Stress: The Good, Bad, and the Ugly
Part One

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Course Overview: Stress
Session One

- Definitions
- Physiology
- Toxic Stress
- Risk factors for experiencing toxic stress
- Protective Factors
- Stress and individuals with disabilities
Course Overview
Session Two

- Research on stress and children and youth
  - Early care-giving experiences
  - Autism
  - Self-injurious behaviors
  - Deafblindness
- Research on stress and families of children with disabilities
- Implications of the research for teaching
Course Overview
Session Three

- Prevention of Toxic Stress
  - Preventing toxic stress in children and youth with disabilities
  - Supporting families of children with disabilities
  - Dealing with your own stress
Definitions of Stress

- Psychological
  - Stress occurs when an individual perceives challenges as overwhelming when compared to resources and coping abilities (Greenberg, Carr & Summers, 2002; Gunnar & Quevedo, 2007).
Definitions of Stress

- Biological
  - Organism’s digression from a state of homeostasis and its activation of neurobiological systems (stress response) that enables it to return to a point of homeostasis (McEwan & Seeman, 1999).
Stress: The Good

- Stress is a part of a process we use to evaluate and attempt to cope with challenges
- Normal process if time limited
- Time limited stress is protective
Stress: the Good and Bad

- Under conditions of normal stress, children learn how to cope and manage
- Need supportive adults if they are to do this
- Prolonged stress can damage the body including the brain
Activity

- Think of a time when you felt you were under stress but actually performed better because of the stress.

- Think of a time when the stress seemed to be more long term.
  - How did you react physically?
  - Emotionally?
Physiology of Stress

- Sympathetic nervous system (SNS): Activates physiological responses to stress
- Parasympathetic nervous system: Activates relaxation response
- Tug of war to achieve balance or equilibrium
Physiology of Stress

Brain

- Triune brain
  - Reptilian
  - Limbic brain
  - Neocortex
Physiology of Stress

- SAM System (Sympathetic-adrenomedullary system) Rapid fire system that releases epinephrine (adrenaline) Fight or flight response
- HPA Axis (hypothalamic-pituitary-adrenocortical system). Produces a cascade of longer acting hormones that ends in production of glucocorticoids including cortisol
Cortisol

- Glucocorticoids take may minutes or hours to produce and affect physiology for long periods (Sapolsky, et al., 2000)
- Cortisol distributes glucose to critical organs and away from ones not immediately needed
Crisis passes

- Body attempts to return to homeostasis through parasympathetic nervous system including feedback loop of HPA axis
Stress and Physiological Processes: Parasympathetic Nervous System (PNS)

- Feedback loop reversal of HPA
- Counter defenses protect hippocampus from too much cortisol ordered by hypothalamus
- SNS is slow to shut down leaving the individual in a state of readiness for awhile
Video Clip

- Dr. Robert Sapolsky of Stanford University: The Psychology of Stress
Cortisol

- Varies on a circadian cycle and reactively in response to an acute stressor
- Circadian cycle
  - Highest when you first wake up (Cortisol awakening response)
  - Decreases throughout the day
Cortisol

- Curve may be elevated or flattened
  - More likely to be flattened in chronic illness, PTSD
- Reactive cortisol response
  - Reaches peak 20 to 30 minutes after onset of stressor
  - Gradually returns to baseline over course of 40 to 60 minutes (Nicolson, 2007; Ramsay & Lewis, 2004).
Poll

- “Raise your hand” if you think women generally have a slower SNS stress reversal time.
- “Raise your hand” if you think men have a slower SNS stress reversal time.
Stress: The Bad and the Ugly

- Sometimes stress hormones remain active for too long
- Injure and kill cells in hippocampus
- Hippocampus needed for memory and learning
- Excessive cortisol affects long-term memory
Stress: The Bad and the Ugly

There are only two times I feel stress: Day and Night.
Questions
Stress: The Bad and the Ugly

- Stress hormones divert glucose from brain to muscles
- Compromises ability to form new memories
- Hippocampus has fewer cells in aging brain
- Hippocampus tells hypothalamus to reduce cortisol
- Degenerative cycle set into motion
  - (Lee, Ogle, & Sapolsky, 2002)
Stress: the bad and the ugly

- Increased risk of
  - Heart disease
  - Diabetes
  - Hypertension
  - Drug abuse
  - Alcoholism
  - Depression
  - Anxiety disorders

Stress: The Bad and the Ugly

- Frequent, sustained stress hard-wires maladaptive responses
- Limbic brain receives permanent insult from cortisol
- Significant adversity early in life damages the "architecture of the developing brain"
  (National Scientific Council on the Developing Child, 2005)
Stress and the Developing Brain

- Toxic Stress can impair
  - emotional well being
  - early learning
  - exploration and curiosity
  - school readiness
  - school achievement

Protective Factors

- Presence of sensitive and responsive caregivers
- Secure attachment relationships
- High quality early care and education
- Peer acceptance
- Responsive environments
- Feelings of competence
Think again of the time when you felt you were stressed for a long period of time

Which, if any, of the protective factors were in place?

How do you think they helped you cope with the stress?
Magnitude of Stress Response

- Novelty of threat
- Unpredictable nature
- Threat to person or ego
- Sense of lack of control
  - (Guilliams & Edwards, 2010)
Poll

- “Raise your hand” if you think bosses experience higher chronic stress than employees
- “Raise your hand” if you think workers experience higher stress than bosses
Toxic Stress

- Pathological or toxic stress occurs:
  - Perceived lack of control
  - Experience of negative emotions
  - Resources are judged to be not effective or not available
  - Absence of supportive relationships
Stress and Temperament

- Variations in perception of stressful events and vulnerability to them
- Temperamental characteristics play large role in vulnerability to effect of stress
- Temperament must be considered in context of social relationships
  - (Gunnar & Quevedo, 2007)
Stress and Individuals with Disabilities

- Challenging behaviors may be maladaptive responses to stress
- May have difficulty anticipating what is coming up
- May have difficulty with state regulation
- Sleep disturbances
- Poor physical health
Stress and Individuals with Disabilities

- May have feelings of incompetence
- Learned helplessness
- Often perceive stress in more frequent, intense, and sustained manner (Lovallo, 1997)
- Unable to communicate to tell others about the stressor
  - Janssen, Schuengel, & Stolk (2002)
Stress and Individuals with Disabilities

- Frequent, sustained stress hard-wires maladaptive responses
- Limbic brain receives permanent insult from cortisol
- Degenerative cycle is in place
Implications of Physical Impairments

- May not be able to physically reach needed or desired items
- May not be able to physically escape from perceived threats
- May not be able to get physical exercise
Implications of Sensory Impairments

- Sensory impairments limit ability to orient to changes in stimuli
- Habituation-dishabituation
- Individual who cannot habituate is in constant state of threat
- Hyper or hypo response
Implications of Sensory Impairments

- May not hear or see threats approaching.
- People and things appear and disappear with little perceived reason.
- Threat to contingent learning.
- Contributes to learned helplessness.
- Disturbances to circadian rhythm.
Stress and Attachment

- If early relationships are reliably warm, they can buffer child from the affects of other stressors.
- Individuals who have secure relationships have more controlled stress hormone reaction when upset or frightened.
- Presence of sensitive responsive caregiver, can prevent elevated cortisol levels in toddlers.
Stress and Attachment

- Many threat to secure attachment between caregiver and child with severe multiple disabilities
  - Time spent in NICU units
  - Severe health problems
  - Low arousal levels- not enough time for attachment to occur
  - Hyper arousal- unable to cope with too much interaction
  - Misunderstood communication cues on both sides
Questions

Guilliams T. J. & Edward, L. (2010) Chronic stress and the HPA axis. The Standard; Point Institute of Neuraceutical Research, 9; 1-12


References

