

Psychological Stress and Health

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WHAT IS STRESS?

Depends who you ask.....

- **Epidemiological—Objective Event**

 - Requires change/adaptation

 - 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

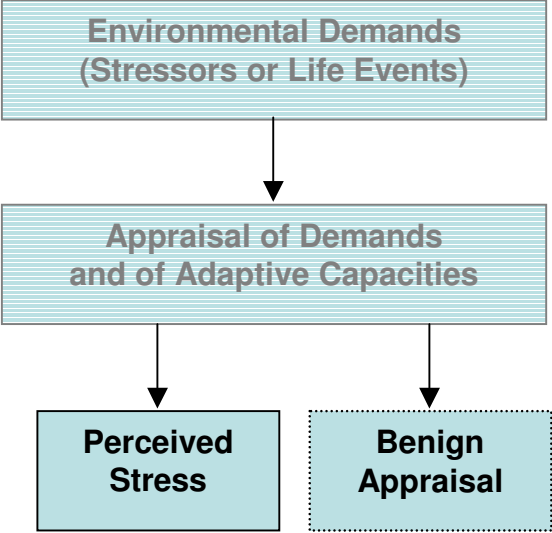
 - Cortisol

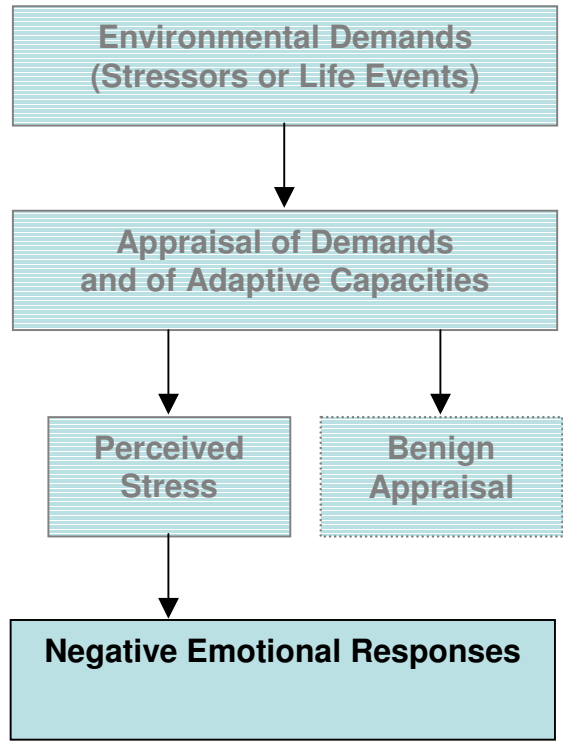
**Environmental Demands
(Stressors or Life Events)**

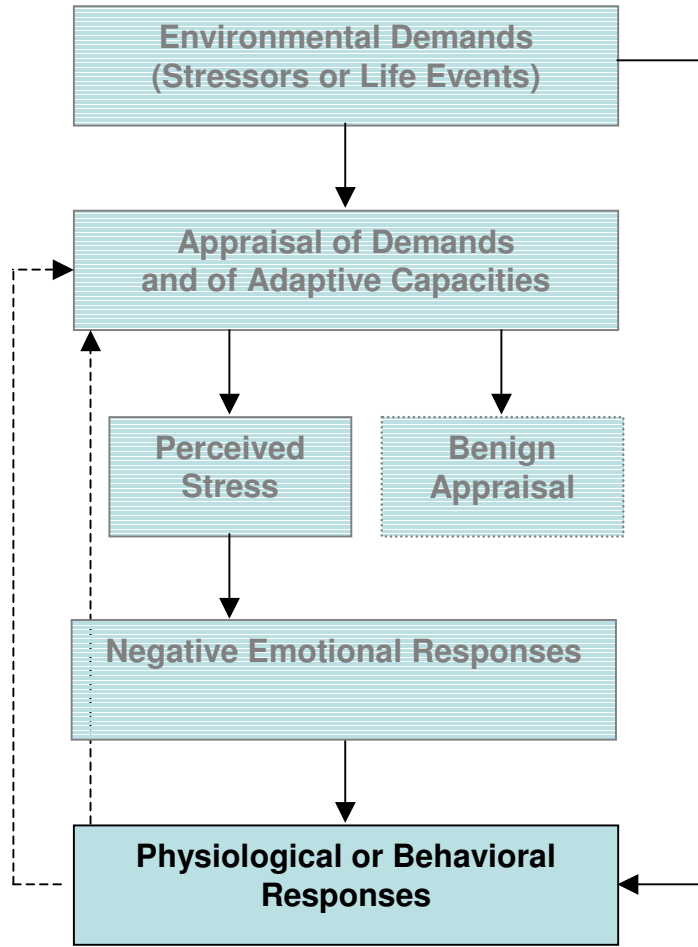
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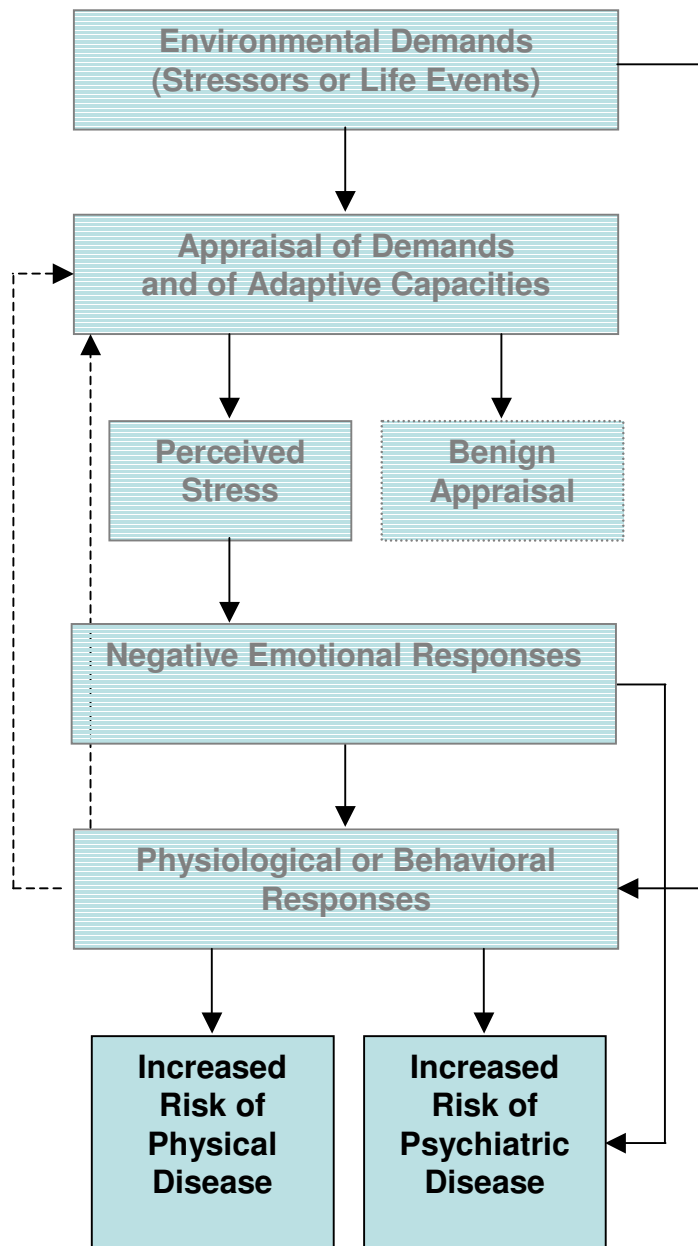


**Appraisal of Demands
and of Adaptive Capacities**





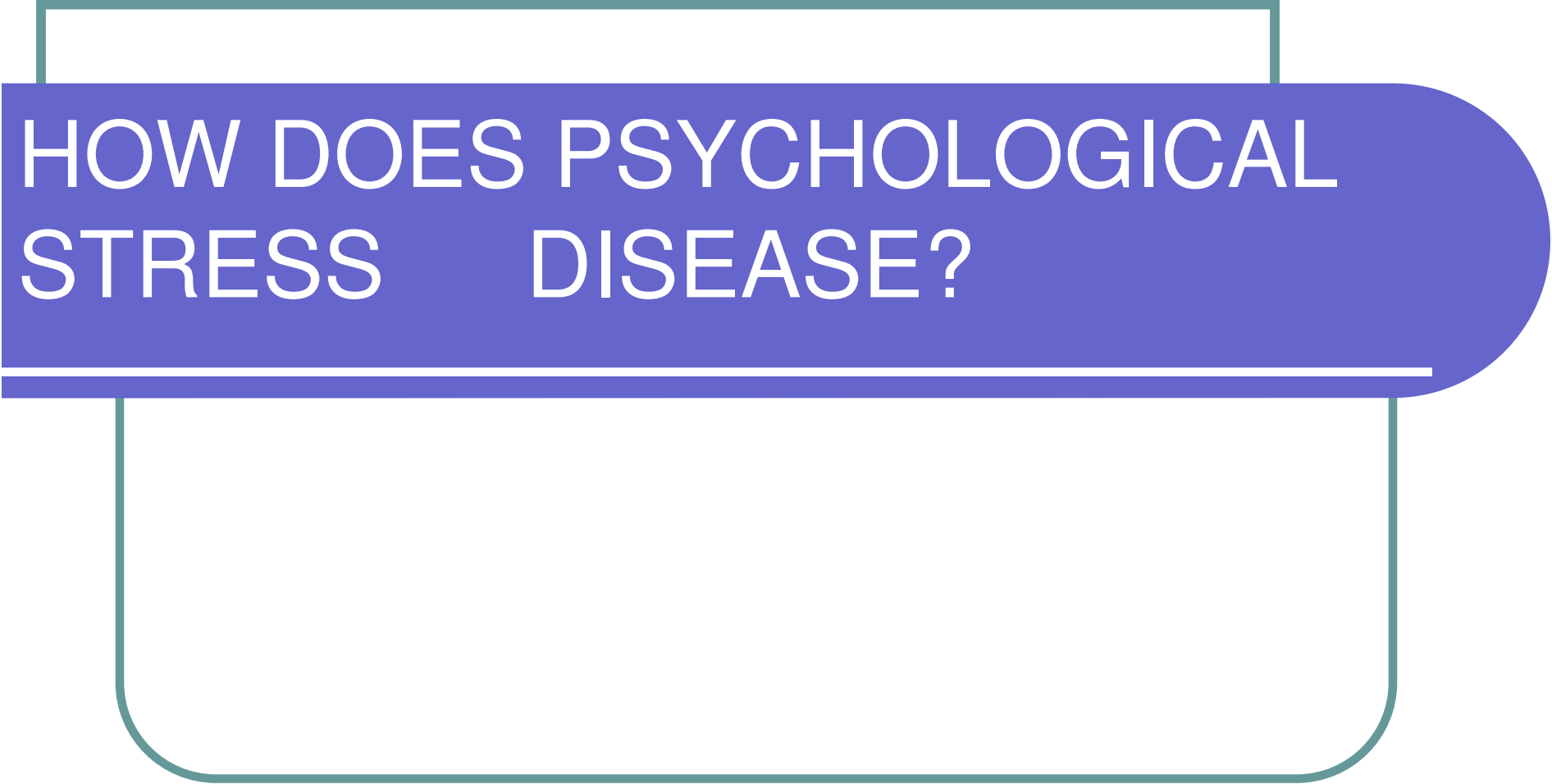




Cohen, Kessler & Gordon (1995)

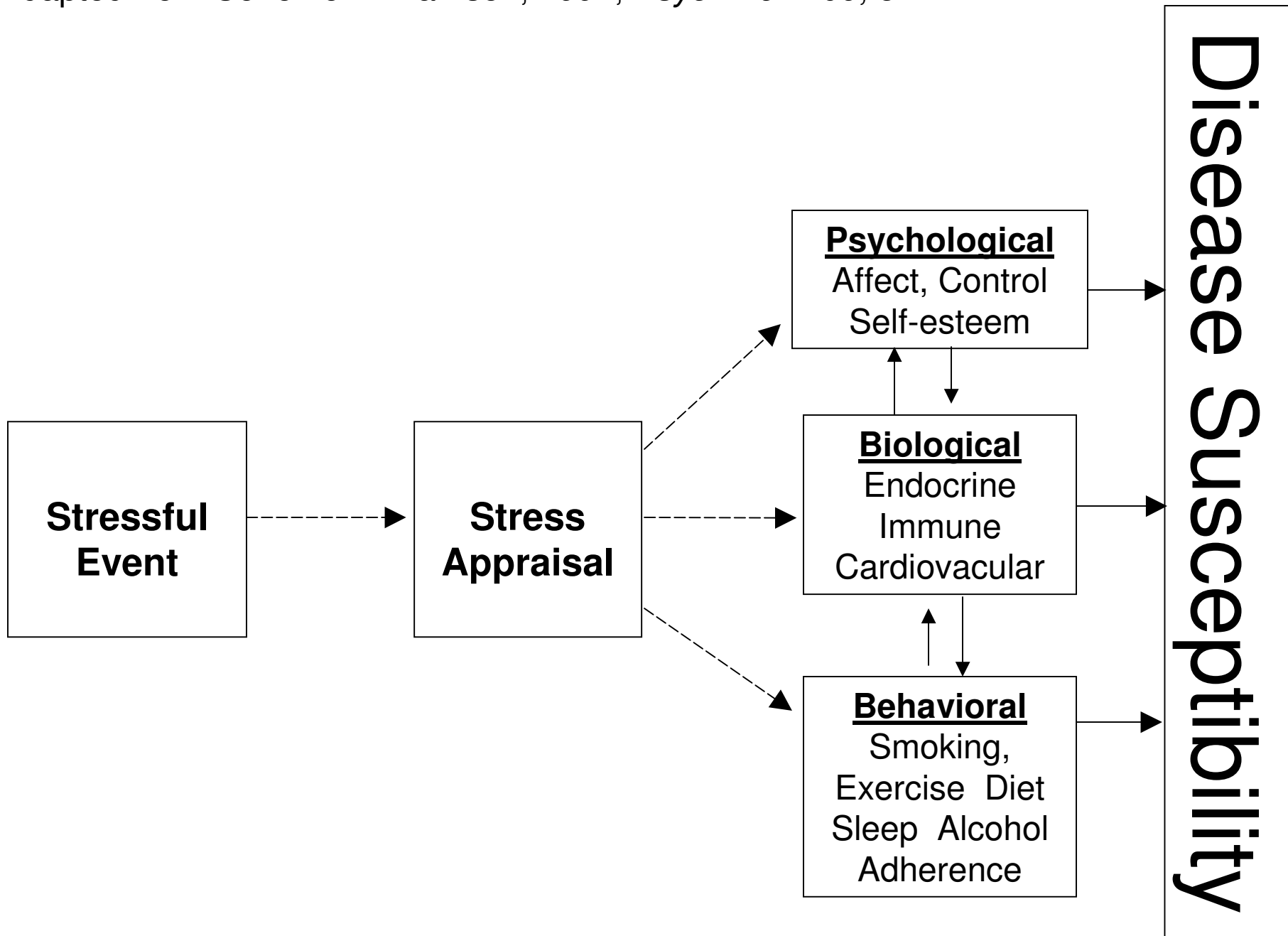
Psychological Stress is NOT...

- ⌊ Clinical depression, anxiety disorders or PTSD
- ⌊ Personality characteristics such as hostility, extraversion, neuroticism



HOW DOES PSYCHOLOGICAL
STRESS DISEASE?

Adapted from Cohen & Williamson, 1991, *Psych Bull* 109, 5-24.



- Alters physiological functioning
(either direct effects on tissue or impairs the body's defenses against disease)
- Is correlated with physical deprivation or exposures
- Changes health behaviors/alters adherence to medical regimens
- Increased care seeking and illness behavior

Common Measures of Stressful Life Events

1 **Nonspecific**

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

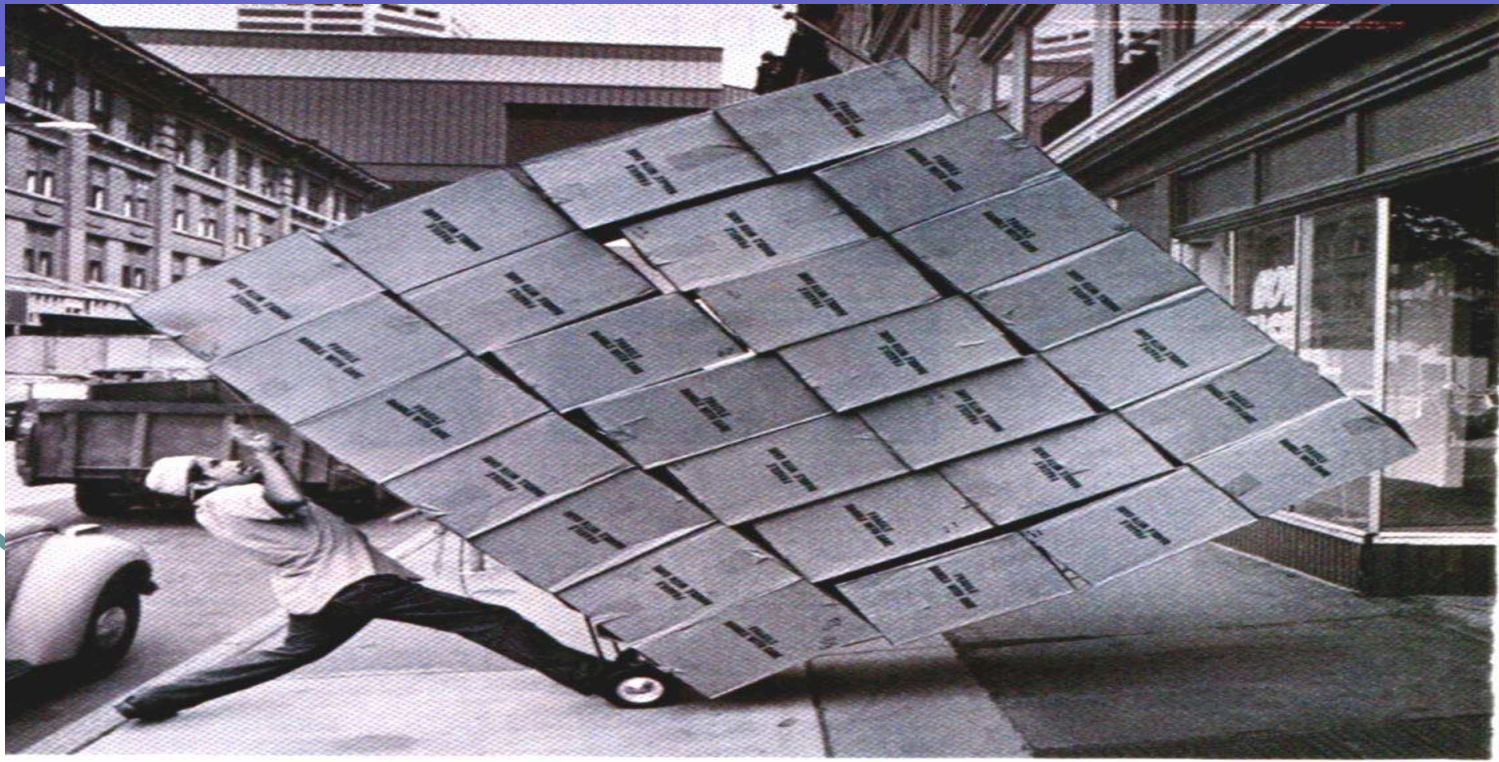
1 **Specific Events**

- 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

Psychological (appraised) Stress



Lazarus/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
- 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

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

EXAMPLE: Job Strain Model (demand/decision latitude)

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

Job Demands

Was your job hectic?

Was 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?

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)



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.

Different Within Disease Outcomes

- ┆ Healthy Subjects
 - ┆ Onset
- ┆ Subjects with Disease
 - ┆ Progression/severity
 - ┆ Recovery
 - ┆ Recurrence

What is the evidence?

- 1 Depression
- 1 CHD
- 1 Infectious Diseases

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.
- 1 The association between early onsets and major life stress changes over repeated depressive episodes.

Psychological Stress and CHD Risk: Job Stress

- o Multiple measures of job stress have been associated with CHD Risk in healthy populations.
- o People with low control at work are at increased CHD risk, particularly when coupled with high levels of work demand.
- o* Low control and high demands have also been linked with high blood pressure (essential hypertension).
- o An imbalance between the effort people put into work and the rewards they gain may also contribute to risk.

(Hemingway & Marmot, *BMJ* 1999; Rozansky et al. *Circulation*, 1999; ...)

Psychological Stress and CHD Risk: Acute Stress

- 1 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)

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

Psychological Stress and CHD Risk: Depression & Anxiety

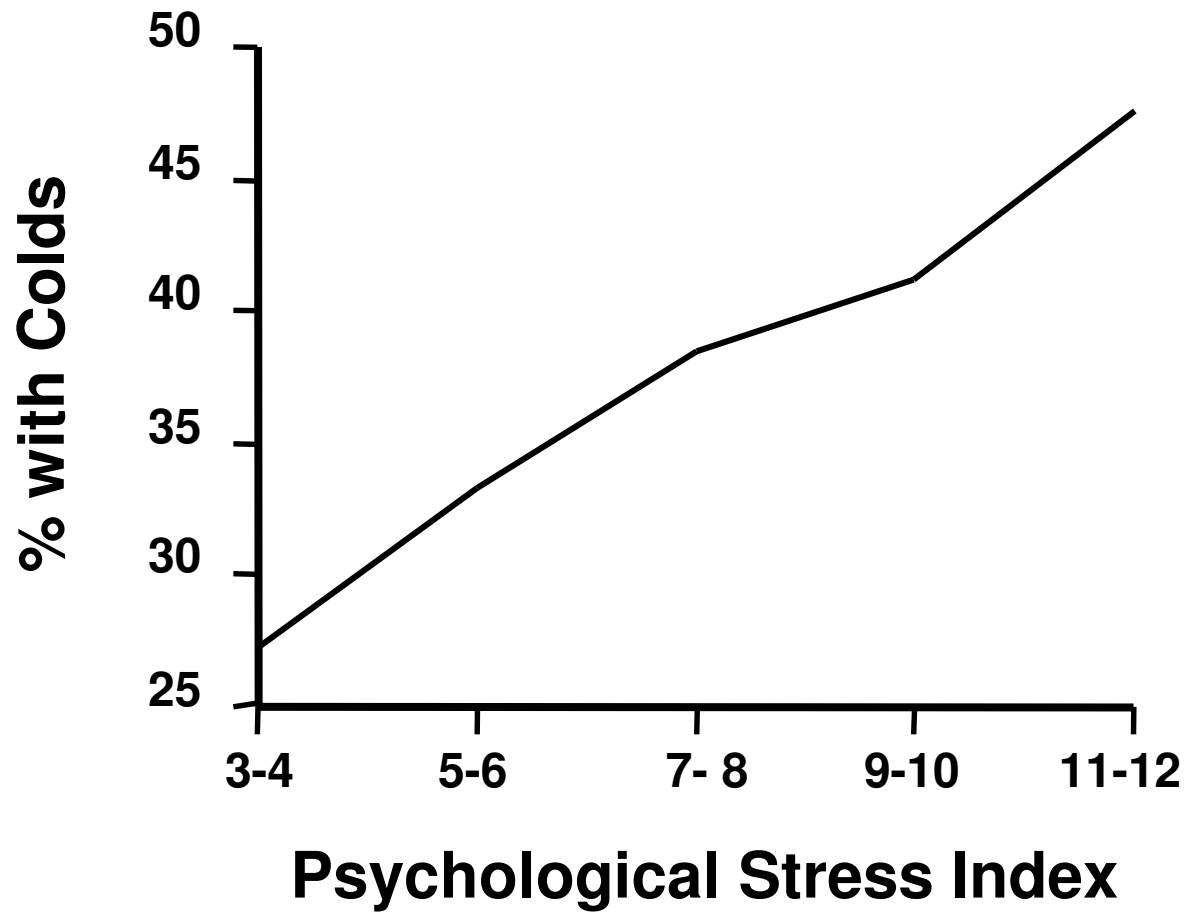
- 1 Depressive symptoms and future CHD and in progression of CHD has been documented in multiple studies
- 1 This effect is stronger when CHD is measured as angina, but studies in patients of death and documented MI also are supportive.
- 1 Reasonable evidence that anxiety predicts sudden cardiac death in men.
- 1 Depression, anxiety and anger may represent a general (nonspecific) disposition that puts persons at risk for heart disease.

Kubzansky & Kawachi in *Social Epidemiology*, 2000; Suls & Bunde, *Psychol Bull.* 2005 ; Hemingway & Marmot, *BMJ* 1999; Rozansky et al. *Circulation*,1999

Psychological Stress and Infectious Disease: ACUTE URIs

- 1 Epidemiology and viral-challenge studies: greater risk for those with major life events or perceived stress.
- 1 Some evidence that the longer stressors last the greater the risk.
- 1 Social conflicts with friends and family & fellow workers and un- and under-employment are potent stressors

Miller, G. & Cohen, S. (2005). Infectious disease and PNI. In K. Vedhara & M. Irwin (eds.), *Human PNI*. Oxford Press.



Cohen, Tyrrell & Smith, *New England Journal of Medicine*, 1991

Psychological Stress and Infectious Disease: LATENT INFECTIONS

1 Oral & Genital Herpes

Persistent but not short-term stressors are associated with recurrence.

Effects may be mediated by respiratory infections

Miller, G. & Cohen, S. (2005). Infectious disease and PNI. In K. Vedhara & M. Irwin (eds.), Human PNI. Oxford Press.

Psychological Stress and Infectious Disease: LATENT INFECTIONS

1 **HIV/AIDS**

Few studies of psychological stress and onset of AIDS in HIV+

Stressful life events have been associated with disease progression and survival in HIV+ individuals

Some evidence for bereavement and depressed affect and disease progression and mortality in HIV+

Pereira, D. B. & Penedo, F. J. (2005). PNI and chronic viral infection: HIV infection. In K. Vedhara & M. Irwin (eds.), Human PNI. Oxford Press.



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

Demographic Buffers

- 1 Age
- 1 Socioeconomic Status
- 1 Race/Ethnicity

Personality Buffers

- 1 **Composite indices of Stress-Protective Resources**
 - 1 Psychosocial Assets
 - 1 Hardiness (control, commitment & challenge)

- 1 **Interpersonal Factors**
 - 1 Social skills
 - 1 Social interests
 - 1 Anomie (alienation)

Personality Buffers

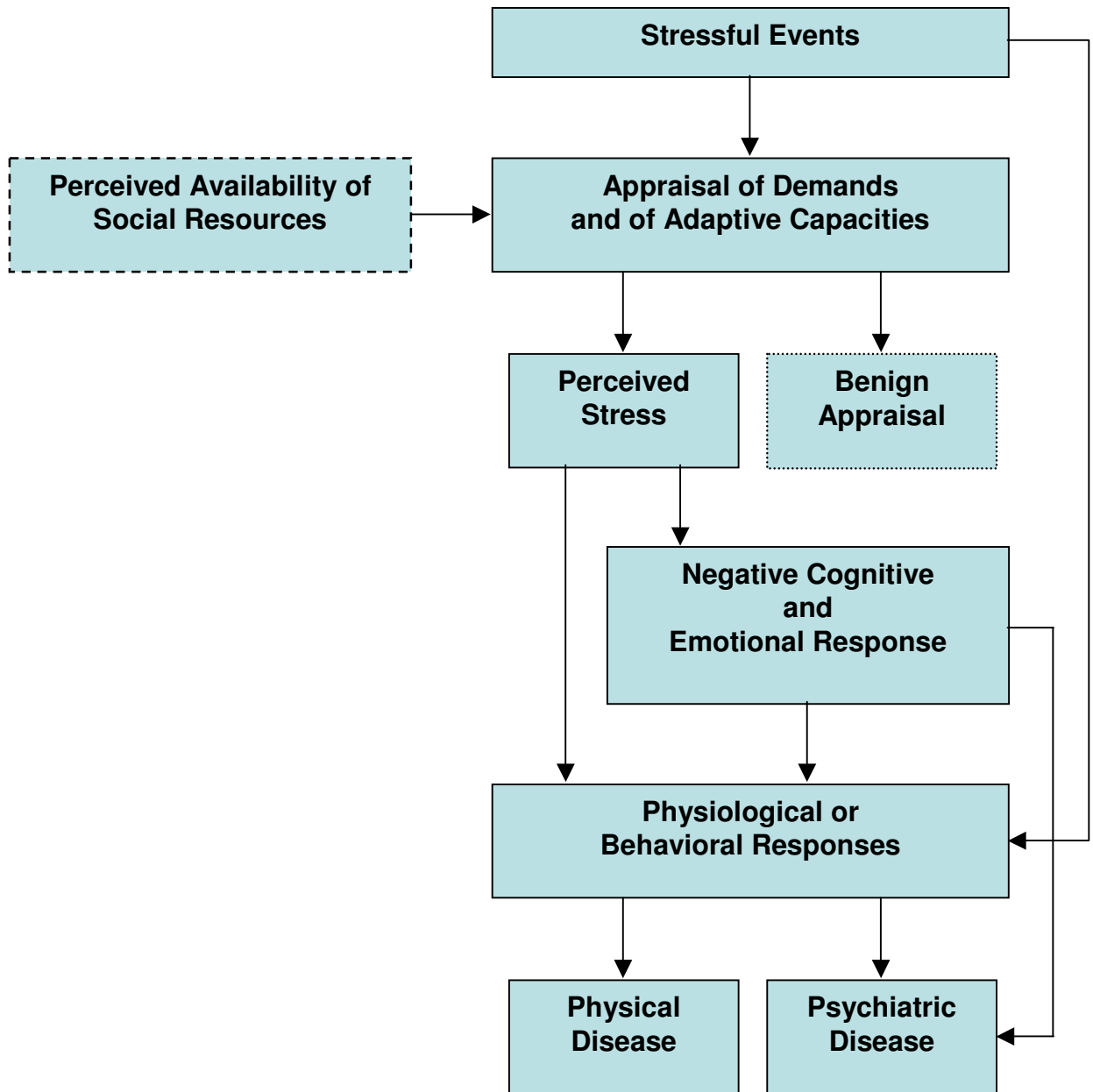
1 **Intrapersonal Factors**

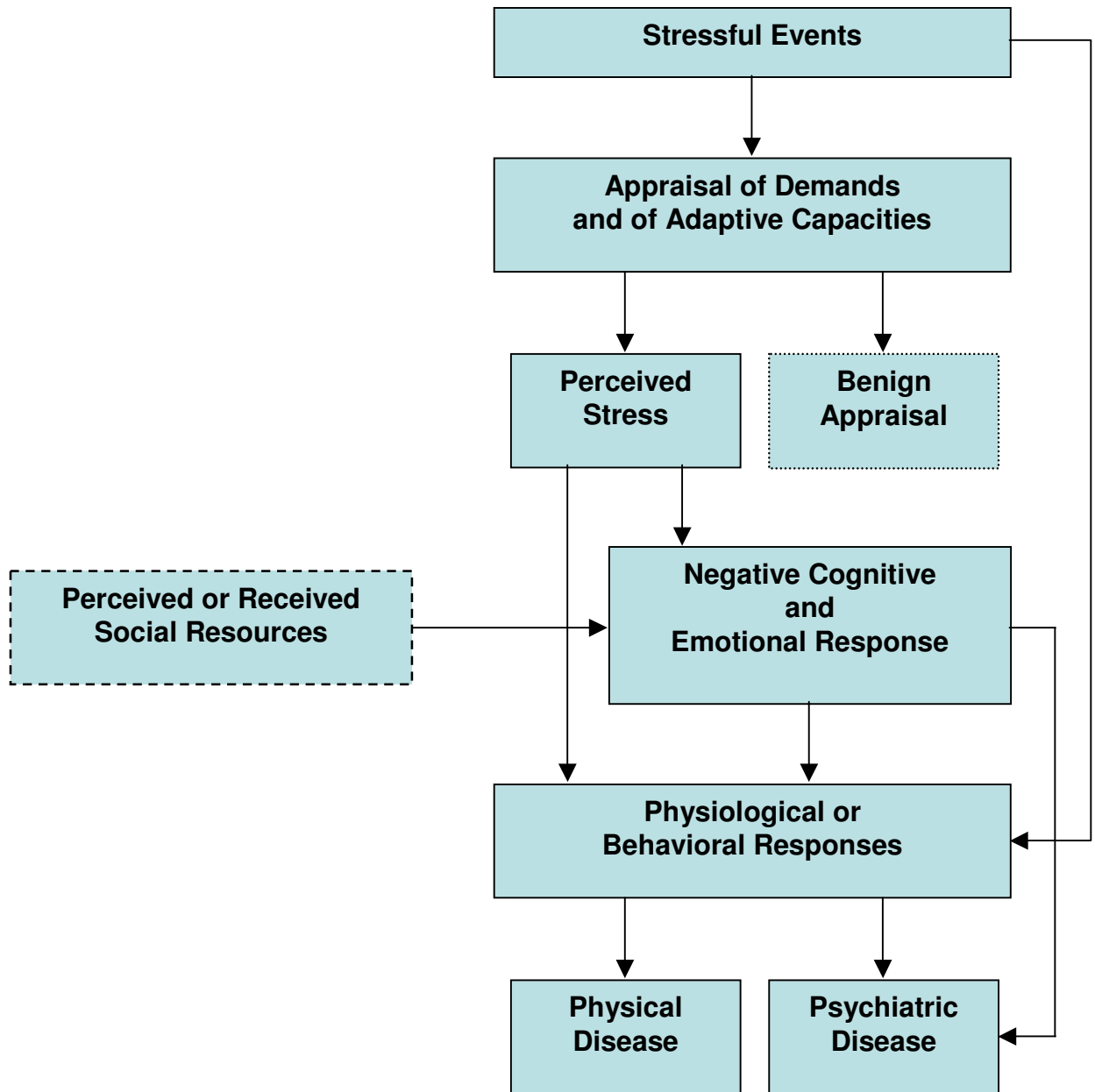
- 1 Generalized Expectancies of Control
- 1 Type A Behavior Pattern
- 1 Coping Styles
- 1 Coping Flexibility and Complexity
- 1 Arousal and Sensation Seeking
- 1 Self-esteem
- 1 Private Self-Consciousness
- 1 Stress-Reactivity

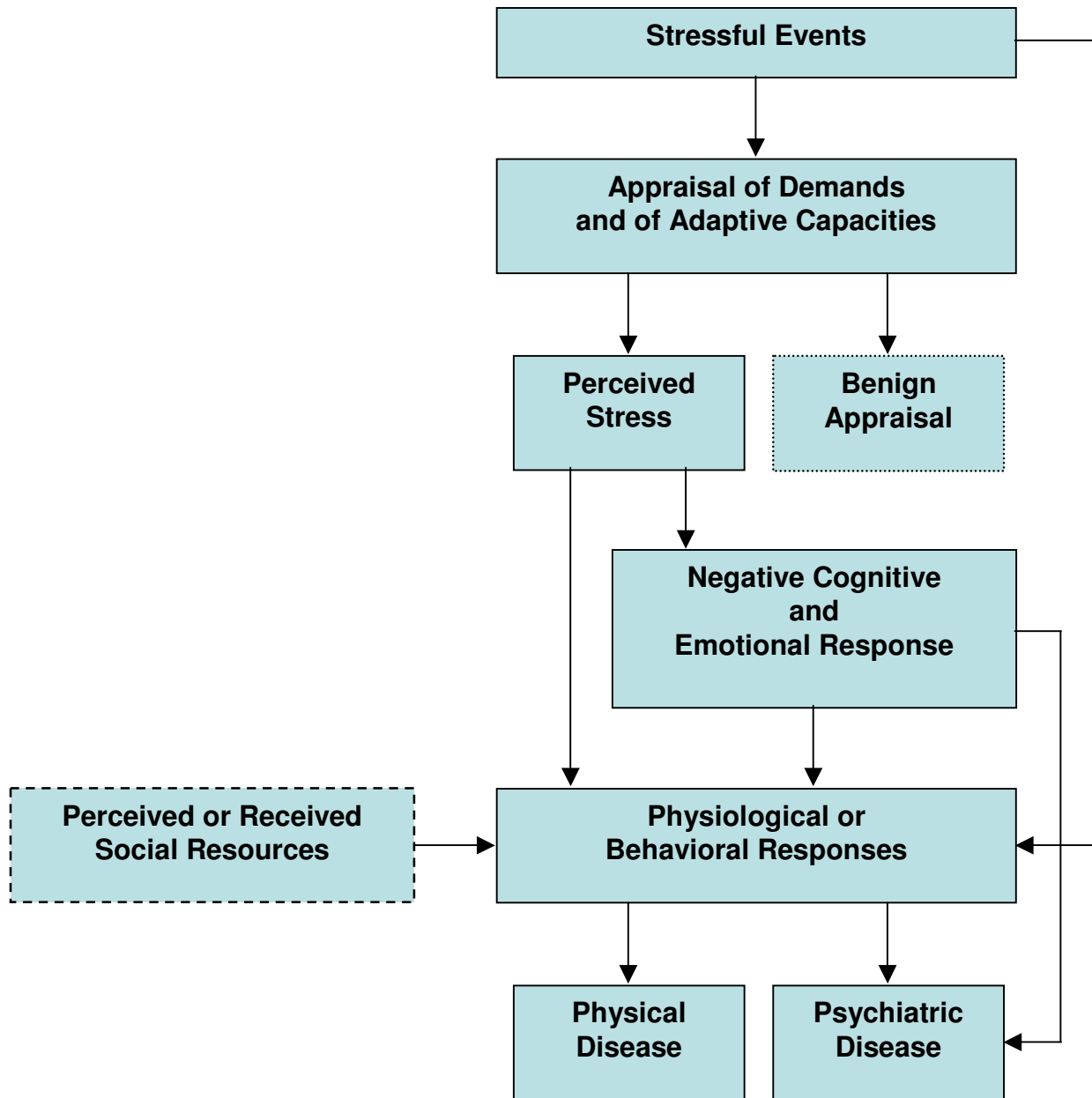
Coping Resources as Buffers

- ⌞ Skills and abilities (e.g., analytic, mechanical)
- ⌞ Social (people who can provide support)
- ⌞ Physical (health & stamina)
- ⌞ Tangible Resources (money)
- ⌞ Psychological (self-efficacy, perceived control)
- ⌞ Institutional, Cultural & Political (agencies, social groups)

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

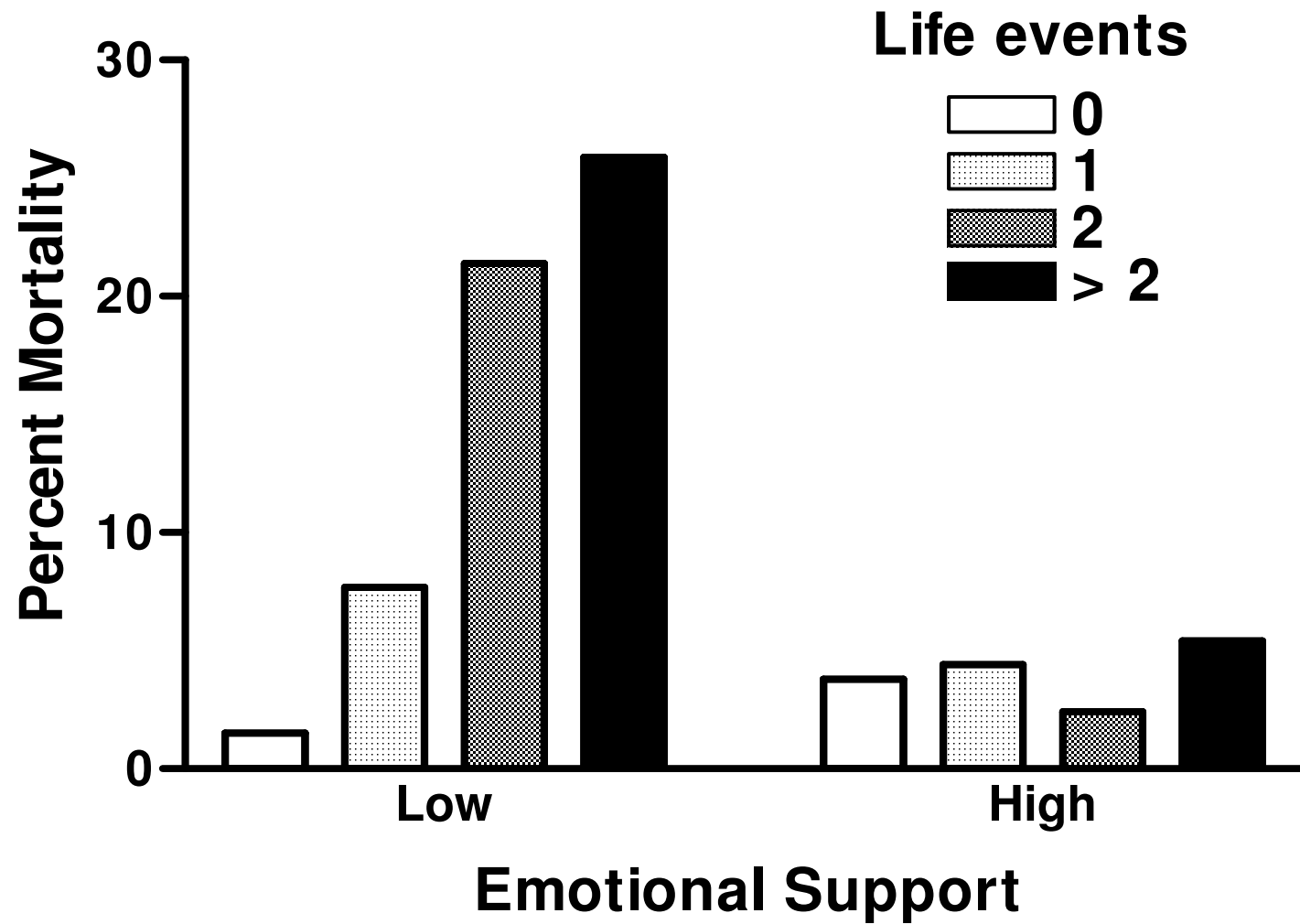




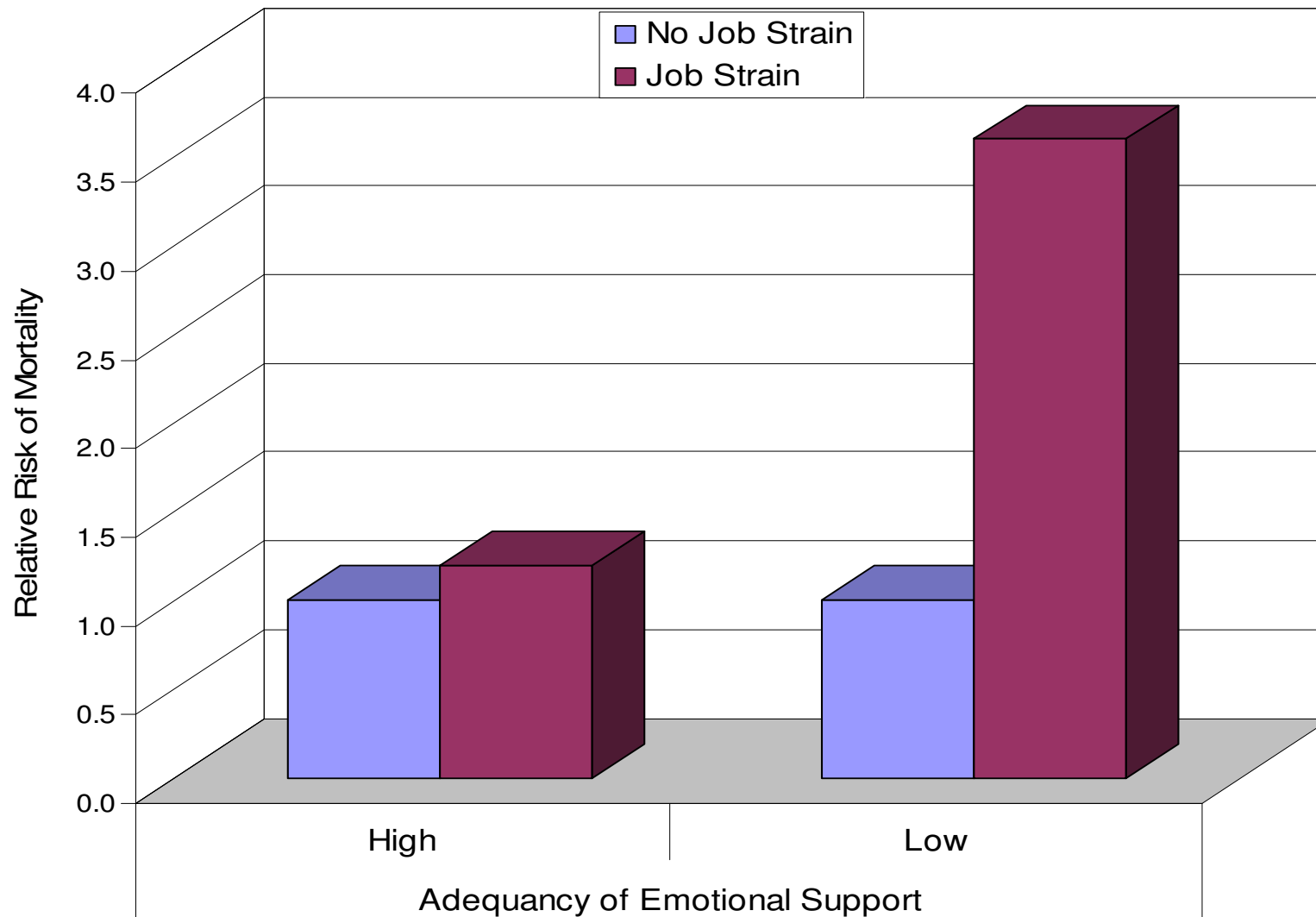


**Examples of Stress-Buffering
with
HARD DISEASE OUTCOMES**

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

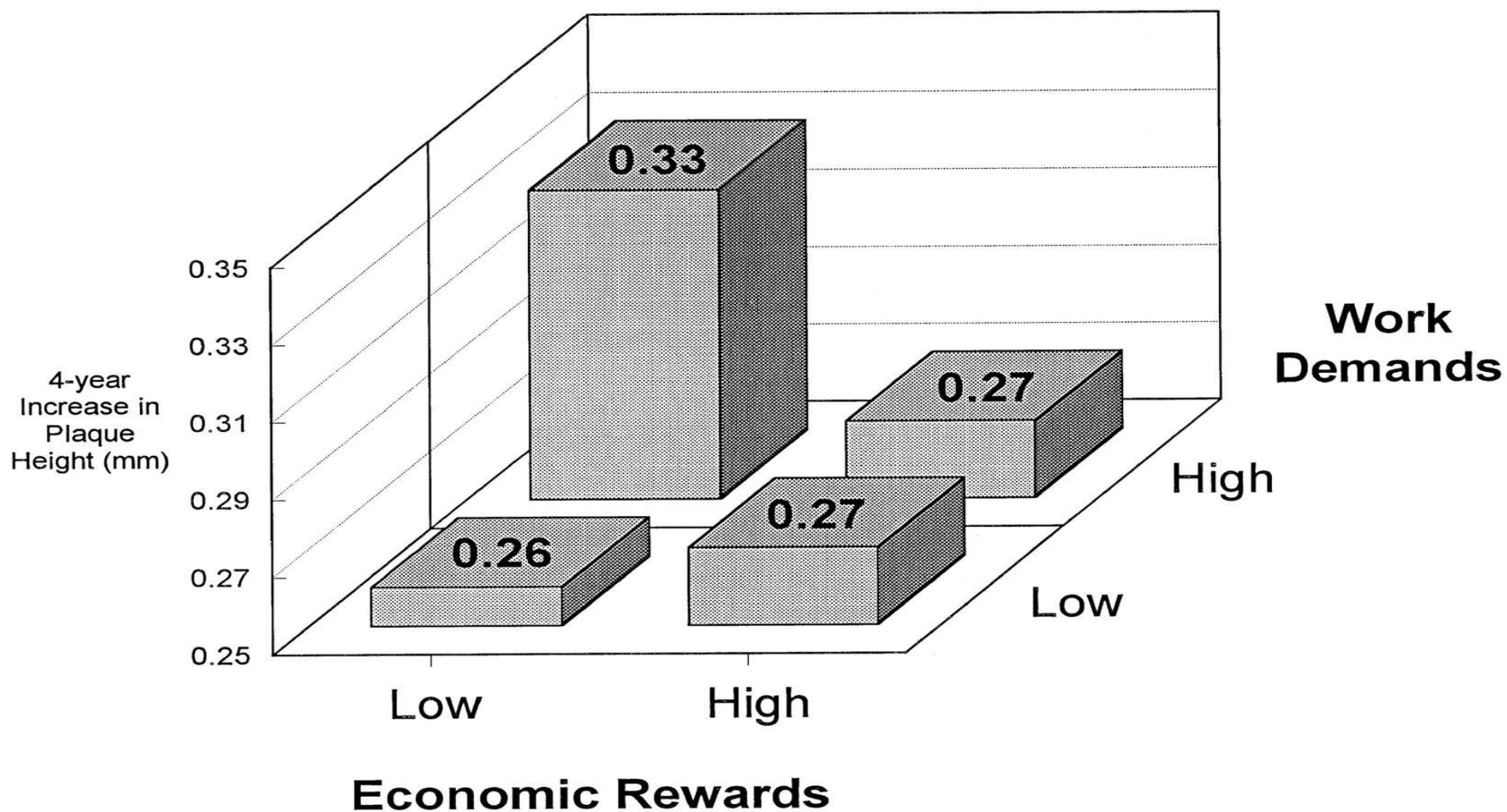


Job Strain, Adequacy of Emotional Support and Risk for Mortality in Elderly Swedish Men

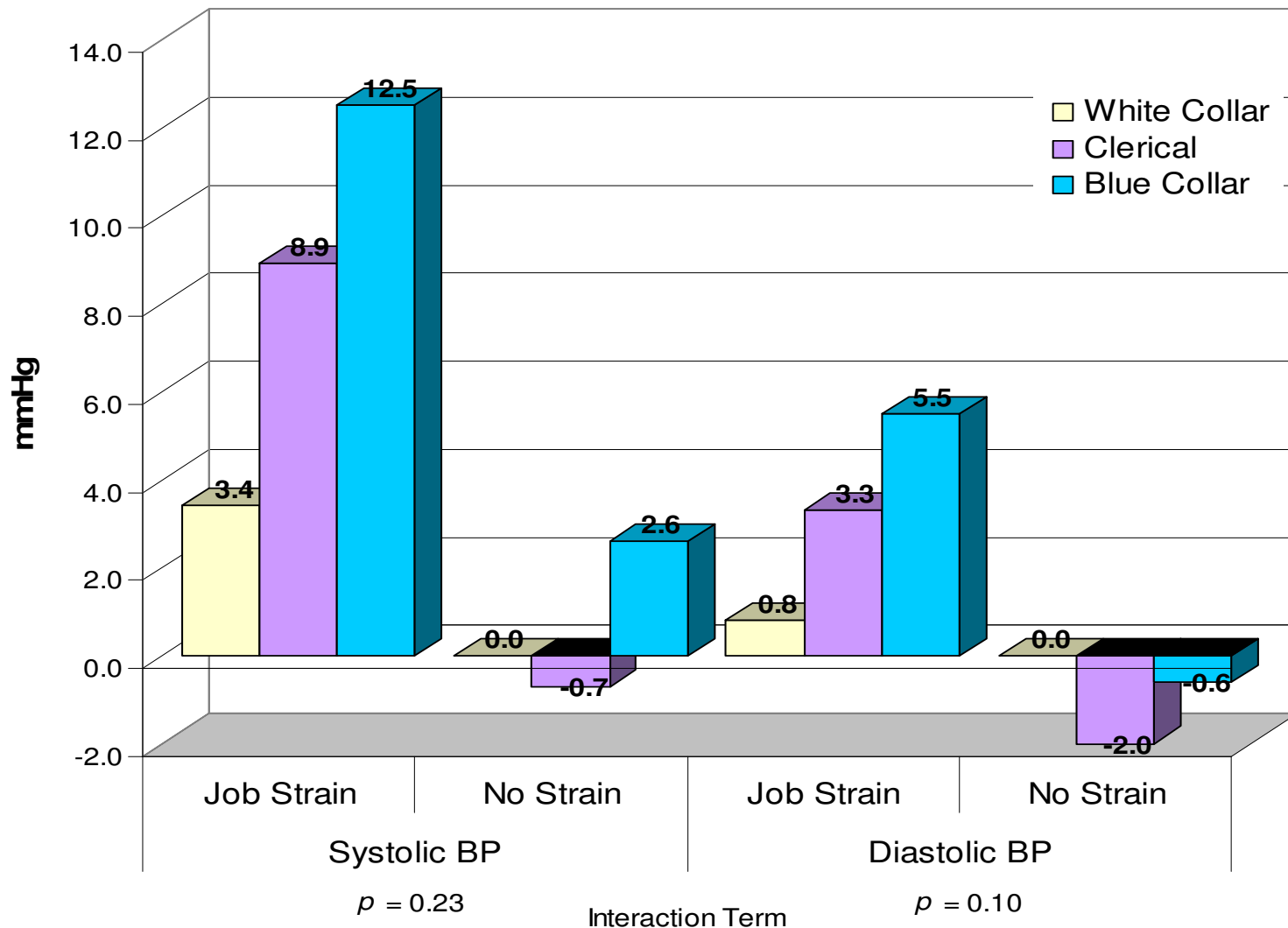


Falk et al., *Am J Public Health*, 1992, 82, 1136-139.

Work Demands, Economic Rewards and 4-Yr Increases in Carotid Plaque in Finnish Men

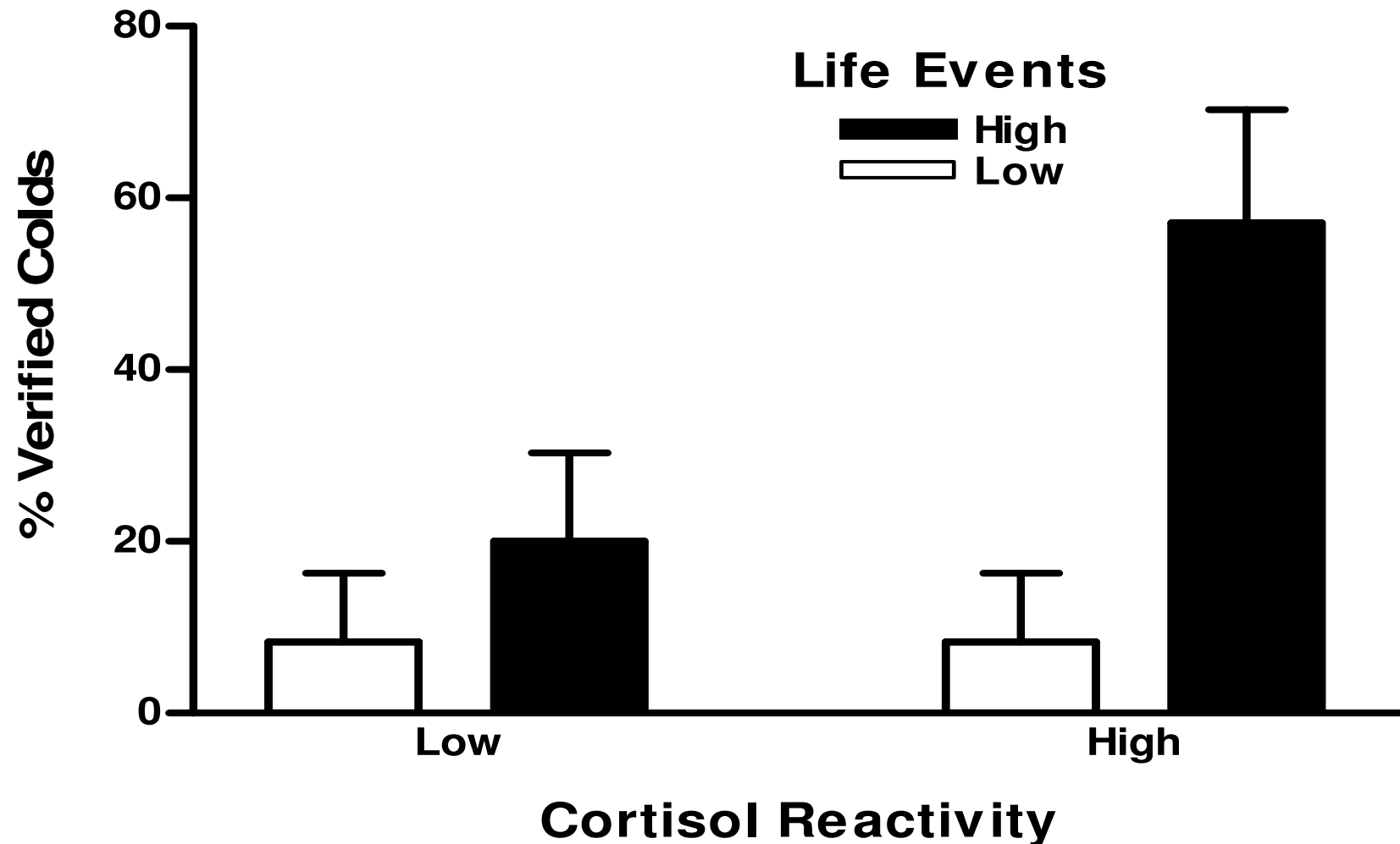


Job Strain, SES and Ambulatory Blood Pressure



Landsbergis et al. *Annals of NY Academy of Sciences*, 1999, 896, 414-416.

Stressful Life Events, Cortisol Reactivity and Incidence of Upper Respiratory Infections



Cohen, S., et al. (2002). *Psychosomatic Medicine*, 64, 302-310.

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
- 1 Because testing for interactions is not standard, negative findings may not be reported.

Stress & Health: Some Final Issues

- ⌊ Some impressive demonstrations of associations between stress and disease.
- ⌊ Hint about the role of vulnerability factors/especially social support
- ⌊ 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

THE END

