MODELS OF STRESS

• Aims
  • To explore a variety of conceptualisations of the stress process
  • To examine how stress might influence health
  • To provide some criticism of these models

• Objectives
  • The student should be able to compare and contrast the relative strengths and weaknesses of different approach to understanding stress
Lay conceptualizations

- Stress is bad
- Stress make you ill (causality)
- Stress effects biology (causality & distinctiviness)
- Stress causes major disease
- Stress is not our fault (employers fault)
- Previously called – ‘nerves’ etc.
Scientific conceptualizations

• Definitions
  – Stimulus (e.g., a life event)
  – A response (e.g., strain)
  – An interaction
  – A transaction

• Objective or subjective
  – Are certain things just stressful or is it how they are perceived?
A scientific proof

- Scientific ‘proof’
- Control for recognised disease predictors (cholesterol, smoking, age, family history etc.)
- W, X, Y & Z (viral challenge study)
  - (W) Stress, (X) Mucus weight, viral replication, (Y) self-reported symptoms, (Z) IL-1β, IL-6, TNFα, cortisol, IgA(s)
- Time based, therefore need to add (T) to WXYZ model
- Examine interventions in clinically ill groups- can disease progress be slowed down.
A life events (stimulus based model)

• Definition
  – Objective = Any negative or positive ‘major event’ that leads to change (Holmes & Rahe, 1967)
  – Subjective = Control, unpleasantness, threat

• Minor events
  – Daily hassles (chronicity, duration, onset-offset)
  – May interact with major life events
General Adaptation syndrome (response based models)

Resistance To stress

Alarm | Resistance | Collapse

Normal adjustment

Exposure/Time
Implications of GAS

- Long term exposure is detrimental (but did coin the term eustress)
- All stressors lead to a similar physiological pattern of response
- No role of perception or appraisal
- Does not mention individual differences (but does add later the idea of conditional factors)
Interactions and transactions

- Interactions are moderators & transactions contain a temporal component (these are not mutually exclusive).
  - *Interaction demands exceed capacity, but this unfold over time*

- These models are based on appraisal mechanisms
Lazarus’s transactional model

- Events
- Personality
- Primary appraisal
- Secondary appraisal
- Coping
- Outcome
Appraisals

- Primary
  - Benign
  - Threat = anticipated harm
  - Loss = experience harm
  - Challenge = growth

- Secondary
  - Knowledge
  - Attributions
  - beliefs
Coping definitions

• Behaviours/cognitions following a ‘stressful encounter’ designed to help deal with the encounter

• These are defined independently of outcome success/failure

• However, there is also the idea of anticipatory or proactive coping
  – Trying to anticipate potential problems – sees active coping as better than avoidance or reappraisal
Coping structure

- Styles
  - Social support
  - Asking a friend for help

- Functions
  - Emotional focused
  - Problem focused
  - Direct action
  - denial

- Behaviours/cognitions
Coping and personality

• Coping can be defined as either state or trait
  • Traits: monitors and blunters

• Coping – Personality adjustment continuum
  • Coping traits maybe tapping basic dimensions of normal personality
    – NI-COPE, E-COPE & P-COPE

• Personality and coping states
  • Daily diaries find that personality and coping states are linked
Coping and positive mood/affect

- Positive affect is independent of negative affect
- Even within stress transactions people will report levels of positive mood.
- Positive affect is beneficial
  - Associated with creative problem solving, broadens attention, reduces negative physiological aspects of stress
- Coping and positive affect
  - Positive reappraisal, infusing ordinary events with positive meaning.
Coping: critiques

• No one-to-one correspondence between styles and functions
  • E.g., social support

• Questionnaire measures
  • Trait like
  • Poor reliability and validity
  • Ambiguous items
  • Confounded with health
Karasek’ model of work stress

Demands

Low

High

Control

Low

Low strain’ jobs

‘Passive’ jobs

‘High strain’ jobs

‘Active’ jobs

High

Low strain’ jobs

‘Passive’ jobs

‘High strain’ jobs

‘Active’ jobs
Job demands and health (Rick et al, 2003).

<table>
<thead>
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<th></th>
<th>N of studies</th>
<th>Strength</th>
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<tbody>
<tr>
<td>Workload</td>
<td>24</td>
<td>Mixed</td>
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<tr>
<td>Work Scheduling</td>
<td>9</td>
<td>Negative impact of shift work and long hour</td>
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<tr>
<td>Work design</td>
<td>4</td>
<td>No improvements in health</td>
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<tr>
<td>Physical environment</td>
<td>7</td>
<td>No relationship</td>
</tr>
<tr>
<td>Other demands</td>
<td>17</td>
<td>Generally negative</td>
</tr>
<tr>
<td>Skill discretion</td>
<td>8</td>
<td>No consistent effect</td>
</tr>
<tr>
<td>Decision authority</td>
<td>19</td>
<td>Positive effect</td>
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<tr>
<td>Other forms of control</td>
<td>21</td>
<td>Mixed</td>
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<tr>
<td>Support</td>
<td>18</td>
<td>Negative effect</td>
</tr>
<tr>
<td>Bullying</td>
<td>4</td>
<td>Negative effect</td>
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Warr’s vitamin model

- A & D – too much and too little of these are bad
  - Control
  - Skill level
  - External demands
  - Variety
  - Clarity
  - Interpersonal contact

- C & E – too little of these are bad
  - Money
  - Valued social position
  - Physical security
Karasek – an evaluation

• Very simplistic
• Broad constructs
• Predicted interaction effect rarely seen
• Uses a ‘minus’ term to calculate the interaction
• Static
• Job ‘types’ are confounded with SES
• Extended to include social support
• Added in social support (High Support + Demands + Control = learning)
Effort-control model (Siegrist, 1996)

• Imbalance between effort and rewards (e.g., money, esteem, career opportunities).

• Based more in organizational theories (e.g., organizational justice theory).
Control-demand versus effort reward

• Recent data from cohort studies shows that effort-demand imbalance predicts both self report somatic symptoms and CHD.

• Control adds to the prediction of somatic symptoms

• Demand add to the prediction of CHD.
Characterisation of interventions (cf. Cox.1983)

<table>
<thead>
<tr>
<th></th>
<th>Individual</th>
<th>Organizational</th>
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<tbody>
<tr>
<td><strong>Primary</strong></td>
<td>Reduce the risk factors or change the nature of the stressor</td>
<td>Remove the hazard or reduce its exposure to the employee</td>
</tr>
<tr>
<td><strong>Secondary</strong></td>
<td>Alter the way the individual responded to a stressor</td>
<td>Improve the organisations ability to recognise and respond to stress problems</td>
</tr>
<tr>
<td><strong>Tertiary</strong></td>
<td>Heal the traumatised</td>
<td>Health employees cope with stress at work</td>
</tr>
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Individual or organizational

- Reynolds (1997)
  - Counselling vs organizational change vs control
  - Both immediate and long term benefits seen for the individual level analysis

  - Meta-analyses
    - Socio-technical interventions (e.g., workload) general positive changes
    - Psycho-social interventions gave a mixed picture
The biological system

Stress

Cortical processing

Limbic system

Hypothalamus

Pituitary

Adrenal glands
  Cortex
  Medulla

ACTH
B-end

Cortisol

Adrenaline
Neuro-science of stress

Sensory input → Thalamus

Hippocampus

Insula

Amygdala

A1 ... An

Central nucleus

Hypothalamus

HACER

PVN

Pons & Medulla

LocCeruleus

Spinal cord

Pituitary

Cortisol

Sensory cortex

Primary projections

Association areas

Orbital & Frontal poles