

Psychological Stress and Health

Sheldon Cohen
Carnegie Mellon University

WHAT IS STRESS?

Depends who you ask.....

- **Epidemiological—Objective Event**

 - Requires change/adaptation

 - Consensual negative impact

 - Demand/Control

- **Psychological—Perceived Threat**

 - Demands exceed ability to cope

 - Experience of stress

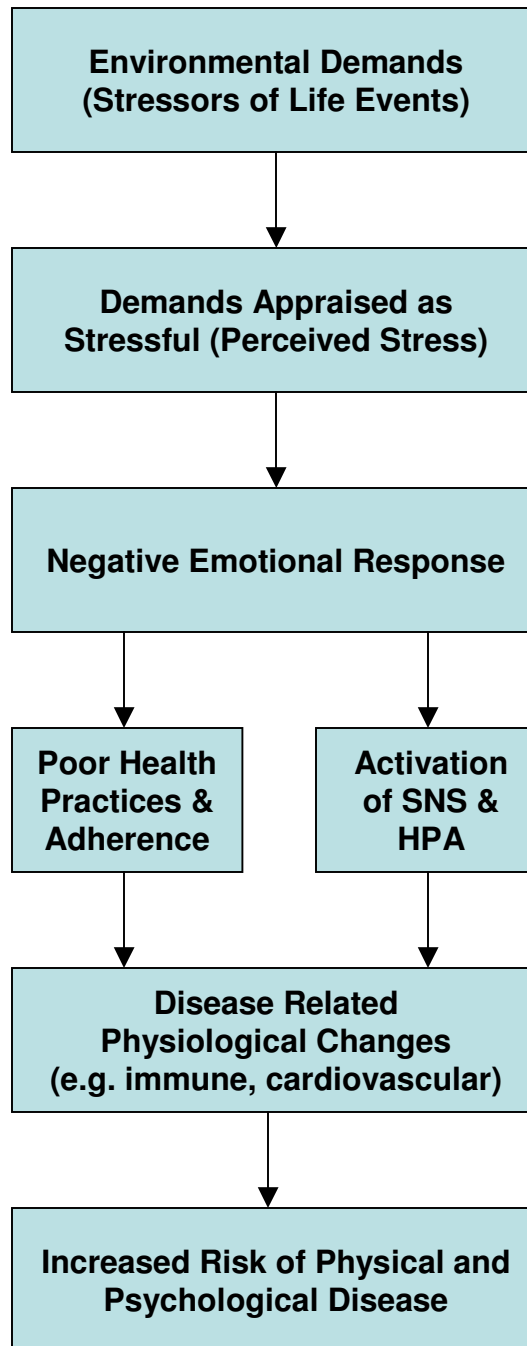
- **Biological—SNS Activation (or vagal withdrawal)**

 - or HPA Activation

 - e.g., BP, HR, Skin Conductance,

 - HR variability, Epinephrine, Norepinephrine

 - and Cortisol



Common Measures of Objective Events: Stressful Life Events

1 **Nonspecific**

- 1 Major Stressful Life Events Scales
- 1 Life Event Interviews (e.g., LEDS, SEPRATE)

1 **Specific Events**

- 1 Bereavement
- 1 Divorce
- 1 Natural Disasters
- 1 Caregiving
- 1 Job Loss
- 1 Job Classification (demand/control)

EXAMPLE: Major Stressful Life Events Scales (Item Examples)

Death of a spouse or partner
Death of a child
Separation or divorce
Serious problems at work or school
Arrested or involved in court case
Being robbed
Natural disaster or house fire
Involvement in a serious accident
Fired at work
Business Readjustment

What is Stress Appraisal?

Appraisal depends of stimulus situation & psychological characteristics of individual

Primary Appraisal– *Is this a threat?*

Threat (potential for harm)

Harm/loss (damage done)

Challenge (opportunity for growth, mastery, gain)

Secondary Appraisal-- *Can I cope with it?*

Problem-focused coping

Emotional-focused coping

Common Measures of Perceived Stress

1 **Global Perceived Stress**

- 1 Demand/Coping (control)
- 1 Experiential (negative impact, feel stressed)

1 **Domain Specific**

- 1 **Work Stress**
 - 1 Experiential
 - 1 Demand/Control
 - 1 Effort/Reward
- 1 **Marital or Family Stress**

EXAMPLE: Perceived Stress Scale

- ⌋ How often felt nervous and stressed
- ⌋ How often felt on top of things
- ⌋ How often felt unable to control things
- ⌋ How often felt that your demands exceed your ability to cope

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). *Journal of Health and Social Behavior*, 24, 385-396.

EXAMPLE: Job Strain Model

(perceptions of demand/decision latitude)

Persons who perceive that they work in environments that involve **high demand and allow little latitude or flexibility to meet those demands** may develop job strain.

Job Demands

Is your job hectic?

Is your job psychologically demanding?

Decision Latitude

Could you make at least one private phone call about 10 minutes or longer during working hours?

Could you receive a private visitor for about 10 minutes during working hours?

Do you have control over how to complete your work?

When to complete work?

Common Measures of Negative Affect

- ⌞ Anxiety, Depression, Anger
- ⌞ Undifferentiated Negative Affect

Is trait affect chronic stress or dispositional?

EXAMPLE: Negative Affect (POMS)

Sad

Depressed

Unhappy

On-edge

Nervous

Tense

Hostile

Resentful

Angry

Maybe undifferentiated affect

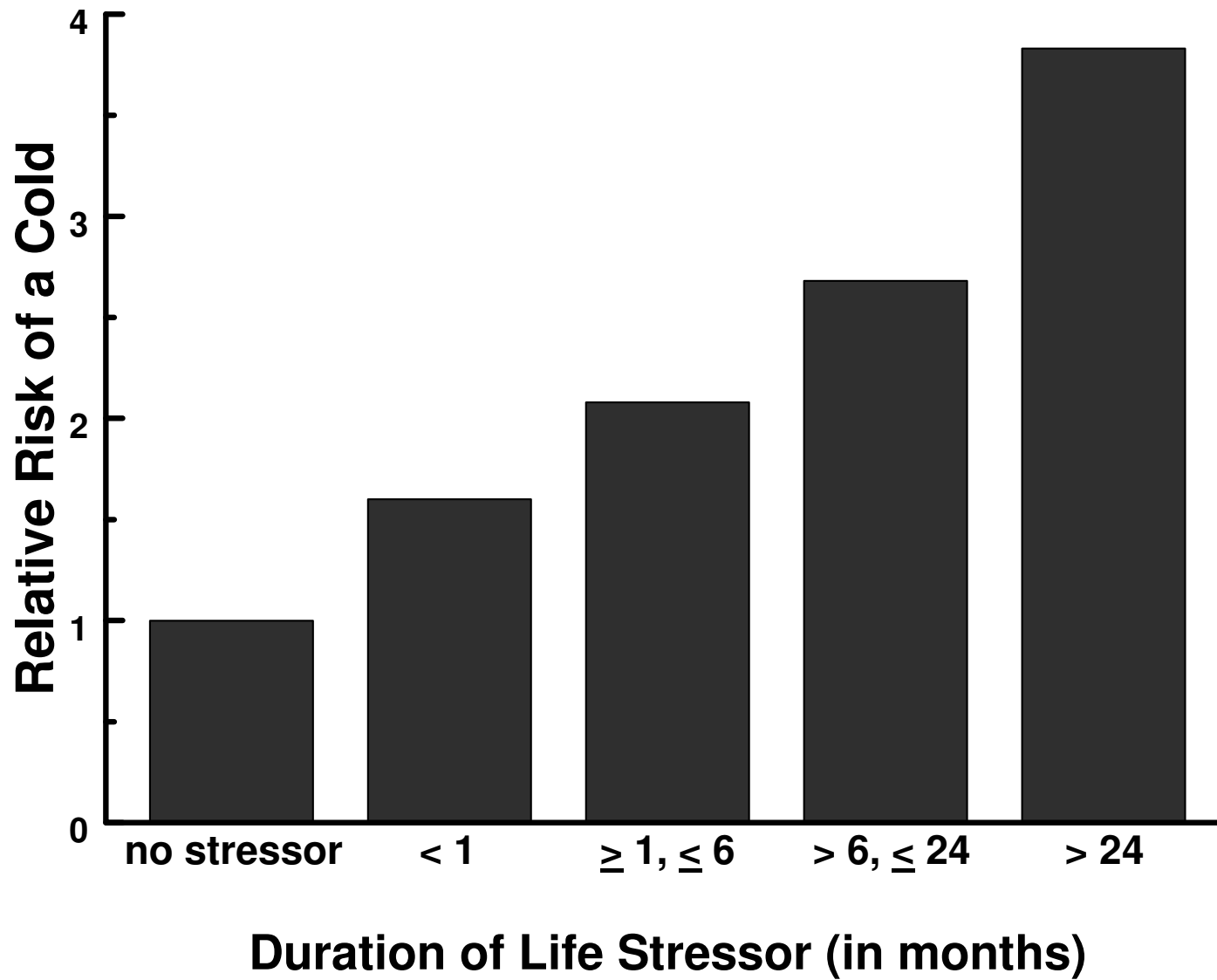


Acute versus Chronic Stress

- *No agreed upon interval* at which an acute event becomes chronic
- Hypothesis 1: the longer the stressful experience the greater the health risk
- Hypothesis 2: acute stress can trigger disease events among persons with underlying disease (e.g., asthma, CAD)
- Hypothesis 3: acute stress is most likely to trigger events in the context of a chronic stressor



Does the **duration**
of the stressor matter?



Cohen et al. (Health Psychology, 1998)

How Many of Us Get Hurt by Stress?

1 Most people adapt,
most of the time

We don't know how much of the slack in prediction is due to:

(a) *buffering/modifiers*, or

(b) *imperfect measurement of initiating circumstances.*

What is the evidence?

- 1 Depression
- 1 CHD

- 1 HIV/AIDS
- 1 Infectious Diseases
- 1 Wound Healing
- 1 Rheumatoid Arthritis
- 1 Asthma

Psychological Stress and Depression

- 1 Major life events occur 50-80% of the time within 3-6 months of onset (control comparisons are about 20-30%).
- 1 Approximately 20-25% of people with major stressful events break down with depression.
- 1 Loss of close others is a particularly potent stressful event in triggering major depression.

Psychological Stress and CHD Risk: Job Stress

50% increase in CVD risk associated with high levels of work stress

When work stress is defined as:

- *low control* at work, particularly when coupled with high levels of *work demand*
- The perception of *organizational injustice*
- *An imbalance between the effort people put into work and the rewards they gain*

(Hemingway & Marmot, *BMJ* 1999; Kivimaki et al., *Scand J Work Environment Health* 2006; Rozansky et al. *Circulation*, 1999)

Psychological Stress and CHD Risk: Acute Stress

Increasing evidence of acute stress triggering clinical events

(MI, Cardiac arrhythmia, sudden death)

For example: 9/11, Northridge earth quake, SCUD Missile attacks, Self-reported negative emotions (anger) in ambulatory studies

Long-term CVD risk is increased among those experiencing traumatic events (e.g., loss of a child) and emotional, physical or sexual abuse.

(...Krantz & McCeney, *Ann Rev Psychol* 2002; Everson-Rose & Lewis. *Ann Rev Public Health*, 2005)



Who Gets Hurt by Stress? Stress-Buffers or Vulnerability Factors

Some Proposed Buffers

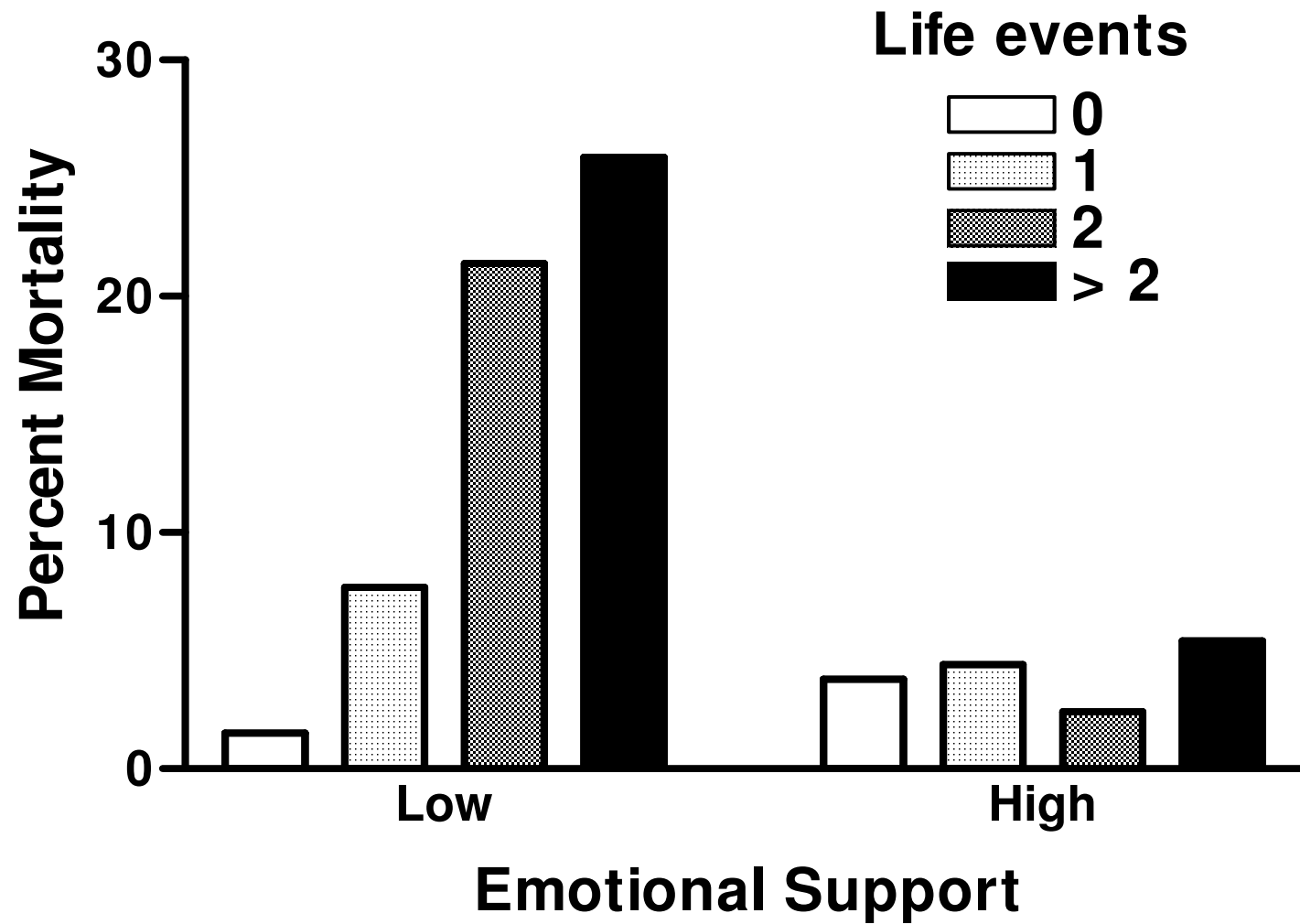
- ⌊ Social Support (have people who can provide resources when under stress)
- ⌊ Physical (health & stamina)
- ⌊ Tangible Resources (money)
- ⌊ Psychological Resources (self-efficacy, feelings of mastery/control, self-esteem)
- ⌊ Institutional, Cultural & Political (agencies, social groups)

S. Folkman et al. (1991) In Eckenrode (ed), *The social context of coping*.

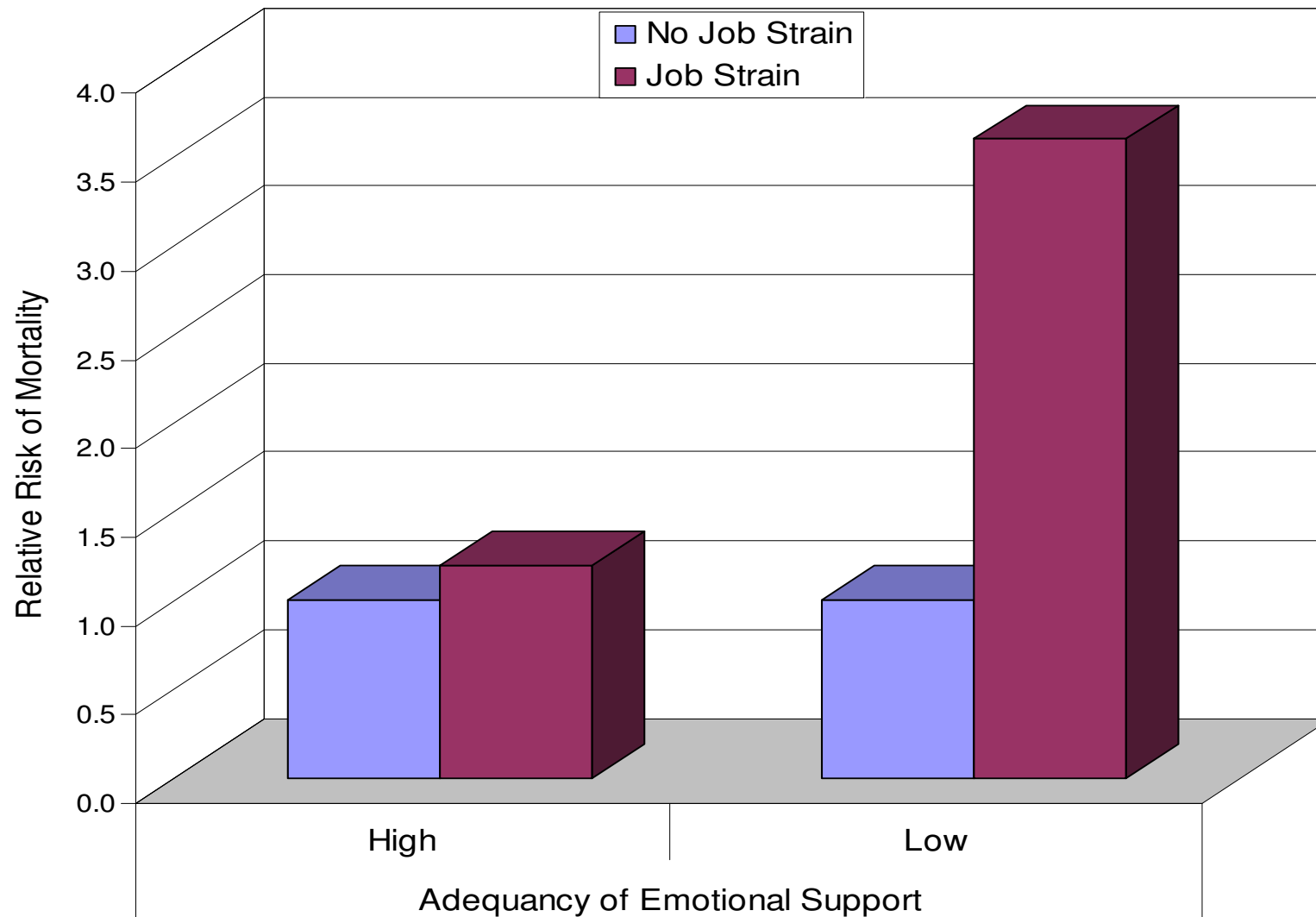


**Examples of Social
Support/Stress-Buffering with
HARD DISEASE OUTCOMES**

Life Events, Emotional Support and 7-yr Mortality in Swedish Men



Job Strain, Adequacy of Emotional Support and Risk for Mortality in Elderly Swedish Men



Falk et al., *Am J Public Health*, 1992, 82, 1136-139.

Summary: Buffering/Vulnerability

- 1 It is a diverse literature (many possible buffers) and it is not (to my knowledge) currently reviewed.
- 1 Most studies of stress and health do not test for buffering or provide appropriate tests

Stress & Health: Some Final Issues

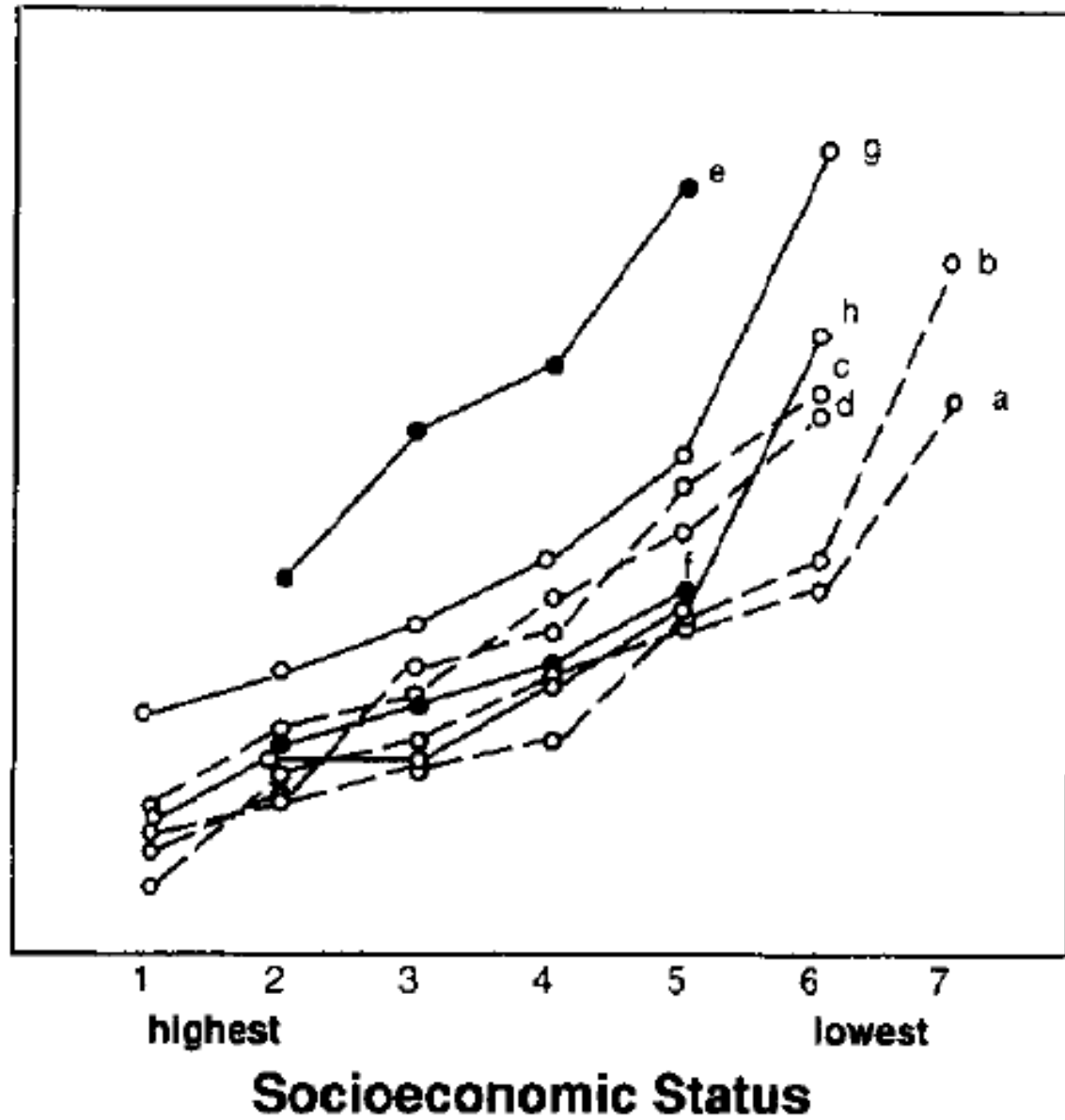
- 1 Some impressive demonstrations of associations between stress and disease.
- 1 Hint about the role of vulnerability factors/especially social support
- 1 Interpretable literatures limited to few major diseases

Some Issues (continued)

- 1 A lack of studies addressing behavioral and physiological mediators accounting for links between stress and disease
- 1 Limited work defining important parameters of stressful events or perceived stress
 - 1 Types of Stressors
 - 1 Control and Predictability of Stressors
 - 1 Stressor Duration

Mortality Rate by Socioeconomic Status Level

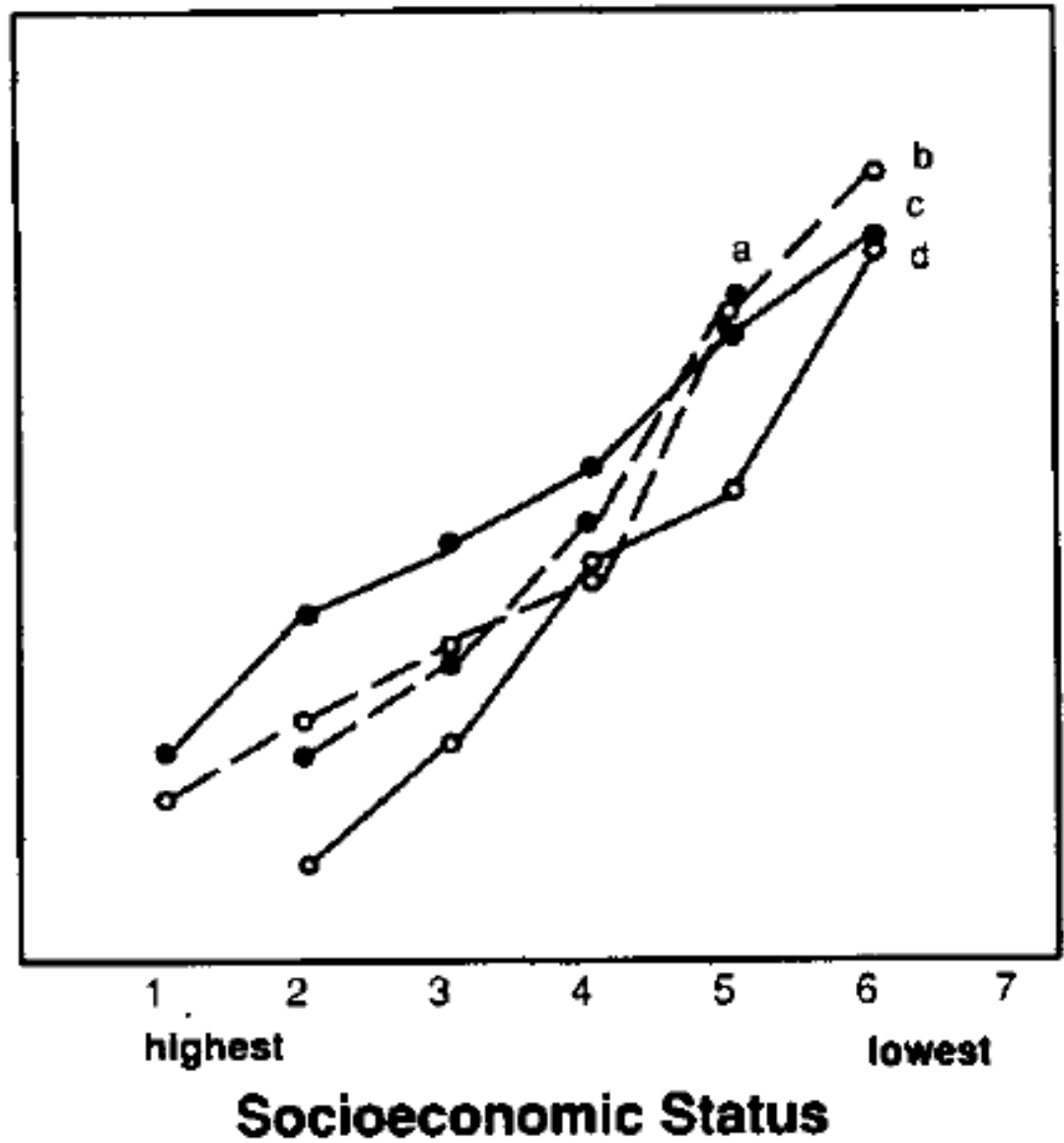
(a-d)	(e,f)	(g,h)
Std mortality ratio	Annual death rate	Infant mortality
○—○	●—●	○—○
1.6	50	30
1.4	40	25
1.2	30	20
1.0	20	15
.8	10	10

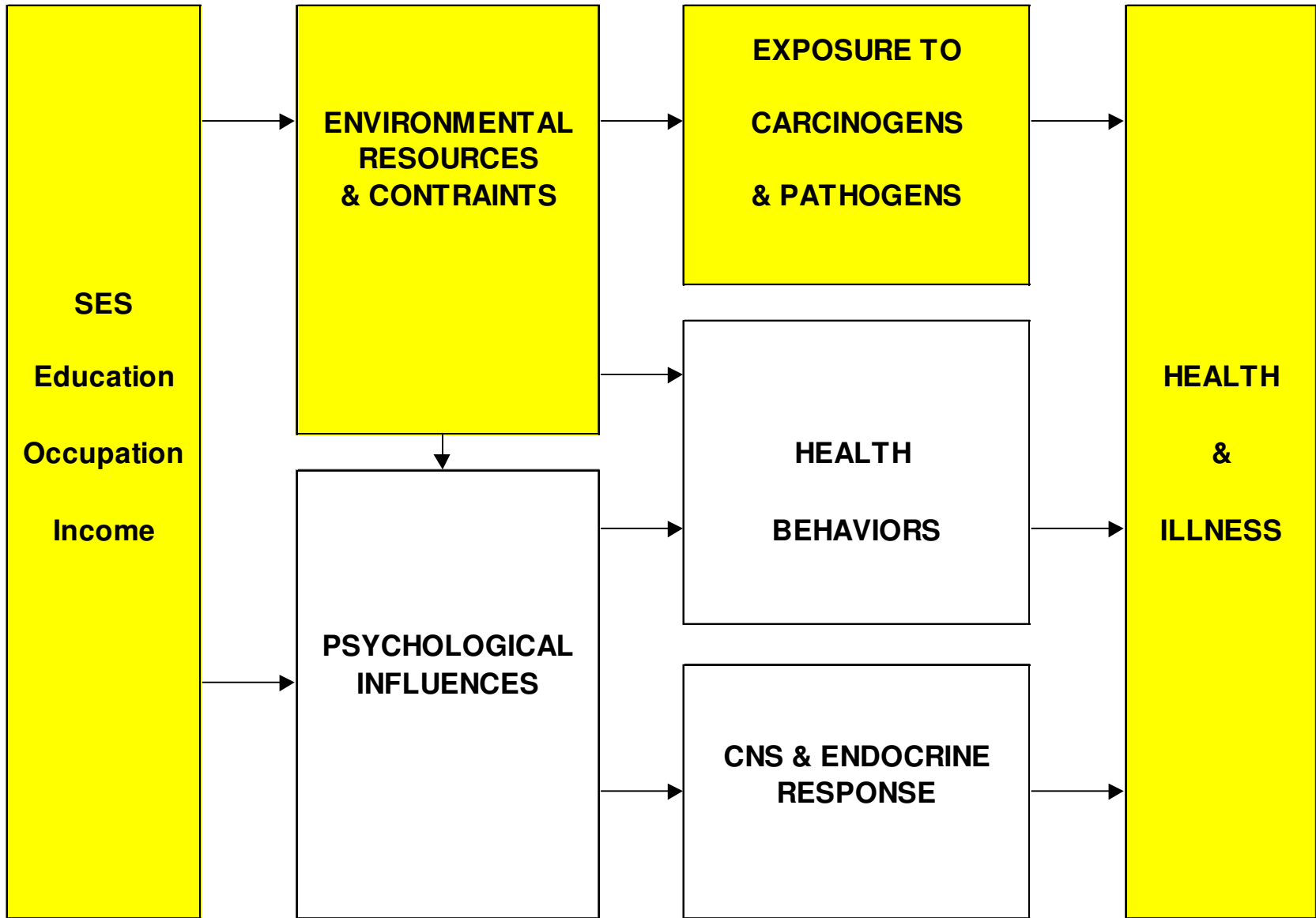


Morbidity Rate by Socioeconomic Status Level

(a) Osteo-arthriti
 (b) Chronic disease
 (c) Hyper-tension
 (d) Cervical cancer

25	150	16	30
20	125	14	25
15	100	12	20
10	75	10	15
5	50	8	10





THE END

“Stressed is just desserts spelled
backwards”