Mental health effects of…

Climate Change

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NATURAL DISASTERS / FORECAST

"On average, a disaster occurs somewhere in the world each day"

- Norris et al, *Psychiatry* 65:207-60 (2002), p. 207

"The relative burden of natural disasters to community health and wellbeing is likely to increase substantially over the next few decades, with climate change bringing with it far more serious and long-term disaster events and impacts"

- Morrissey & Reser, *Aust J Rural Health* 15:120-5 (2007), p. 122

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Natural Hazards with Climate Change

- Wind and flood damage, landslides, rising sea levels
- Reduced agricultural yields, crop damage, livestock damage, pest outbreaks, malnutrition
- Water quality problems (disease, contamination, salination)
- Wildfires
- Drought
- Heat-related health dangers
- Power outages
- Declining urban air quality
- Disrupted settlements, commerce, transport, & infrastructure
- Population displacement, evacuation

Anticipated Consequences of Climate Change

- Death, injury, danger, disease, malnutrition
- Decline in standards of living and quality of life
- Increased poverty
- Disaster risks unequally distributed: poor populations most affected (*viz*. Hurricane Katrina)
  - Urban poor often live in less desirable, low-lying flood-prone areas or on steep slopes prone to landslides
  - Those without resources are least prepared and least able to adapt to catastrophic loss
  - Poverty (with or without disaster) is associated with mental health problems:
    - Drug/alcohol abuse, dysphoria, distress, PTSD

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Climate Change and Mental Health

- Climate change *itself* would not be expected to cause mental health problems
- Mental health problems may arise from *adverse conditions caused by* climate change
  - Natural disasters – threat to life or limb (PTSD)
  - Declining quality of life, hardship (depression, distress; ***NOT*** PTSD)
  - Poverty (chronic drug/alcohol, dysphoria, distress)

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DSM-IV-TR Diagnosis of PTSD

A. **Exposure** to qualifying event: sudden, unexpected, physical (threat to life or limb)

B. **Intrusive recollections** – nightmares, flashbacks, unwanted images

C. **Avoidance and numbing** – avoiding reminders, psychogenic amnesia, loss of interest, feeling isolated, distant, and numb

D. **Hyperarousal** – insomnia, irritability, poor concentration, hypervigilance, jumpiness, easily startled

- Symptoms last at least <u>one month</u>
- Symptoms are <u>new</u> after the event
- Symptoms <u>impair</u> functioning or are significantly distressing

Range of Mental Health Outcomes of Disasters

- **Psychiatric disorders**
  - PTSD – usually most common Dx
  - Major depression – a close 2nd
  - Panic and generalized anxiety disorders (few)
  - ***NOT* :** new alcohol and drug abuse, schizophrenia, bipolar, somatization disorder
- **Psychological distress** – health-related anxiety, depressive, and psychosomatic symptoms, increased substance use
- **Chronic problems of living** – hassles, life events, losses, disruption, financial and psychosocial stressors
- **Psychosocial resource loss** – perceived control, beliefs about self & world, social support

PRINCIPLES OF DISASTER MENTAL HEALTH

- The worse the disaster, the worse the mental health consequences (eg, higher PTSD prevalence)
- The greater the individual's exposure, the worse the mental health consequences (eg, PTSD more likely)
- Risk factors for postdisaster mental health problems:
  - Exposure (necessary for PTSD)
  - Severity (weak predictor)
  - Gender (strong predictor)
  - Pre-existing problems (strong predictor) (don't automatically assume origins in disaster)

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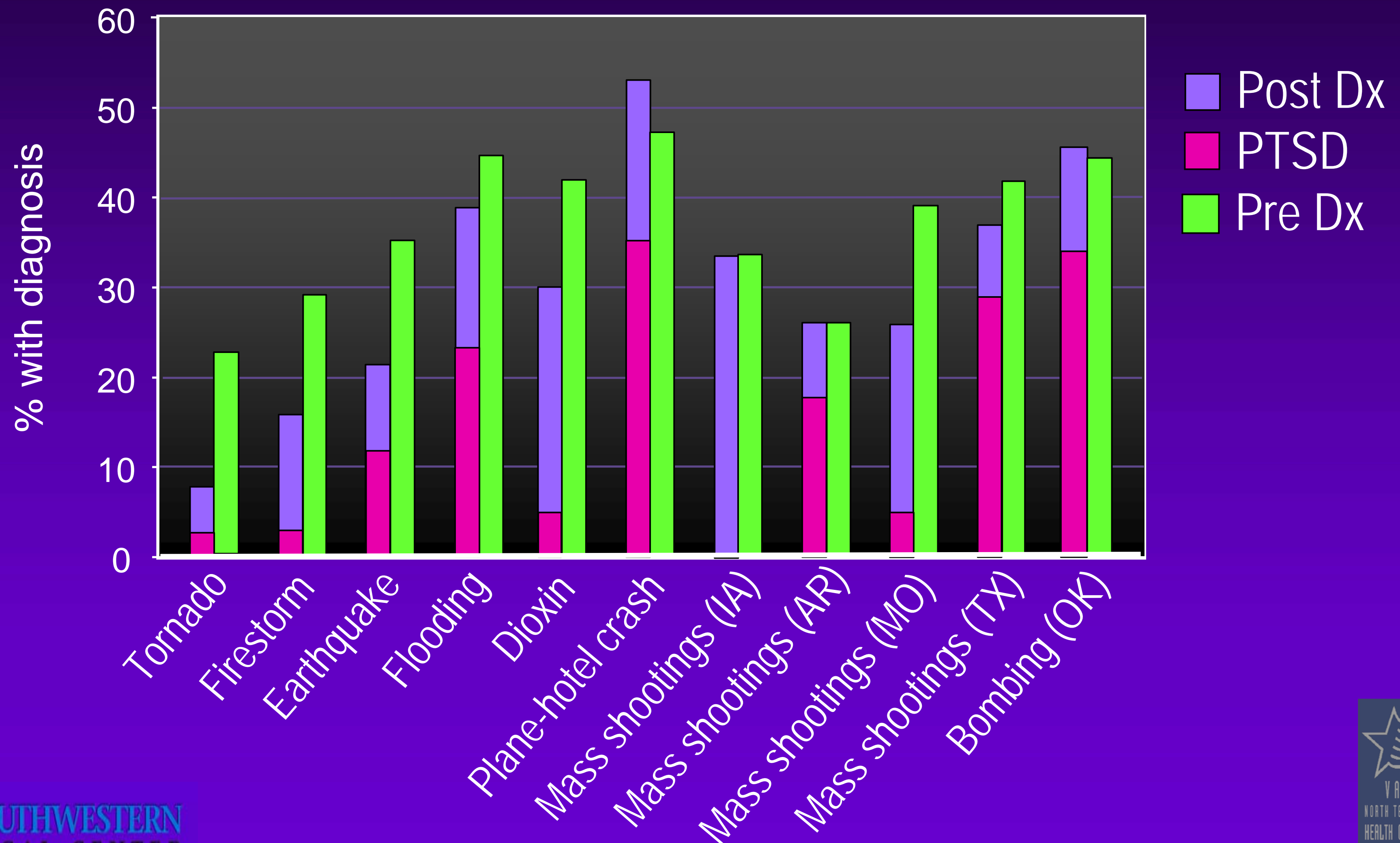
CROSS-DISASTER COMPARISON OF POSTDISASTER PREVALENCE OF PTSD AND OTHER DISORDERS

N=804



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Cross-Disaster Comparison of Postdisaster Prevalence of PTSD and Other Disorders

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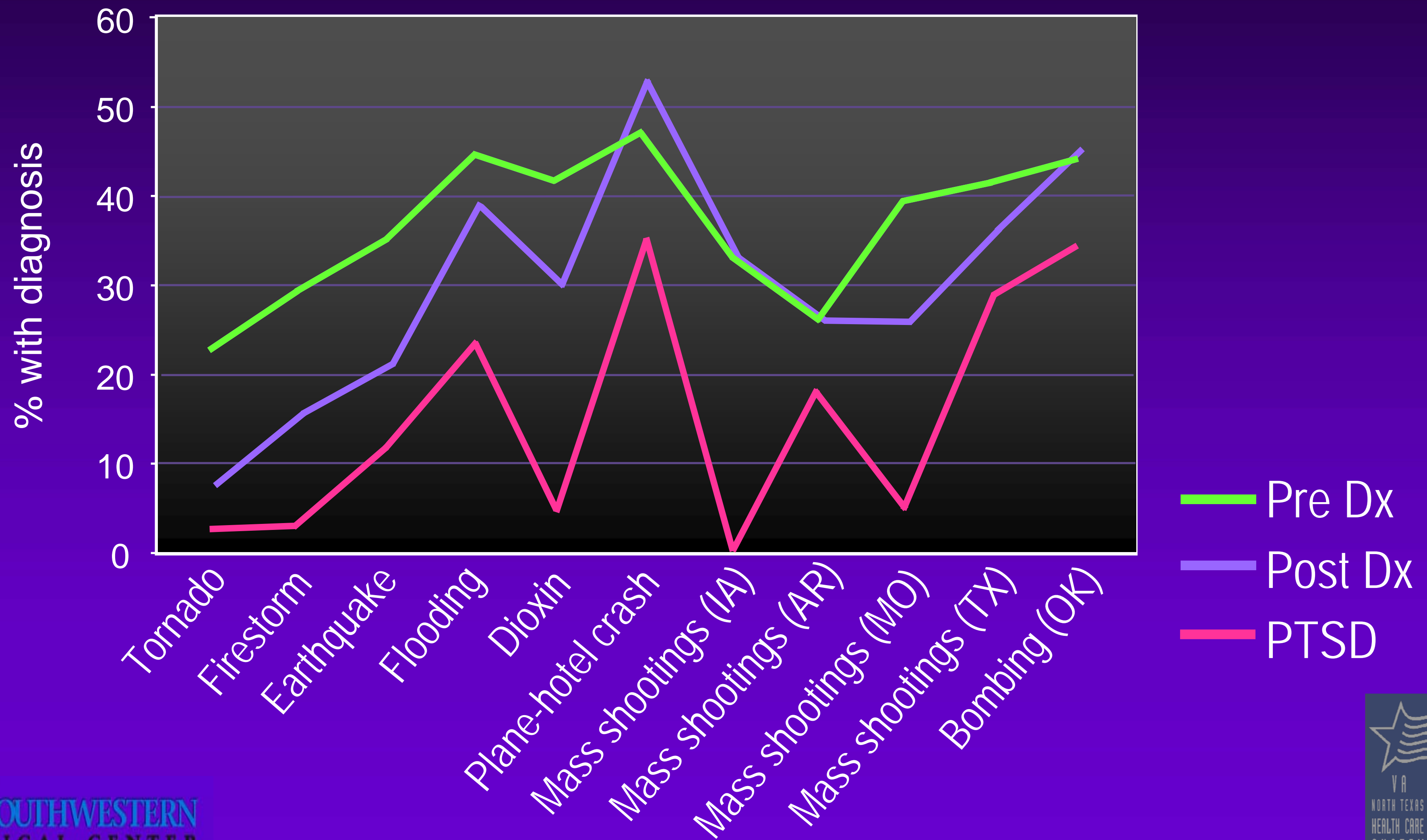

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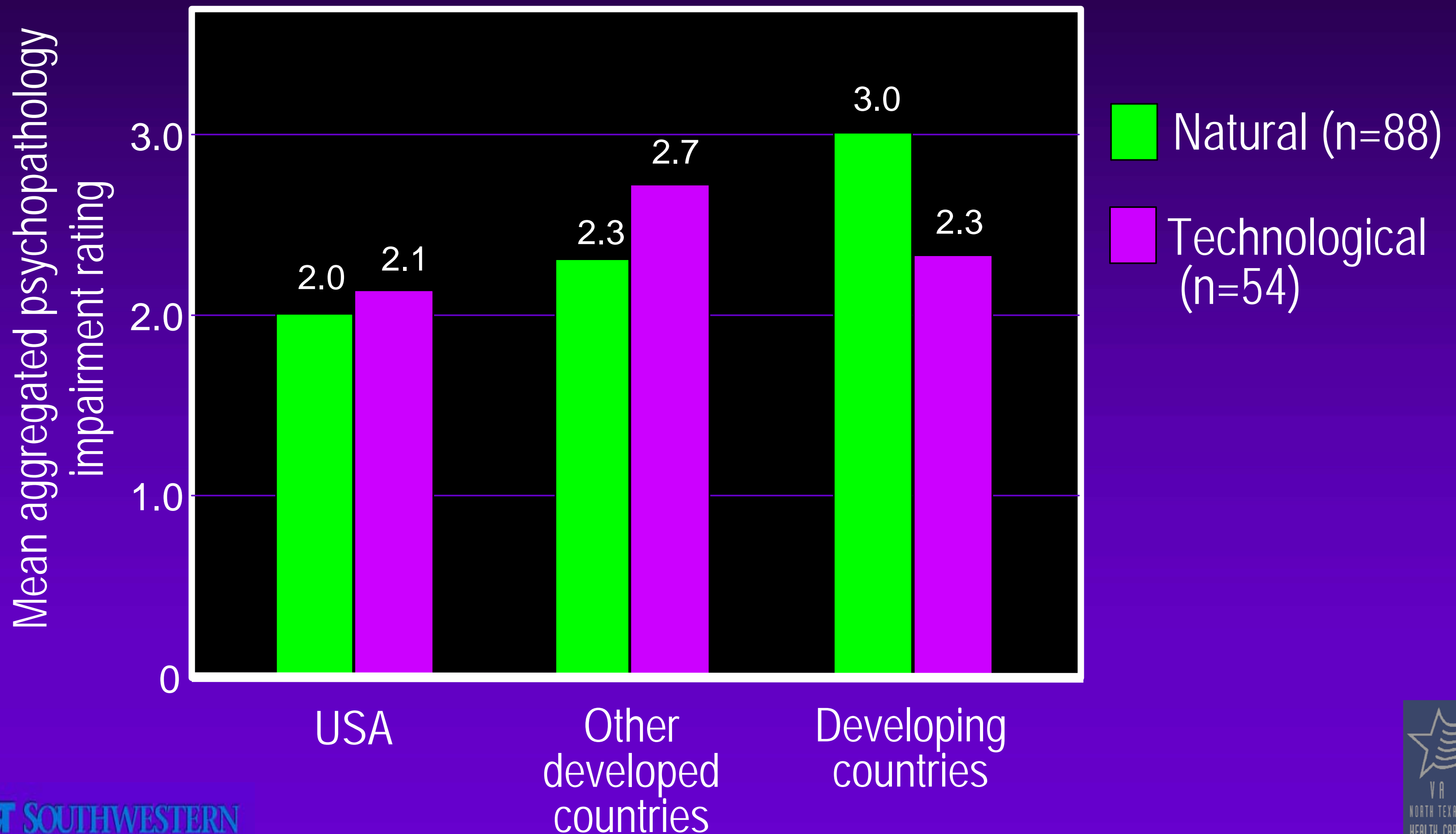
Psychopathology Severity Rating by Location (Data Aggregated from Published Studies)

Norris et al, *Psychiatry* 65:207-260, 2002



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Some Perspective on This

- Throughout history, disasters have been endemic
- Worst case scenario:
  - science fiction movie scenes...*Day After Tomorrow, Armageddon*
  - global devastation, with collapse of infrastructures, world economy, and governments (very different from circumscribed disasters)
  - main function is survival (not mental health)
  - survival of the fittest (mental health may have a role in this)

CHARACTERISTICS OF DISASTER PTSD

- **Timing:** rapid onset; chronicity is common
- **Psychiatric comorbidity:** typical (and important for treatment and prognosis)
- **Groups B (intrusion) and D (hyperarousal):** common, nonpathological, not associated with indicators of illness in absence of C (avoidance & numbing)
- **Group C (avoidance & numbing):** uncommon, pathological, PTSD marker

North et al, *JAMA* 282:755-62 (1999)

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PRINCIPLES OF DISASTER MENTAL HEALTH

- **People are resilient**
  - Most are not psychiatrically ill after even the worst events
  - Positive outcomes and growth also occur
- **Most people are significantly distressed**
- **Living with constant disaster threat** ⇒ uncertainty, anxiety, and dread - significant background stressors
- **Distress vs. disorder:** differentiate distress from psychopathology → different interventions
- **Chronic pre-existing problems** should be differentiated from disaster-related psychopathology

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Lessons from Hurricane Katrina

- Post-traumatic psychopathology was eclipsed by needs of those with chronic, pre-existing problems (serious mental illness, MR, Alzheimers, drug dependence/withdrawal)

  - who were also traumatized by the hurricane...and then evacuated from their familiar environments

- Disrupted infrastructures – loss of services

- Evacuees displaced from medical, psychiatric, and social services and their own personal social support networks

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PREVENTION

- Psychological preparedness has significant role in prevention and reduction of impact of natural disasters
- Formally addressing the community's ability to plan, prepare for, and mount an effective disaster response may help fortify community mental health in a natural disaster context
  - ie, adequate preparation reduces anxiety
  - stress inoculation training (public health intervention)
- Risk communication – inform for safety without instilling panic

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One Last Thing...Schizophrenia

- Studies show increased prevalence of later onset of schizophrenia in adult offspring of mothers who were in second trimester of pregnancy during severe famine
- Statistically significant
- Small effect size

Hulshoff Pol et al, *Am J Psychiatry* 157:1170-2 (2000)
St. Clair et al, *JAMA 294*:557-62 (2005)
McClellan et al, *JAMA 296*:582-4 (2006)

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CONCLUSIONS

- **Declining quality of life and hardship** resulting from climate change may precipitate distress and increased depression
- **Natural disasters** created by climate change may result in PTSD, depression, and distress
- **Loss of infrastructure and services** after disaster are problematic for both post-traumatic psycho-pathology and chronic psychiatric illness already present in the population

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