Strengthening Human Health and Well-being in the Face of Climate Change: Insights from Psychology

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HEALTH, MENTAL HEALTH, AND THE USGCRP CLIMATE & HEALTH ASSESSMENT

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Resilient People. Healthy Communities. A Nation Prepared.
Climate change is a significant threat to health

- Climate change threats in the United States
  - Elevated temperatures
  - More frequent, severe, or longer-lasting extreme events
  - Degraded air quality
  - Diseases transmitted through food, water, and disease vectors

- Threats are expected to worsen with continued climate change

- Changes to climate = increased risk to human health
Major U.S. Climate Trends

Rising Temperatures
U.S. average temperature has increased by 1.3°F to 1.9°F since record keeping began in 1895. Warming has been the greatest in North and West while some parts of the Southeast have experienced little change.

Extreme Precipitation
Heavy downpours are increasing nationally, especially over the last three to five decades. The largest increases are in the Midwest and Northeast.

Floods
Floods have been increasing in parts of the Midwest and Northeast.

Wildfires
Wildfires in the West start earlier in the spring, last later into the fall, and burn more acreage.

Heat Waves
Heat waves have become more frequent and intense, especially in the West.

Drought
Drought has increased in the West. Over the last decade, the Southwest has experienced the most persistent droughts on record.

Cold Waves and Winter Storms
Cold waves have become less frequent and intense across the Nation. Winter storms have increased in frequency and intensity since the 1950s and their tracks have shifted northward.

Sea Level
Sea levels along the Mid-Atlantic and parts of the Gulf Coast have risen by about 8 inches over the last half century.

Hurricanes
The intensity, frequency, and duration of North Atlantic hurricanes, as well as the frequency of the strongest (category 4 and 5) hurricanes, have all increased since the early 1980s.
Climate change creates new public health challenges

- Areas experiencing health-threatening weather and climate phenomena are likely to experience **worsening impacts**
- Climate change-related health threats will **shift to new locations**
- Areas may see a **shift in the timing** of seasons, and threats will occur over longer periods, or at unprecedented times of the year
United States Global Change Research Program (USGCRP) Report

- Released on April 4, 2016
- Topics
  - Temperature-related death and illness
  - Air quality impacts
  - Extreme Events
  - Vectorborne disease
  - Water-related illnesses
  - Food safety, nutrition, and distribution
  - Mental health and well-being
Health impacts associated with climate change in the US

- Everyone in the United States will be affected by climate change at some point in their lives
- Populations of concern discussed in each chapter:
  - Low income communities
  - Some communities of color
  - Limited English proficiency and immigrant groups
  - Indigenous peoples
  - Children, women, and older adults
  - Persons with disabilities
  - Persons with preexisting or chronic medical conditions
Mental Health and Well-Being

- Exposure to Disasters Results in Mental Health Consequences
  - Examples of mental health consequences include post-traumatic stress disorder, depression, anxiety, grief/bereavement, increased substance use or misuse, and suicidal thoughts.
  - Disaster-related stress and accompanying psychological impacts can continue over extended time periods - up to a year or more.
Specific Groups of People are at Higher Risk

- Children are at risk for distress, anxiety, and other adverse mental health effects in the aftermath of an extreme event.
- Farmers, those with limited mobility, immigrants, those living in coastal areas, those from Indigenous communities or tribes, and veterans are also expected to experience higher risk of poor mental health outcomes.
- People living in poverty and with fewer socioeconomic resources have less capacity to adapt to the challenges brought by climate change.
- Firefighters, emergency medical service providers, healthcare workers, those recovering human remains, and non-traditional first responders who may be involved with supporting the community after a natural disaster are all at increased risk for mental health consequence.
Impact of Climate Change on Physical, Mental, and Community Health

Medical and Physical Health
- Changes in fitness and activity level
- Heat-related illness
- Allergies
- Increased exposure to waterborne and vector-borne illness

Mental Health
- Stress, anxiety, depression, grief, sense of loss
- Strains on social relationships
- Substance abuse
- Post-traumatic stress disorder

Community Health
- Increased interpersonal aggression
- Increased violence and crime
- Increased social instability
- Decreased community cohesion
Climate Change Threats Result in Mental Health Consequences and Social Impacts

- More frequent and prolonged heat waves may increase the amount of time spent indoors, which could have an effect on mental health, particularly for children and those who use the outdoors for exercise and stress management.

Extreme Heat Increases Risks for People with Mental Illness

- Increases in extreme heat will increase the risk of disease and death for people with mental illness, including elderly populations and those taking prescription medications that impair the body’s ability to regulate temperature.
Populations of Concern

- Vulnerability Varies Over Time and Is Place-Specific
  - Where a person lives, goes to school, works, or spends leisure time will contribute to exposure.
  - Locations with greater health threats include urban areas, areas where airborne allergens and other air pollutants occur at levels that aggravate respiratory illnesses, communities experiencing depleted water supplies or vulnerable energy and transportation infrastructure, coastal and other flood-prone areas, and locations affected by drought and wildfire.
Health Impacts Vary with Age and Life Stage

- Children are vulnerable to adverse health effects associated with environmental exposures due to factors related to their immature physiology and metabolism, their unique exposure pathways, their biological sensitivities, and limits to their adaptive capacity.
- Older adults in the United States are not uniform with regard to their climate-related vulnerabilities, but are a diverse group with distinct subpopulations that can be identified not only by age but also by race, educational attainment, socioeconomic status, social support networks, overall physical and mental health, and disability status.
Life Stages

Vulnerability to the Health Impacts of Climate Change at Different Life Stages

**Mothers and babies**
Adverse pregnancy outcomes such as low birth weight and preterm birth have been linked to extreme heat events, airborne particulate matter, and floods.

**Infants and toddlers**
Young children’s biological sensitivity places them at greater risk from asthma, diarrheal illness, and heat-related illness.

**School age and older children**
The behaviors and activities of older children increase their risk of exposure to heat-related illness, vector-borne and waterborne disease, and respiratory effects from air pollution and allergens.
Social Determinants of Health Interact with Climate Factors to Affect Health Risks

- People or communities can have greater or lesser vulnerability to health risks depending on social, political, and economic factors that are collectively known as social determinants of health.
- In disadvantaged groups, social determinants of health interact with the three elements of vulnerability by contributing to increased exposure, increased sensitivity, and reduced adaptive capacity.
Populations of Concern

- Mapping Tools and Vulnerability Indices Identify Climate Health Risks
  
  By linking together census data, data on the determinants of health (social, environmental, preexisting health conditions), measures of adaptive capacity (such as health care access), and climate data, GIS mapping helps identify and position resources for at-risk populations.
QUESTIONS

Office of the Assistant Secretary for Preparedness and Response (www.phe.gov)

USGCRP Report (health2016.globalchange.gov)
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Congressional Briefing, 12 December 2016
Why look at the psychological impacts of climate change?
Why look at the psychological impacts of climate change?
People are concerned.
Climate change is affecting human well-being.
1. Direct and indirect effects
2. Acute and gradual changes
3. Experienced and anticipated effects
PHYSICAL IMPACTS

- wildfires
- flooding
- drought
- heat stress
- changing temperatures
- rising sea levels
- storms
- stress on freshwater resources
- changing growing seasons

Source:
EcoAmerica
http://ecoamerica.org/research/#PsychImpacts
HUMAN SYSTEMS AND INFRASTRUCTURE IMPACTS
- urban and rural infrastructure
- transportation networks
- food security and crop production
- economic sectors and services | human livelihoods
- energy infrastructure | human security

PHYSICAL IMPACTS
- wildfires | flooding
- drought | heat stress
- changing temperatures
- rising sea levels | storms
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- changing growing seasons

Source:
EcoAmerica
http://ecoamerica.org/research/#PsychImpacts
Natural disasters are on the rise.
Impacts of natural disasters

Physical health: Death, injury, disease; adverse birth outcomes
- Disruptions in food, water, shelter
- Disruptions in delivery of health services
- Impaired immune system functioning

Mental health: PTSD, depression
- sleep disorders
- negative health behaviors
- substance abuse
Social impacts

- Domestic abuse
- Violence and conflict
- Stress of indirect impacts
The impact of gradual changes
It’s estimated that desertification due to climate change could lead to 50 million climate refugees over the next 10 years.
The effects are not always obvious.

- Migration
  - loosens social bonds
  - Increases psychological vulnerability
  - removes a source of strength and comfort

- Higher temperatures
  - Increase suicide rates
  - Increase aggression
  - Decrease school performance
“You think your house is permanent... When you lose your house and everything you own, you learn everything is temporary.”

(Hurricane Sandy survivor)
Uncertainty is a source of stress.

- Anxiety about the future
- Loss of perceived control
- Tension over the interpretation of events
Effects on interpersonal relations

- Increases in violence and crime
- Increases in interpersonal aggression
- Decreased social cohesion
A threat to national security

- The Syrian refugee crisis is linked to unusual drought in the area, associated with climate change.
- Jihadists are already blaming the U.S. for climate change.
- Resources required for disaster relief are resources unavailable for other challenges, making us more vulnerable as a country.
What can be done?
Promoting resilience
What is resilience?

The ability of a system to cope with change.

As discussed by engineers:

- *The ability of a substance to spring back into shape after being compressed or distorted by an outside force.*

As discussed by psychologists:

- *The capacity to recover and thrive in the face of adverse events.*

As defined by the National Health Security Strategy:

- *The sustained ability of communities to withstand, adapt to, and recover from adversity.*
Resilience is multifaceted.

1. **Context**
   - e.g. social group, region, institution

2. **Disturbance**
   - e.g. natural hazard, conflict, insecurity, food shortage, high fuel prices

3. **Capacity to deal with disturbance**
   - e.g. survive, cope, recover, learn, transform

4. **Reaction to disturbance**
   - Bounce back better
   - Recover, but worse than before
   - Collapse

**System or process**

**Shocks**

**Stresses**

**Exposure**

**Sensitivity**

**Adaptive capacity**

**Resilience of what?**

**Resilience to what?**
Infrastructure resilience and psychological resilience are interdependent.

- The effects of disasters are highly dependent on existing infrastructure.
  - Each dollar directed toward preparedness saves about $7 in disaster response.
- But in the search for psychological resilience, people and communities may make maladaptive choices.
  - They want to return to the familiar.
  - They want to deny the problem.
- So they will be looking to replace and rebuild rather than transform.
If people think the government has been ineffective or misleading,
- They will be angry
- They will lose faith

Government leadership is needed in order to
- maintain trust,
- motivate action,
- integrate initiatives, and
- avoid inequity
What makes people resilient?

- Sense of optimism and self-efficacy
- Active coping strategies
- Practical support
- Social connections
What makes communities resilient?

- Strong social networks
- Informational outreach
- Attention to the most vulnerable
- Practical resources
  - Community energy generation
  - Food independence
  - Flood risk management
Addressing climate change has co-benefits

At the community level, an analysis of 21 projects designed to address climate change found positive outcomes:

- **social** (health and wellbeing),
- **community** (community cohesion),
- **economic** (carbon savings, local economic benefits),
- **infrastructure** (insulation, renewable energy systems),
- **institutional** (relationships with existing networks such as local education systems)
Benefits for individuals more generally will also accrue:

- Burning fossil fuels emits pollution that is associated with 4 of the 5 leading causes of death in the U.S. and that has neurotoxic impacts.

- 3.2 million people a year die from factors related to physical inactivity. Choosing to walk or cycle instead of driving can have strong positive health impacts.

- Eating less red meat would reduce risk of heart disease and death while reducing carbon emissions.
We need to make plans

- Focus on *local impacts*
  - Identify local strengths

- Conduct a *vulnerability assessment*
  - Recognize diverse levels of vulnerability

- *Educate* people about what to expect and how to adapt
  - Include ideas about alternative practices

- Establish the *infrastructure* to encourage adaptation
  - Both social and physical
Message strategies

- Emphasize what can (and needs to) be done
- Provide emotionally rich images and stories
- Describe local impacts
- Emphasize co-benefits
- Encourage optimism
Keys to resilience overall

- Preparation
- Organization
- Diversity
- Adaptability

Crisis is an opportunity to create innovation!


- Norwegian Refugee Council, [http://www.nrc.no/?did=9202152#VfmG5J3BzGd](http://www.nrc.no/?did=9202152#VfmG5J3BzGd)


Questions?

www.spssi.org

www.spssi.org/climatechange