardo, & Mordeno, 2017), as well as across gender (Xu & Liao, 2011), sexual orientation (Cox, Dewaele, van Houtte, & Vincke, 2011), race (Bellizzi et al., 2010), ethnicity and physical and mental health conditions (e.g., Helgeson, Reynolds, & Tomich, 2006). At the same time, much less research on PTG has been done with samples of racial minorities or low-income populations in the United States, compared to majority White or middle-class samples (Weiss & Berger, 2010).

Notably, multiple findings demonstrate that people identifying with oppressed identities and statuses report higher PTG than those identifying with more privileged statuses. For instance, people identifying as a racial minority (such as Black) in the United States (e.g., Bellizzi et al., 2010), or as female in the United States and other countries (e.g., Xu & Liao, 2011), report more PTG than Whites or men do (Helgeson et al., 2006). Certainly, some explanations for these findings can be found within the Tedeschi and Calhoun model. A number of studies have found that social support (Prati & Pietrantonio, 2009), religiosity (Chan & Rhodes, 2013), and trauma-related self-disclosure (Taku, Tedeschi, Cann, & Calhoun, 2009) are relevant to PTG. Thus, some have suggested that women might report greater PTG because they typically make greater use of social support (Swickert & Hittner, 2009) in which they are able to engage in supported self-disclosure, and women engage in more positive reappraisal and positive self-talk than do men (Helgeson et al., 2006). American Blacks are typically more religious than Whites (Pew Research Center, 2015), and religious beliefs in particular appear to serve as a scaffold for meaning-making after trauma which may spur PTG formation (Shaw, Joseph, & Linley, 2005). Religious communities may also provide social support and space for self-disclosure, especially in cultures where religion has been historically important, such as in American Black culture, particularly among women (Bryant-Davis, Ullman, Tsong, & Gobin, 2011). In sum, based on this limited research, American Black women may be a group particularly primed to report PTG.

## PTG and Disasters

A now broad base of literature has shown that, although the majority of trauma survivors report PTG (e.g., Nalipay et al., 2017), it is a heavily contextual phenomenon and may be affected by the type of trauma experienced and the population in question (e.g., Shakespeare-Finch & Copping, 2006). Natural disasters are a complex form of individual- and community-level trauma, whose rates—especially hydro-meteorological disasters (i.e., storms, floods, mudslides and droughts)—and human cost are rising rapidly due to climate change and other human-caused environmental alterations (e.g., Leaning & Guha-Sapir, 2013). Natural disasters are unique in their psychological impact in part because they typically involve communally experienced trauma including: the experience of the disaster itself; home and community damage and destruction; and the experience of evacuation and relocation with accompanying disruption of social, cultural and familial ties

(Nuttman-Shwartz, Dekel, & Tuval-Mashiach, 2011). Relocation due to disaster or conflict can heighten individuals' sense of threat and loss of control and has itself been defined as a trauma in the literature (Nuttman-Shwartz et al., 2011).

To our knowledge, only four qualitative studies to date have focused on postdisaster PTG. The first was a prior study of a different subset of participants from the same dataset as the current study that discussed positive changes in intimate relationships postdisaster in the context of PTG theory (Lowe, Rhodes, & Scoglio, 2012). This study was focused on changes in intimate relationships postdisaster more broadly, however, and did not examine PTG as a whole.

In another study, Aslam and Kamal (2013) examined 300 survivors (half male, half female) of a severe flood in Pakistan that the authors reported damaged 1.8 million homes and claimed almost 2,000 lives. Aslam and Kamal (2013) reported that survivors described positive changes occurring in the five domains of the PTGI, as well as increased community involvement. The authors specifically described PTG in the New Possibilities domain as consisting of new educational, economic, and social opportunities arising from liberation from pre-disaster discrimination and socio-economic restrictions. For instance, the authors described some survivors pursuing higher education that they would not have done prior to the disaster and also described an expanded and more equal role for women in their postdisaster communities. The authors noted that,

Our findings are in line with the theoretical assumptions that have been proposed by Tedeschi and Calhoun . . . some community member had identified the new possibilities—for example, some students reported that they will now looking for some jobs in city as their lands are no more as, previously they had decided to continue agriculture. . . . For example, 13 years old boy, who was in class 6th reported, “I now decided to become a doctor, because we lost all our land, I have no other option, but study.” Interest in education, specially, among females has been increased and the rate of school-going children increased. During focus group discussion, a female teacher reported “Our self-confidence has increased, we are more mobile. We participate in community activities. Those girls who had left the education had reinstated their education . . . [these] findings of our study are consistent with the past studies that claim the people after struggle with distressed event identify the new possibilities in life.” (Errors in original; Aslam & Kamal, 2013, p. 36).

More recently, a small study ( $N = 6$ ) examined PTG in female Australian farmers impacted by a flood (Carra & Curtin, 2017). This study did not use the framework of the five domains of the PTGI, although results showed that these women described experiencing PTG in the form of moving from emotional distress to greater acceptance. Finally, Smith et al. (2017) found PTG roughly according to PTGI domains in a sample of 99 survivors of the Canterbury earthquakes of 2010–2011 in Australia. As with Aslam and Kamal (2013), Smith et al. (2017) noted a perception of enhanced community cohesion postdisaster as being an important aspect of their participants' PTG. None of these studies contained a quantitative assessment of PTG using the PTGI and thus were unable to compare qualitative and quantitative PTG results in the postdisaster context. Such comparison is useful for potentially evaluating the PTGI's convergent validity, so as to better understand whether this most commonly used quantitative instrument for assessing PTG is capturing the growth being studied.

## The Current Study

The current study had two primary aims. The first aim was to examine whether PTG was evident in the postdisaster context in a low-income urban population of Black mothers, and, if so, what the experience of PTG was like for these participants. The second aim was to explore the extent to which experiences of PTG in the postdisaster context, as described and coded in the qualitative interviews, converged with those captured in the quantitative scores on the PTGI and its subscales. This study was largely exploratory as there is limited prior research in this area of the experience of PTG after disasters in low-resourced populations. We therefore did not formulate any specific hypotheses a priori, but rather aimed to learn more about the experience of PTG (or lack thereof), according to Tedeschi and Calhoun (2004)'s framework, for our participants, through the interviews.

## Method

### Participants and Procedure

The Institutional Review Board of the University of Massachusetts Boston approved this study (Title: "Resilience in Survivors of Katrina" IRB Protocol Number: F13067). Participants were originally part of a large multiwave study of low-income student parents in two community colleges in New Orleans in 2004–2005. Prior to Hurricane Katrina, they had enrolled in a longitudinal, randomized controlled study of an educational intervention designed to encourage community college retention and graduation (Richburg-Hayes et al., 2009). To be eligible for the initial study, students had to be between the ages of 18 and 34 years old; be parents of at least one dependent child under 19; have a household income under 200% of the federal poverty level; and have a high school diploma or equivalent. The initial set of participants ( $N = 1,019$ ) was on average 24.9 years old, 87% Black, and 95% female. Although structural damage in New Orleans made it impossible to complete the original study, the research team reorganized the study to investigate participants' post-Katrina psychological and social adjustment. A series of quantitative surveys were administered pre- and post-Katrina (in 2004, 2006–2007, and 2009), as well as two rounds of qualitative interviews in 2006–2007 and 2009 (total  $N = 125$ ).

The current study included data from face-to-face interviews that occurred in July and August 2009 with 32 Black low-income women who, at the time of the hurricane, lived in areas that were highly affected by Katrina (Jefferson and Orleans parishes in New Orleans) and sustained severe damage to their pre-Katrina home. All participants were assigned pseudonyms to protect confidentiality. At the time of the interviews in 2009, participants were on average 31.42 years of age (range = 24–39 years;  $SD = 4.67$  years). They had between one and five children, with an average of 2.20 children ( $SD = 0.84$ ). Of the 32 participants, 11 identified as married, nine identified as being partnered, seven identified as divorced or separated, and four identified as not having a partner. Twenty out of 32 participants reported having received both FEMA (usually a one-time \$2,000 cash payment) and non-FEMA (e.g., Red Cross, churches, nonprofit organizations) cash, housing, and food assistance. Eight participants out of 32 did not respond to

the survey question inquiring about assistance, and four out of 32 responded in the negative.

To conduct a mixed-methods analysis using roughly similar time points, we only included participants who had been interviewed within six months of completing the PTGI, thus restricting the qualitative sample to a smaller subsample. We initially selected transcripts that were within the 6-month time window and purposefully included transcripts from participants with a range of PTGI scores to more fully examine the relation between the qualitative codes and the PTGI. Half of this subsample (16 out of 32 participants; 50%) had returned to New Orleans at the time of the interview, with the other half having relocated indefinitely to Houston.

### Qualitative Interviews

Interviews lasted 1 to 2 hours and took place at mutually agreed-upon and convenient locations, including interviewees' homes and coffee shops. Participants provided written informed consent and were compensated with \$50 gift cards. Interviewers included three clinical psychology doctoral students (two White women, one Asian American man), two sociology professors from New Orleans (one Black woman, one White woman), and two sociology doctoral students (both White women).

Interviews followed a semistructured protocol. Interviews were meant to cover the same topics and questions, although not necessarily in the same order or with the same use of interview probes (Scott & Garner, 2013; Weiss, 1994). Interviewers all received the same interview guide but were also trained to let the interview unfold as a conversation, without sticking rigidly to a protocol. Interviewers received training from the principal investigators of the project. This training included a review of the interview questions, rehearsal of the process via role-play exercises, and a refinement of the question phrasing and order.

In a few interviews, some interviewers omitted specific questions regarding psychological changes due to Katrina, despite that all interviewers were instructed to ask the same questions with variable follow-up questions. These omissions were likely due to these interviewers having a background in sociology rather than psychology and therefore prioritizing questions regarding social variables. These omissions likely resulted in the interviewees reporting less PTG than they might have if psychological changes had been asked about more explicitly. At the same time, we believe that we had a sufficient number of interviews in which psychological changes were asked about to achieve saturation with respect to the experience of PTG—that is, at a certain point, we found that no new themes relevant to PTG were emerging upon the coding of a greater number of transcripts (Saunders et al., 2018).

### Measures

**PTGI.** PTG was measured quantitatively in 2009 using the 21-item Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). In the current study, participants rated the extent to which they experienced positive changes as a result of Hurricane Katrina on a 5-point Likert scale, ranging from 1 (*not at all*) to 5

(*extremely*). The 21-item PTGI is comprised of five subscales: Relating to Others (7 items; e.g., “I have a greater sense of closeness with others”), New Possibilities (5 items; e.g., “New opportunities are available to me which would not have been otherwise”), Personal Strength (4 items; e.g., “I have a greater feeling of self-reliance”), Appreciation of Life (3 items; e.g., “I can better appreciate each day”), and Spiritual Change (2 items; e.g., “I have a stronger religious faith”). PTGI full scale Cronbach’s alpha for the current sample = .91. This measure demonstrated good internal consistency ( $\alpha = .90$ ) and acceptable test–retest reliability across 2 months ( $r = .71$ ) in the original study conducted with an undergraduate sample (Tedeschi & Calhoun, 1996). The validity of this measure was also established in this college student sample (Tedeschi & Calhoun, 1996). Further, the PTGI has been found repeatedly to be reliable across populations (e.g., for a review, see Johnson & Boals, 2015), including Black women (Bellizzi et al., 2010). A few prior qualitative studies have established some convergent validity for the PTGI in that these studies generally found that the experience of PTG described in qualitative data mapped moderately (Mosher et al., 2017) to well (Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013; Waters & Strauss, 2016) onto the five domains of the PTGI.

**Interview protocol.** To meet the needs of the full multidisciplinary research team (sociologists, clinical psychologists, and economists), interviews covered broad life history topics, including family of origin; residential, romantic, health, and educational histories; and participants’ experiences during Hurricane Katrina and its aftermath. The interview protocol also covered a range of topics that were informed by previous research on post-disaster adversity and resilience with a focus on psychological outcomes (Lowe, Rhodes, & Scoglio, 2012). Although PTG, as delineated by the five PTGI domains, was not an explicit focus of the interviews, several open-ended questions in the semistructured interview script inquired as to psychological changes (negative and positive) that had occurred as a result of Katrina (see Table A1 in the appendix).

## Data Analysis

Quantitative analysis was performed using SPSS Version 24 (IBM Corp, 2016) software. Qualitative analysis was conducted using NVivo Version 11.4 (QSR International, 2016) software. Transcripts were coded using thematic analysis, a method of identifying themes—some predefined based on prior research and theory, some emerging from the data without predefinition—through an iterative process of reading, rereading, and coding transcripts (Braun & Clarke, 2006). This is therefore a primarily top-down framework, although coders were also able to create new codes through mutual consensus and discussion based on emergent themes that were not identified a priori (Braun & Clarke, 2006). In this study, a codebook was initially designed a priori based on PTG theory that included codes for all 21 items of the PTGI, which were aggregated under larger “parent” codes for the five PTGI domains. New codes were then added as they emerged from the data.

Three trained coders (first author, a White female; another White female; and fourth author, a White male) conducted the coding and compared results. We discussed our potential biases based on our sociocultural backgrounds and identities throughout

the coding process and sought to maintain awareness of the impact of these potential biases on our coding, with a goal to achieving uniform coding through minimizing acting on bias. We also discussed any differences in coding and sought to use these instances of difference to gain greater clarity around the codes as we resolved our disagreements. The interrater reliability (i.e., the total number of identical codes divided by the total number of codes compared) based on the coding of the first 15 transcripts was 94% (Miles & Huberman, 1994), reinforcing the rigor of our analysis (Anfara, Brown, & Mangione, 2002). Spot checks on the uniformity of coding were conducted thereafter. We also found that saturation—that is, the point in the analysis at which no new codes or themes were emerging from the data (Saunders et al., 2018)—had been achieved by the 28th interview and we coded four more interviews after that to confirm this (Ando, Cousins, & Young, 2014).

PTGI scores (range = 32–84;  $M = 61.94$ ;  $SD = 15.73$ ) were also calculated. Correlations between PTGI total and subscale scores and frequency of citing PTGI domains in the transcripts were assessed (see Table A2 in the appendix) as a rough indication of convergent validity of the PTGI (Maxwell, 2010; Sandelowski, Voils, & Knafel, 2009). Coders were blind to PTGI scores when coding the transcripts.

## Results

The themes related to PTG that emerged from the data fit within the five-domain structure of the PTGI, although in some cases with different emphases, and heavily weighted toward the domain of New Possibilities. Table A3 in the appendix indicates the prevalence of PTGI domains, themes, and percent of participants describing them. In order the prevalence was New Possibilities, Relating to Others, Personal Strength, Appreciation for Life, and Spiritual Change (see Table A3 in the appendix), although of note Personal Strength and Appreciation for Life were equally prevalent.

### PTGI New Possibilities

**Theme: New opportunities are available that participants did not sense pre-Katrina.** The PTGI subscale domain New Possibilities was the most heavily coded PTG domain in this study. Many participants described PTG as consisting of a change in perspective brought about by new postdisaster opportunities, including experiencing some liberation from pre-disaster entrenched structural oppression in the form of reduced residential segregation, greater diversity, more community resources, enhanced educational opportunities for children, and greater economic and occupational opportunities compared to participants’ pre-Katrina experiences. Several participants noted that they did not realize the extent of the inequality in opportunity that they were experiencing pre-Katrina, nor its impact on them, until they were able to sense and experience new opportunities post-Katrina often, but not always, in the context of having relocated to Houston. Participants described that this growth most often came alongside the cost of disaster-related relocation and the cultural, social, and familial losses it entailed.

Aliyah, for example, a 38-year-old divorced mother of three, noted how the growth from new opportunities existed alongside the stark pain of loss of her hometown, family ties and connection—a central theme for many of these participants:

I miss just walking in the French Quarter. I could actually just get up, you know, if I want to take my kids for a walk in the Quarters, just walk in the Quarters, come back home. *I really, I mean I wish Katrina wouldn't have happened, but I'm glad it happened, you know. . . . I really am, because I got to live outside my box . . .* But I mean, like I said, I do not know which way to do it. If I could take some of here and put there, take some of there and put here, I do not know. . . . The schools here are like 10 times better . . . It's just you always just will always miss New Orleans. You know, even though you could go home a million times, I know I have to come back here. . . . I mean New Orleans is always going to be home, you know? But this is it now . . . *You know, so in my case, it Katrina was a good thing. Now was it a happy thing? No.* My family was a close-knit family . . . we are not that type of family that, you know, once you move on, we just forget about you. You are part of the make of who we are, so why would we forget about you. We're all very connected. . . . And the connection is I think that's what we miss, the connection. (PTGI Score 83; PTGI Quartile 4)

Aliyah further described holding her pain at having to relocate alongside the growth and change in perspective she believed she and her children had had through the increased interracial interactions and educational opportunities (i.e., less segregated schools and neighborhoods) they experienced in Houston:

And it's like thank God I left New Orleans, but it's still four years later, and it's still like, we here for real? You know, it like almost like it's no comparison, but it almost is: It's like how they say Black people came to this country on ships, you was not asked, you were told, you were forced, and that's how *I feel, like I was forced to be here. It was not—hey, you want to move Houston?* . . . Which doesn't mean it isn't so much better. I mean, you know, not to be funny or nothing, but you know White people do not look at you crazy here . . . [Whereas in New Orleans], they really did. . . . *I mean, a lot of things, you know, it's like you could tell me about my family because you on the outside looking in, but when you on the inside of it, you know it but you do not want to admit to it.*

I do not want to go back [to New Orleans] if my kids cannot have a White teacher because this world is not made up of all Black people. If my kids cannot have a White friend or a Chinese friend or a Mexican friend or an Asian friend or African friend. I mean this world is not made up of one group of specified people. Once they get into college and they get in the workforce you going to have all different types of people. . . . Different races, different nationalities, different backgrounds, different church backgrounds, just different, and to live there and to still think the same way when I know better is kind of crazy to me.

Interviewer: You feel like now that you're somewhere else you have a different perspective on it.

Aliyah: *Right, because I knew it all the while, but I was living in the midst of it, so it didn't bother me.* (emphasis added; (PTGI Score 83; PTGI Quartile 4)

Aliyah's quote highlighted what several other participants described—that they did not conceive of the extent of the oppression

they experienced in New Orleans clearly and how it was impacting them until they were made to leave by Katrina. In another example, Sonya, a 31-year-old single mother of one, who had relocated temporarily to Dallas before returning to New Orleans, illustrated the paradoxical nature of PTG for her and her family:

Katrina was a bad thing in—it was a bad thing, physically. But it was a good thing, I'd say, mentally for me, because I got to experience another state, another town. And that was the good thing about, you know, I evacuated. I evacuated; it was so much better in Dallas for us. (PTGI Score 62; PTGI Quartile 2)

Anais, a 32-year-old mother of two who relocated to Houston, echoed Aliyah and Sonya in describing Katrina as a “disguised blessing,” and specifically in that it took a disaster for some survivors to sense that availing themselves of new opportunities was possible for them:

I made it a point to focusing my mind—Lord, thank you for the disguised blessing that you're giving. . . . And that's what I took it as. Even though I was not the person that lived in the Lower Ninth Ward, that's how I looked at it because for a lot of people it was a true blessing because a lot of people would have still been stagnated to still live there and not—and be afraid to step out to try something else better or different for themselves or even give their parents—their children or their family an opportunity to grow. (PTGI Score 78; PTGI Quartile 4)

Michelle, a 31-year-old partnered mother of three, who evacuated pre-Katrina and relocated permanently to Houston, also noted the benefits of racial and cultural diversity in Houston:

I'm around different types of people all of the time. . . . We sit down and talk about our culture. They talk about their culture. Tell us, you know, I'm learning how to speak different Spanish words, stuff like that. So it's real—it's real good. . . . I like being out here because you learn more. . . . Even if you do not go to school, like college, you still will learn if you're a person that's willing to learn if you'll just sit down and talk to different people. (PTGI Score 51; Quartile 2)

**Theme: Increased self-efficacy and motivation when sensing new opportunities.** Many participants noted that experiencing a greater sense of new opportunities post-Katrina increased their motivation and goal-directed behavior as goals seemed increasingly attainable. For instance, several participants referred to how their perceptions of greater opportunities post-Katrina, including but not limited to more visible government and nonprofit programs, increased their motivation and willingness to engage in more goal-directed behavior.

Michelle, for example, described how socioeconomic mobility existed in Houston in a way that it did not in New Orleans, and that this perception of new opportunities had increased her motivation and caused her to shift her behavior toward being more goal-oriented:

And the opportunity to become somebody out here is much greater than down there, so that's one of the reasons I'm not going back. You can really like prosper if you put your mind to it out here quicker than out there. Out there it's like a party city for me, you know. . . . And out here, I do not party as much . . . That's, you know, that's the difference—me out here versus . . . being out there. (PTGI Score 51; Quartile 2)

In another example, Makayla, a single 39-year-old mother of one, who had evacuated prior to Katrina and returned to live in New Orleans, reflected on how she became more motivated once opportunities were more visible, particularly for Blacks, post-Katrina. She also noted the role race played in limited pre-Katrina opportunities:

I know I would still be working, but . . . I do not think I would be motivated to start my own business. . . . After Katrina, there was more opportunity and more information and more programs helping people to start businesses. . . . Before, there was no commercials telling you that you could start your own business, as in, "We have programs out here to help you." It was pretty much a difficult thing to do to start your own business. That's why people never tried to start. And most are African Americans, because we didn't have that support, we didn't have that understanding of—where can I go to help me start a business? Now we do. (PTGI Score 83; Quartile 4)

In another instance, Jordan, a 33-year-old married mother of three, who had evacuated pre-Katrina and then returned to New Orleans to live, also described her new motivation to start her own business as the result of sensing post-Katrina that her goals might be within reach, which in turn spurred her personal growth:

I think now, my eyes are open to bigger and better things since the storm. I just expect more from myself now. Like I can do what I want . . . I can do anything. So before the storm, it was just like—I'm just going to go with it for right now, but I didn't see where I was going in the future. You know, I do not have a clear path of everything that I'm going to do, but [now]—at least I know I have options. You know, like I say, I might open my own business, but I'm still going to continue my education. You know, I'm not going to stop that. . . . I do not know exactly what made me feel this way. I do not know. I guess just going through this whole process. I'm just growing as a person. (PTGI Score 71; Quartile 3)

## PTGI Relating to Others

**Theme: Experiencing altruism leading to greater connection to others.** Three themes emerged regarding participants' PTG that corresponded with the items under the PTGI Relating to Others domain. The first theme was that of enhanced connection to others, associated with receiving unprecedented altruism and compassion from others that occurred in the wake of Katrina. For instance, Sandra, a 26-year-old married mother of four, noted,

The whole church came and prayed with you and just said that it was okay. And they have this lady here—and I still stay in contact with her—and her and her husband just would come there and just make sure that we needed—you needed anything, you know, if you just wanted to cry because you didn't know if you was going back home. Well, this was home. (PTGI Score 75; Quartile 4)

**Theme: Greater connection to others through shared traumatic experience and sense of common fate.** The second theme that emerged from the PTGI Relating to Others domain codes was one of feeling a greater sense of connection, closeness with others, as well as more reciprocal altruism and community cohesion through having experienced a shared traumatic event. Makayla, a 39-year-old divorced mother of one, noted that her relationship with her neighbors since Katrina was,

[a]ctually, better. Because before the storm, we would spoke, "Hi. How are you doing?" But after we talk, we know where each other works. Before that, I didn't know they where they worked, because I just, "Hello. How are you doing?" So we actually have a relationship. If they need something, they'll come knock on my door. If I need something, I'll knock on their door. That didn't happen before the storm. I guess everybody feels like we have to look out for each other after that [Katrina] happened. . . . I do not know. I guess we feel like we're family now. And we all went through the same thing, so we all have a lot in common. (PTGI Score 83; Quartile 4)

**Theme: Increased vulnerability leads to greater closeness to others.** Finally, the traumatic experience of Katrina and relocation triggered a greater willingness for some to be vulnerable in their intimate relationships, leading to greater closeness. For many, enhanced vulnerability emerged because their trauma-related stress was so great that they could not maintain their traditional psychological defenses. Sandra described,

[My relationship with my husband] has changed tremendously [since the hurricane]. It changed for the better, but in the beginning, too, you know, throughout the change we learned a lot of things about each other . . . You know, and certain things surfaced that was hidden, I've come to be more open now with expressing how I feel—you know, to him, to deal with the situation, and not allow this stuff to just linger around. Because that was one of my, you know, one of my biggest problems. . . . You know, I didn't like anybody to tell me not to . . . and you know what I'm feeling or whatever I'm going through, that made me even more angry—to see that I would be exposed, you know, that I'm being exposed to somebody. So it has definitely took a turn for—to better the relationship. (PTGI Score 75; Quartile 4)

## PTGI Personal Strength

**Theme: Increased use of adaptive coping skills.** Two primary themes emerged in the PTGI Personal Strength domain: increased use of adaptive coping skills and greater self-reliance. The first theme that emerged from the PTGI Personal Strength domain item codes was that of an increased sense of personal strength through the greater use of adaptive coping strategies, such as acceptance and gratitude. Brooke, for example, a 35-year-old partnered mother of four, described her personal transformation due to her experience of Katrina as a shift away from maladaptive coping strategies (e.g., denial and disengagement) toward more adaptive coping strategies, such as positive reframing, dialectical thinking and acceptance:

I thank God for Katrina. . . . I think that whole fiasco made me the person that I am today. . . . You know I thank—everybody look at it as, you know, a catastrophe, which it was, but you make the best of a bad situation. . . . You deal with it and move on . . . I mean the person that I was back then, I had the attitude of—I just do not care. . . . Whatever happens, happens, and I'm basically still like that now, whatever happens, happens, but you look for the good in whatever happens. . . . You know you do not necessarily gravitate to the negative side. Yeah it happened. Oh well. Learn from it, move on. (PTGI Score 84; Quartile 4)

**Theme: Increased self-reliance.** The second theme that emerged from the PTGI Personal Strength domain's codes was more literally an increase in self-reliance. Kaylee, a 36-year-old partnered mother of four, described how Katrina and relocation

to Houston away from her family and the social support she received in New Orleans, created in her an increased sense of self-reliance and independence, noting,

It happened so fast, you know. It's just how things can change so fast. You know, in a blink of an eye you can be one way and in a blink of an eye it's gone. You go from one way of living to another, you know, whereas in New Orleans I felt where we were I was somewhat handicapped . . . to where you live in a house, and you have no bills to pay, so any money that you have is yours to take care of your business, and go shopping, and do whatever you have to do, versus coming out here. Responsibility really kicked in . . . With bills and . . . real life kicked in, which is good compared to where we come from. (PTGI Score 68; Quartile 3)

Trinity, a 30-year-old mother of two living in Houston, similarly noted:

I was a job hopper [before Katrina] . . . but I've been kind of holding on to the same job . . . I think I'm more independent now than I was before. I used to ask my mom for a lot and now I kind of try to deal with everything on my own. So I feel a little more independent now. (PTGI Score 84; Quartile 4)

Like Kaylee, Trinity reported that trauma-related losses such as the loss of proximity to family in fact led to the increased independence that was a positive experience.

## PTGI Appreciation for Life

**Theme: Greater appreciation for life and gratitude.** Several participants described gratitude and greater appreciation for life, often intertwined with the theme of religiosity that served as a cognitive superstructure for much of the PTG in this sample. Danielle, for example, a 29-year-old married mother of two who relocated permanently to Houston, described her increased appreciation for life since Katrina, prompted by her reflections as to what might have happened to her and her family had they not evacuated:

The girls, they talked about how they saw the dead bodies and the people on the street and it's—I mean, it's like, I am so thankful, and I just thank God every day, because for whatever reason that my husband was urgent about getting me up and getting out of there, I'm glad that the call went through, because I do not know what would have happened to me and my daughters had he not called, and had we not have gotten up and left in time—left, left. Because it was just . . . I mean the most important thing I think I lost out of Hurricane Katrina was my grandfather . . . other than that, everything else can be replaced. I mean it was not—it's nothing big. Pictures, all that, I mean—That's fine . . . we had life. (PTGI Score 73; Quartile 3)

**Theme: Changed priorities.** A larger theme emerged from the coding of the third item of the PTGI Appreciation for Life domain—"I changed my priorities about what is important in life." This theme is illustrated by the experience of Kaylee, the 36-year-old partnered mother of four who relocated to Houston, who explained how Katrina altered her priorities and path in life toward more values-consistent action:

I value my life a little bit more [since Katrina]. I mean, I do not take things for granted anymore. I do not take nothing for granted. I take everything like a grain of salt now, you know . . . I'm thankful for

what I do have, you know, and just keep trying. That's all I can do. I'm not surrounded with all the corrupt things. I mean, in New Orleans, I partied . . . I mean, I partied and I made myself oblivious to that I actually was living in a cesspool of all kinds of shit . . . But it was normal to me, you know, because I had become oblivious to what was around me and, you know, it was what it was. You know, and then when you had to get all that taken from you, to walk into a new . . . I said, you know, God do everything for a reason, because who knows if Katrina wouldn't have come, how I would have ended up, how my kids would have ended up. (PTGI Score 68; Quartile 3)

In this quote, as is common in this sample, Kaylee uses positive religious coping and positive reframing to build meaning, concluding that everything happens for a reason. Kaylee also voices the theme that many others voiced, that she was not aware of the impact that her limited opportunities and oppression in New Orleans had on her until she relocated. In this case, Katrina and relocation set her and her children on a path toward taking actions closer to her values and aspirations.

## PTGI Spiritual Change

**Theme: Strengthened faith.** Spiritual Change was the least-coded PTGI domain, likely because participants reported strong religiosity both pre- and postdisaster. The theme of enhanced spirituality did emerge however, as several participants described how Katrina and Katrina-related circumstances strengthened their faith, which in some cases led to broader personal growth. Alexis, for instance, a 36-year-old partnered mother of two who returned to New Orleans, described,

I felt like if Katrina wouldn't've been here, I never would have—I do not think I would have got as close to God that I did. You know, living here, having to live with my grandmother and getting into church and just getting my life in order, getting myself together . . . I was not a drug addict or nothing. I just used to smoke weed a lot . . . And I stopped smoking . . . So, I think if Katrina would have not occurred, then a lot of things in me wouldn't have changed, you know. Being around my grandmother and our relationship got closer. I'm even closer with my grandmother more because I was not close to my grandmother about anything . . . Going to church just made me more aware and more mature about things. You know, how to talk to my kids, you know, how to get them on the right track, and to keep them straight. How to be a better mother, that's what it did. (PTGI Score 55; Quartile 2)

Alexis noted how being made to relocate to live with her grandmother—in addition to her actual experience of Katrina itself—led to her increase in religiosity and broader personal transformation.

## PTG Codes and Correspondence to PTGI

The total frequency of PTG codes per participant was related to their overall PTGI scores, with a small-to-moderate effect size ( $r = .32$ ;  $p = .078$ ), in an association that trended toward significance. The frequency of codes for the PTG Relating to Others domain was significantly related to the quantitative PTGI Relating to Others subscale, with a moderate effect size ( $r = .45$ ;  $p = .008$ ). The frequency of codes per domain and PTGI quantitative scores on the remaining four subscales (New Possibilities, Personal

Strength, Appreciation for Life, and Spiritual Change) were not significantly related.

## Discussion

The purpose of this study was to examine whether PTG was present in the narratives of low-income Black young mothers describing their experiences of Hurricane Katrina and relocation, and if so, whether this PTG fit with prior conceptions of PTG theory and research. This analysis also sought to compare PTGI scores with qualitative descriptions of PTG in an effort to examine the PTGI's validity. Most participants (26 out of 32; 81.0%) described some form of PTG, several of them spontaneously, as not all interviewers inquired as to personal growth. The experience of PTG in this sample generally mapped well onto the five domains of the PTGI. Some evidence of the PTGI's validity was seen in that the frequency of all PTG qualitative codes was related to overall PTGI scores, with a small-to-moderate effect size, in a relationship that trended toward significance. The PTGI Relating to Others subscale score was significantly related to the frequency of codes for the PTGI Relating to Others domain, whereas the other subscale scores were not significantly associated with code frequency in their respective domains. It may be that only the items on the PTGI Relating to Others subscale were adequately capturing the growth described qualitatively by our participants.

Most notably, PTG in this study was dominated by growth in the New Possibilities domain stemming from the drastic external changes wrought by the disaster and related relocation. Disasters disproportionately negatively impact individuals identifying with oppressed statuses and identities, including Blacks, women, and the poor in the United States (e.g., Cutter et al., 2006; Elliott & Pais, 2006). Our current understanding, however, is that disasters specifically can in some instances also provide experiences of increased opportunities involved in breaking free of limitations that are often grounded in structural and institutional sexism, racism, and systemically maintained poverty. Examples from another qualitative study of PTG and disaster (Aslam & Kamal, 2013), and from foundational articles by Tedeschi and Calhoun (e.g., 2007) have also described this type of New Possibilities growth grounded in freedom from discriminatory socially constructed restrictions as a result of the trauma or disaster.

We believe it is important to understand this type of New Possibilities growth as disaster-related PTG because to do otherwise inadvertently minimizes the reality that it took a disaster for these women to experience these new opportunities as realistic possibilities for them. Both the disaster-related financial and housing assistance they received and their new experiences of mobility, diversity, and opportunity post-Katrina appeared to have allowed them to see new goals as attainable, which then increased their motivation and goal-directed behavior. This is consistent with literature showing that the visibility and pursuit of goals perceived as attainable has been associated with increases in senses of purpose and control, as well as productivity and subjective well-being (e.g., Latham & Locke, 1979; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Specifically, engagement with new opportunities that provide the possibility of new goal attainment has been found to serve as an important mediator between disruption of core beliefs by trauma and PTG (e.g., Roepke & Seligman, 2015).

The remaining PTG themes, such as those of closer relationships, greater personal strength, enhanced appreciation for life, and increased spirituality, fit well with PTG theory and literature outlining growth as in part an internal transformation triggered by first intrusive, then deliberative, cognitive-emotional processing of trauma-related experiences (Tedeschi & Calhoun, 2004). Other PTG themes that may stretch the traditional conception of PTG, which was initially more individual-level and internally focused, were specifically related to the communal nature of the disaster.

In the second most heavily coded domain, PTGI Relating to Others, for example, participants described increased connection to others through experiencing a "community of altruism" (Kaniasty, 2012) in the wake of disaster. Research also shows that a sense of common fate—here, being spurred by their common experience of Katrina—can often lead to increased reciprocal altruism and stronger relationships among individuals (Dovidio & Morris, 1975). In the case of communal-level trauma, this increased sense of community cohesion, connection, and reciprocal altruism may form part of PTG. This increased community cohesion that was seen here parallels that documented in the few other postdisaster qualitative studies of PTG (Aslam & Kamal, 2013; Smith et al., 2017).

In addition, several participants described how enduring Katrina-related stressors—including relocation that disrupted participants' and their families' pre-Katrina social support networks—resulted in cherishing their family members more, leading to improved communication and closeness. In the Personal Strength domain, the theme of increased self-reliance and independence likely emerged in this study as a specific consequence of relocation and familial tie disruption. The developmental stage of emerging adulthood of these participants may have further primed them for growth in this area once the disaster and familial separation occurred (see Arnett, 2000). Indeed, a prior study of this same dataset found that relocators were significantly more likely to be living independently compared to those who returned to New Orleans post-Katrina (Bosick, 2015).

Of note, despite the low frequency of Spiritual Change codes, as well as participants' low scores on the quantitative PTGI Spiritual Change subscale in this dataset, religion was a powerful framework for meaning-making and heavily intertwined with most PTG themes in this sample. Thus, it is critically important for researchers to consider sociocultural contexts when examining PTG quantitatively, and not to assume that low quantitative Spiritual Change scores mean that religion did not play an important role in PTG. Further, in this study, mothers described their children's experiences, for example in terms of new opportunities for their children and appreciation that their children escaped worse fates in New Orleans, as fueling their PTG and change in perspective. Future studies may wish to examine further how being a parent impacts experiences of PTG, such as whether this is similar to the "vicarious PTG" described in some recent research (e.g., Hyatt-Burkhart, 2014) or is a different phenomenon altogether.

Importantly, this study in no way intends to minimize the huge losses and disparate negative impact our participants experienced from Katrina. Notably, poor female Americans of color are likely to experience the most extreme adverse impacts of climate change and natural disaster. Disruption of familial and social ties after disaster and displacement carries significant personal costs, particularly for low-income mothers who may rely on these ties for

emotional support, as well as childcare and other needs (Morris & Detering, 2016). Providers should be particularly attentive to disaster survivors' needs for support in these areas.

At the same time, without minimizing or distracting from the suffering experienced by disaster survivors, any examination of PTG after disaster and displacement should include a consideration of how these disruptions may also have led to growth through new opportunities, such as those grounded in postdisaster freedom from structural racism, sexism, and socioeconomic oppression, as well as other discriminatory restrictions. Postdisaster PTG may also include a sense of increased independence and self-reliance—especially for young to middle-aged adults who experienced pre-disaster oppression.

Certainly, the goal is to create policies that would allow for this kind of growth absent a disaster—in the short term through specific voucher programs, and in the long term, by improving equality in all neighborhoods, including their predisaster neighborhoods in New Orleans. Notably, our participants described that they did not sense that these programs and opportunities were realistic possibilities for them pre-Katrina, even if they did exist. Thus, a piece of the policy work to be done includes considering how to make existing policies visible and realistic for individuals seeking to move to areas with better resources or seeking to take advantage of programs already available in their communities. In turn, participants described how sensing new opportunities as realistic options for them, along with perceiving new goals as attainable as a result of these new opportunities, increased their motivation for goal-directed behavior and this also constituted their growth. Thus, having these opportunities be more visible and accessible than they currently are is even more critically important for growth in individuals facing challenges like those of our participants.

## Limitations

This study allowed for a mixed-methods exploration of PTG in a distinct and understudied population—young, low-income Black mothers who survived Katrina. Further inclusion criteria limited participants to those who had suffered damage to their pre-Katrina home, and an equal number of returners and relocators were also included in the sample. The results of this study, therefore, may not generalize to the experiences of all low-income Black mothers who lived through Katrina, nor to those of broader groups of Katrina or other disaster survivors.

Further, although the qualitative protocol included questions on postdisaster recovery and resilience, it was not designed to elicit the various PTGI domains. Moreover, interviewers' professional and sociodemographic backgrounds may have led to variability in the questions asked. In addition, a prior qualitative study of a different subsample of the same dataset showed that interviewee responses on various topics sometimes varied according to interviewer race (Lowe, Lustig, and Marrow, 2011).

It must also be noted that interview questions were only asked at one point in time. PTG might be described differently at various points in the recovery process. Future qualitative and mixed-methods research should aim to interview participants at multiple time points to shed further light on PTG processes. Moreover, the PTGI was not administered simultaneously when the interviews were conducted, but rather within a 6-month window. Correspondence between qualitative and quantitative data may have been

affected by this time lapse. Also notable was that this study used thematic analysis which, in this case, involved primarily a top-down design driven by prior research and theory. This approach is useful in that it allowed for an examination of some convergent validity evidence of PTG qualitative data and the PTGI. Coders also looked for additional themes emerging from the data with the possibility of refining prior research and theory. At the same time, top-down analysis may have caused some bias in analyzing data that did not conform to prior established theory.

## Implications and Conclusions

Despite these limitations, this study represents a step toward understanding the experiences of PTG in a subgroup that is understudied and particularly vulnerable to adverse outcomes following natural disasters. This study also moved toward gaining a broader understanding of postdisaster PTG as being driven both by cognitive-emotional processing of the traumatic experience and by experiences of new opportunities, including those stemming from some degree of liberation from predisaster entrenched and institutionalized sexism, racism, and socioeconomic oppression.

Research into how disaster and related relocation may interact with PTG, particularly in populations that experienced oppression predisaster, is still in its exploratory stages. Future research should continue to examine ways in which disasters both disproportionately negatively impact already oppressed groups, and at the same time, may, in some cases, lead to opportunities to escape from this oppression that could be targeted for further development. More broadly, it may be worth evaluating whether the specific elements of the postdisaster context—such as new challenges and opportunities due to displacement; the broad giving and receiving of altruism and compassion at a community level; enhanced community cohesion and engagement; greater governmental financial and housing assistance; and increased familial intimacy due to social network disruption—should be focused on more extensively than is often done in current PTG research. Future studies should further examine whether all aspects of PTG in these contexts are being fully assessed by the current PTGI and qualitative protocols.

In sum, this article noted that the type of PTG that may be reported by disaster survivors may include experiencing some forms of freedom from predisaster restrictions grounded in racism, sexism, and socioeconomic oppression, at the very high cost of the loss of familial and cultural ties, among other losses. That it took a disaster for our participants to experience some liberation from oppression highlights the critical need for realistic, visible and accessible policies to help individuals like our participants achieve the same growth absent a natural disaster.

**Keywords:** posttraumatic growth; new opportunities; Hurricane Katrina; African Americans; low-income women

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## Appendix

**Table A1.** *Posttraumatic Growth-Related Interview Questions*

Potential PTGI domain	Interview questions
General PTG	What sort of good things have happened since then [Katrina]? Any positive changes?
PTGI Personal Strength	Are there ways that you have grown as a person [since Katrina]?
PTGI Appreciation for Life	Do you think you would be doing something different if Hurricane Katrina hadn't happened? What do you think that would be? Is this better or worse than what you are doing now? Sometimes things happen that can make a big difference in people's lives. Can you talk a little bit about any turning points about your life? . . . about the most important bad thing that has happened in your life so far? . . . about the most important good thing that has happened in your life so far? . . . have any other events had a major impact on your life? In what way? What happened?
PTGI Relating to Others	Has your relationship with your parents or guardians changed since the hurricane?
PTGI New Possibilities	Has the disruption in your life from Hurricane Katrina changed your relationship with your partner? Is your kid's daycare or school better or worse than where they were before Katrina? How have your educational goals been affected by the changes in your life since Hurricane Katrina?
PTGI Spiritual Change	What role would you say religion or spirituality plays in your life? How important is it? Is that different than before Hurricane Katrina?

Note. PTGI = Posttraumatic Growth Inventory.

**Table A2.** *Correlations Between Frequency of Posttraumatic Growth Domain Codes and PTGI Quantitative Scores*

Posttraumatic growth domain codes	PTGI total score	PTGI NP subscale score	PTGI RO subscale score	PTGI PS subscale score	PTGI AL subscale score	PTGI SC subscale score
PTGI total code frequency	.32 ( $p = .078$ )					
PTGI NP code frequency		.24 ( $p = .179$ )				
PTGI RO code frequency			.495 ( $p = .004$ )**			
PTGI PS code frequency				.14 ( $p = .450$ )		
PTGI AL code frequency					.24 ( $p = .181$ )	
PTGI SC code frequency						.19 ( $p = .303$ )

Note. PTGI = Posttraumatic Growth Inventory; NP = New Possibilities; RO = Relating to Others; PS = Personal Strength; AL = Appreciation for Life; SC = Spiritual Change.

\*\*  $p < .01$ .

(Appendix continues)

**Table A3.** *Posttraumatic Growth (PTG) Themes, PTGI Domains, and Number of Participants Endorsing Each Domain*

PTGI domain	PTG themes	Number of participants describing this PTG domain (out of total $N = 32$ )	Percentage of participants describing this domain (rounded to nearest percentage)
New Possibilities	Total	23	72
	New opportunities (economic, educational, through exposure to increased diversity)	22	69
	Increased self-efficacy / motivation	13	31
Relating to Others	Total	12	38
	Experiencing altruism leading to greater compassion for others	5	16
	Greater connection to others through shared traumatic experience and sense of common fate	6	19
	Increased vulnerability leads to greater closeness to others	9	28
Personal Strength	Total	11	34
	Increased use of adaptive coping skills	8	25
	Increased self-reliance	10	31
Appreciation for Life	Total	11	34
	Gratitude/increased appreciation for life	11	34
	Restructured priorities/new sense of self	4	13
Spiritual Change	Strengthened religious faith	10	31

*Note.* PTGI = Posttraumatic Growth Inventory.