

Conceptualizing Exposure to Trauma and Trauma Related Disorders and Symptoms

Robert J. Ursano, M.D.

Prof/Chair
Dept of Psychiatry
Uniformed Services University

Director
Center for the Study of Traumatic Stress



Center for the Study of Traumatic Stress

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Characteristics of Traumatic Events

Individuals Exposed



Intentional
assault
robbery
rape

Unintentional
accident
MVA
injury

**Communities/
Populations Exposed**



Human Made
industrial acc.
plane crash
toxic exposure

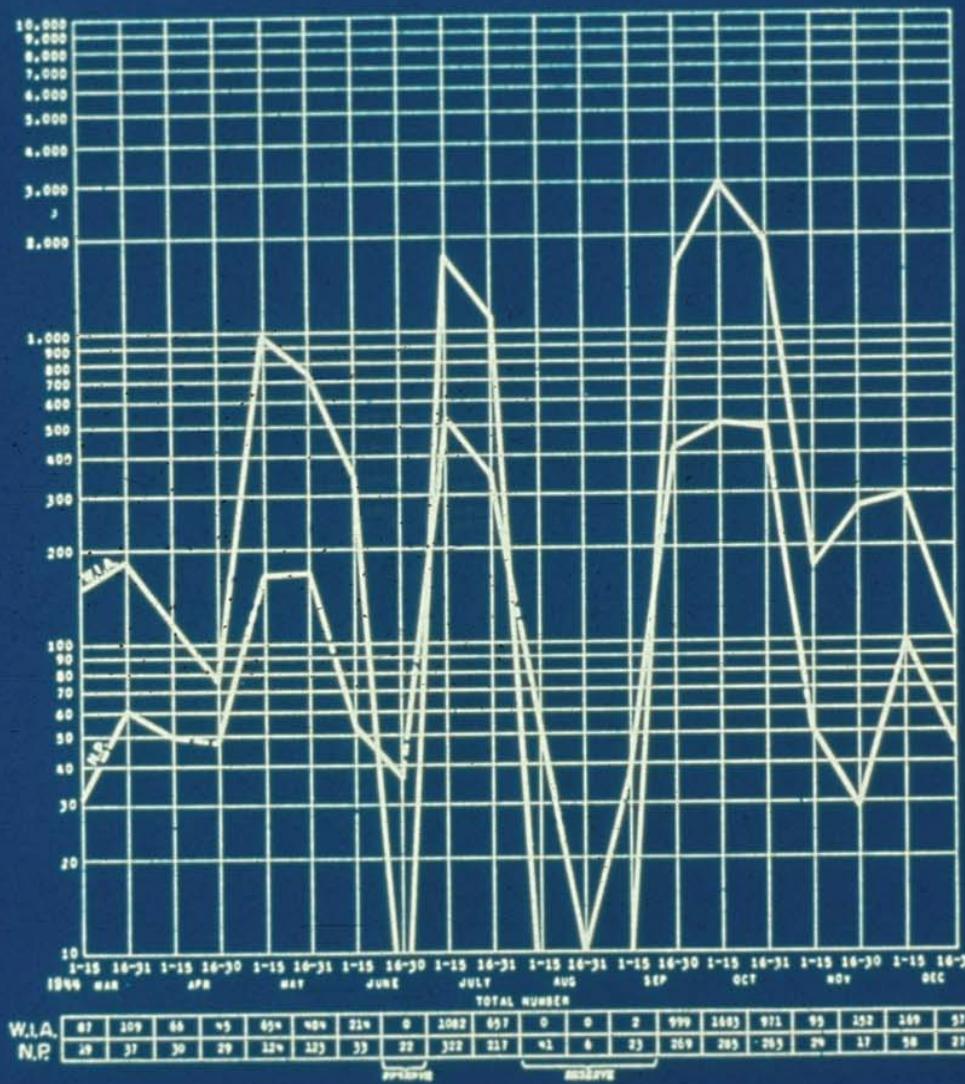
Natural
hurricane
earthquake
tornado

Mental Health Responses to Trauma, Disasters and Public Health Emergencies



Organizing Principles

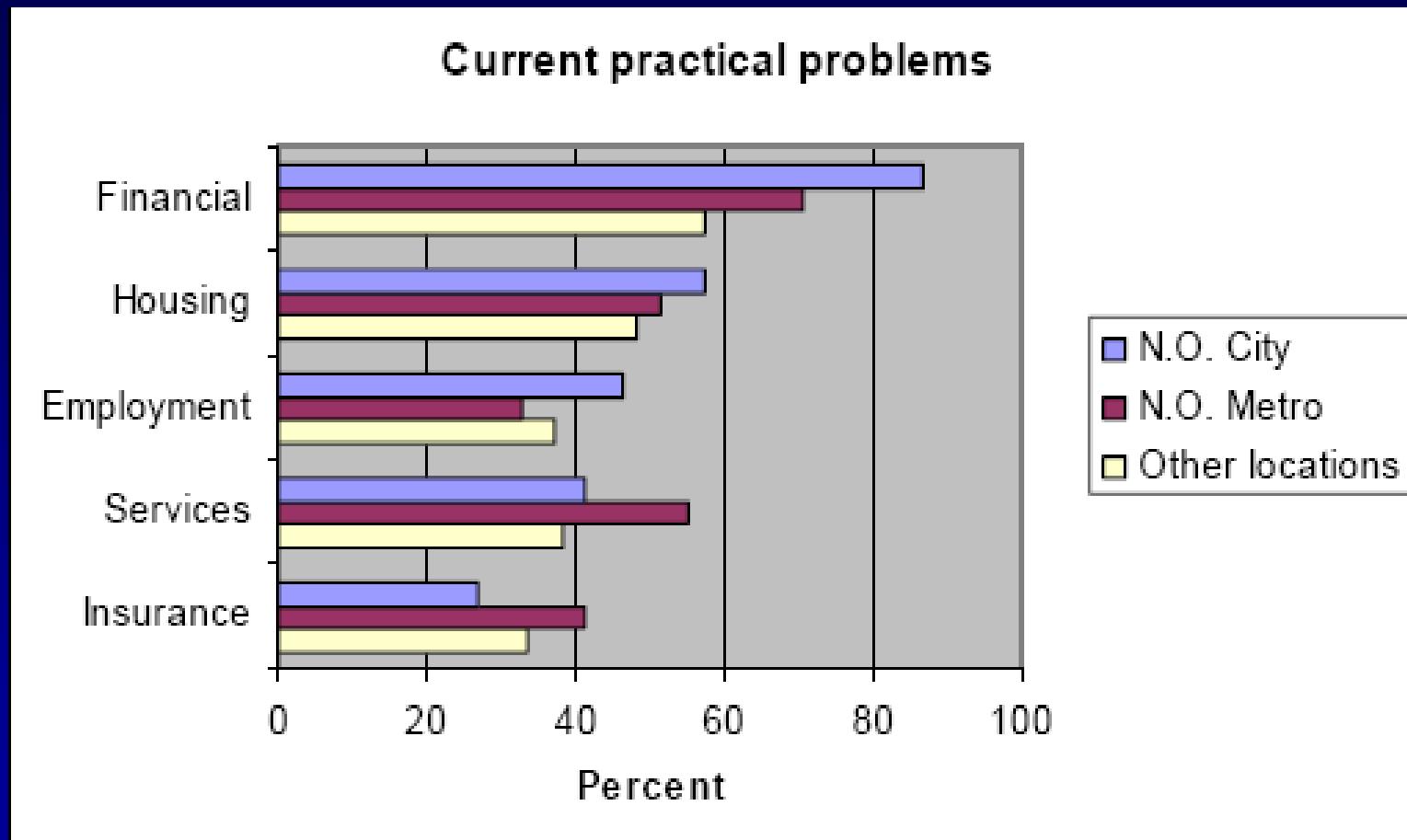
- Trauma as toxic exposure – 40% -??90%
“Asbestos exposure among smokers”
(Need to understand the toxin)
- DSM V- RDOC:
Dimensions and Categories
“Trauma & Stressor Related Disorders”
(dimensions, behaviors, disorderS)
- Individual and community level exposures



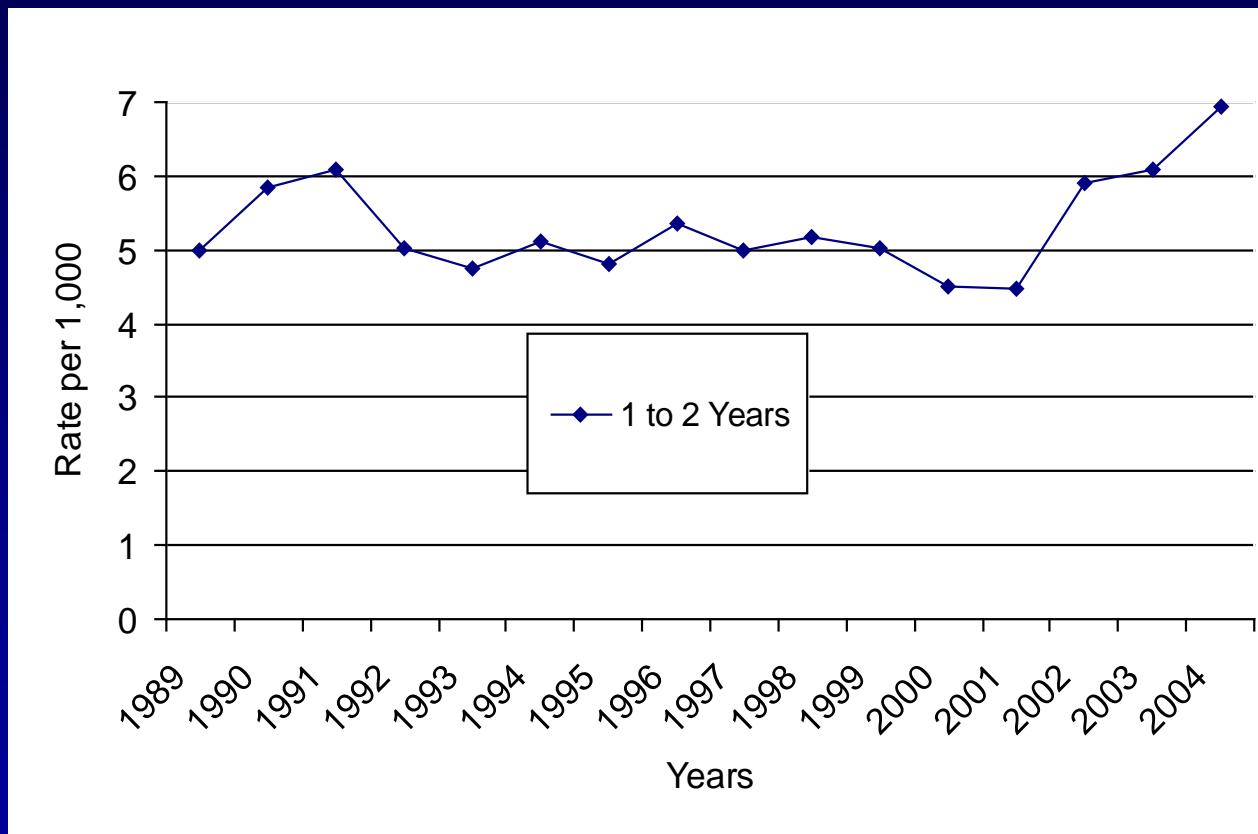
| W.I.A. | TOTAL NUMBER | | | | | | | | | | | | | | | | |
|--------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 | 1-15 |
| W.I.A. | 87 | 109 | 66 | 45 | 454 | 404 | 214 | 0 | 1082 | 697 | 0 | 0 | 2 | 999 | 1663 | 915 | 95 |
| N.P. | 49 | 37 | 30 | 29 | 124 | 123 | 33 | 22 | 322 | 237 | 41 | 8 | 23 | 269 | 295 | 265 | 29 |



Problems 5-8 months post (N=1043) (Traumatic Events and cascade of adversities)



U.S. Army Child Neglect Rates Age 1-2 year olds, 1989-2004



Psychosocial Responses to Trauma and Disaster

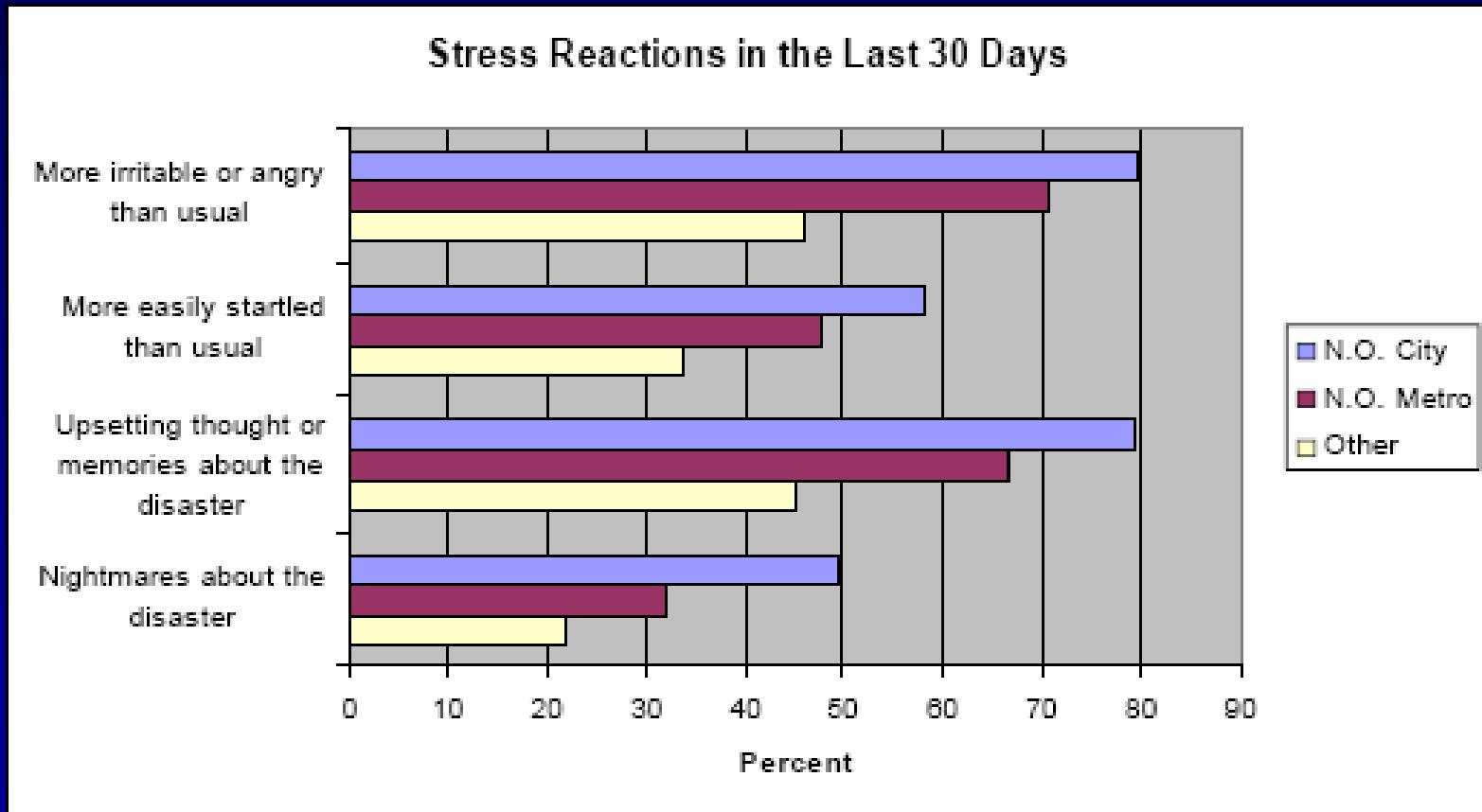
- Horror
- Anger
- NOT Panic
- Resilience/altruism
- Fear
- Sleep problems
- Increased Alcohol and Smoking Use
- Grief
- Anger at government
- Blaming
- Scapegoating
- Social isolation
- Demoralization
- Loss of faith in social institutions
- Guilt
- Paranoia



Hurricane Katrina (2005)

Stress Reactions at 5-8 months (N=1043)

(Anger/aggression/irritability)



Post Disaster Community Mental Health Surveillance

- Distress
- Psychiatric Illness/Symptoms
- Health Risk Behaviors
- Risk Perception
- Safety Perception
- Changes in behavior
- Preparedness Behaviors



Trauma Related Behaviors (TRB)



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Those with difficulty balancing home & work were 2.5 times more likely to have PTSD &/or Depression

(9 mos. post-hurricanes)

After adjusting for:

- Injury/damage
- Overall work demand

PTSD: Wald Chi Sq.=13.5, OR = 2.5, p=0.002, CI=1.54-4.17

DEP: Wald Chi Sq.=11.6, OR = 2.5, p=0.006, CI=1.48-4.26



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Cost of Lost Productivity Due to Depression

- 80% of lost productive time costs are due to reduced performance while **AT WORK**
(e.g. fatigue, how long to start work after arriving)

- 20% due to Absenteeism

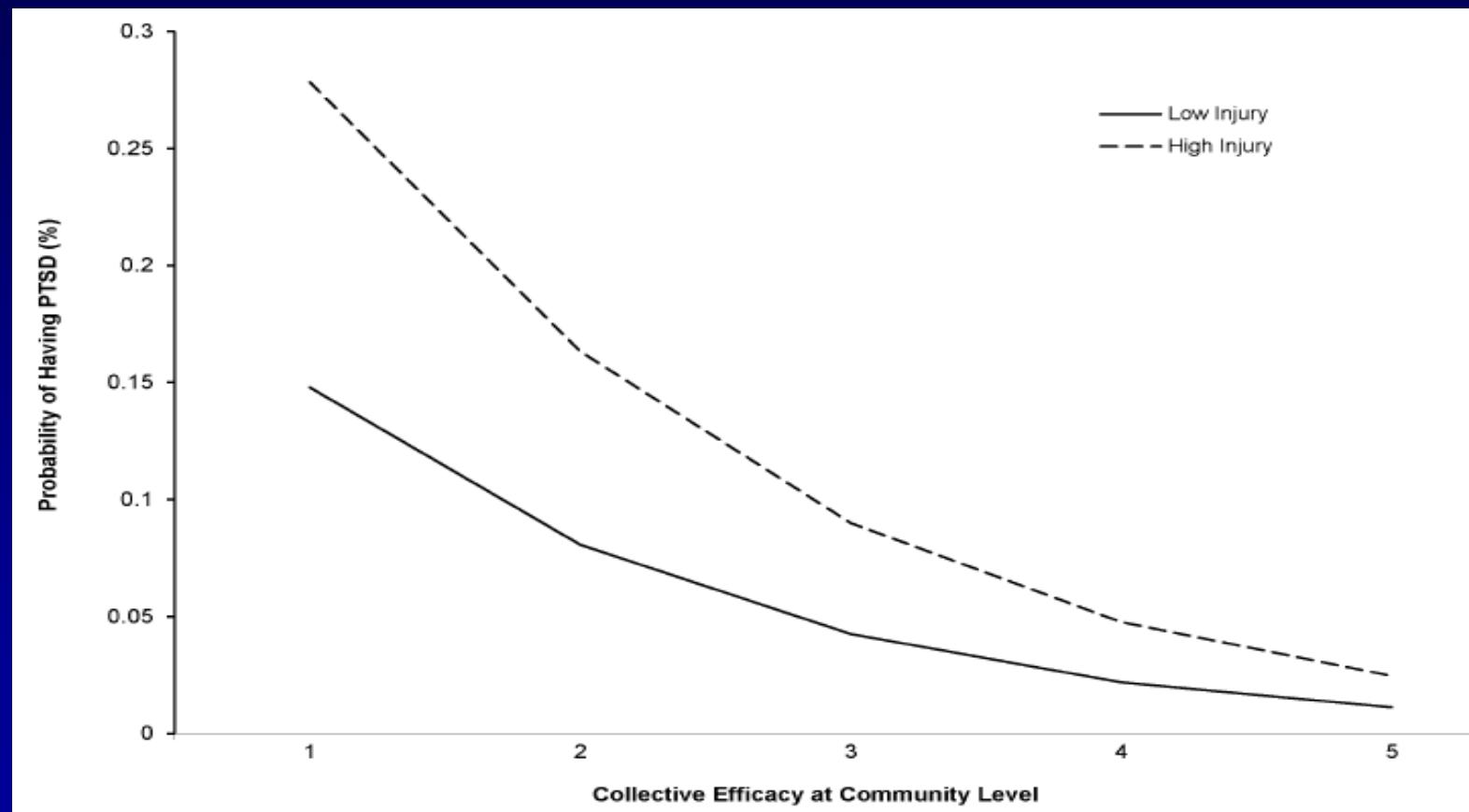


Foster Resilience

- Optimism
- “Recovery Skills”
- Self regulation of emotions
- Attachment/Social Support
- Altruism (?)
- Active vs passive responses
(instrumental)



Collective Efficacy and Probability of PTSD



Post-Traumatic Stress Disorder (PTSD)

- PTSD not uncommon after many types of traumatic events
 - Examples: Motor vehicle accidents and industrial explosions
- Perhaps nearly all have the acute form at some point
 - Can develop in people without psychiatric history
- Rapid recovery is the norm



Measure Trajectory- Predict Trajectory

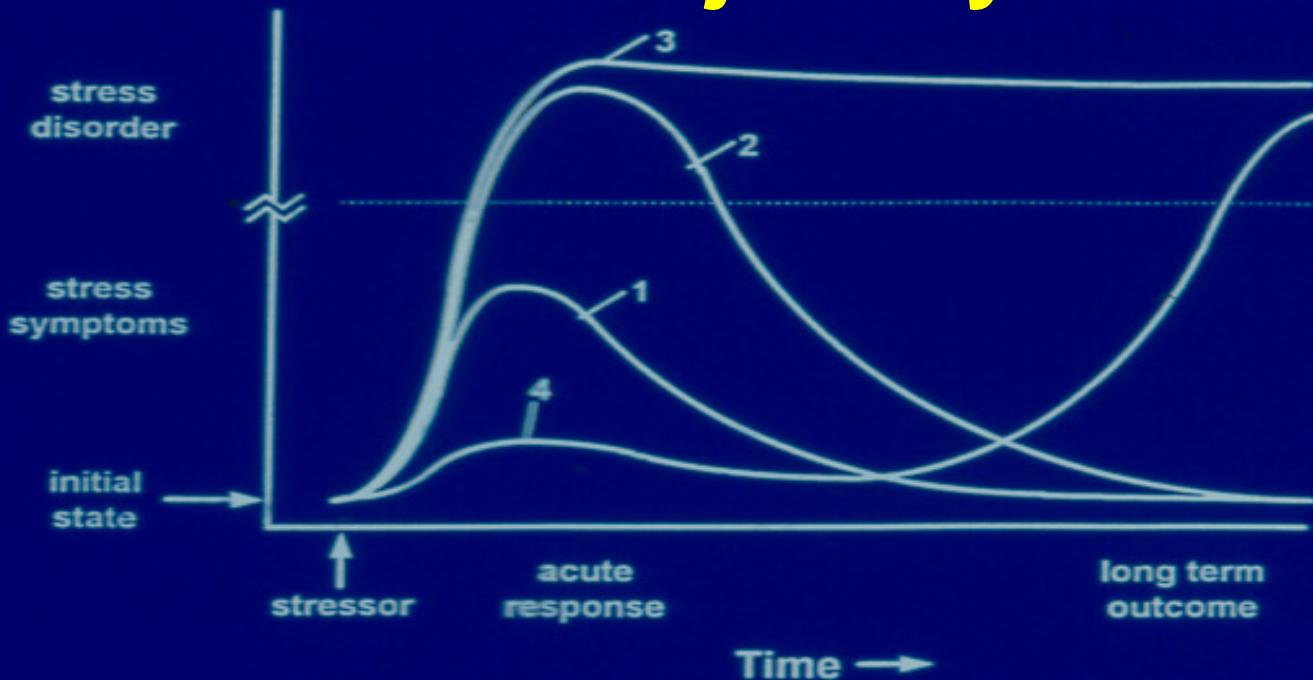


Figure 3. Traumatic stress responses over time. Line 1 represents acute stress symptoms that resolve with time; 2 depicts ASD that also resolves; 3 is ASD that progresses to PTSD; and 4 shows delayed onset PTSD.

Figure 2

Median prevalence of PTSD in DSMV- Experiencing categories within 12 months post-trauma (including Combat)

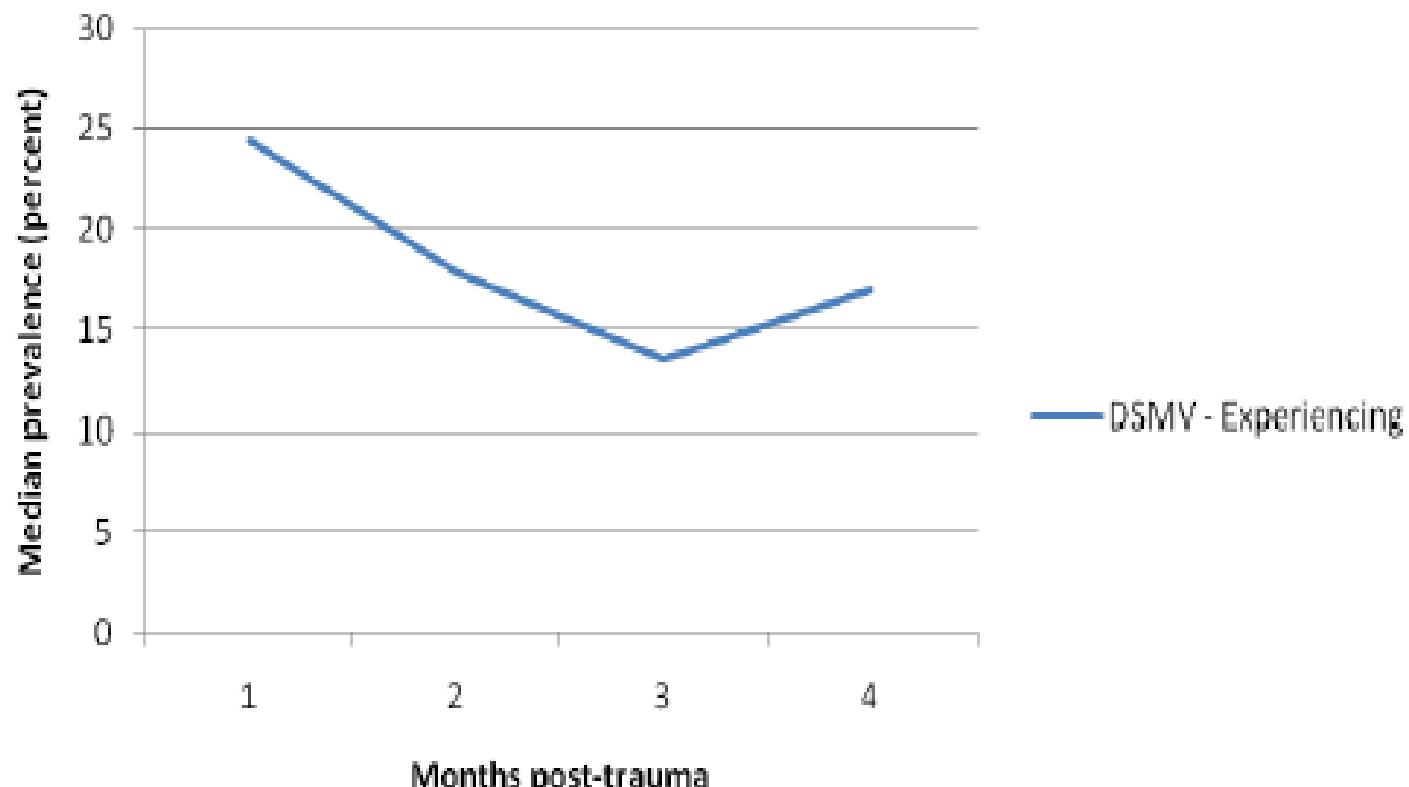
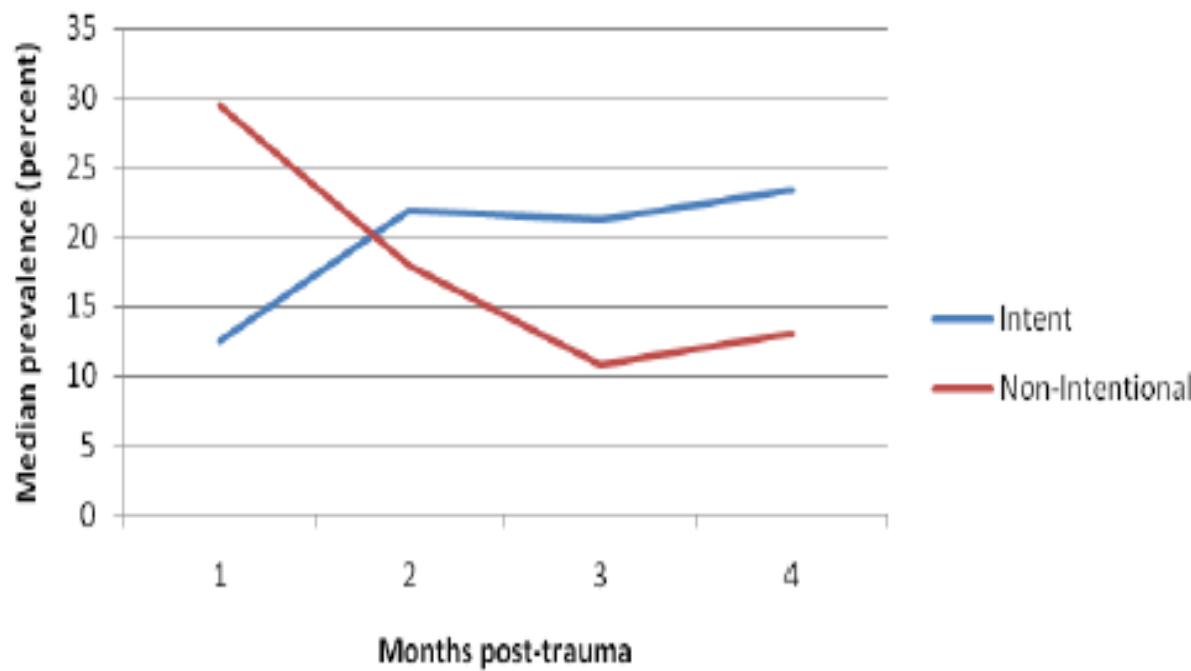


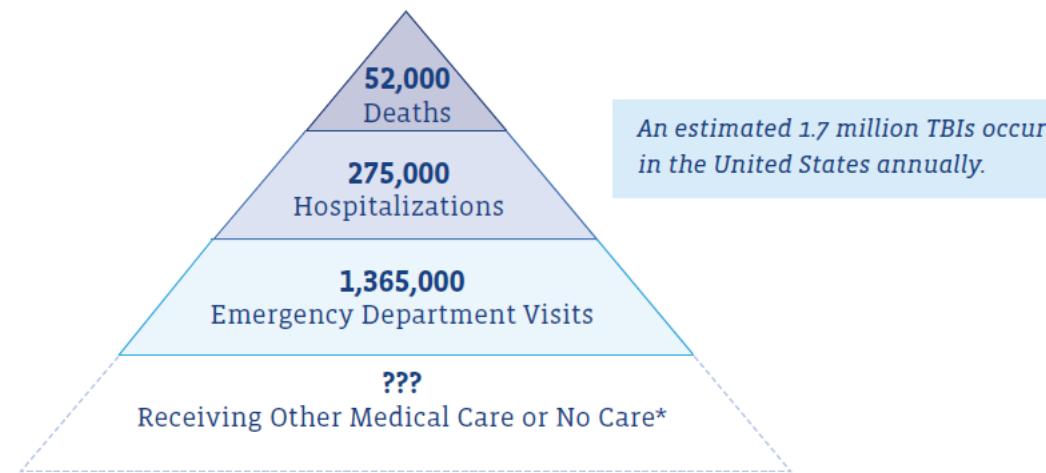
Figure 12

Median prevalence of PTSD by intentional and unintentional trauma type categories within 12 months post-trauma (without Combat)



ANNUAL NUMBER OF TBIs

Estimated Average Annual Number of Traumatic Brain Injury-Related
Emergency Department Visits, Hospitalizations, and Deaths, United States, 2002–2006



Of the 1.7 million TBIs occurring each year in the United States, 80.7% were emergency department visits, 16.3% were hospitalizations, and 3.0% were deaths.

* Data for this category are not included in this report. See "Limitations" in Appendix B for more information.

Source: Faul M, Xu L, Wald MM, Coronado VG. Traumatic Brain Injury in the United States: Emergency Department Visits, Hospitalizations and Deaths 2002 – 2006. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2010.

www.cdc.gov/TraumaticBrainInjury

Postconcussive Symptoms (PCS)

Physical

- Headache
- Dizziness
- Balance problems
- Naus/Vomiting
- Fatigue
- Visual Disturbances
- Sensitive to Light/Noise
- Ringing in ears

Emotional

- Anxiety
- Depression
- Irritability
- Mood lability

Cognitive

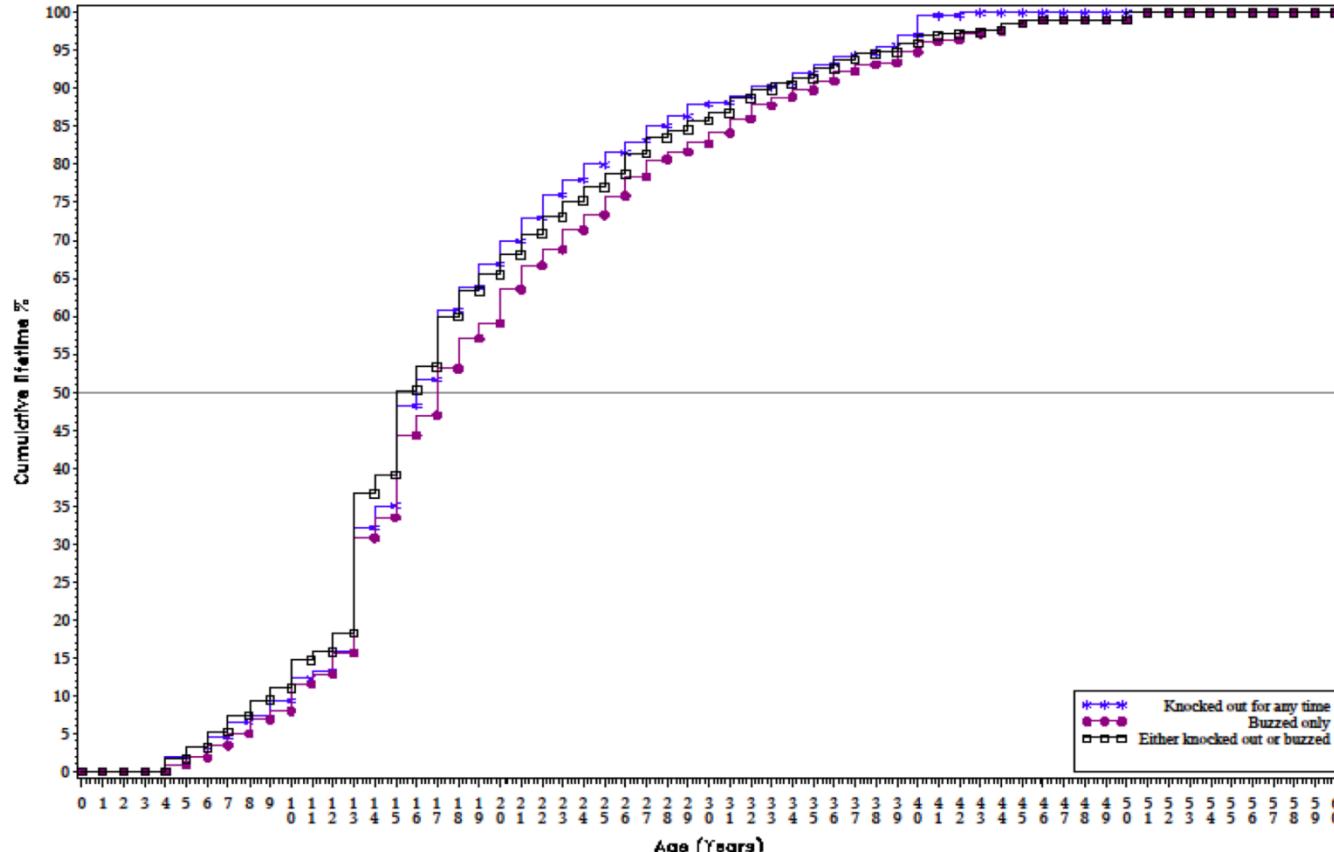
- Slowed processing
- Decreased attention
- Poor Concentration
- Memory Problems
- Verbal dysfluency
- Word-finding
- Abstract reasoning



Age at First TBI (in AAS Q2-Q4)

15:41 Friday, October 12, 2012 1

Figure 1a Cumulative Lifetime % of injuries in the AAS Q2-4 (blown up to 100%)



TBI and MDx: Multivariate model predicting suicidality¹ (A*S)

| | Lifetime Suicide Ideation | | Lifetime Suicide Plan | | Lifetime Suicide Attempt | |
|--|---------------------------|-----------|-----------------------|-----------|--------------------------|-----------|
| | OR | [95% CI] | OR | [95% CI] | OR | [95% CI] |
| Antecedent TBI¹ | 1.7 | [1.4-2.0] | 1.9 | [1.5-2.5] | 1.6 | [1.2-2.2] |
| Antecedent TBI² (full model) | 1.4 | [1.2-1.6] | 1.6 | [1.1-2.1] | 1.3 | [0.9-1.8] |

¹Multivariate model predicting suicidality outcomes with TBI (0,1,2) controlling for all demographics and interaction between "not entered army yet" and "birth place"; controlling for years since ideation for outcomes among ideators

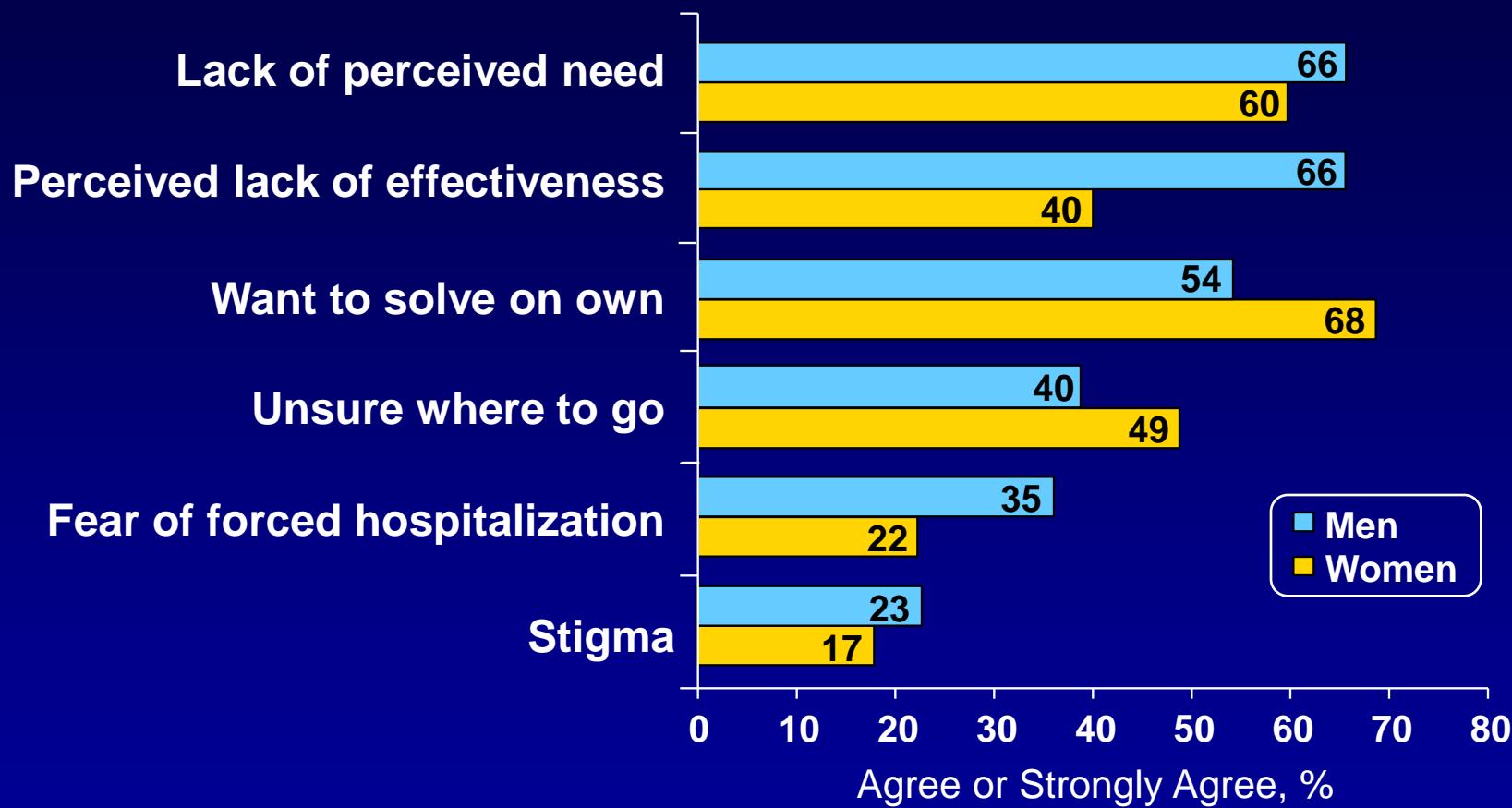
²As above and controlling for mental disorders

Barriers to Seeking Care and Mental Health Risk*



*Participants were asked to “rate each of the possible concerns that might affect your decision to receive mental health counseling or services if you ever had a problem.”
Hoge CW, et al. *N Engl J Med.* 2004;351:13-22.

Is Stigma Unique to Military?



Maybe Less Than One Might Think...!



What is PTSD?

- 1) The inability to “digest” early stress symptoms, e.g. impaired “repair” or “return to stasis”
- 2) Altered “set point”
- 3) The “glue” that makes the symptoms “stay” or “cluster together”

Oklahoma City Terrorist Attack (at 6 months)

34% PTSD

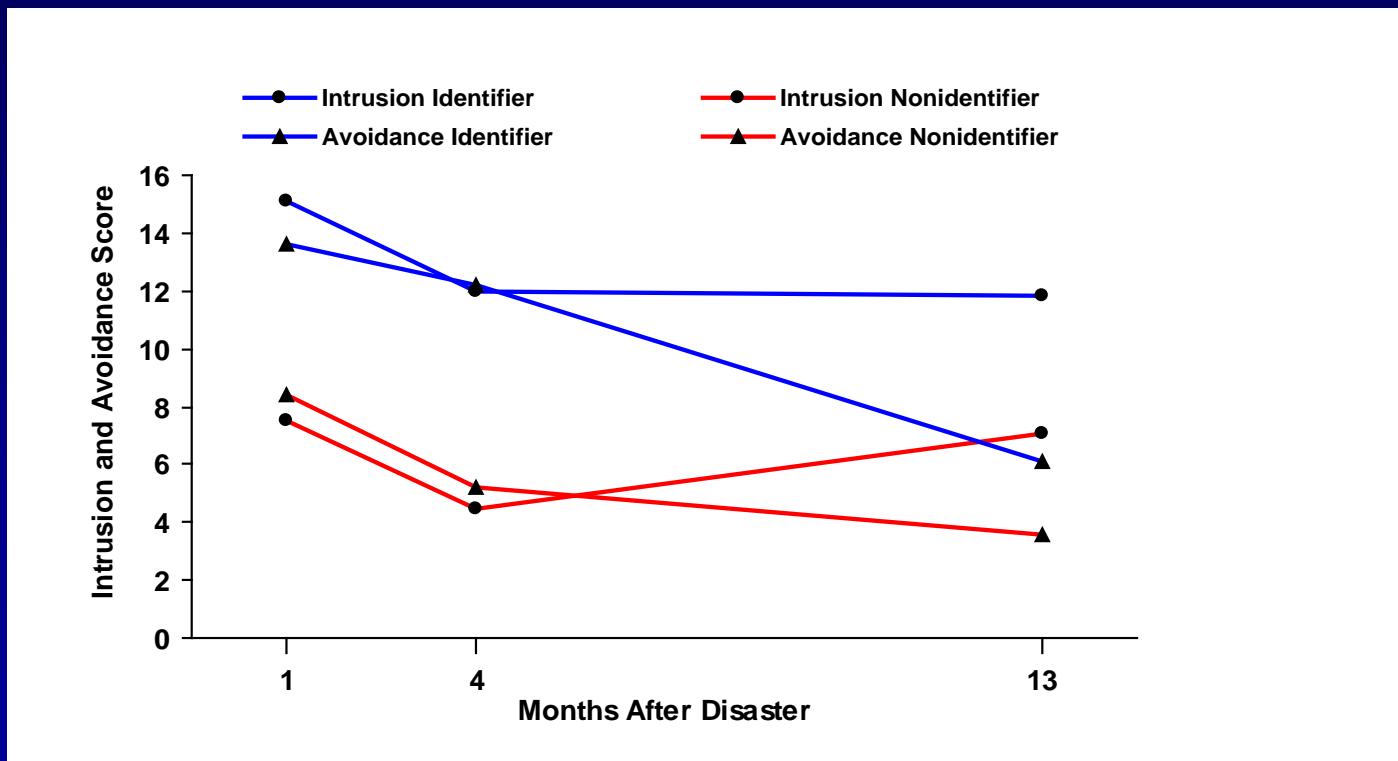
25% Depression

40% Never had a Psychiatric
Problem in the Past



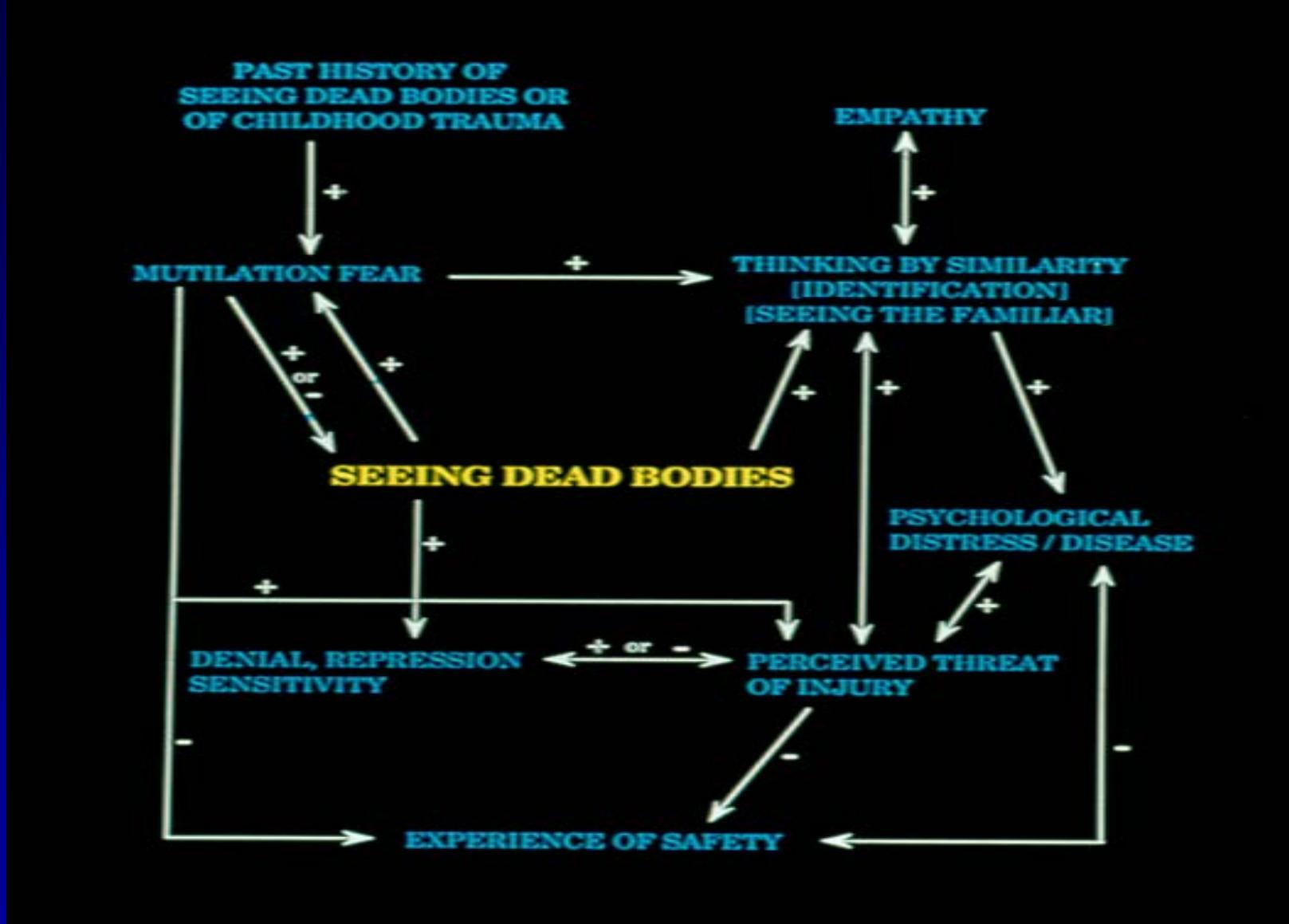
PTSD: an Autoimmune Disorder

Exposure to Death and the Dead Identification and PTSD Symptoms



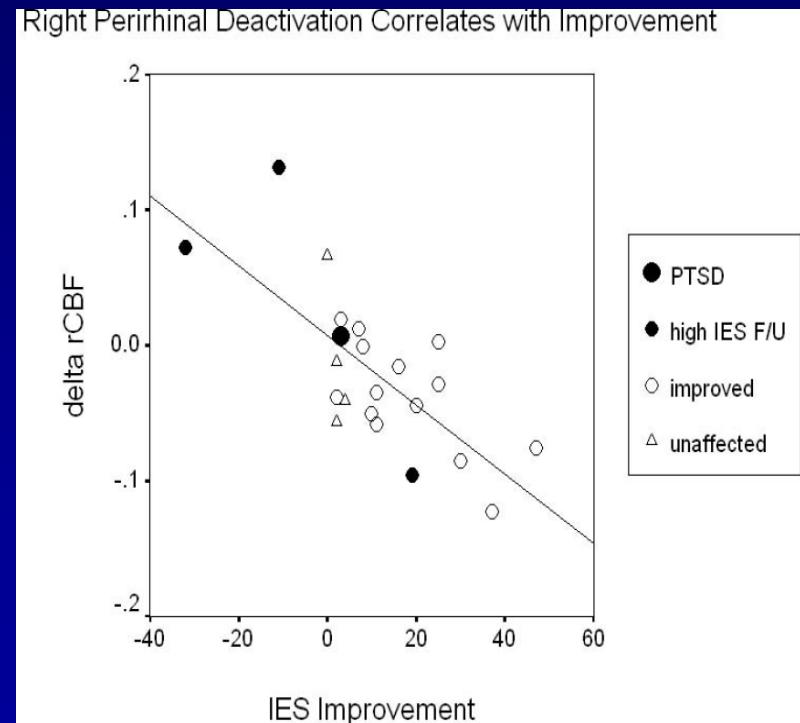
What is PTSD?

- 4) The ability to remember AND the ability to forget are important
- 5) Fear organized behaviors
- 6) Toxic Exposure (Event Related) Disorders – cue related versus autonomous – "Stressor related"



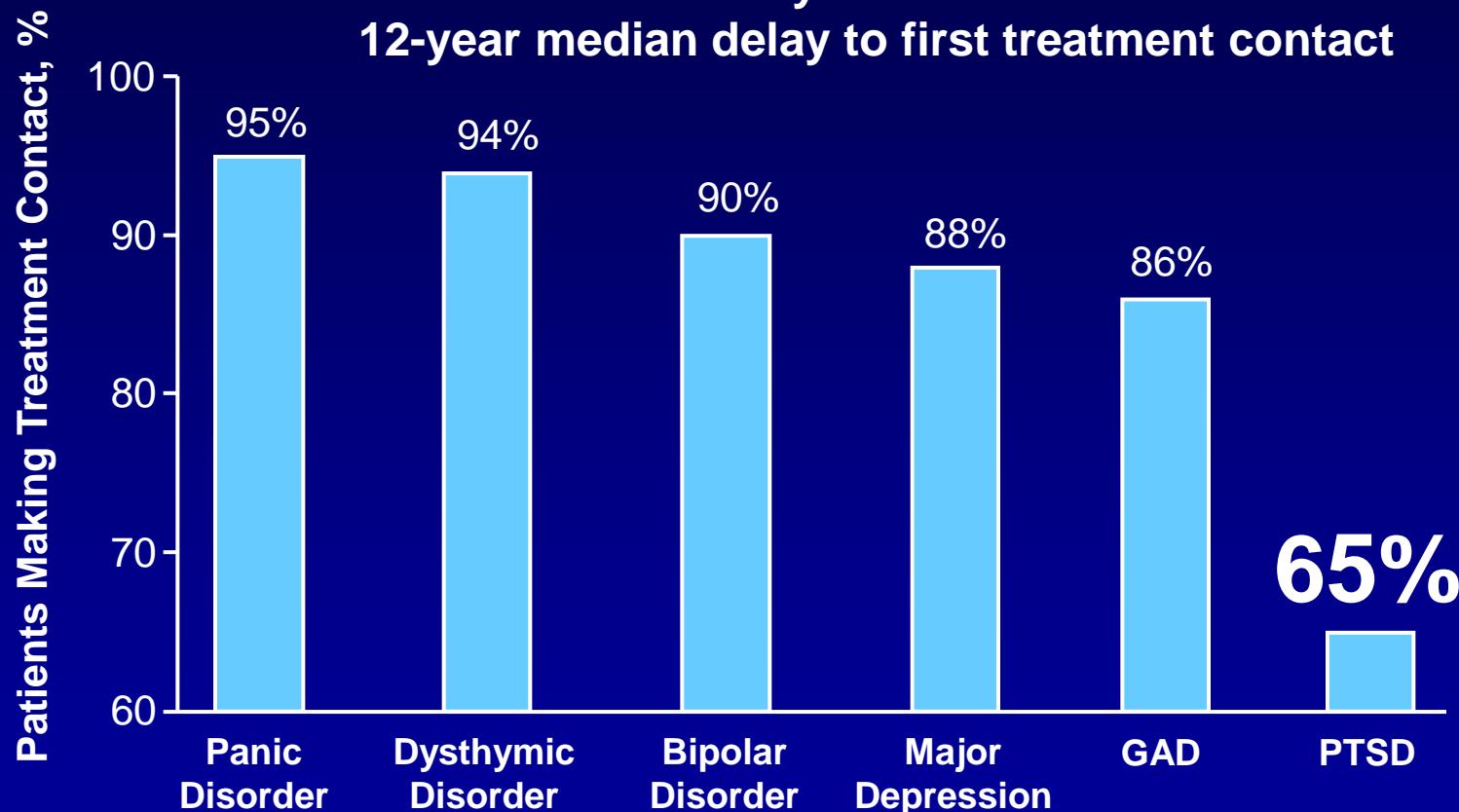
Who Does NOT get PTSD

Reduced Perrhinal Cortex Activity (vs Normals) Leads to Recovery After Trauma Exposure



Lifetime Probability of Treatment Contact (USA)

7% contact within year of PTSD onset and
12-year median delay to first treatment contact





Back Up



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Psychological and Behavioral Intervention Matrix (Bio)

| | Agent: Anthr/Terror | Vector: Terrst/Mail | Population: Person |
|--------|--|--|---|
| Pre | <ul style="list-style-type: none">-Premedication-vaccination-Air detection sys | <ul style="list-style-type: none">-Airport Screening | <ul style="list-style-type: none">Preparedness Behaviors-Participation in Vaccination-Information/plan. |
| During | <ul style="list-style-type: none">-Specific medicaion rx-supportive rx-Masks/Cover | <ul style="list-style-type: none">-Security-Detectors | <ul style="list-style-type: none">Response Behaviors-Quarantine-Evacuation-Grief Leadership-Social Distancing |
| Post | <ul style="list-style-type: none">-rehabilitation | <ul style="list-style-type: none">-Justice system | <ul style="list-style-type: none">Recovery Behaviors-Help seeking-Specific Rx's |



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DSM 5 Key Points

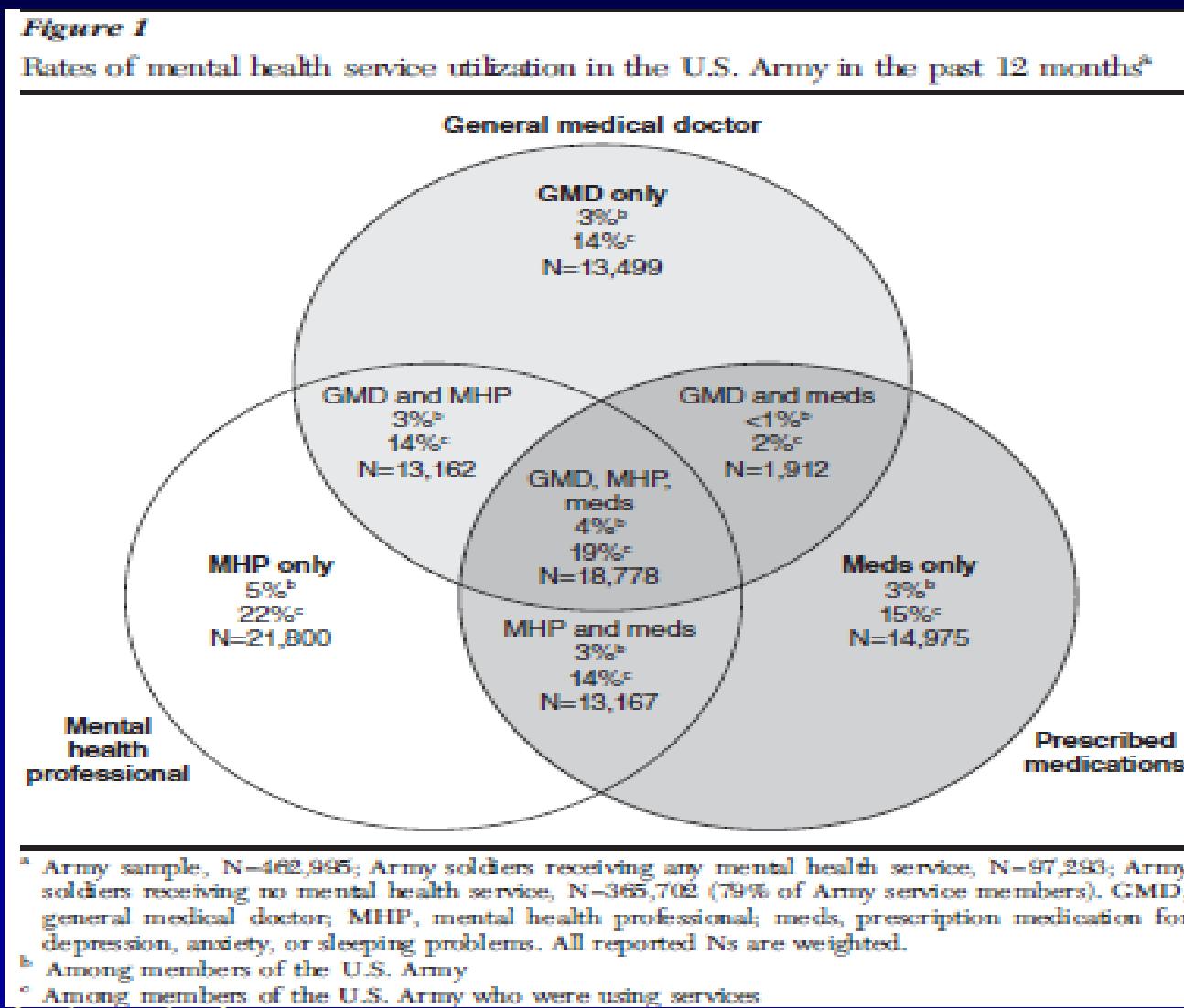
Persistent Complex Bereavement Disorder

- Conditions for Further Study
- **Potential compelling clinical need for the category**
- **Inclusion in the Appendix will facilitate research**
- **Substantial empirical evidence, but there remain concerns that need further resolution (e.g. Onset > 12 months after death of loved one)**
- **Considerations of benefit vs. potential harm**

Mental Health Services: Army

Figure 1

Rates of mental health service utilization in the U.S. Army in the past 12 months^a



DSM 5 Key Points Chapters

- Anxiety Disorders
- Obsessive Compulsive and Related Disorders
- **Trauma and Stressor-Related Disorders**
- Dissociative Disorders

DSM 5 Key Points

PTSD

- PTSD – 4 vs 3 symptom clusters (Avoidant & Negative/numbing/withdrawal)-1,1,2,2
- 24 vs 17 possible Sxs
- **Dissociative Subtype** – “with”
 - Persistent or recurrent depersonalization or derealization
 - Supported by clustering of symptoms and different imaging findings PFC and Amygdala (d/u vs u/d) (Lanius)
 - No present data on differential treatment



DSM 5 Key Points

ASD

- Five Categories
- Nine of 14 symptoms required
- Describes severe acute posttraumatic stress reactions in initial month
- No presumption that it is predictive of PTSD because no evidence that it (or any permutation of ASD) is adequately predictive
- Dissociation not required

mTBI and Health

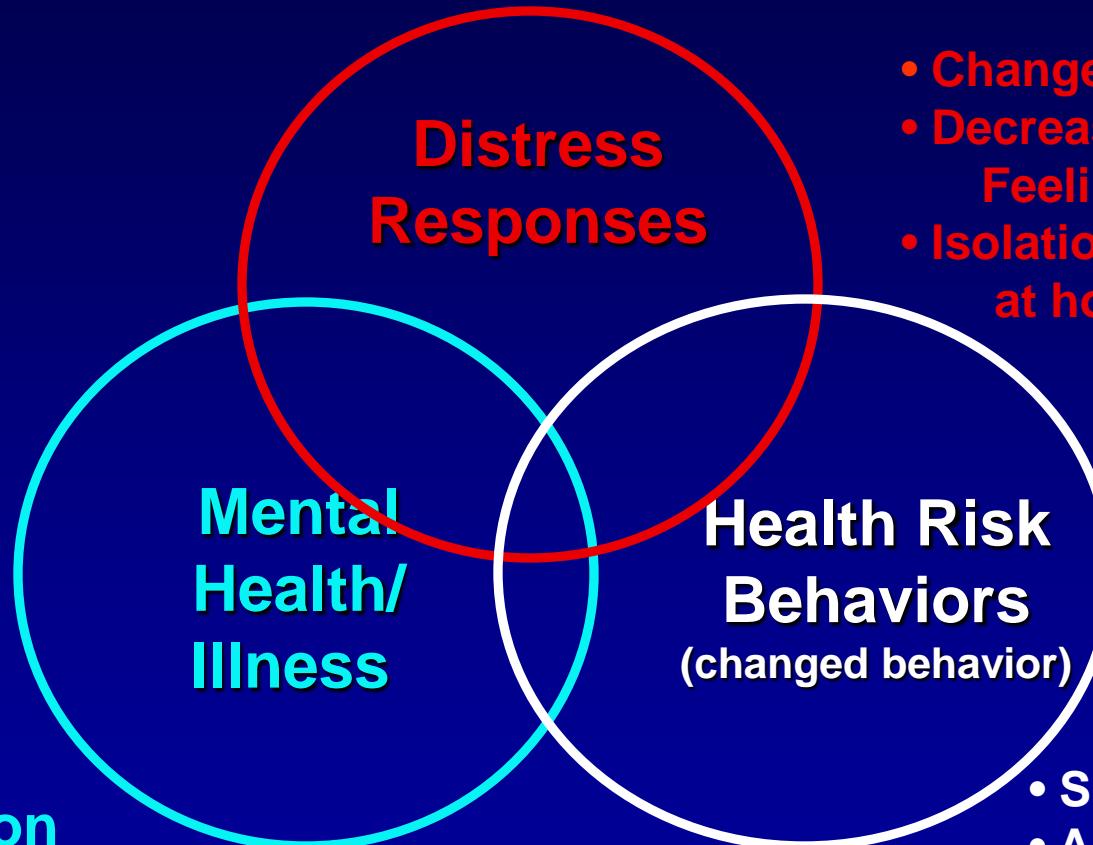
LOC vs Other Injury significant

| Health Measures Past-Month | mTBI & LOC (%) (n=124) | mTBI & MS altered (%) (n=260) | Other Injury (%) (n=435) | No Injury (%) (n=1706) |
|--|------------------------------|-------------------------------------|-----------------------------|------------------------------|
| Poor general health | 12.6* | 6.6 | 6.9 | 2.3 |
| Sick-call \geq 2 past month | 42.5* | 32.8 | 28.9 | 19.7 |
| Missed work \geq 2 X past month | 23.3* | 15.6 | 14.6 | 7.3 |
| High Physical Symptom Score - PHQ-15 \geq 15 (range 0-28) | 24.8* | 16.1 | 11.3 | 5.1 |

mTBI and Post Concussive Sxs

| Other Post-Concussive Symptoms | mTBI with LOC (%) | mTBI with Altered MS (%) | Other Injuries (%) | No Injury (%) |
|--------------------------------|-------------------|--------------------------|--------------------|---------------|
| Memory problems | 24.6* | 16.2 | 13.7 | 7.4 |
| Balance problems | 8.3* | 6.7* | 2.8 | 1.6 |
| Ringing in the ears | 23.5* | 17.9 | 14.0 | 5.9 |
| Concentration problems | 31.4* | 26.0* | 18.1 | 10.2 |
| Irritability | 56.8* | 47.6* | 36.8 | 24.7 |

Psychiatric Responses to Trauma



- Anxiety
- PTSD
- Depression
- Resilience

- Change in Sleep
- Decrease in Feeling Safe
- Isolation (staying at home)

**Health Risk
Behaviors**
(changed behavior)

- Smoking
- Alcohol
- Over dedication
- Change in travel
- Separation anxiety



Disaster Behaviors Before, During and After

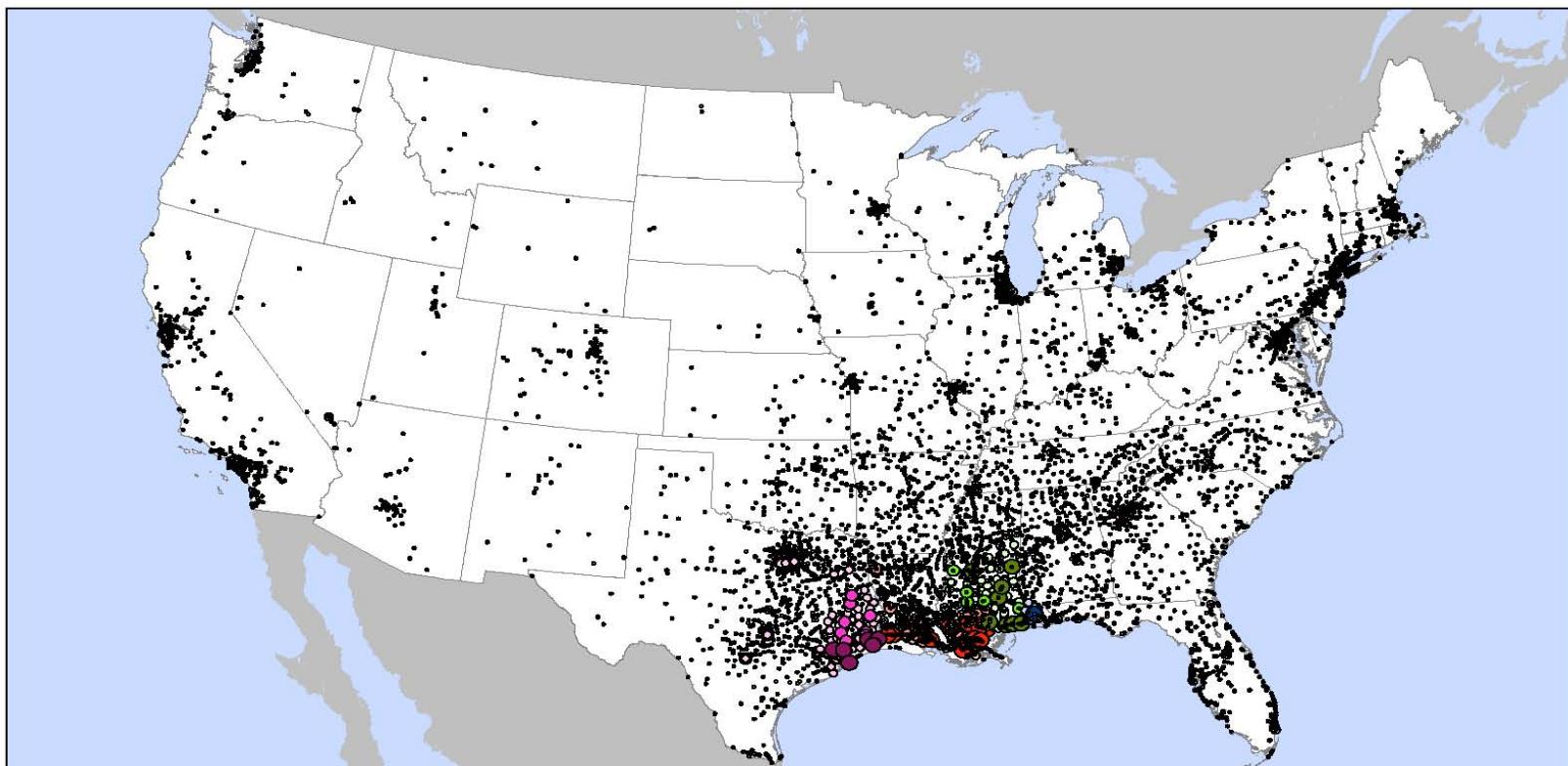
- Preparing behaviors
- Health Care Seeking
- Convergence
- Overdedication
- “See Something Say Something”
- Avoiding others (London Bombing)
- Stigmatizing
- Staying home (separation anxiety, economic impact)



Response Behaviors and inconvenient aspects of human behavior

- Evacuation
- Shelter in place....
- Convergence
- Migration

Locations of Katrina/Rita Applicants from Louisiana, Mississippi, Alabama, and Texas as of 10/31/05



Map Not To Scale

Data provided by
Recovery Division IA Management Cell

The figures contained on this map
are based on the best available data.

Cities with less than 5 applicants not shown

Legend

Applicants per city

- Less than 1,000
- 1,000 - 5,000
- 5,000 - 10,000
- Greater than 10,000

- DR-1604 Mississippi
- DR-1606 Texas
- DR-1605 Alabama
- DR-1603 and DR-1607 Louisiana



FEMA

Recovery Division
Washington, DC
11/02/05 -- 11:10:00 EST

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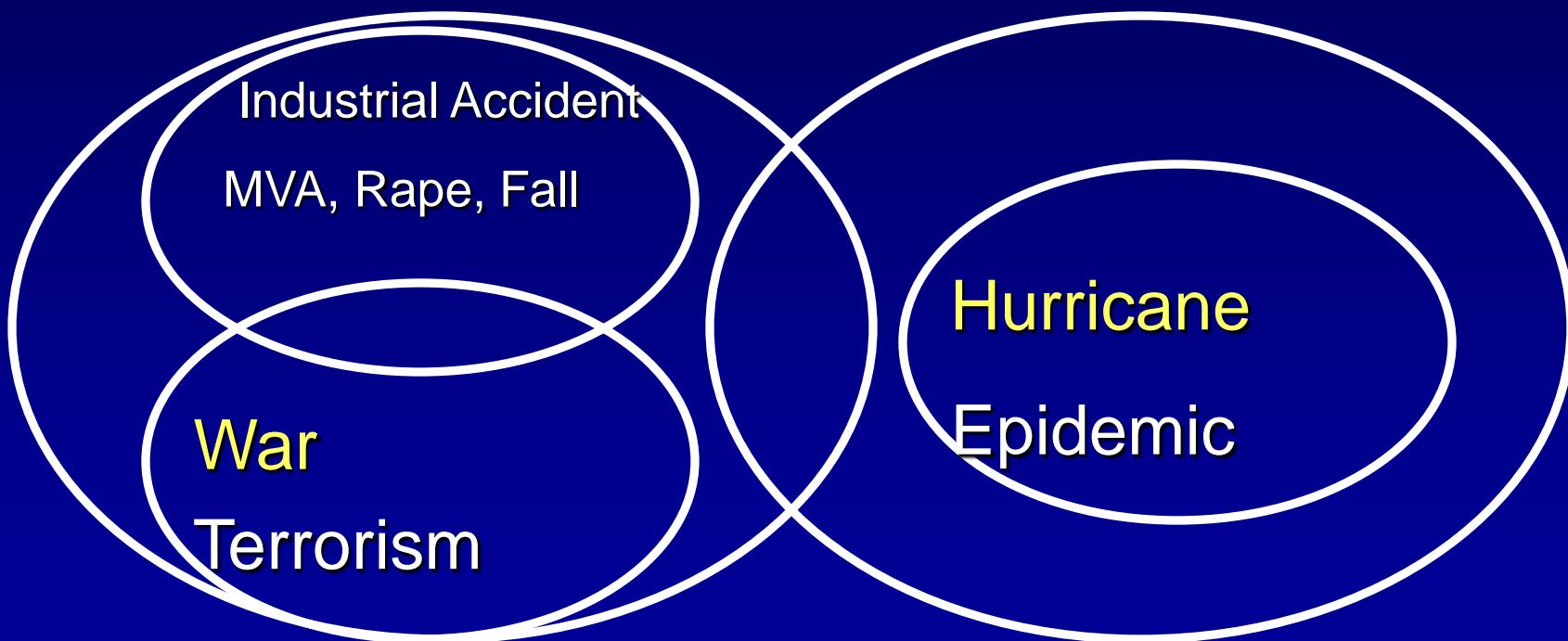
Treatment Across The Domains of Illness

| | PTSD | MI | Mult.Scler | Back Pain |
|-------------------------------------|---|------------------------------------|------------|-----------|
| Disorder | The Glue Self Repair | ICU | | |
| Symptoms | Withdrawal Nightmares | Nitroglycerin | | |
| Impairment Of Function | Marital Job | Walker Job Couns. | | |
| Disability | Job “phobic” | Lg Trm Plan and Asst | | |
| Co-Morbid Conditions | Depression Subst Abuse | Hypertension Hyper chol. | | |
| Trajectory- Prev of Relapse/Chro | Acute, Chronic, Delayed Recovering | Life Style Changes (smoking) | | |

Trauma and Disasters

Human Made

Natural



TBI and MDx: Population Attributable Risk Proportion (PARP) (A*S)

| | PARP ¹ | | |
|--|----------------------------|-----------------------|--------------------------|
| | Lifetime Suicidal Ideation | Lifetime Suicide Plan | Lifetime Suicide Attempt |
| Eliminating TBI in a model controlling for TBI but not mental disorder | 0.293 | 0.378 | 0.304 |
| Eliminating TBI but not mental disorders in a model controlling for both | 0.202 | 0.293 | 0.180 |

¹Models all control for person-years and demographics

- 20-30% of all suicidality in the AAS would be reduced if we were able to eliminate TBI