



UNIFORMED SERVICES UNIVERSITY
of the Health Sciences

Conceptualizing Exposure to Trauma and Trauma Related Disorders and Symptoms

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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

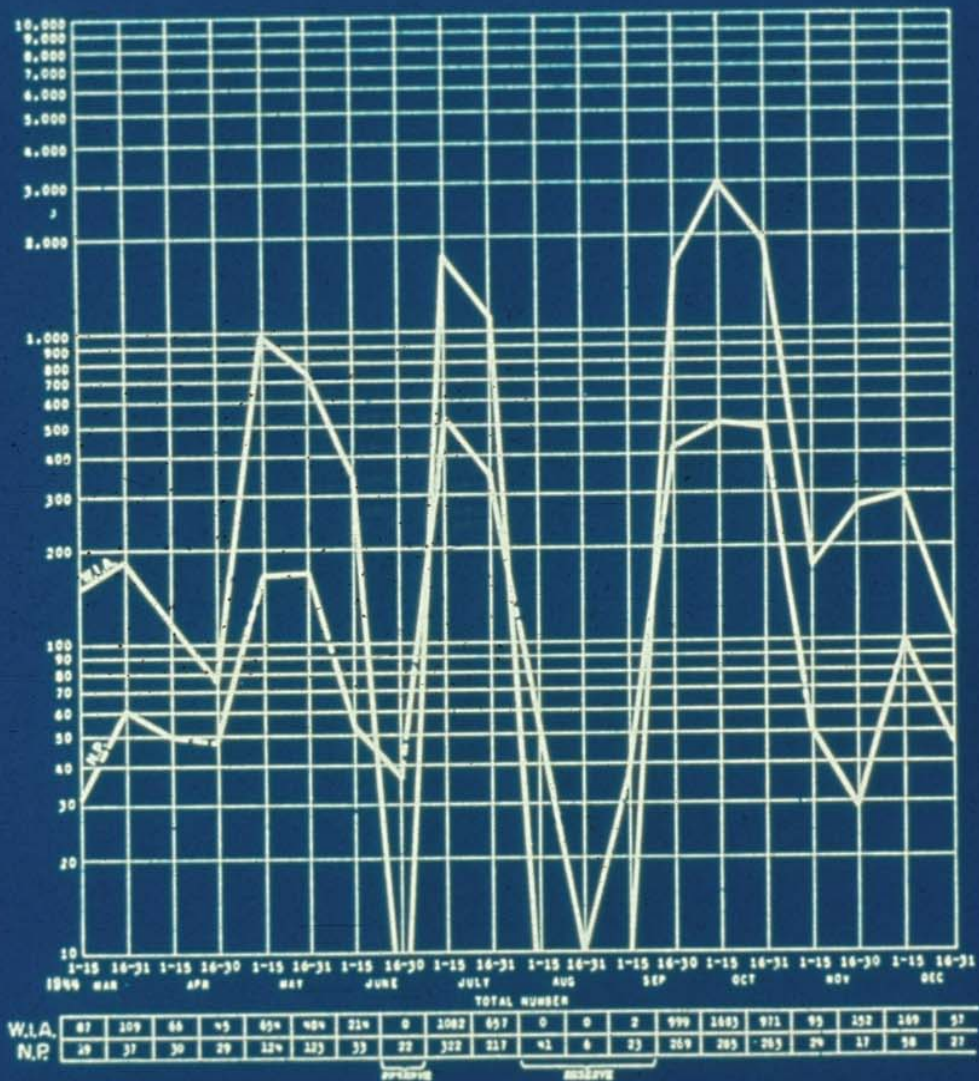


Mental Health Responses to Trauma, Disasters and Public Health Emergencies



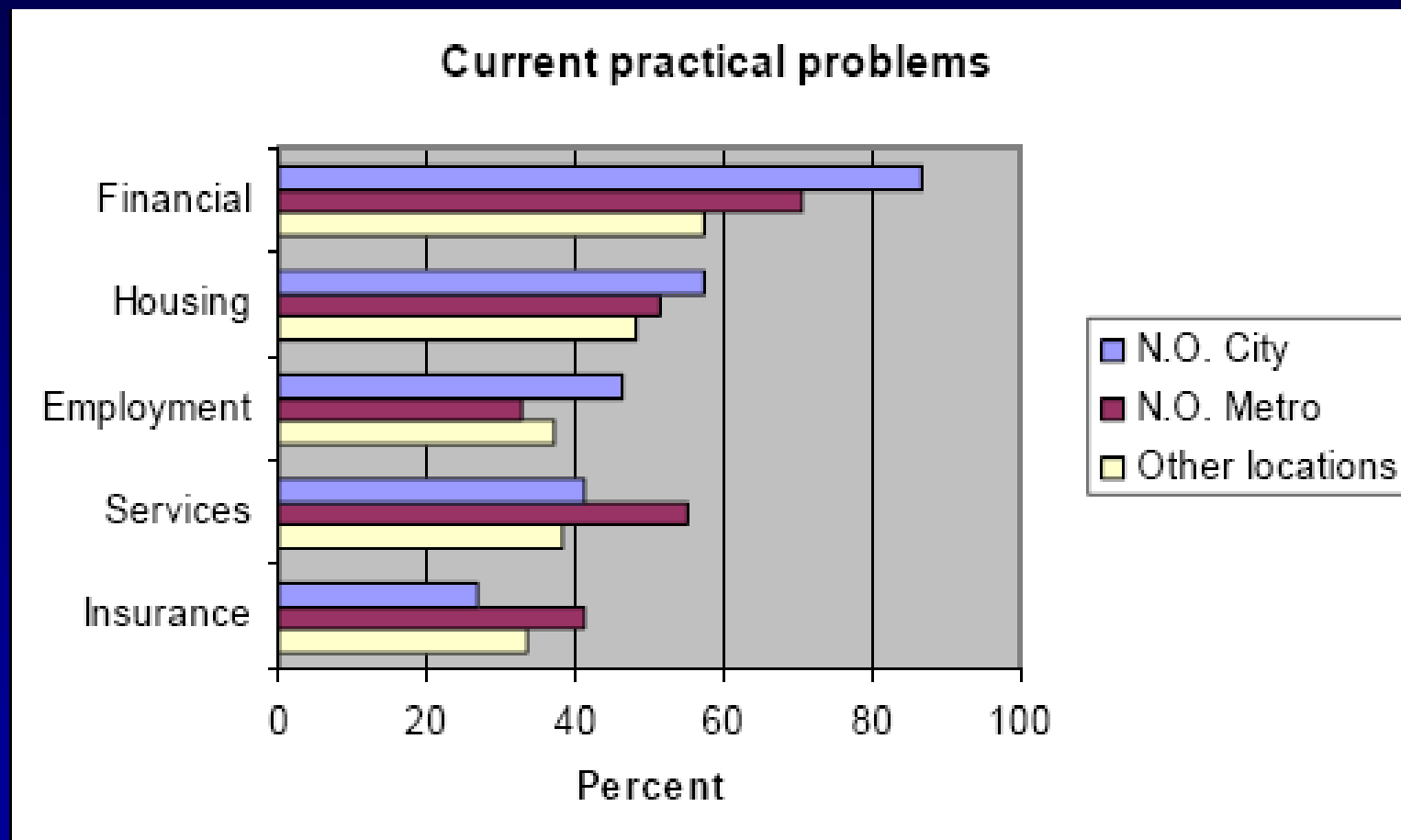
Organizing Principles

- 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

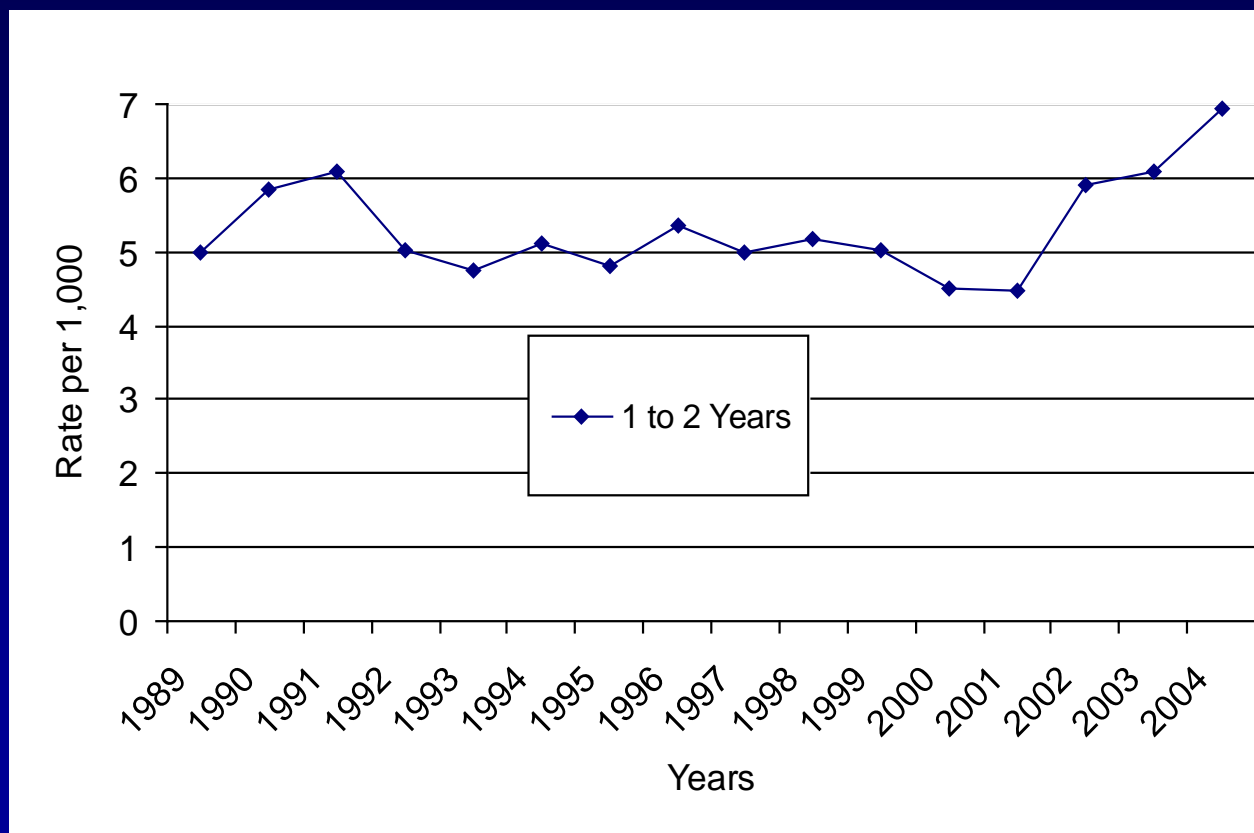


Hurricane Katrina (2005)

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



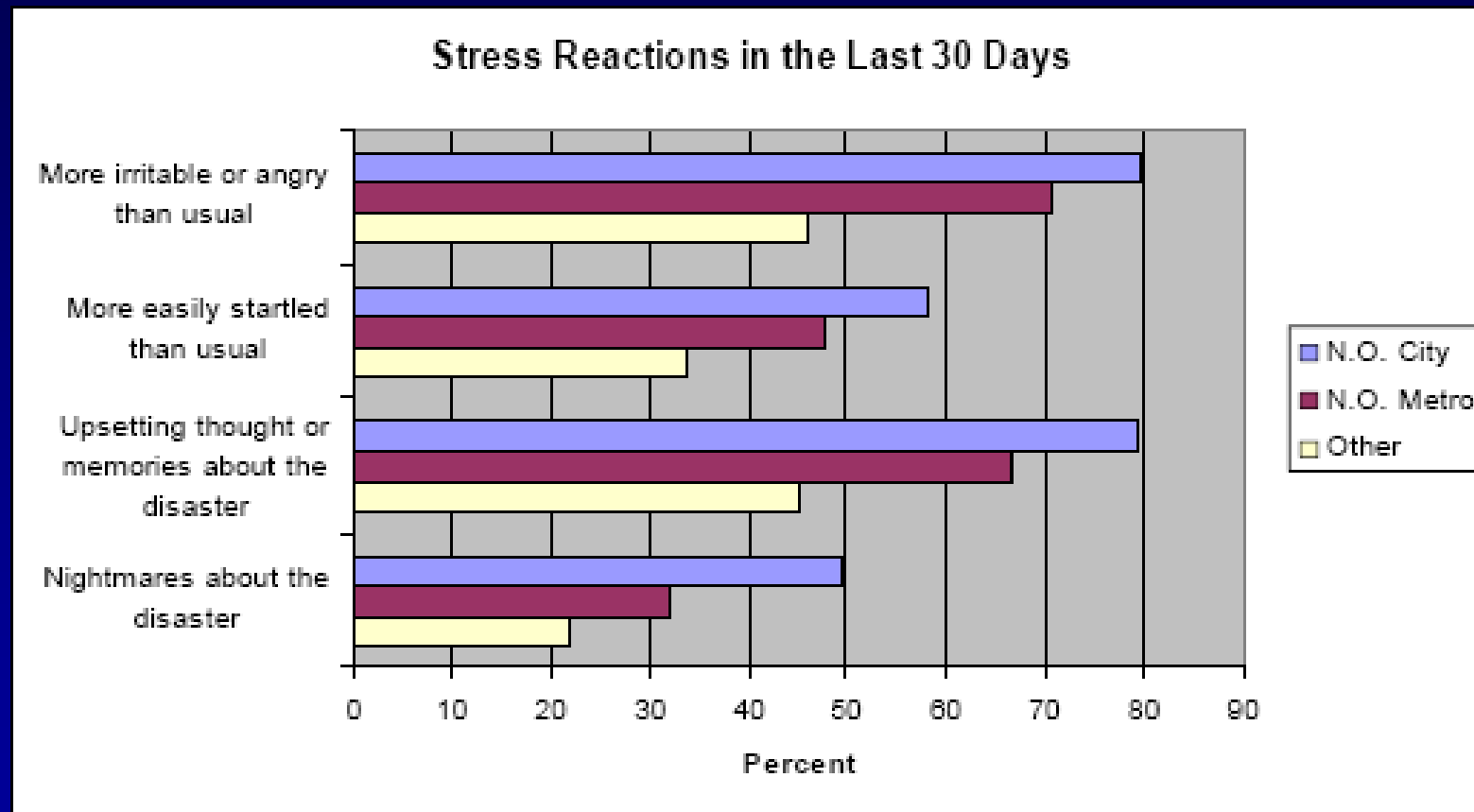
Psychosocial Responses to Trauma and Disaster

- 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)

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

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



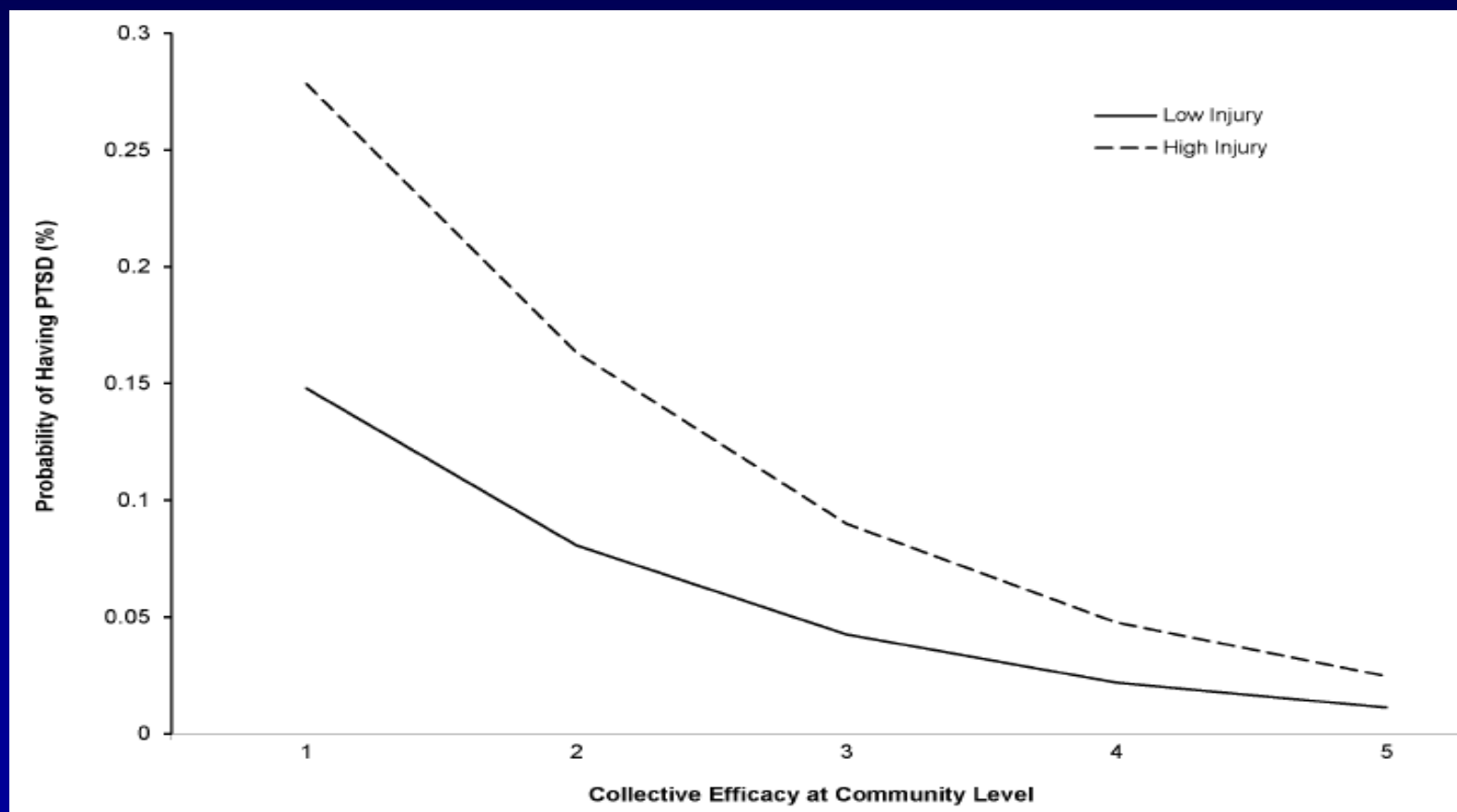


Foster Resilience

- 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

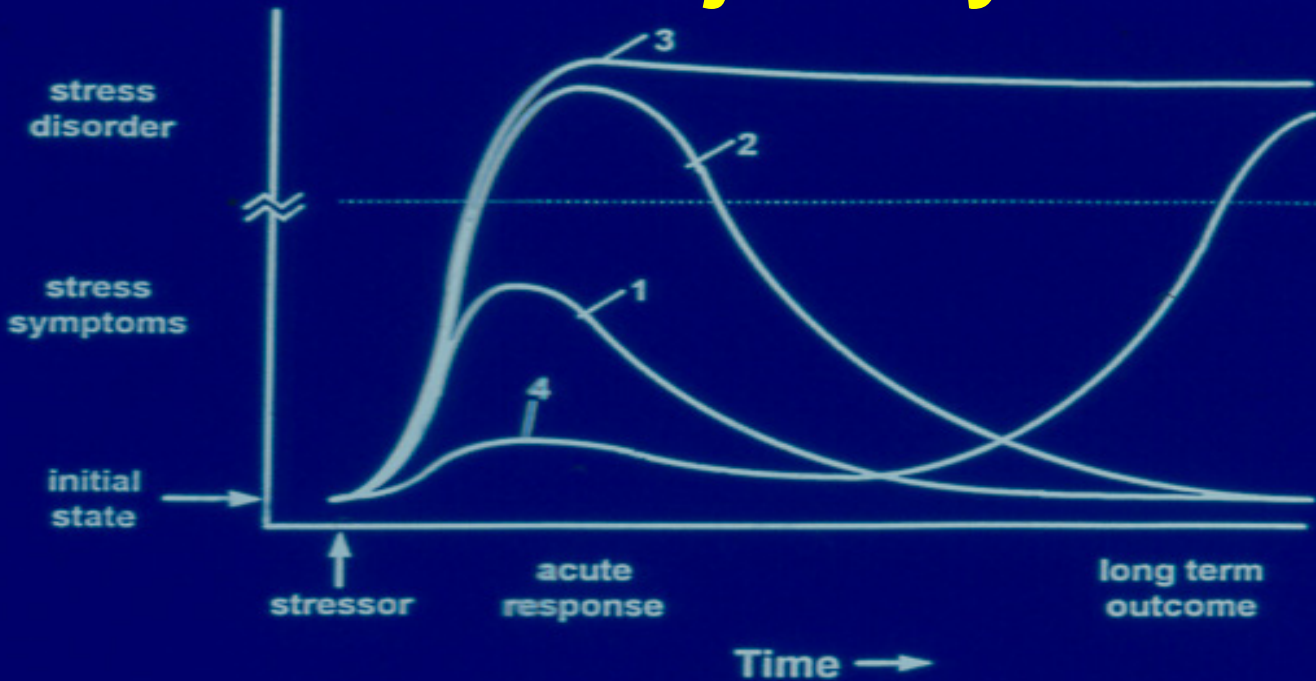


Figure 3. Traumatic stress responses over time. Line 1 represents acute stress symptoms that resolve with time; 2 depicts ASD that also resolves; 3 is ASD that progresses to PTSD; and 4 shows delayed onset PTSD.





Figure 2

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

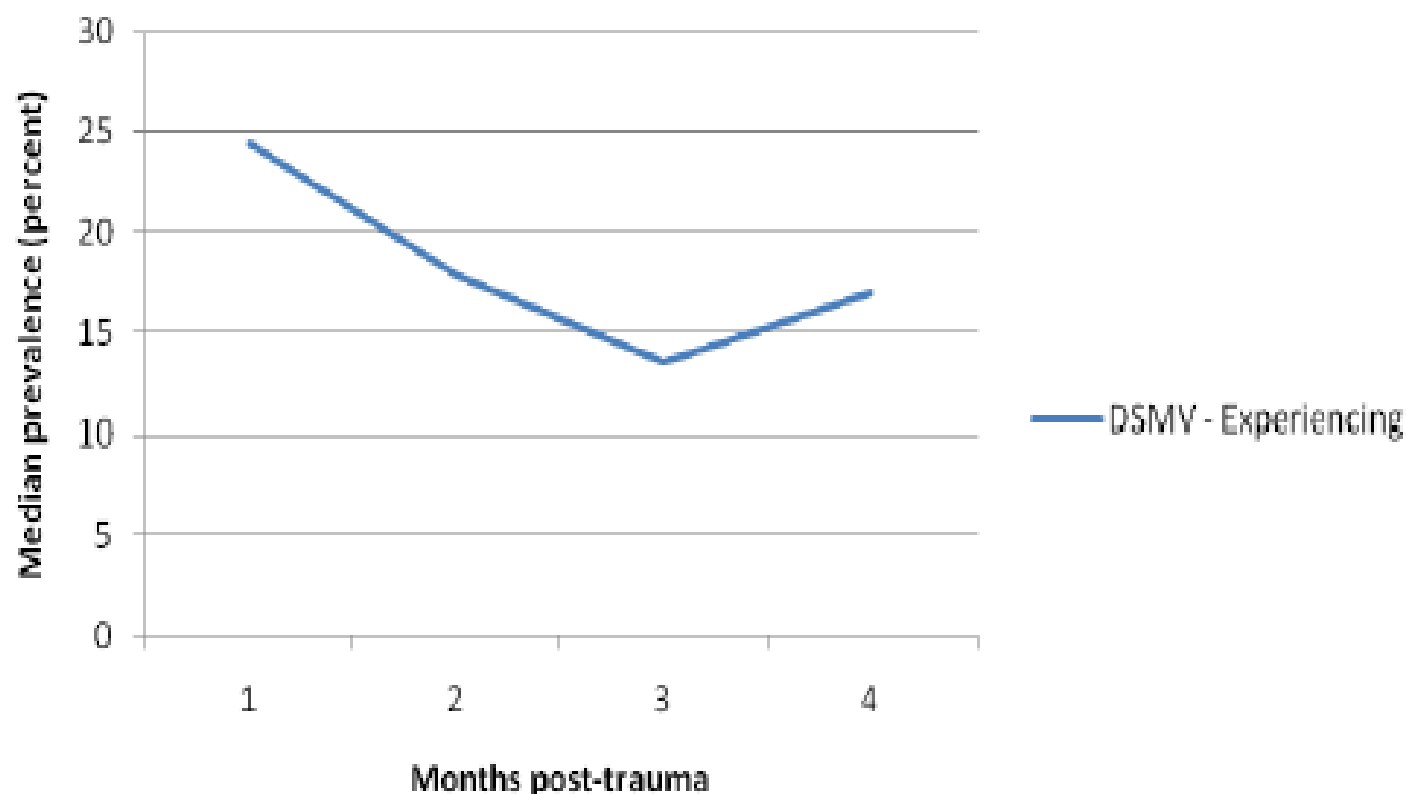
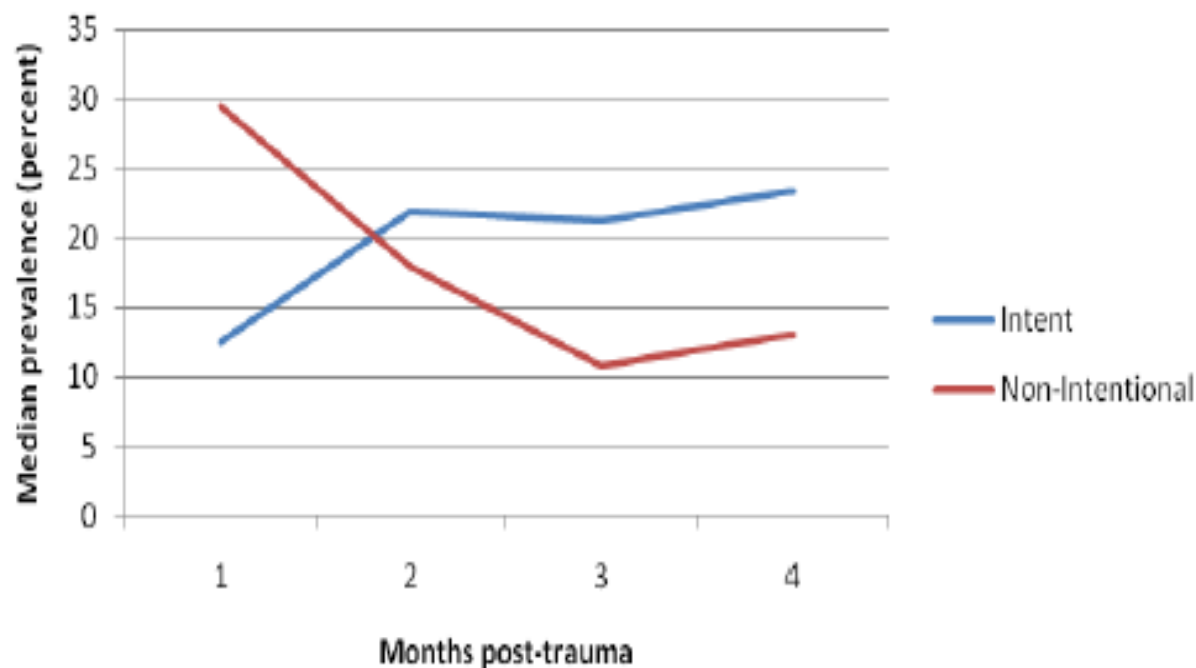




Figure 12

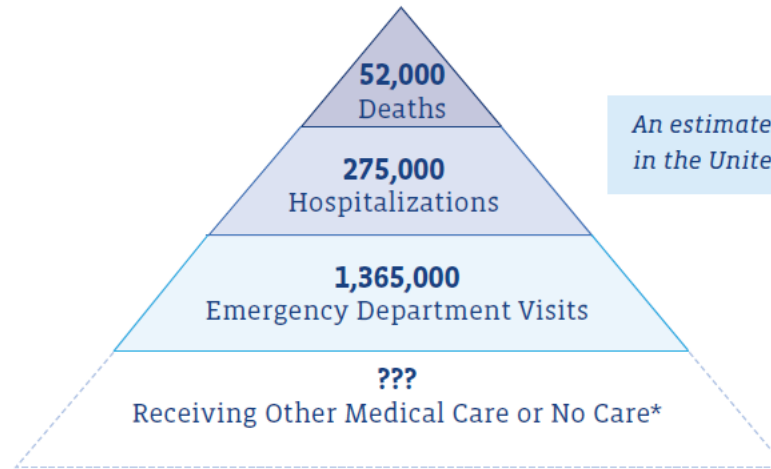
Median prevalence of PTSD by intentional and unintentional trauma type categories within 12 months post-trauma (without Combat)





ANNUAL NUMBER OF TBIs

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



*An estimated 1.7 million TBIs occur
in the United States annually.*

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

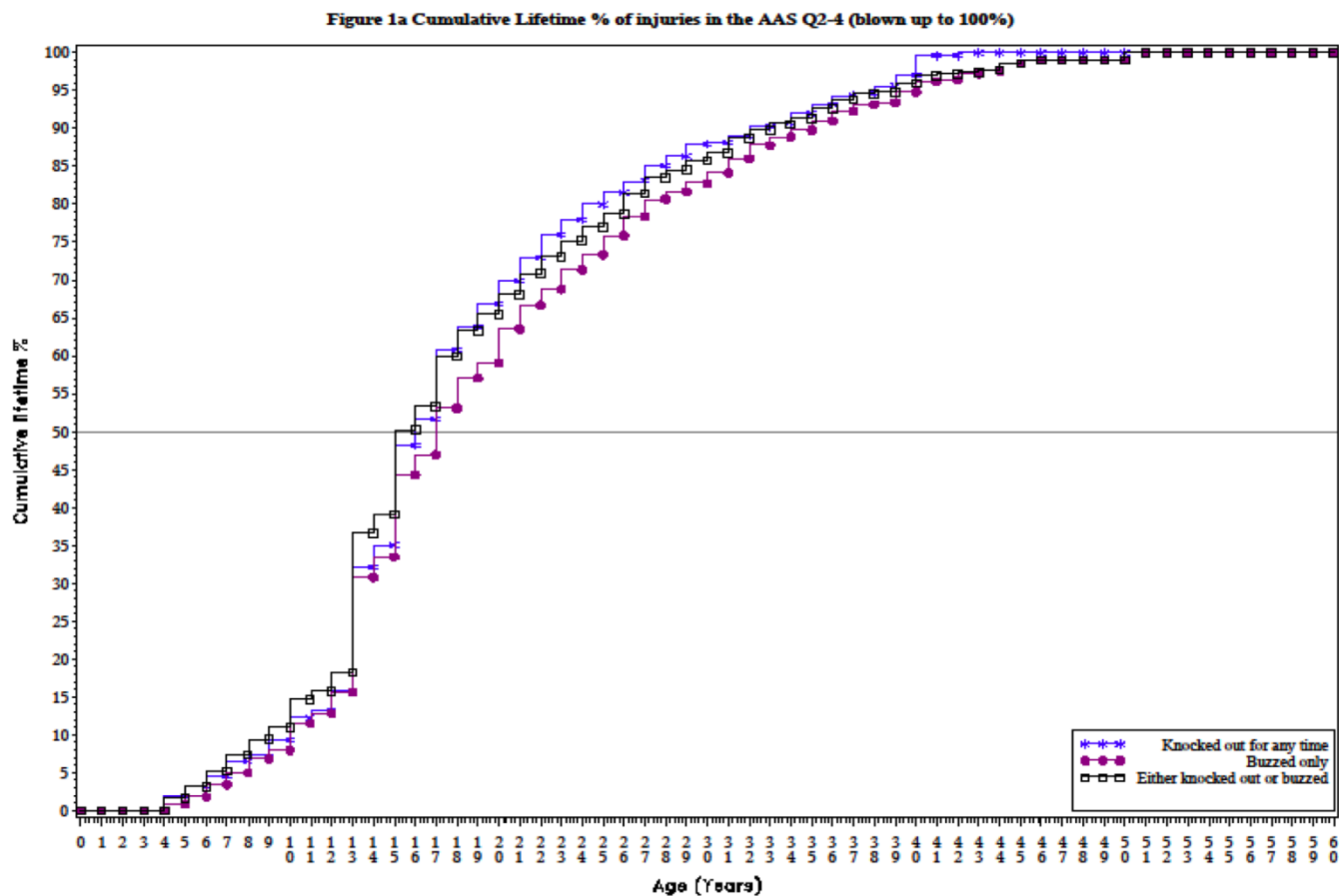
Cognitive

- 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



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

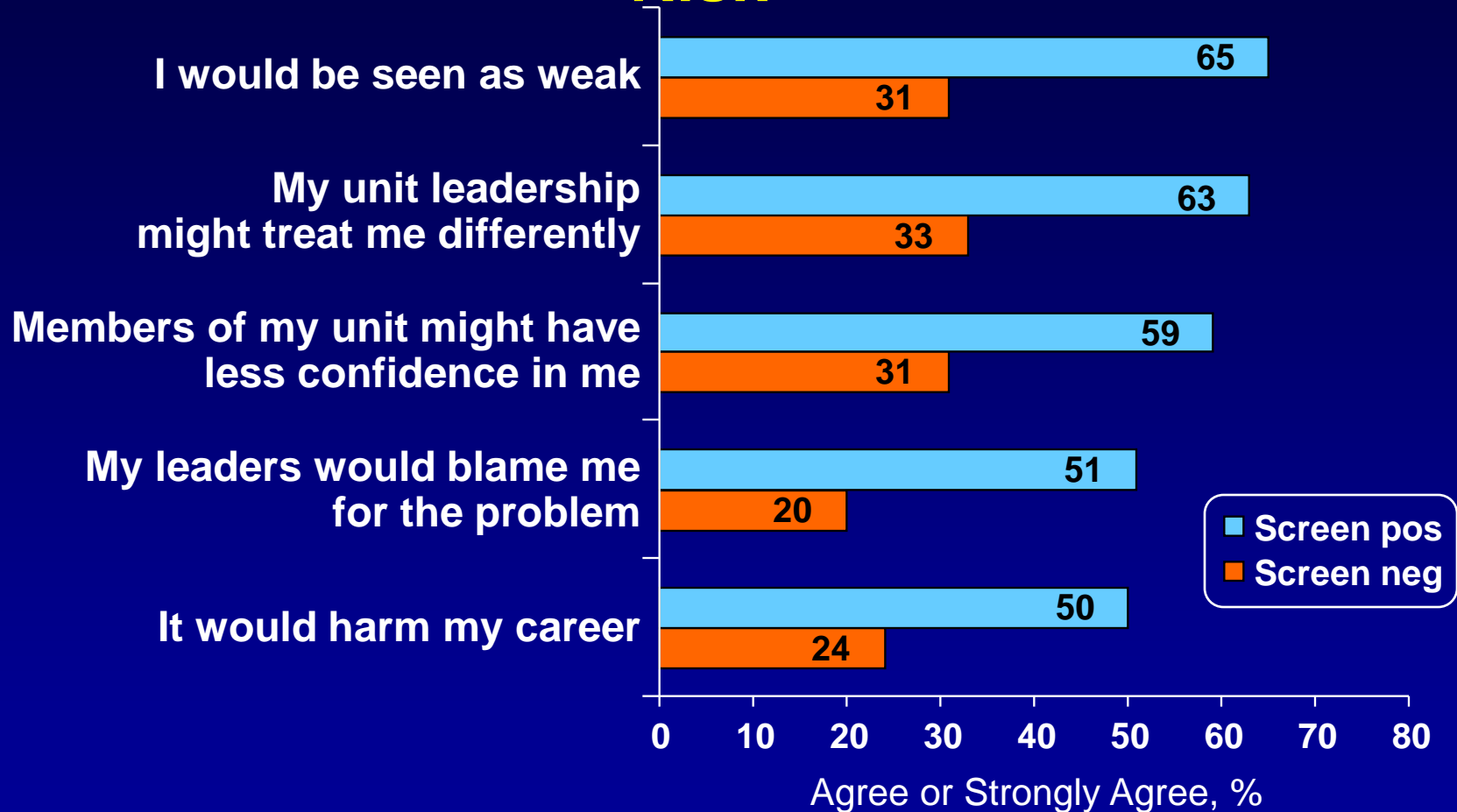
	Lifetime Suicide Ideation		Lifetime Suicide Plan		Lifetime Suicide Attempt	
	OR	[95% CI]	OR	[95% CI]	OR	[95% CI]
Antecedent TBI¹	1.7	[1.4-2.0]	1.9	[1.5-2.5]	1.6	[1.2-2.2]
Antecedent TBI² (full model)	1.4	[1.2-1.6]	1.6	[1.1-2.1]	1.3	[0.9-1.8]

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



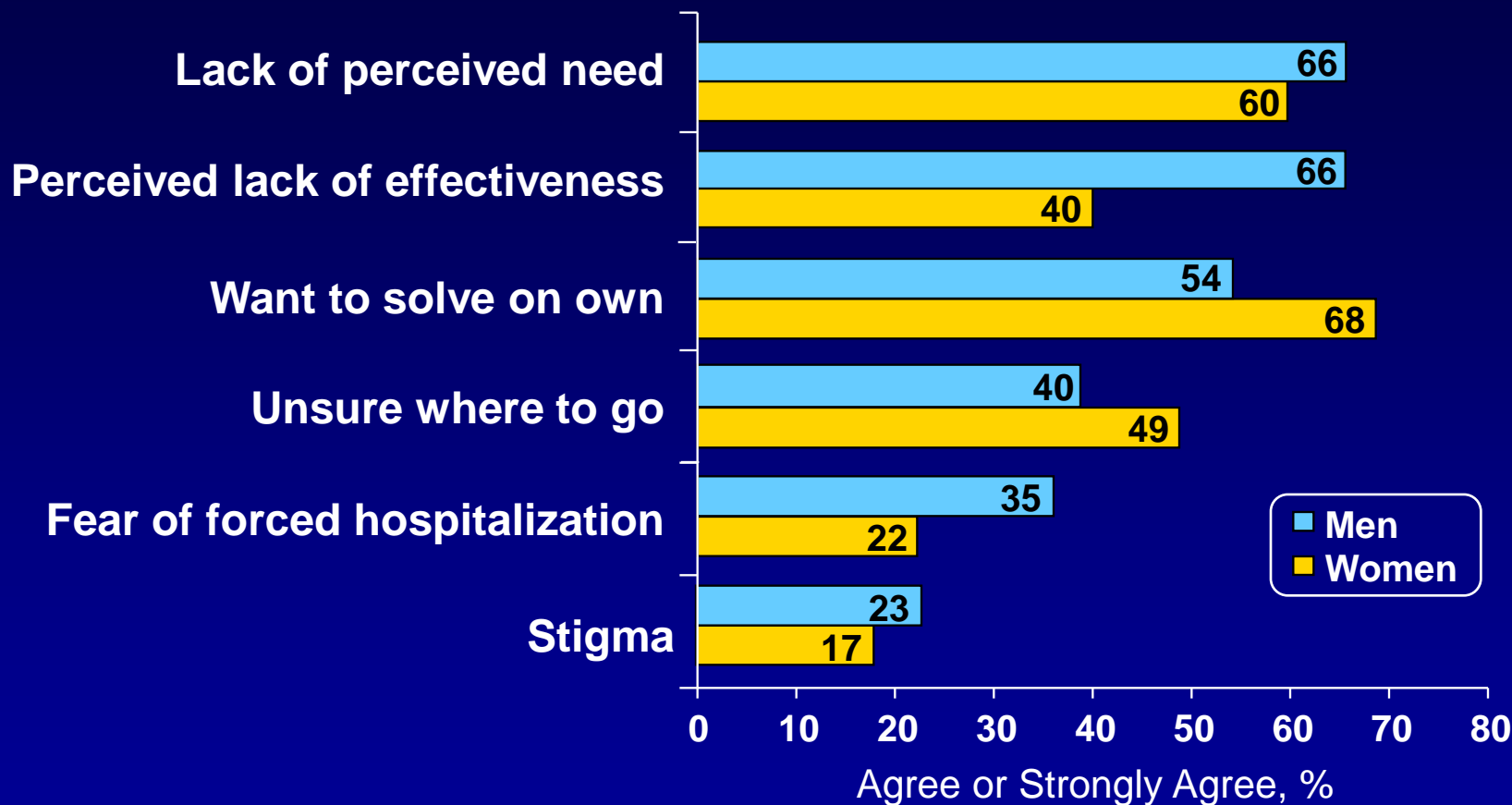
Barriers to Seeking Care and Mental Health Risk*



*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

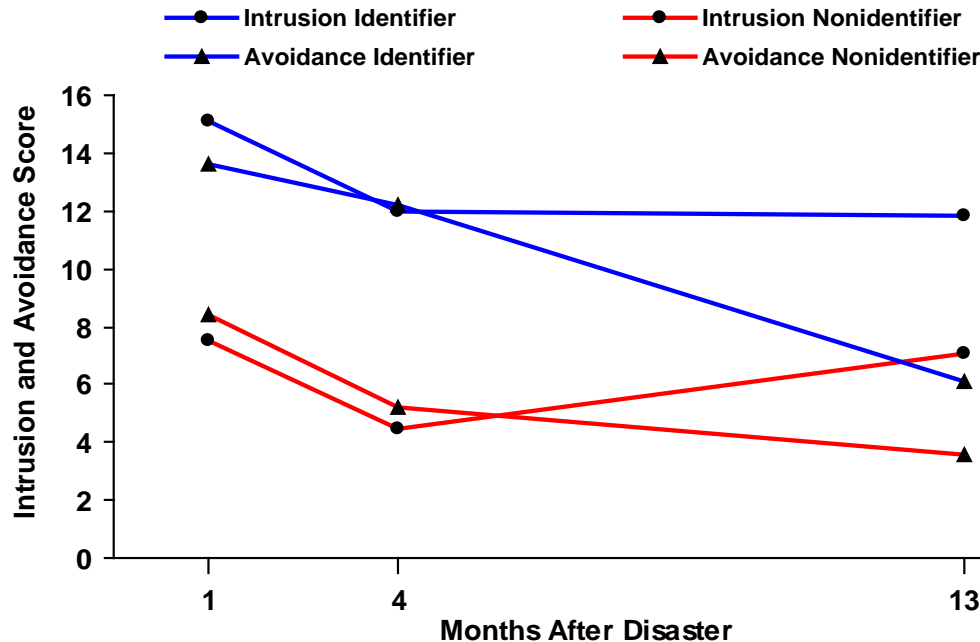
25% Depression

40% Never had a Psychiatric
Problem in the Past



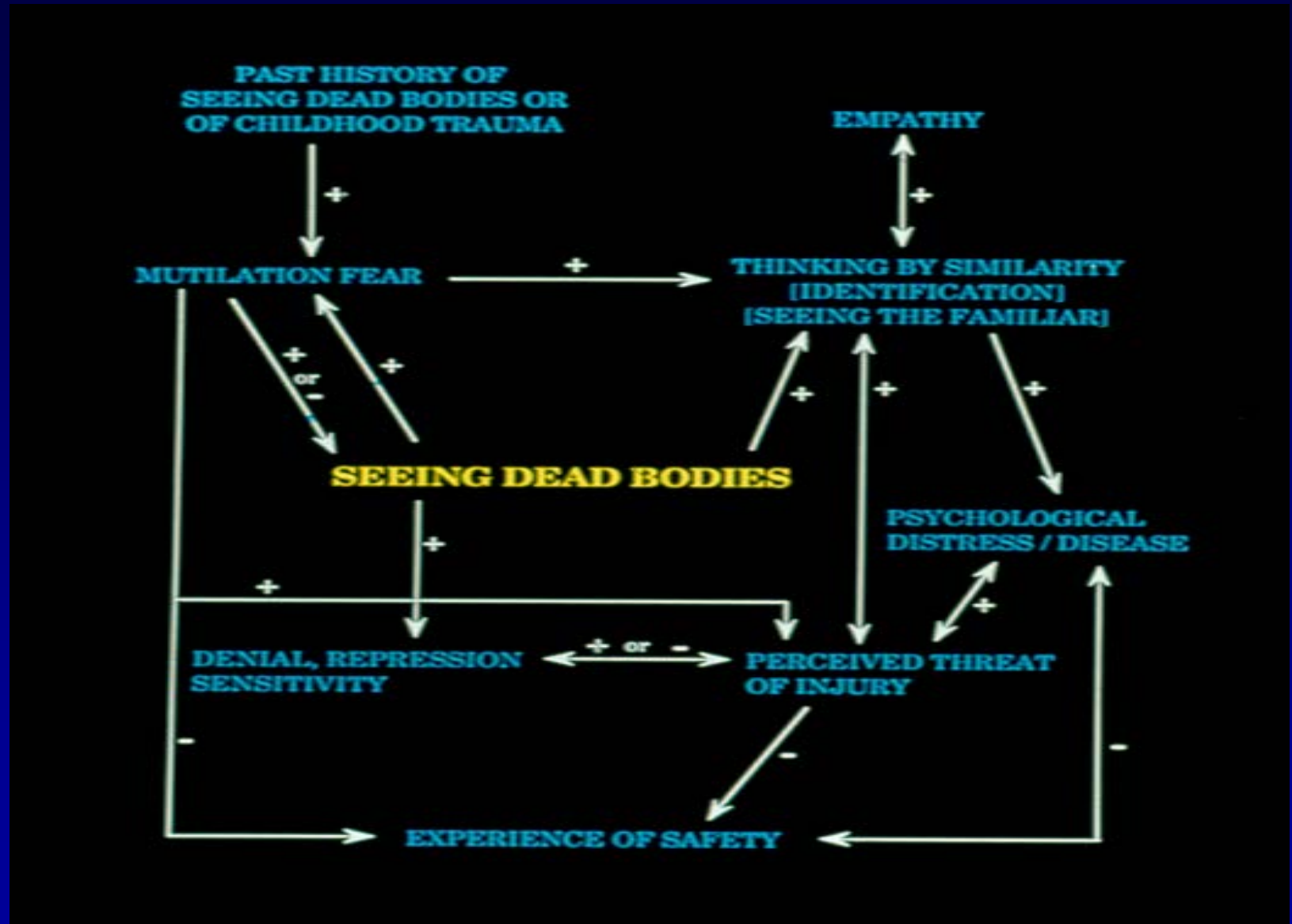
PTSD: an Autoimmune Disorder

Exposure to Death and the Dead Identification and PTSD Symptoms



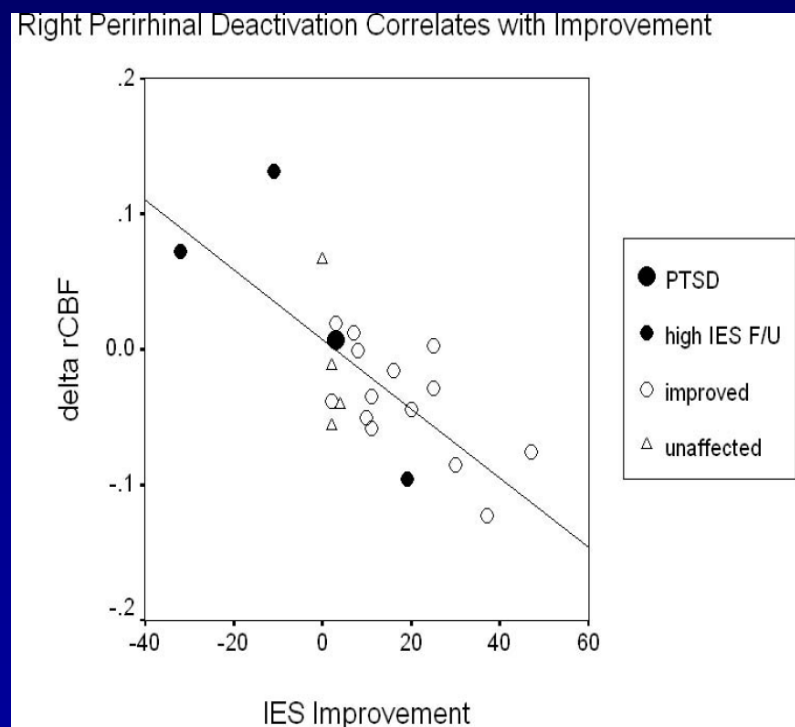
What is PTSD?

- 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

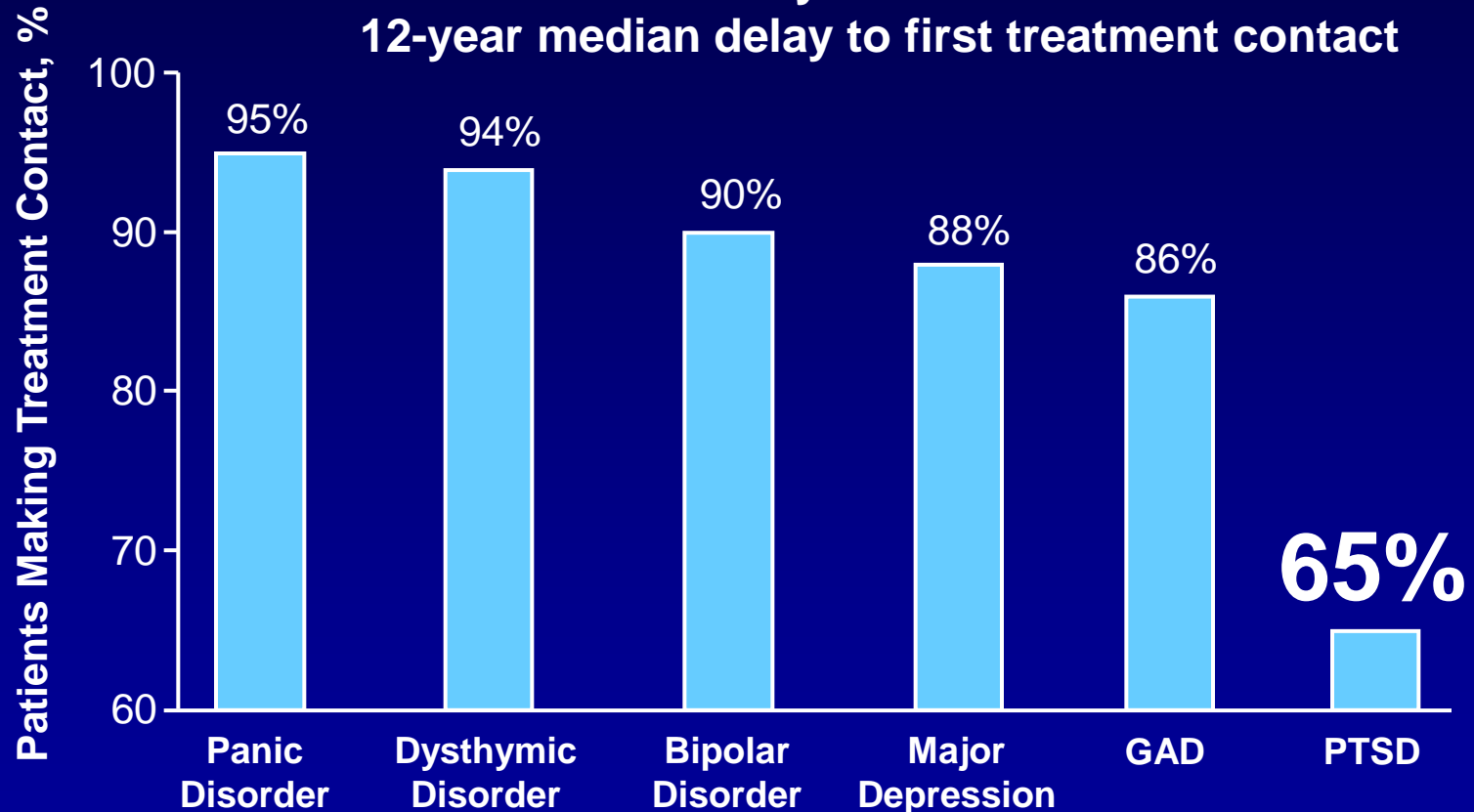
**Reduced Perirhinal Cortex Activity
(vs Normals) Leads to
Recovery After Trauma Exposure**





Lifetime Probability of Treatment Contact (USA)

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



Back Up



Psychological and Behavioral Intervention Matrix (Bio)

Agent: Anthrax/Terror Vector: Terrorist/Mail Population: Person

Pre	<ul style="list-style-type: none">-Premedication-vaccination-Air detection sys	<ul style="list-style-type: none">-Airport Screening	Preparedness Behaviors <ul style="list-style-type: none">-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	Response Behaviors <ul style="list-style-type: none">-Quarantine-Evacuation-Grief Leadership-Social Distancing
Post	<ul style="list-style-type: none">-rehabilitation	<ul style="list-style-type: none">-Justice system	Recovery Behaviors <ul style="list-style-type: none">-Help seeking-Specific Rx's



DSM 5 Key Points

Persistent Complex Bereavement Disorder

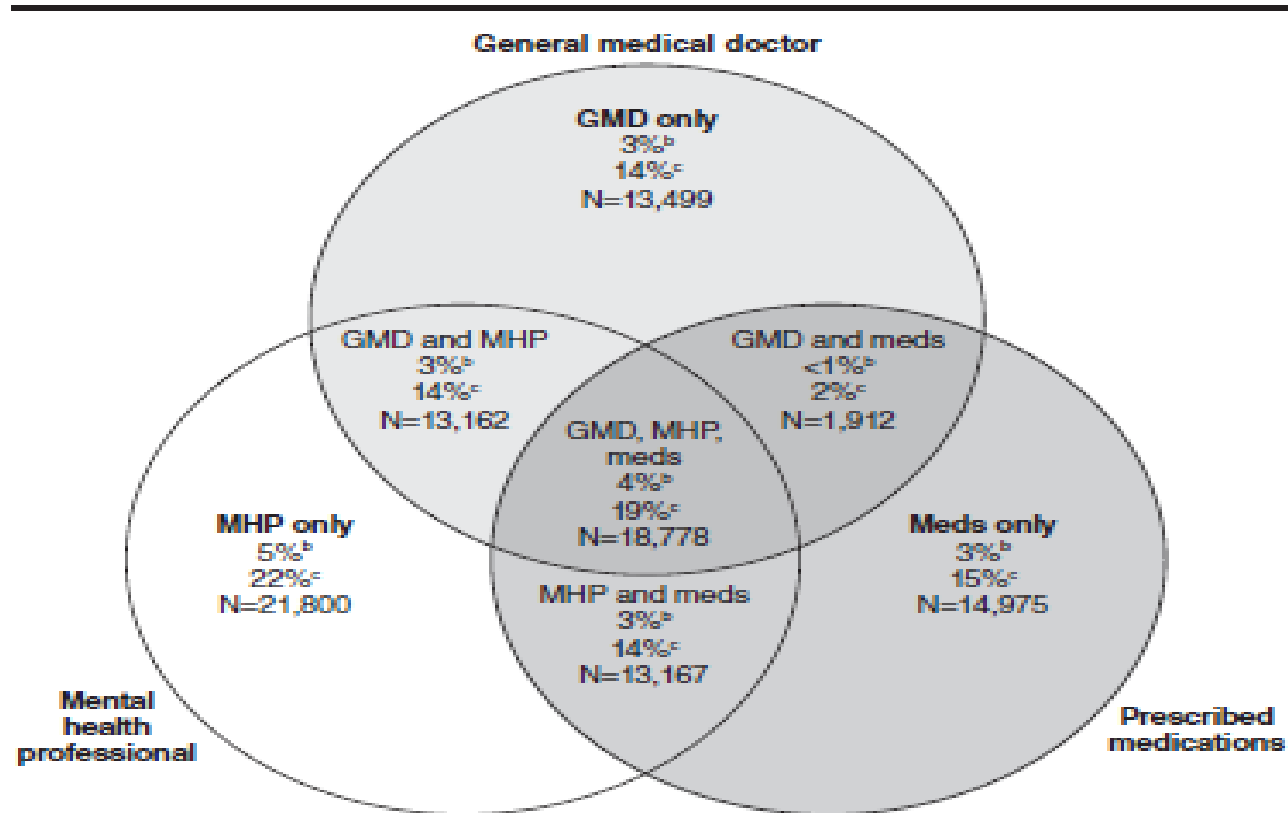
- Conditions for Further Study
- **Potential compelling clinical need for the category**
- **Inclusion in the Appendix will facilitate research**
- **Substantial empirical evidence, but there remain concerns that need further resolution (e.g. Onset > 12 months after death of loved one)**
- **Considerations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



^a Army sample, N=462,995; Army soldiers receiving any mental health service, N=97,293; Army soldiers receiving no mental health service, N=365,702 (79% of Army service members). GMD, general medical doctor; MHP, mental health professional; meds, prescription medication for depression, anxiety, or sleeping problems. All reported Ns are weighted.

^b Among members of the U.S. Army

^c Among members of the U.S. Army who were using services

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 ≥ 2 past month	42.5*	32.8	28.9	19.7
Missed work ≥ 2 X past month	23.3*	15.6	14.6	7.3
High Physical Symptom Score - PHQ-15 ≥ 15 (range 0-28)	24.8*	16.1	11.3	5.1

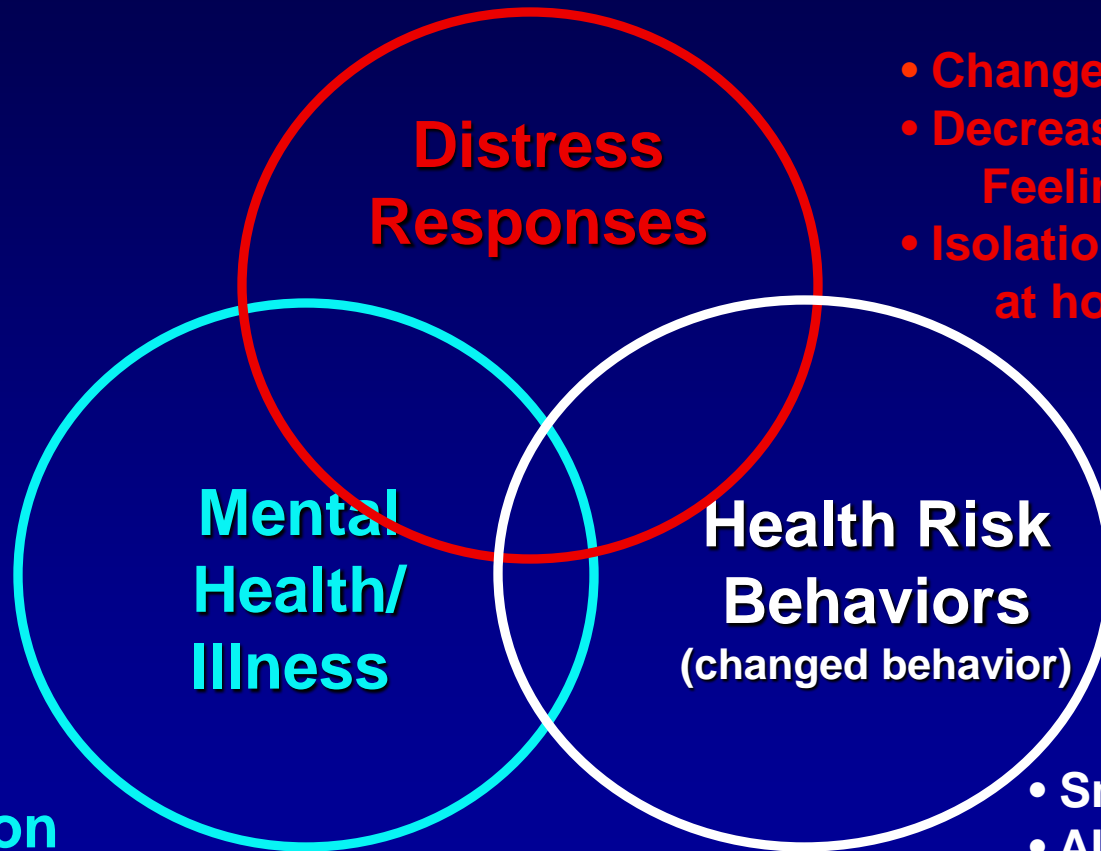


mTBI and Post Concussive Sxs

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)

- 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)



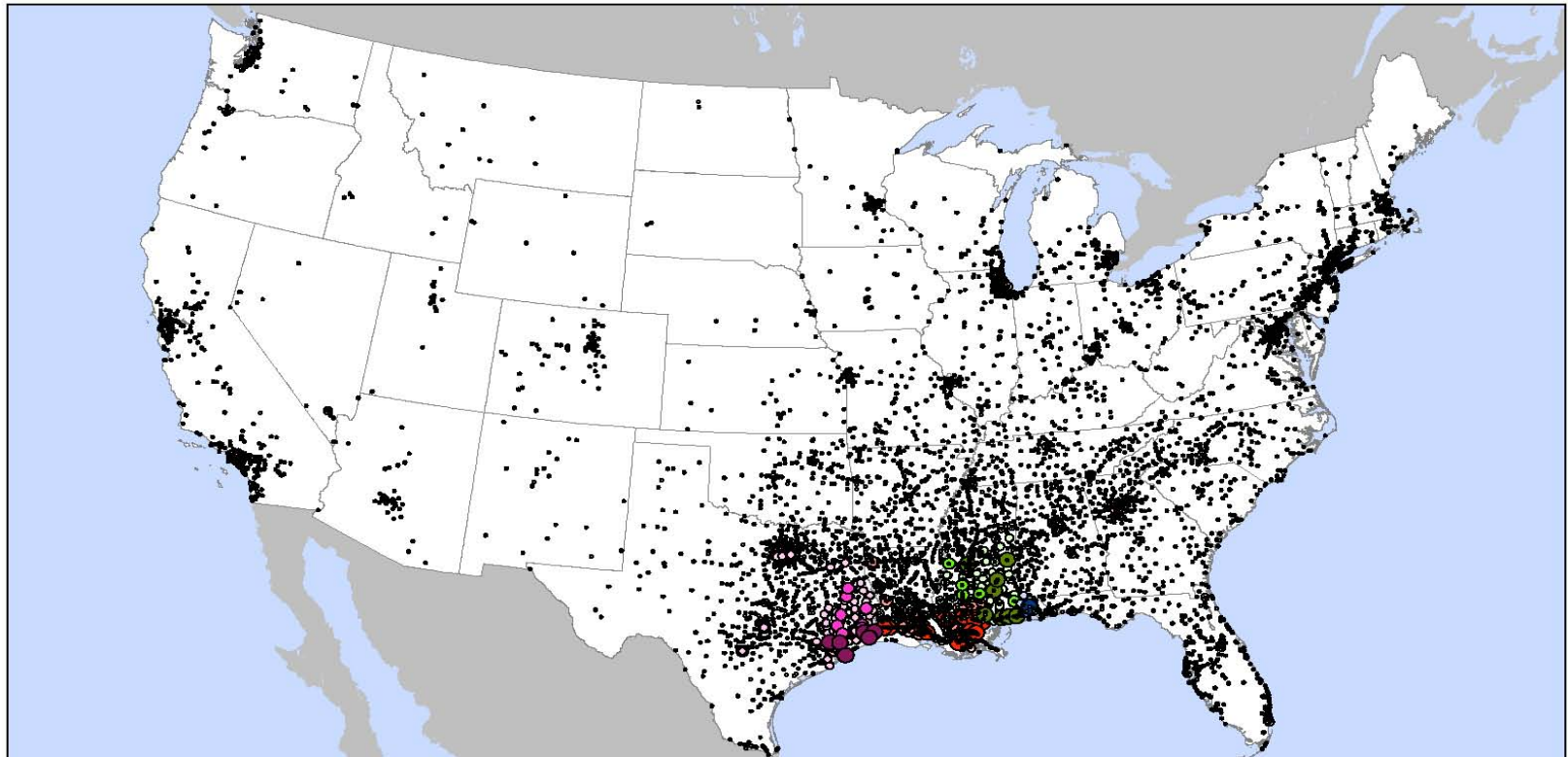
Response Behaviors and inconvenient aspects of human behavior

- 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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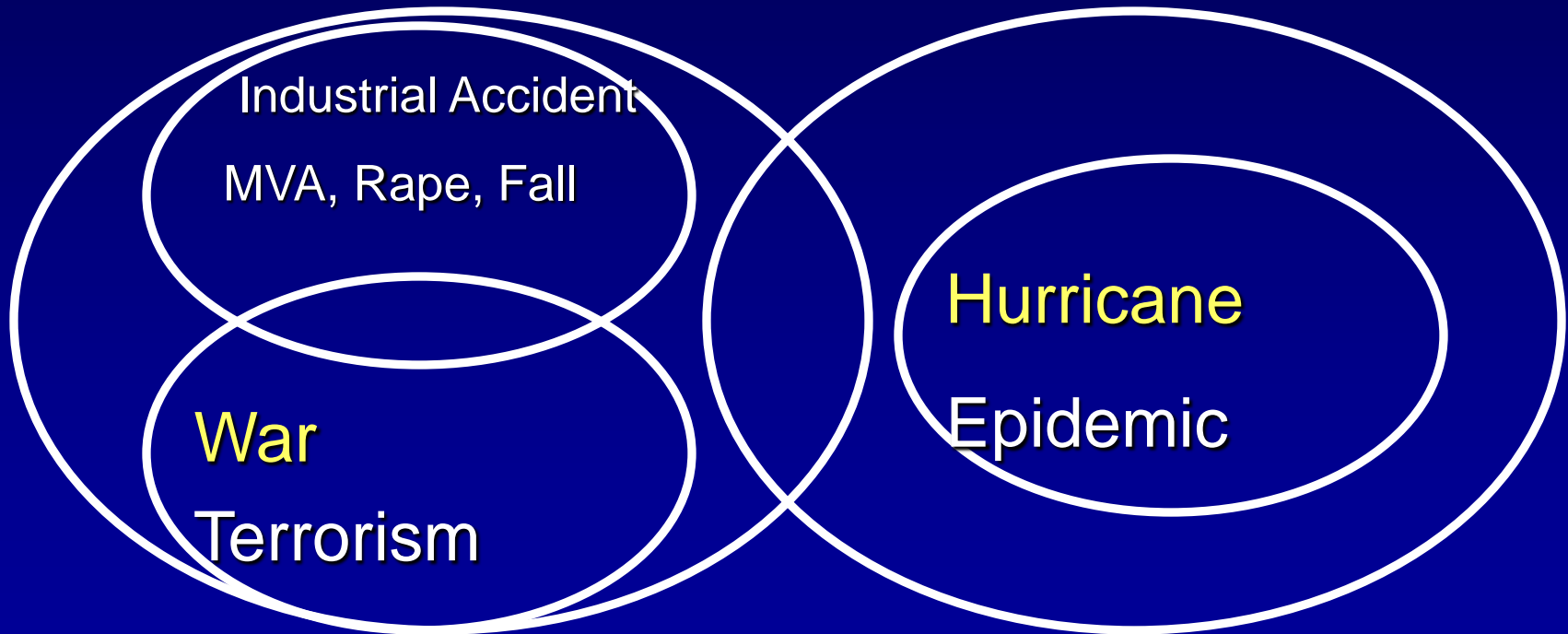
Treatment Across The Domains of Illness

	PTSD	MI	Mult.Scler	Back Pain
Disorder	The Glue Self Repair	ICU		
Symptoms	Withdawal 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