The New Science of Stress
Evidence Based Practices to Remain Resilient

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Strong epidemiological evidence linking chronic stress to worse health

**Chronic stressors**
- Work stress & burnout
- Difficult childhood environment
- Financial strain
- Interpersonal stress
- Caregiving
- Unsafe neighborhoods

**Increased risk of worse health**
- Mortality
- High blood pressure
- Metabolic syndrome
- Type 2 diabetes
- Cardiovascular disease
- Cognitive functioning decline
- Physical functioning decline
- Cancer progression, not incidence

Defining chronic stress

Life circumstances that include both an **objective stressor** and high **subjective stress**

<table>
<thead>
<tr>
<th>Acute stressors</th>
<th>Daily events/daily hassles</th>
<th>Major life events</th>
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Stress and mortality from national cohort study

Midlife in the United States (MIDUS) study 2

*N*=6,609 US adults recruited from random digit dialing in 2004-2006

Followed for 11.6 years with *N* = 870 deaths over that time period

Types of stress captured via questionnaire:
- Discrimination (lifetime, daily, job)
- Perceived social inequality (social comparison of home, job, and family life)
- Difficulty with friends, family members, and spouse/partner
- Subjective stress within the last month
- Number of stressful life events across one’s lifetime
Research question

Does an accumulation of stress in someone’s life increase their risk of dying...

*above and beyond known mortality predictors?*

Known mortality predictors are:

- Demographics: sex, age, race, participant education, parental education, child welfare, current employment status, health insurance
- Health behaviors: smoking, alcohol use, physical activity, waist-hip ratio
- Number of chronic health conditions in the past 12 months
- Current depression and/or anxiety

Cumulative stress increases mortality risk above and beyond known risk factors

![Graph showing hazard ratio with 95% confidence interval](image)

20% increase in mortality for those in the highest versus lowest quartile of stress exposure
How is this possible?

**Caregiving**

**Biological dysregulation such as:**
- Peripheral inflammation
- High blood pressure
- Metabolic processes
- Telomere shortening
- Endothelial function
- DNA repair
- Gene expression

**Disease**
Family caregivers are chronically stressed

- Decreased quality of life, including:
  - Anxiety
  - Depression
  - Social isolation
  - Weight gain
  - Sleep problems
  - Fatigue
  - Pain

*Important note:
This is not true for all caregivers!

Recent data on family caregivers

![Graph comparing part-time vs. full-time caregivers](chart.png)

- Physical symptoms
- Role captivity
- Benefit finding

Part-time CG (n=1,823)  Full-time CG (n=1,724)
Dementia caregivers impacted most

Feeling trapped may be what is ‘toxic’ about caregiving
Biological basis for the toxicity of feeling trapped

Feeling trapped activates our reptilian brain, leaving us in a permanent state of 'fight or flight' — with our sympathetic nervous system always on.

Fight or flight response is driven by sympathetic nervous system activation.
Parasympathetic activation drives healing

Activated in conditions of safety*

How can we signal safety to our brain and body?

- Paced, slow breathing
- Direct way to stimulate PNS - scientific fact
- Stimulating PNS shuts down ruminative thoughts (Burger, Van der Does, Thayer, Brosschot, Verkuil, 2019)
- Meditation is one way to slow the breath .. what else might work?
  - Sensory stimulation (aromatherapy, candles)
  - Nature, art, meaningfully connecting with a loved one — seeing beauty, manufacturing experiences of ‘awe’
  - Intentional morning and evening ritual (cup of tea? journaling?)
How can we signal safety to our brain and body?

- Communities and spaces of trusted others such as:
  - Support groups
  - Choir singing
  - “Sangha” (meditation groups)
  - Church services
  - Yoga classes

- Environments free of threats and judgments - implications for how we set up homes, work places, medical facilities
Chronic stress: We can’t avoid it

Especially true for caregivers - both family members and professional caregivers

Instead of fighting it:

• Accept the current reality
• Set up environments and daily lives that activate the PNS
• Create moments of rest to heal from the damage (and build up resilience) to the demands of the chronic stressor

Tools for coping with chronic stress

1. Purpose in life / meaning making
2. Breathing techniques
3. Gratitude exercises
4. Mindful savoring
5. Physical activity
6. Sleep quality
7. Deep social connection
8. Positive emotions of joy and awe
Accepting versus rejection reality of the moment

- Wisdom traditions have suggested that acceptance of what is is how we move through stressful times - don’t fight the mud

- Recent empirical evidence from my research group supports this

Chronic stress makes us more rejecting and less accepting

![Bar chart showing differences between chronically stressed mothers and low stress mothers in terms of accepting, rejecting, and mind wandering. Group differences are significant at p<.05.]

Crosswell, Coccia, & Epel (2018)
Accepting the reality of the moment is associated with…

✓ Better mood
✓ Increased feeling of connection to marital partner
✓ Better sleep
✓ Better glucose regulation
✓ Higher telomerase

More evidence-based tools for coping with chronic stress

1. Exercise
2. Sleep
3. Meaning making / finding purpose
4. Gratitude exercises
5. Social connection
6. Positive emotions of joy, awe, savoring

The Greater Good Science Center housed at UC Berkeley offers evidence-based exercises / practices
Takeaway Message

We can’t get rid of the sources of most chronic stressors. Focus instead on *creating environments and daily routines that signal subconsciously to your body that you are safe*. This will allow your body to have moments of rest where it can turn on its natural healing capacities.
We need research participants!

Currently recruiting healthy adults for studies conducted by UCSF, at the Laurel Heights Campus (3333 California St., San Francisco)

1. Stress Resilience Study
   • Testing how innovative breathing techniques, meditation and physical exercises may improve mental and physical health
   • Participation involves two in-person study visits to UCSF and engaging in a daily stress resilience technique for 3 weeks
   • Contact: Samantha.Schilf@ucsf.edu

2. Cardiovascular Responses to Problem Solving Study
   • Psychological and physiological study examining the body’s responses during computer tasks
   • Looking for participants ages 60 - 85
   • Participants come to UCSF for one 1.5 hour visit to complete computer
   • Contact: Sheyda.zebarjadian@ucsf.edu

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Mentors and collaborators:

Read more about our Aging, Metabolism, and Emotions Research Lab:

http://www.amecenter.ucsf.edu/