Triangulating on Stress after Hurricane Ike

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UTMB

Presenter Disclosures

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No relationship to disclose

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UTMB

Creating Research in the Midst of a Disaster

Phase I: Immediate online baseline assessment of measures of hurricane impact, perceived stress, depression, PTSD, resource loss, resilience, positive growth, physical symptoms, coping, social support, worry, displacement, damage, injury, financial data, health utilization data, employment & work disruption & four biological measures of stress via salivary samples.

Planning for the Long Haul – Longitudinal Follow Up

Phase II: Repeated assessment of measures of perceived stress, depression, PTSD, resource loss, resilience, positive growth, physical symptoms, coping, social support, worry and four biological measures of stress at the 12 month and 24 month anniversary of Hurricane Ike.

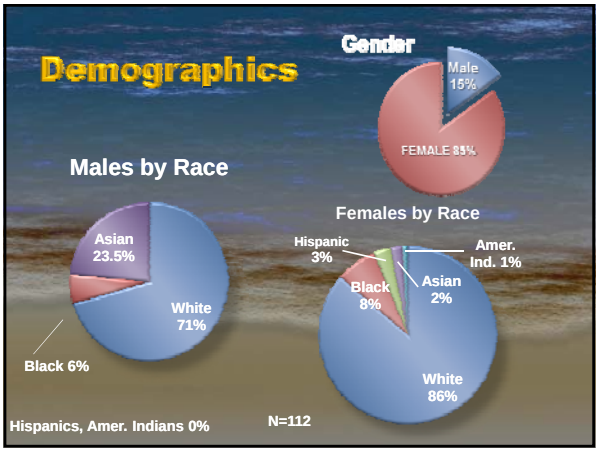
Specific Aims

- Primary Aim 1: Investigate the progression of mental distress across time relative to recovery trajectories found in previous studies of bereavement and traumatic loss to identify predictive factors that discriminate between patterns of recovery in a disaster population.
- Primary Aim 2: Examine the meditational importance of internal and external resource levels and change over time in predicting subsequent levels of psychological distress and changes in distress.

Sample

- **UTMB community: Faculty, staff and students**
  - 7th largest employer in the region (13,000 employees statewide)
  - 6 hospitals
  - State's oldest schools of Medicine, Nursing, Health Professions and Biomedical Sciences
  - 2,338 students(2,094 from 122 TX counties), over 700 interns, residents, and fellows, and 1,116 faculty.
- **477 respondents to survey at baseline**
- 115 respondents to survey and salivary donation

Demographics



Triangulating on Stress

PRE-DISASTER FACTORS:
- Demographics – gender, age, marital status, education, family, etc.
- Socio-economic – income, employment, insurance, housing
- Medical conditions
- Pre-existing coping habits

WITHIN DISASTER FACTORS:
- Disaster Exposure
  - Displacement
  - Property Damage
  - Personal injury
  - Inconvenience

POST-DISASTER FACTORS:
- Initial Distress (eg, perceived stress, worry)
  - Acute
  - Ongoing
- Stressful Events (eg, loss of job)
- Psychosocial Resource Loss
  - Possessions
  - Social ties
  - Roles
- Resilience
- Support (agency & family)

Coping Styles & Coping Self-Efficacy

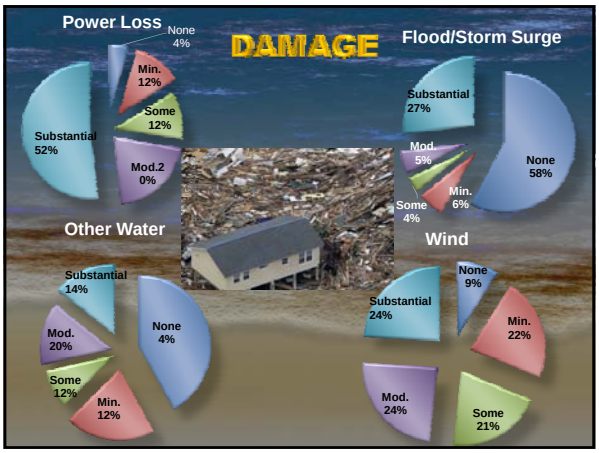
STRESS
- Impact Factors
- Physiological markers
- Immunoendocrine factors
- Psychological Indicators
- Increased negative behaviors (e.g., smoking, weight gain)

HEALTH OUTCOMES:
- Depression
- PTSD
- Anxiety Disorder
- Increased medical utilization
- Increased mental health utilization
- Increased employment disruption
  - Increased sick leave
  - Increased vacation leave

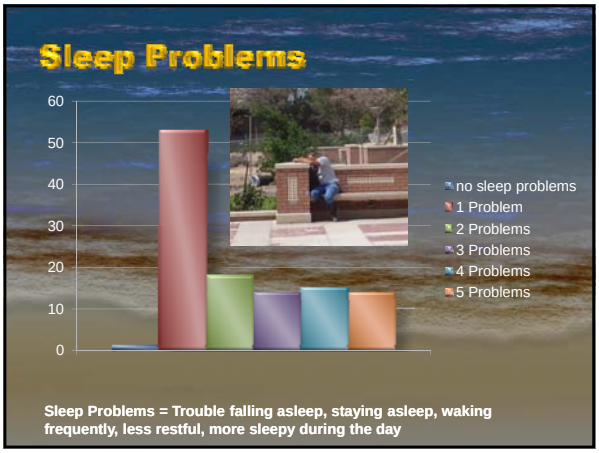
How long did it take to reach their destinations?

Evacuation Statistics

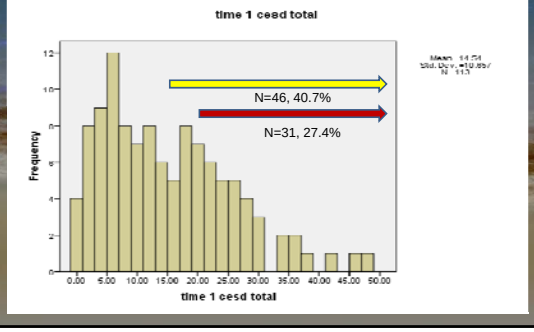
Variable	Mean	sd	Min-Max
Age of the participant	47.88	10.93	24-80
How many days were you away	12.09	19.12	0-142
Number of adults responsible for evacuating	1.79	1.63	0-12
Number of children under 18 responsible for evacuating	0.44	.803	0-4
Number of pets responsible for evacuating	1.85	2.67	0-17


DAMAGE
Power Loss
None 4%
Min. 12%
Some 12%
Mod.2 0%
Substantial 52%
Other Water
Substantial 14%
None 4%
Mod. 20%
Some 12%
Min. 12%
Flood/Storm Surge
Substantial 27%
Mod. 5%
Some 4%
Min. 6%
None 58%
Wind
None 9%
Substantial 24%
Min. 22%
Mod. 24%
Some 21%

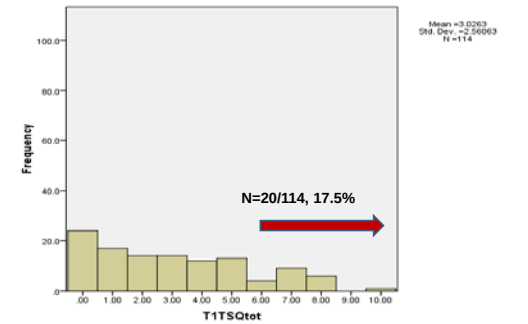
Impacts to Health


Sleep Problems
60
50
40
30
20
10
0
no sleep problems
1 Problem
2 Problems
3 Problems
4 Problems
5 Problems
Sleep Problems = Trouble falling asleep, staying asleep, waking frequently, less restful, more sleepy during the day

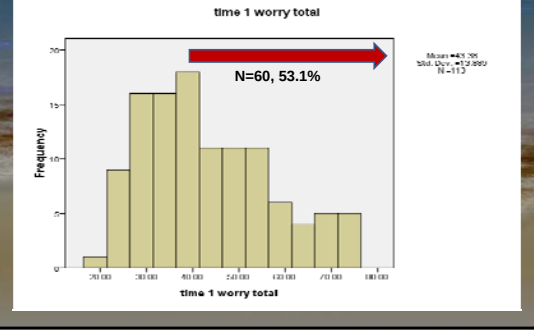
Proportion Meeting CESD Criterias



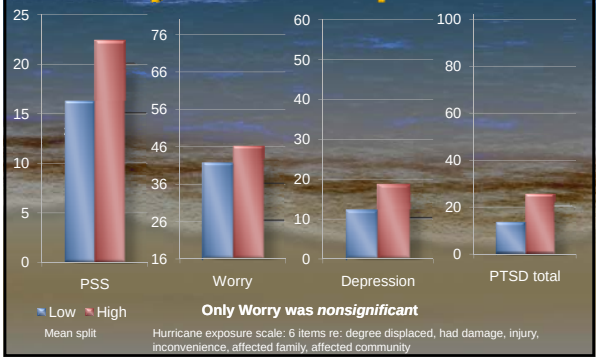
Proportion Meeting PTSD Criterion



Proportion Meeting Worry Criterion



Psychological Assessments By Hurricane Exposure



Only Worry was *nonsignificant*

Hurricane exposure scale: 6 items re: degree displaced, had damage, injury, inconvenience, affected family, affected community

Relationships Between Psychological Measures

	Worry	PTSD Total	PTSD Freq	PTSD Severity	Depression	Hurricane Exposure
Perceived stress	.562**	.680**	.679**	.654**	.792**	.396**
Worry	-	.512**	.503**	.503**	.563**	.126*
PTSD Total		-	-	-	.763**	.410**
PTSD Freq			-	-	.748**	.408**
PTSD Severity				-	.751**	.378**
Depression					-	.249**
Hurricane Exposure						-

Relationships Between Biological Measures

	IL6	TNFa	EBV	DHEAS	Cortisol	Testosterone	Cort: DHEAS
IL1b	.411**	.491**	ns	ns	ns	.231*	ns
IL6	-	.417**	.206*	ns	ns	ns	ns
TNFa		-	ns	ns	.190+	ns	.173+
EBV			-	ns	ns	ns	ns
DHEAS				-	ns	ns	-
Cortisol					-	ns	-
Testosterone						-	ns
Cortisol: DHEAS							

Relationships Between Biological Measures and Psychological Measures

- IL6 correlated with Depression (r=.214*) and marginally with PTSD Severity (r=.173)
- All other relationships were essentially nonexistent, (r<.000 to r=.149)

Predicting Depression and PTSD Symptoms

Predictors	Depression Partial r	PTSD Partial r
	P=.000; R^2=.733	P=.000; R^2=.659
Perceived stress	.609	ns
Worry	ns	.189 (.063)
PTSD Frequency	.487	-
PTSD Severity	ns	-
Depression	-	.633
Hurricane Exposure	-.179 (.077)	.376
IL1b	ns	.200
IL6	.259	ns
TNFa	ns	-.177 (.081)

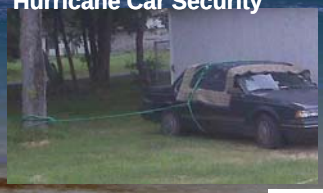
Predicting Perceived Stress and Worry

Predictors	Perceived Stress Partial r	Worry Partial r
	P=.000; R^2=.673	P=.000; R^2=.360
Perceived stress	-	.346
Worry	.250	-
PTSD Frequency	ns	.234
Depression	.680	ns
Hurricane Exposure	.247	ns
DHEAS	ns	-.217

Summary

- Clearly we have participants that were showing significant distress.
- There are indications that our biological measures are indicative of stress and psychological well-being but that relationship is not yet clear.
- Follow-up assessments were taken at the 1 year anniversary in September 2009, (n=295) and are currently being taken at the 2nd anniversary.
- Repeated measures across time may allow us to identify those that recover quickly, show delayed recovery, sustained distress or delayed distress.
- Goal is to test our model of moderators and mediators for negative health outcomes.

Hurricane Car Security



Better than gold…

Questions?