

The Science and Practice of Resilience Interventions for Children Exposed to Disasters

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David Abramson PhD, Columbia University
Kallin Brooks JD, Columbia University
Lori Peek PhD, Colorado State University

Prologue

The post-Katrina trailer park where we met “M” was markedly different than the many others which had sprung up in the weeks and months following the devastating 2005 hurricane. Rather than being situated in a dusty field, surrounded by chain-link fencing, this trailer park was in a forested glen. The houses were well-kept single-wide mobile homes, arranged in a horseshoe around a grassy field, rather than the smaller travel trailers deployed in endless rows common to other trailer parks. Our research team of interviewers pulled up to this trailer park mid-afternoon just as the school-bus arrived. Twenty to thirty schoolchildren emptied from the bus and went running across the field to their homes. Many knew each other from their old New Orleans neighborhood in the Lower 9th Ward. The residents were mainly working class and working poor residents who had been displaced from their homes, and represented a mix of homeowners and renters living in this FEMA-subsidized emergency housing.

Our team of fifteen researchers fanned out across the trailer park to recruit the mobile home residents in to our Gulf Coast Child and Family Health Study. This was the baseline survey for what would ultimately be a five-year longitudinal cohort study of 1,079 randomly sampled households in Louisiana and Mississippi. The interviews generally took about 45 minutes. One of the interviewers emerged from a home after two hours with the resident. She was visibly moved as she recounted the woman’s story.

M was in her late forties, a mother of two children, one high-school aged, the other an adult. During the hurricane, M was separated from her husband and daughters, since she had been required to report to the healthcare facility where she worked and ended up evacuating with the patients. For almost a week the family did not know of one another’s fate, or even whether each had survived the storm. They ended up reunited at a Texas shelter, and over the succeeding six months leading up to our interview moved seven times, across multiple states. As M described her journey to our interviewer she pulled out a scrapbook. It was filled with pictures – of her destroyed home in New Orleans, and then of every place where she and the family had stayed since the hurricane. They had moved from shelter to shelter, to hotels and motels, to crowded homes where they doubled-up with friends, and ultimately to this trailer park. Her husband drove their teenaged daughter back and forth to her old New Orleans high school daily, commuting up to four hours in an effort to maintain this stability in their daughter’s life. The snapshots in the scrapbook chronicled this story. “Whenever my girls face something difficult in their lives, I want them to be able to pull this scrapbook out,” M told our interviewer. “I want them to see where they’ve been, the challenges they’ve faced. This is their strength. There isn’t anything they can’t handle.”

Our research team re-interviewed M three more times over the subsequent five years. Two years after the hurricane the team found her living in a travel trailer in the front yard of her New Orleans home as she supervised its reconstruction. By the last round of interviewing she and her family had moved back in to their home, and her daughter had graduated high school and was attending college. It appeared that the family had regained its pre-hurricane stability despite nearly five years of enormously difficult economic and social hardships.

As a tale of resilience, M’s story reflects so many of the characteristics and attributes identified by researchers. Despite exposure to extreme adversity, M’s daughter maintained critical academic routines, was encouraged by her parents to develop her cognitive skills, was living in a supportive and nurturing household by a mother who actively

promoted her daughters' sense of self-efficacy and hope for the future (embodied by a tangible tool – the scrapbook – to reinforce the message). M, herself, was a woman who personified “hardiness,” and whose personal outlook was dominated by her faith, good humor, and unshakable optimism. At a larger level, the daughter’s resilience was further bolstered by the sense of community offered by the mobile home park, by the stability of her mother’s workplace, and even by the policies that brought her family back to the Lower 9th Ward to be actively engaged in the community’s redevelopment.

All of which leads to a central question: is it possible to design policies, programs, and interventions to replicate such resilience? Is it feasible to identify the factors which promote such “resilient” outcomes among children and youth, either directly or indirectly, and then target interventions to enhance, activate, or facilitate these factors? Resilience is complex, operating at multiply intersecting levels that encompass individual biology, cognition, and psychology; family dynamics; communal and institutional support systems; and policy environments. This puzzle reflects a fundamental question that had been posed by Yehuda and colleagues: “Are resilient people born, or made?” (Yehuda, Flory et al. 2006).

Introduction

This white paper considers the current science and practice of resilience interventions for children and youth¹ who are susceptible to disasters or who have been exposed to disasters. Picking up on the central question introduced in the prologue above – is it possible to design evidence-based resilience interventions for children? – this paper reviews the ways in which resilience research has influenced resilience interventions, considers specific illustrations of these resilience practices, and examines the evidentiary base for these activities. Furthermore, we will place these disaster-related resilience interventions within a public health framework of primary, secondary, and tertiary prevention. Public health may have entered the field of resilience interventions rather late in the game, but its community-based practice orientation and methods for assessing programmatic effectiveness and theoretical construct fidelity can offer powerful tools to this burgeoning field of “interventional resilience.” Lastly, we will explore the inherent challenges of developing evidence-based resilience practices within the context of disasters.

The field of resilience research has evolved over the fifty years since developmental psychologists first began examining what factors contributed to the positive social, emotional, and intellectual growth of children growing up in the face of highly adverse conditions, such as being reared by a schizophrenic parent (Garmezy, Masten et al. 1984, Garmezy 1985) or living in environments of extreme poverty (Masten 2001). Researchers noted that deficit models which focused on correlations among a child’s personality, environment, and subsequent psychopathology were inadequate frameworks for providing robust explanations of how children developed. The goal was not merely to avoid psychopathology in children, but to understand how children achieved their cognitive, social, and emotional potential. By contrasting children who were more successful at reaching key developmental milestones despite their adverse circumstances with those who were less successful, effectively illuminating what made them resilient, researchers hypothesized they could articulate adaptation mechanisms. Once these adaptation pathways were understood, the subsequent step would involve developing interventions that stimulated or facilitated these growth processes so as to encourage better outcomes for more children, regardless as to their circumstances.

As a number of scholars have noted, this field of “positive psychology” spawned a short list of factors that were persistently associated with children’s ability to adapt and achieve developmental milestones despite being exposed to chronic and acute adverse conditions (Luthar and Cicchetti 2000, Masten 2001, Luthar, Cohen et al. 2006, Masten

¹ In the interest of editorial brevity, throughout this white paper we will mainly refer to children and youth, across the age spectrum of toddler to adolescent, as “children”

2008, Masten and Obradovic 2008, Wright, Masten et al. 2013). These factors included such child-specific characteristics as good cognitive abilities; positive constructs of self (including self-efficacy and self-control); attitudinal and belief systems that encompassed hopefulness, faith, and a positive worldview; and the ability to form and sustain relationships with parents, peers, and siblings. Studies by Chaney and colleagues of American soldiers who were held captive in Vietnamese prisoner-of-war camps for extended periods revealed many of the same characteristics of resilience among adults (Yehuda, Flory et al. 2006).

Scholars have long noted that children do not grow up in a vacuum, but are embedded in a number of concentric social systems that support and nourish them – notably their parents, their households, their peers, the institutions with which they interact, their communities, and society as a whole (Bronfenbrenner 1986), all of which exert an influence on children’s ability to adapt to adverse conditions. Factors across all of these domains are often divided by those which “promote” adaptive competencies in children, and those that “protect” them from the negative consequences of exposure to adverse events leading to psychopathologies or stunted development. Wright and colleagues (Wright, Masten et al. 2013) have referred to this phase of inquiry in the scientific evolution as the first two of four waves of resilience research: the first wave identified resilience factors, and the second wave explored resilience processes within individuals and across these multiple social systems.

With each succeeding wave the resilience research field expanded beyond the original boundaries of developmental psychology. Wright et al referred to the third wave as the examination of interventions that might enhance or facilitate resilience, and the still-emerging fourth wave is focused upon a consideration of multiple system effects, notably within the fields of epigenetics and neurobiology. In the second and third waves, social scientists, education researchers, and social epidemiologists applied their disciplinary perspectives, particularly as the research explored the intersection of multiple levels (e.g., how does one measure a family or community’s social capital or and its relationship to a child’s ability to adapt), the relationship of resilience to health outcomes (including the biological mechanisms of action of adverse events triggering stress responses which in turn lead to biochemical and genetic changes), and the institutional settings most conducive to resilience interventions for children (e.g., schools and day care centers).

These succeeding waves of resilience research have resulted in significant analytical shifts in the field as well. What began in the first wave as qualitative case-based research and quantitative variable-based research that generally relied upon correlational analyses such as regression modeling, analysis of co-variance, and categorical data analyses, has evolved to include hierarchical modeling, latent growth curve analyses (particularly when looking at the relationship of resilience factors to recovery over time) (Bonanno, Westphal et al. 2011), structural equation and propensity score modeling (Abramson, Stehling-Ariza et al. 2010, Stehling-Ariza, Park et al. 2012), and complex system science approaches (Sherrieb, Norris et al. 2010). The benefit of such sophisticated analyses is that they permit far more nuanced tests of frameworks and models that can incorporate multiple social levels as well as dimensions of time. The cost to such complexity is that it may be regarded as out of reach to a practice community eager to translate such findings in to programs and interventions.

As different scientific communities struggled with finding common ground in defining, operationalizing, and analyzing resilience, the concept of population resilience emerged in political discourse as well, particularly over the span of the past decade. In 2005, the United Nations secretariat of the International Strategy for Disaster Reduction convened one hundred and sixty-eight countries in Japan, culminating in the Hyogo Framework for Action. This international blueprint for risk reduction urged countries to develop national resilience programs and strategies so as to reduce the impacts of natural disasters. In response, political leaders in a number of countries, including the US and Canada, called for national resilience efforts. For example, the 2009 US National Health Security Strategy has

two goals, the first of which is to “build community resilience,” and the second to strengthen health and emergency response systems. This foundational policy document goes on to elaborate that, “Communities help build resilience by implementing policies and practices to ensure the conditions under which people can be healthy, by assuring access to medical care, building social cohesion, supporting healthy behaviors, and creating a culture of preparedness in which bystander response to emergencies is not the exception but the norm.” In Presidential Policy Directive 8, issued in 2011, resilience is defined as “the ability to *adapt* to changing conditions and *withstand* and *rapidly recover* from disruption due to emergencies” [emphasis added]. (Brown 2011).

This political rhetoric has translated to administrative action as well. Among the notable mandates are the Centers for Disease Control and Prevention’s (CDC) Public Health Emergency Preparedness Capabilities: National Standards for State and Local Planning (2011), (Centers for Disease Control and Prevention 2011) which list community preparedness and community recovery as the two capabilities that every public health department should plan for as part of their “community resilience” domain. State and public health agencies, in turn, are tasked with identifying processes and outcome measures which can demonstrate to their satisfaction, and that of their federal funders, that they are engaging in and achieving “community resilience.” Although these appear to be entirely different constructs than individual resilience, as Norris and colleagues have pointed out in their seminal article on community resilience, (a) the concept of resilience is often viewed metaphorically rather than operationally (in that it represents a return to a prior steady state after being shocked or deformed, and thus may be viewed as either an outcome or a dynamic process), and (b) community resilience is often measured as the capacity to sustain individual physical and mental health and well-being within a community (Norris, Stevens et al. 2008). The combination of the definitional ambiguity and the potential interpretation of community resilience as the aggregation of individually resilient residents suggest considerable measurement challenges.

In addition to scientific and governmental interests in cultivating “resilience interventions,” there has been increasing awareness and attention to the specific risks associated with children who have been exposed to natural, technological, and man-made disasters (Peek 2008, National Commission on Children and Disasters 2010). Despite the apparent rarity of a disaster happening in any one individual’s life, in recent years the number of domestic disasters and complex emergencies affecting children and youth have increased – including several high-profile events such as the World Trade Center attacks (Hoven, Duarte et al. 2003), Hurricane Katrina (Abramson, Stehling-Ariza et al. 2008, McLaughlin, Fairbank et al. 2009), the BP oil spill (Abramson, Redlener et al. 2010), the Joplin tornado, the Newtown school shooting, and most recently the Moore tornado outside of Oklahoma City. In addition to these major events, children are exposed to any number of “smaller” communal disasters as well, including flooding, wildfires, and mass traumas. The acute phases of a disaster inevitably lead to secondary stresses on children and youth as well: displacement, academic interruptions and disruptions, social network cleavages, economic and mobility constraints. These initial and secondary stresses lead to many consequences, some of them invisible for years. Among these are physical health effects, and increased rates of chronic health conditions that emerge across the lifespan; enduring mental health effects beyond self-limiting PTSD, behavioral and emotional disturbance, and complicated grief; educational effects, including missed grade promotions; and social role effects. Attending this increased awareness and understanding of the many complex effects on children has been an increasing emphasis by governmental, philanthropic, and voluntary sectors to identify and intervene in order to promote positive development among children, and to avert long-term morbidity and pathology.

Cumulatively, these various interests, the evolving science, and the pressing demands to address children’s needs post-disaster, have led to an increasing appreciation of the need to develop evidence-based resilience interventions.

The Landscape of Disaster-Related Resilience Interventions for Children

We employed several search strategies in order to identify programs and interventions whose expressed goals and objectives were to enhance children's resiliency, and to identify evidence as to the effectiveness of resilience interventions. The initial Internet search for programs was conducted using the following search terms: *youth empowerment program, youth leadership programs, disaster preparedness, recovery, youth or child resilience, and disaster education*. Based on these search criteria a limited number of programs were identified. A second search was conducted in which we added identifiers for specific disasters: *Hurricane Katrina, Hurricane Rita, Joplin tornado, April 2011 tornados, 2010 Midwest floods, 2010 Arkansas floods, 2007 California wildfires, and 9/11 terror attacks*. Lastly, programs were further identified and researched as they arose throughout the literature search. For instance, programs referenced by articles uncovered during the literature were included in the list of programs. Each program or intervention was reviewed to determine if it intentionally addressed any of the "short list" of resilience factors identified in the literature (Wright, Masten et al. 2013). A total of 17 programs were identified, and are included in Tables 1 and 2. This is not intended to be an exhaustive list of all resilience programs or interventions, but rather an illustrative list.

As depicted in Table 1, we have characterized the resilience interventions according to the moderating and mediating factors that correspond to the most commonly-cited predictors of child resilience. The interventions may be intended directly for the children and youth, to the parents or household, or be targeted to larger social spheres such as child-oriented institutions or the community more broadly. For each mediating or moderating factor, we have further distinguished the programmatic objectives of the interventions. For example, there are resilience interventions that focus upon promoting "self-identity," and within that domain there are distinct programmatic objectives of enhancing self-efficacy, and others for enhancing self-esteem. For each of the intervention's objectives, we have also characterized it by where it would fit in a public health prevention model. Given that these disaster resilience programs are often similar in size and scale to community-based health promotion and disease prevention programs, and that there may be advantages to aligning the resilience programs with similar programs that target risk reduction or skill enhancement among children and youth, we have categorized the interventions as fitting within primary, secondary, or tertiary prevention models:

- Primary prevention programs target populations who are potentially exposed, and their objective is to prevent exposure to, or consequence of, adverse or toxic agents. This is consistent with the resilience definition of "withstanding" or resisting the disaster exposure, and much of the programmatic activity occurs before the disaster.
- Secondary prevention programs target populations who were exposed but for whom it is unknown whether or to what extent they were affected; their objective is to "treat" populations so as to minimize the debilitating effects of disaster exposure. This is consistent with a resilience definition of "adapting," and generally occurs after the disaster and the exposure.
- Tertiary prevention programs target populations who were exposed *and* affected; their objective is to facilitate rapid and complete recovery, and prevent further "spread" to others or deterioration of the organism. This is consistent with the resilience definition of "rapid recovery" and exclusively occurs after the disaster exposure.

Table 2 describes the specific programs that illustrate the resilience objectives in Table 1.

Overall, it is noteworthy how few programs were identified using these search criteria, and it suggests that the field of "interventional resilience" programming for children and youth is still evolving. It is likely that a number of programs that have been developed in response to disasters were implemented locally with little documentation or

evaluation of their effectiveness. Furthermore, we are aware of a number of programs in development whose express purpose is to enhance child and youth resilience through targeted interventions, but they are in early stages of design and implementation. It is also important to note that we have purposefully excluded the many non-disaster resilience programs that exist (Head Start and 4-H programs, for example), since disaster context is often quite distinct from chronic adversities or more routine environments. We also elected to exclude those programs or interventions that were narrowly focused on mental health treatment only, even in post-disaster settings.

Many of the programs and interventions we identified were built on preparedness education models, in which the children and youth were taught the basics of emergency preparedness, given risk-specific instructions (such as seeking shelter in tornado-susceptible areas or bomb-shelters in war or zones), and also taught specific survival and recovery skills. These interventions were often classroom-based (Minnesota's Disaster Readiness Actions for Teens, Wisconsin's READY program, American Red Cross' Masters of Disaster, Israel's Urban Resilience Program), but a number were also community-based (such as the Boy Scouts, Girl Scouts, or Teen CERT). Many of these programs explicitly reference that they are intended to enhance self-efficacy and provide opportunities for helping others, although we have attempted to characterize these programs by their presumed or implicit objectives notwithstanding their stated programmatic goals. Virtually all of these education-based interventions occur in the pre-disaster stage, and are generally intended to promote moderating traits among children and youth. In addition, they develop facets within youth that may be "mobilized" during a disaster, and that can serve as risk-activated moderators.

Several of the programs and interventions promote very specific social and emotional skills, including stress reduction techniques (Israel's Urban Resilience Program), communication and relationship-building techniques (Journey of Hope), or political advocacy skills (VAYLA and The Rethinkers, both in New Orleans). These skill-oriented programs are a combination of pre- and post-disaster activities, and appear to be most effective as primary prevention models when they are tied to specific risks or hazards.

Three programs in particular – Save the Children's Resilient and Ready Community Initiatives, the Communities Advancing Resilience Toolkit, and the Joplin Child Care Task Force – focus upon community-wide policies, infrastructure, governance and response entities, and child-oriented institutions rather than directly on the children or youth themselves. Their objectives fit more properly in to larger ecological models of resilience, in which children's well-being is contingent upon the stability and competency of multiple institutions affecting their lives. We have included these broader community-oriented programs in the program matrix because they explicitly reference children's well-being and resilience as a programmatic objective.

A number of the resilience interventions seek to broaden children's and youth's worldviews, offering historical, political, and social context to disaster events and their consequences. These include the New York City-based 9/12 project that emerged after the World Trade Center Attacks, Israel's Urban Resilience Program, VAYLA and the Rethinkers programs in New Orleans, and FEMA's Youth Advisory Council. Although these programs differ in their perspectives, they all offer youth explanatory frameworks for disaster risk and consequence that promote hopefulness and agency for the children. These programs are a mix of pre-disaster and post-disaster interventions, and thus serve both primary and secondary prevention goals.

Across all of these resilience interventions, however, there is very limited evaluation of their effectiveness, or representation of a clear evidence base that reflected interventions mapped to theoretical constructs that had been measured and analyzed. Whereas the research literature offers substantial evidence on the relationship of child, parental, and communal characteristics with child development, the evidence for programmatic effectiveness is

extraordinarily shallow. The next section considers some of the challenges in developing such an evidence base for resilience interventions.

TABLE 1: CHILD AND YOUTH RESILIENCE INTERVENTIONS

MODERATORS / MEDIATORS	OBJECTIVE	PREVENTION/INTERVENTION		
		PRIMARY	SECONDARY	TERTIARY
SELF-IDENTITY	Increase self-efficacy	<ul style="list-style-type: none"> • Masters of Disaster* • Teen CERT* • Youth Preparedness Council • Emergency Preparedness Award, Boy Scouts • Emergency Preparedness Patch, Girl Scouts • STEP Program, READY Camp & Class • Disaster Readiness Actions for Teens (DRAT)* 	<ul style="list-style-type: none"> • VAYLA* • The Rethinkers 	
	Increase self-worth and self-esteem	<ul style="list-style-type: none"> • Youth Preparedness Council 	<ul style="list-style-type: none"> • The Rethinkers 	
SELF-CONTROL	Increase executive control & self-regulation	<ul style="list-style-type: none"> • Urban Resilience Program* • Disaster Readiness Actions for Teens (DRAT)* 		
COPING SKILL-BUILDING	Increase problem-solving competence	<ul style="list-style-type: none"> • Youth Preparedness Council • Emergency Preparedness Award, Boy Scouts • Masters of Disaster* • Emergency Preparedness Patch, Girl Scouts • Urban Resilience Program** 	<ul style="list-style-type: none"> • The Rethinkers 	
	Teach stress reduction	<ul style="list-style-type: none"> • Urban Resilience Program* 	<ul style="list-style-type: none"> • Child Friendly Spaces Program* • Urban Resilience Program** • Journey of Hope*** 	<ul style="list-style-type: none"> • Joplin Child Care Task Force
RELATIONSHIP ENHANCEMENT	Improve parenting skills		<ul style="list-style-type: none"> • Resilient and Ready Communities Initiative* • Joplin Child Care Task Force 	
	Improve family dynamics & communication	<ul style="list-style-type: none"> • Resilient and Ready 	<ul style="list-style-type: none"> • Resilient and Ready 	

		Communities Initiative* <ul style="list-style-type: none"> • Communities Advancing Resilience Toolkit (CART) 	Communities Initiative*	
	Identify or connect to trusted adults		<ul style="list-style-type: none"> • Child Friendly Spaces Program* • Journey of Hope*** • The Rethinkers* • VAYLA* • Joplin Child Care Task Force 	
OPPORTUNITIES FOR PRO-SOCIAL BEHAVIOR	Provide opportunities to help others	<ul style="list-style-type: none"> • Youth Preparedness Council • Teen CERT • Disaster Readiness Actions for Teens (DRAT)* • Emergency Preparedness Award, Boy Scouts • Emergency Preparedness Patch, Girl Scouts 	<ul style="list-style-type: none"> • The Rethinkers* • VAYLA 	
ENHANCED OR INCREASED RESOURCES	Increase access to <i>human capital</i> , such as better health, emotional well-being, job skills, youth empowerment and development	<ul style="list-style-type: none"> • Resilient and Ready Communities Initiative • Teen CERT** • Urban Resilience Program** • Communities Advancing Resilience Toolkit (CART) 	<ul style="list-style-type: none"> • Child Friendly Spaces Program* • Journey of Hope*** • The 9/12 Generation Project • Liberty's Kitchen • The Rethinkers* • VAYLA* 	<ul style="list-style-type: none"> • CHF Mobile Mental Health
	Increase access to <i>social capital</i> , including increased communication and social support	<ul style="list-style-type: none"> • Resilient and Ready Communities Initiative • Youth Preparedness Council • Disaster Readiness Actions for Teens (DRAT)* 	<ul style="list-style-type: none"> • Child Friendly Spaces Program* • Journey of Hope*** • The Rethinkers* • VAYLA* 	
	Increase access to <i>political capital</i> , such as the ability to advocate for oneself, one's community, and others	<ul style="list-style-type: none"> • Teen CERT* • Youth Preparedness Council • The Rethinkers* • VAYLA* 	<ul style="list-style-type: none"> • The Rethinkers* • VAYLA* 	
	Increase access to <i>economic capital</i> , such as resources, materials, and basic needs		<ul style="list-style-type: none"> • The Rethinkers* • VAYLA* 	

	(clothing, etc.)			
POSITIVE WORLDVIEW	Increase or develop communal solidarity	<ul style="list-style-type: none"> • Youth Preparedness Council • Urban Resilience Program** • Disaster Readiness Actions for Teens (DRAT)* • The 9/12 Generation Project • The Rethinkers* • VAYLA* 	<ul style="list-style-type: none"> • The Rethinkers* • VAYLA* • The 9/12 Generation Project 	
	Contextualize and situate understanding of hazard or traumatic event so that attribution of cause is external rather than internal (effort to counter learned helplessness)		<ul style="list-style-type: none"> • Urban Resilience Program** • The Rethinkers* • VAYLA* • The 9/12 Generation Project 	<ul style="list-style-type: none"> • The Rethinkers* • VAYLA*
INSTITUTIONAL STABILITY	Increase stability and support of schools, youth sports and programs, day care, as well as primary and specialty care	<ul style="list-style-type: none"> • Resilient and Ready Communities Initiative • The 9/12 Generation Project 	<ul style="list-style-type: none"> • Resilient and Ready Communities Initiative • Child Friendly Spaces Program*** • Journey of Hope*** • The Rethinkers* • VAYLA* • Joplin Child Care Task Force 	
RESUMPTION OF SOCIAL ROUTINES	Provide environment for or facilitate return to pre-disaster routines	<ul style="list-style-type: none"> • Urban Resilience Program** • The 9/12 Generation Project 	<ul style="list-style-type: none"> • Child Friendly Spaces Program*** • Journey of Hope*** 	
SOCIAL ORDER/STABILITY	Address community wide issues of social disruptions, inequality, and stability of social institutions such as schools, healthcare facilities, and criminal justice systems		<ul style="list-style-type: none"> • The Rethinkers* • VAYLA* 	
<p>* Process or program evaluation (accomplishes program objectives) ** Intermediate impact (intervention achieved intermediate objectives) *** Outcome impact (intervention either promotes recovery, decreases pathology, increases educational attainment/objective)</p>				

TABLE 2: YOUTH-ORIENTED PROGRAM DESCRIPTIONS

PROGRAM	TARGET AUDIENCE	SETTING	OBJECTIVES
9/12 Generation Project , New York Says Thank You Foundation	Youth, middle and high school students	Community	Activate students in service-learning projects focused on community revitalization, disaster relief, and the arts; empower students to engage in positive impacts beyond their immediate communities and economic means; encourage solidarity among students and youth nationwide; provide positive lessons arising from disaster
Child Friendly Spaces Program , Save the Children	Children, youth, caregivers, disaster-affected communities	Post-disaster, shelters, places of congregation post-emergency	Provide stable space for children to play, socialize and begin to recover post-disaster with the goal of protecting children from harm and to provide a sense of normalcy and community; educate leaders to meet needs of children
Communities Advancing Resilience Toolkit (CART) , Terrorism and Disaster Center of the National Child Traumatic Stress Network	Communities	Community	Community intervention process for community action planning; encourage community relationships and resilience, prompting community members to assess the needs, generate community profiles, develop strategic plans, and implement these plans
Disaster Readiness Actions for Teens (DRAT) , Minnesota Department of Health	Youth	Community	Provide emergency preparedness training for teens by engaging, educating, and empowering youth to respond safely during critical incidents; utilizes a “train-the-trainer” concept to educate teens to come together to teach others about preparedness
Emergency Preparedness Award , Boy Scouts of America	Youth, boys	Community	Educate and empower young men to respond when disaster strikes; provide opportunity to help others during emergency
Emergency Preparedness Patch , Girl Scouts Council of the Nation’s Capital	Youth, girls	Community	Motivate and empower young women to become leaders in their emergency management and response; provide opportunity to help others during emergency
Joplin Child Care Task Force	Youth	Community	Community-based collaboration to respond to children’s and provider’s mental health needs; Provide stable space for children to play, socialize and begin to recover post-disaster with the goal of protecting children from harm and to provide a sense of normalcy and community; educate leaders to meet needs of children
Journey of Hope , Save the Children	Youth	Community	Provide caregivers and youth the support, education, training and resources necessary to understand and normalizing emotions associated with hardships; support children & caregivers in developing positive coping strategies to deal with their emotions; build on the inner strengths of children, families, schools, and communities to further develop positive coping strategies; develop a person’s sense of hope and future by empowering them to feel more in control
Masters of Disaster , American red Cross	Youth	School, Community	Ready-to-go kit designed to integrate lessons of disaster into regular school lesson plans; provide disaster safety instruction to students and families; help students and families understand and prepare for disasters; educate youth on how to stay safe and help others

PROGRAM	TARGET AUDIENCE	SETTING	OBJECTIVES
			during and after disaster
Mobil Medical and Community Resilience Support Units Children's Health Fund	Youth	Community, school	Provide primary medical and mental health care to children in individual settings, and provide group activities to facilitate communication. Utilized "coping boxes" and play therapy with younger children. Objectives are to promote healthy development and emotional well-being
Resilient and Ready Communities Initiative	Youth, children, caregivers, communities	Community	Community-based approach to help local communities address the needs of children in disasters; reduce impact of disasters and emergencies on children through effective preparedness, response, recovery and advocacy; help at-risk regions meet national standards and integrate best practices to support children's safety and well-being through preparedness planning and programs
Rethinkers , New Orleans public schools	Youth	School, New Orleans, LA	Empower youth to identify needs in their post-disaster community and advocate effectively for reform; provide youth with the skills necessary to take action to improve their educational experience
STEP Program, READY Camp & Class , Wisconsin Center for School, Youth, and Citizen Preparedness	Youth, teachers	Community, School Wisconsin	Educate and prepare youth and teachers to respond and recover from serious, unexpected situation; empower youth to take control of their safety by developing emergency plans for themselves and their families; train youth to help themselves and others during emergencies
Teen Community Emergency Response Training (CERT) , FEMA	Youth	Community, school	Educate youth about disaster preparedness for hazards specific to their community to ensure they have the skills needed to protect themselves and assist others; prepare and address response capabilities in high schools; train students in school security and emergency response procedures; involve youth in the country's overall emergency preparedness and basic response plans
Urban Resilience Program , Cohen-Harris Center	Youth	School, Israel	Prepare youth and the population to cope with the consequences of disasters and reinforce citizen resilience; aid communities in developing function, social flexibility and a means of coping through community capital, resilience and education
Vietnamese American Young Leaders Association of New Orleans (VAYLA)	Youth	Community, New Orleans, LA	Promote youth development and community empowerment through cultural awareness, education and engagement; empower youth through supportive services and organizing for cultural enrichment and positive social change
Youth Preparedness Council	Youth	National	Promote youth empowerment, preparedness, and resiliency through the experience of peer discussion and learning; educate and promote youth to serve on a national council and bring their experiences back to their communities to help develop and advance local preparedness and resilience

Evaluating the evidence base for resilience interventions

At a minimum, there appear to be at least three types of challenges to the development of an evidence base for resilience interventions: definitional, operational, and political. These are above and beyond the simpler explanation that this is still a young field, particularly in the context of disasters, and that it will take time for the programs to be sufficiently developed to allow for robust evaluations and accumulation of evidence.

■ Definitional challenges:

- Resilience outcomes are not universal or standardized. Even distinguishing between the ability to withstand, adapt, or recovery quickly reflect vastly different outcomes, and there is still a vigorous debate as to whether resilience is a process, a latent construct, or a specific outcome. Furthermore, resilience can only be measured in the presence of (or in response to) an adverse or potentially traumatic event, thus complicating pre-disaster baseline measurement.
- There is still considerable debate as to whether resilience is represented as the absence of mental health pathology, the achievement of a specific developmental milestone, or the representation of a specific constellation of positive attributes (e.g., self-efficacy, positive worldview, etc.). The latter also raises the question as to whether resilience may be subjectively or objectively measured.
- Because of the recent interest in resilience across many disciplines and sectors there are numerous methodologies and disciplinary lexicons that do not necessarily align.

■ Operational challenges:

- The processes and factors underlying resilience are extraordinarily complex, operating at multiple levels that include biological, psychological, social, and cultural domains. Analytical techniques such as systems science and structural equation modeling are being employed to handle these complex designs, although the value of such approaches will require many replicated studies. The statistical complexity also limits its accessibility to researchers and to stakeholders. Beyond that, the multi-disciplinary nature of these complex research questions and designs require scientists and scholars who can understand and apply theory and methods from areas of expertise far beyond their own.
- The nature of much resilience research is that it relies upon observational data, which is daunting for a number of reasons. The events themselves are rare and unpredictable, it is difficult to get in to the field quickly enough to collect critical time-series data, there is rarely accessible pre-disaster data available, and it is particularly difficult to control for competing explanations in such quasi-experimental research.
- It has also been difficult to operationalize the effects of formal help mechanisms in observational studies because they are so varied, not universally-defined, with no common data systems. The problems inherent in such resilience research are common to public health research's efforts to evaluate community health interventions, and solutions in that field may find traction with the resilience research.
- Exposure itself may be related to social vulnerability factors, which limit ability to develop case-control strategies contingent upon exposure.

■ Political challenges:

- Domestically, the federal government does not generally provide or fund disaster-related child resilience services, strategies, or programs, so has less of an institutional interest in funding evaluation research (Abramson, Morse et al. 2007, Garrett, Grant et al. 2007).

- Most of the extant programming has emerged from the non-profit, philanthropic, and humanitarian aid sectors, which have limited funding for rigorous evaluation methods, and who favor programmatic dollars over research dollars.
- “Root cause” theories and frameworks suggest the need for interventions that are, (a) complex, (b) socially progressive, (c) structural, and (d) are not the responsibility of any one sector or domain (thus little accountability demand for an evidentiary base). As such, there is a limited political advocacy coalition that can advocate for federal research funding, particularly in times of constrained and shrinking science budgets.

Moving forward with “Interventional Resilience”

Despite the challenges noted above, there are several noteworthy trends or opportunities within resilience research. The first is the notion of expanding existing youth programs that have the capacity to “reaching forward” in to disaster settings. These are exemplified by the Boy Scouts and Girl Scouts, but it is easy to imagine other well-established youth-empowerment and youth-development programs (such as 4-H) that can be expanded in to disaster realms. This also affords control groups of children who have not been exposed to the disaster. As much as there is this possibility for a reaching forward, there is also evidence of a “reaching back,” where disaster-inspired programs, such as VAYLA and The Rethinkers, establish themselves in their communities as progressive (but non-disaster) youth empower programs. This extends the utility of such programs, and also affords (as do the reaching forward programs) the research community the ability to test the effect of disaster context on resilience outcomes.

As mentioned earlier in this white paper, there is also the leverage of public health research strategies that can be employed in resilience research. There is a long history in public health of community-based research: the Healthy Communities movement, social medicine, and social determinants of health models align both theoretically and programmatically with a number of resilience interventions. There are developed evaluation and meta-review strategies, such as the Cochrane Collaborative and CDC’s Community Preventive Services Guide, which can serve as models for programmatic evaluations, and the field of social epidemiology in particular has embraced the complex systems sciences, which can be applied to many of the multi-level resilience research strategies.

Which brings us back to M, the hardy Katrina survivor and her daughter who were profiled briefly in the prologue. In thinking about bottling the resilience factors in their lives and designing interventions that can be applied to others, a number of possibilities emerge. First, to the extent possible create programs and policies that allow children to remain within their educational environments, assuming those were positive and high-quality environments. Develop family-based programs that bring parents and children together to create and employ coping skills (like the scrapbook), and which can further enhance familial closeness and communication. Create community-focused emergency housing environments for populations that may be displaced for long periods of time to allow for collective self-efficacy and communal solidarity. And develop programs that empower children and families to be actively involved in rebuilding their own communities, as a means of affirming their self-efficacy and countering the social role of “victim.”

That said, we don’t know with any certainty that all works. Or rather, which part exerts what effect, and to what end? Of course, in the absence of hard evidence, we can certainly follow the five principles offered by Hobfoll (Hobfoll, Watson et al. 2007) in the design of *any* resilience intervention: (1) Promote safety, (2) promote calming, (3) promote self- and collective-efficacy, (4) promote connectedness, and (5) instill hope.

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