

PSYCHOLOGICAL PATHS FROM NEIGHBORHOOD STRESS TO HYPERTENSION

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Project Heart

Agonistic Stress and CVD Risk in Young Adults

NIH-R01-HL084333 (08/08/07-04/30/11)

Agonistic Stress, Coping, and CVD Risk in Urban Youth

NIH-R01-HL7555 (01/01/04-12/31/07)

Anger and Cardiovascular Risk in Urban Youth

NIH-R01-HL52080 (01/01/95-12/31/01)

School-Based Exercise to Lower Adolescent Blood Pressure

NIH-R01-HL45139 (04/01/91-03/31/94)

Adolescent Blood Pressure Variation and LV Mass

NIH-R01-HL-36298 (01/07/87-06/31/90)

School-Based Relaxation to Lower Blood Pressure

NIH-R01-HL-29431 (09/01/82-01/31/86)

VULNERABLE POPULATIONS

CVD is the leading cause of death in the US, disabling 10 million Americans each year

EH, a major risk factor for CVD, affects over 50 million

Incidence of hypertension is three to six times higher among Americans of African descent

Americans in lower SES groups have higher CVD mortality, and higher risk for hypertension, diabetic end-stage renal disease, and peripheral vascular disease.

Centers for Disease Control and Prevention, 2004

Keil et al, *N Engl J Med*, 1993

Mensah et al, *Circulation*, 2005

EARLY RISK

Heart disease begins in youth

High normal blood pressure increases risk: Adolescents with BP \geq 90th percentile are 3 times more likely to have high blood pressure diagnosis by age 30

New emotional and interpersonal problems, risky behaviors, emerge in adolescence

Emphasis on early prevention and management

(NIH Pediatric Task Force Reports)

THE SOCIOECONOMIC GRADIENT

A stepwise decline in SES predicts increased risk of:

- Cardiovascular, respiratory, rheumatoid, and psychiatric diseases
- Low birth weight
- Infant mortality
- Mortality from all causes

This is largely due to the effect of SES on health, rather than the reverse

Disease incidences are several times greater in the lower extreme of SES

PSYCHOLOGICAL ORIGIN?

SES –health gradient is not a result of limited health care access; robust gradients exist in countries with universal health care and equal access

SES-lifestyle differences (smoking, drinking, diet, exercise, crime & toxin exposure, health activity access) explain only a small portion of the gradient

Self-perceived SES predicts health outcomes as well as objectively measured SES

Psychological mechanisms clearly play a major role

PSYCHOLOGICAL PATHS TO ILLNESS

Most psychological explanations emphasize:

- Interpersonal conflict (threatened relationships)
- Negative self-appraisals induced by social denigration, unfair treatment, marginalization (subordination)
- Negative emotions (anger, anxiety, and sadness)

MEDIATING MECHANISMS

Agonistic Motives

Striving to influence, manage, or control others

Subordination Appraisals

Denigration-induced perceptions of low social power

Negative Emotional Responses

Chronic feelings of anger, anxiety, and sadness

PATHOPHYSIOLOGY

Social control motives / Subordination experiences foster hypervigilance in social settings.

Hypervigilance increases vascular resistance, promoting vascular remodeling and arterial stiffness

Chronic emotional arousal alters autonomic control of heart and vasculature



WESTERN
HIGH SCHOOL

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PSYCHOLOGICAL STRESS

Chronic vigilance to a persisting threat

Goals determine threat exposure

Self-regulation skills modulate impact

SOCIAL COMPETENCE INTERVIEW

Re-live a threatening event

Imagine you are making a film about it

Create action *narrative* and *ending* (Goal)

Over 1,000 interviews with adolescents
and adults reveal two major classes of
stress-related goals

AGONISTIC FOCUS

Persisting struggle to manage, control, or dominate others

TRANSCENDENCE FOCUS

Persisting struggle to activate, develop, or control oneself

AGONISTIC GOALS

Trying to:

Get even with someone (revenge)

Get others on my side

Get someone to...

...be less critical (mean, abusive)

...be my friend

...be less demanding

...understand or sympathize with me

TRANSCENDENCE GOALS

Trying to:

Meet a demanding self-goal or standard

Avoid disappointing someone

Enhance a valued skill

Demonstrate my abilities

Avoid failure (falling short)

Be a better friend (daughter, son, parent)

Ewart et al., *Psychological Assessment*, 2002

MOTIVATIONAL PROFILING

Goals and expressive (EX) skills combine to create three motivational profiles:

- **Agonistic Striving** (High EX, High AS, Low TS)
- **Transcendence Striving** (High EX, Low AS, High TS)
- **Dissipated Striving** (Low EX, lack of goal focus)

Roughly a third of adolescents in each profile group

The three profile groups occur with similar frequency in males and females, Blacks and Whites

FILM NARRATIVES

Agonistic Striving

Story Line

Amanda struggles to manage a difficult relationship with her father, stay close to her younger brother, and stop fighting with mom

Film Ending

She lowers stress by getting emancipated from father and living with mom and brother

FILM NARRATIVES

Transcendence Striving

Story Line

Gwen is always fighting with her parents about school; they get very angry with her because she hangs out with friends and then stays up late to do homework

Film Ending

She lowers stress by reorganizing her after-school schedule; starts her homework early so as not to stay up late

FILM NARRATIVES

Dissipated Striving

Story Line

Amber really hates school! She often arrives late, skips classes or leaves early; just being in school stresses her out. Her mom is always on her case.

Film Ending

She forces herself to go to school.

HYPOTHESES

Agonistic focus on controlling others:

- Impairs social problem solving
- Fosters interpersonal conflict
- Undermines self-control
- Increases blood pressure
(especially in social interactions)

All hypotheses were supported by data
obtained in Project Heart Studies 1, 2, 3

Ewart & Jorgensen, *Health Psychology*, 2004

Ewart et al, *Psychophysiology*, 2004

Ewart et al, *Psychological Assessment*, 2002

PROJECT HEART 5

Living in a stressful urban neighborhood increases blood pressure levels during normal daily activities

The association between neighborhood stress and elevated BP is mediated by:

- Agonistic Striving
- Subordination Appraisals (Denigration, Low Power)
- Negative Affect (Anger, Anxiety, Sadness)



ANTHONY A. HENNINGER
SENIOR HIGH SCHOOL

11

PARTICIPANTS

263 public high school students

Age = 14.5 ± 0.5 years

54% Female

43% White; 40% Black; 17% Other

Low to middle SES – Syracuse

STUDY DESIGN

Neighborhood Disorder (City Stress Inventory)

Social Competence Interview

Agonistic Striving

Negative Affect

↓ 2.5 months

Anger Recall

Negative Affect

Ambulatory Blood Pressure & EMA (48 hrs)

BP during social interaction

Subordination (Denigration, Low Social Power)

Negative Affect (every 30 min)

NEIGHBORHOOD DISORDER

Strangers drunk or high near my home

Neighbors complain about the police

Gang fight near my home

Neighbors complain about crime

Cars speeding on my street

People dealing drugs near my home

A crack house near my home

Neighbors on food stamps (how many?)

Vacant houses on my block (how many?)

A family member was robbed or mugged

4-point frequency scale (1 = Never, 4 = Often)

SOCIAL DENIGRATION

EVERY 3 HOURS....

In the past 3 hours, how often were you with someone who:

Says mean things about you behind your back?

Doesn't like the way you look or dress?

Believes untrue stories they heard about you?

Thinks you can be pushed around?

Thinks they are better than you?

Doesn't want you around?

7-point frequency scale (1=Never, 7= Often)

LOW SOCIAL POWER

END OF DAY....

When with others at school or at home today, how often did you feel:

Ignored?

Bossed around?

Criticized?

Put down?

Embarrassed?

Cautious?

Alone?

7-point frequency scale (1=Never, 7= Often)

NEGATIVE AFFECT

EVERY ABP READING (30 min intervals)....

How do you feel *now*?

Angry

Sad

Nervous

7-point frequency scale (1=Not at all, 7=Very much)

SOCIAL INTERACTION DBP

	DS	TS	AS
Baltimore	71.0 (6.2) ^a	69.6 (5.2) ^a	74.2 (5.7) ^b
Syracuse	72.8 (9.0)	71.1 (7.3) ^a	75.2 (8.0) ^b

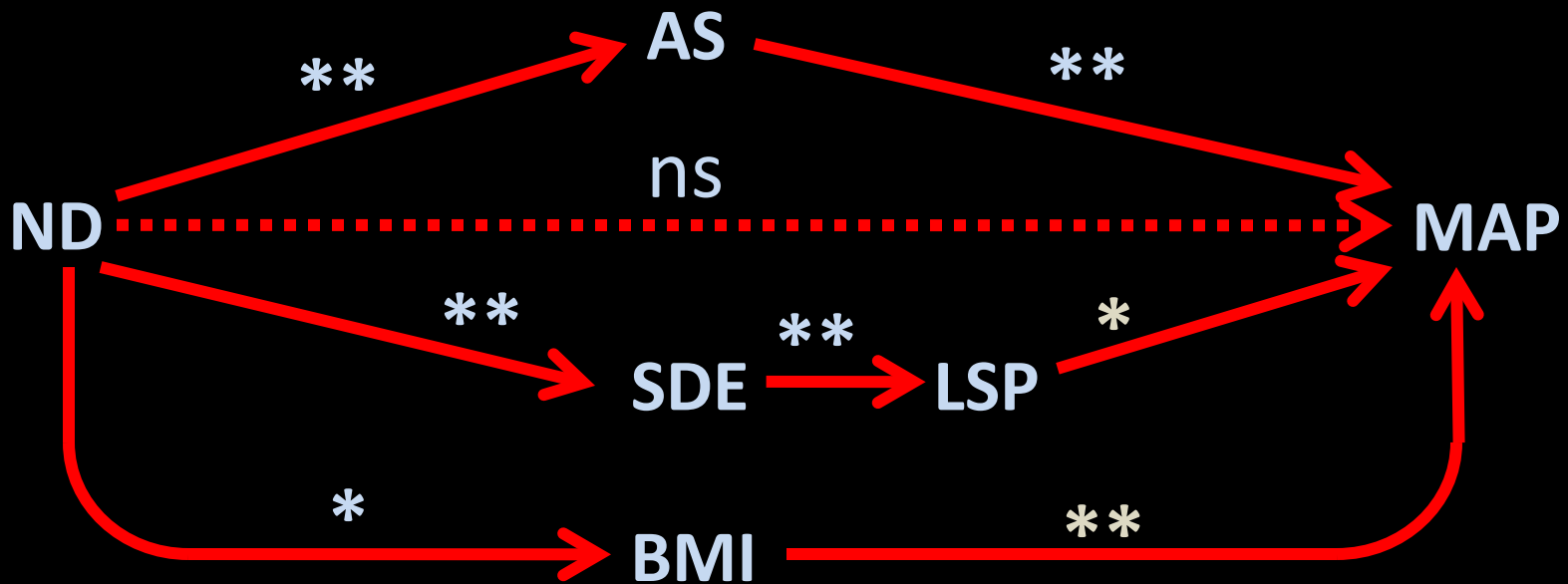
DBP means of TS and AS clusters differ at $p < .001$

MEDIATORS?

	ND	MAP
Agonistic Striving	.18*	.24**
Social Denigration	.20**	.15*
Low Social Power	.16*	.17*
Negative Affect		
SCI	.20**	.12
Anger Recall	.24**	-.01
EMA diary	.21**	-.02
BMI	.13*	.20**

* $p < .05$ ** $p < .01$

PSYCHOLOGICAL PATHS TO HYPERTENSION



ND = Neighborhood Disorder
AS = Agonistic Striving
MAP = mean arterial pressure
SDE = Social Denigration
LSP = Low Social Power
BMI = Body Mass Index

* $p < .05$ ** $p < .01$

IMPLICATIONS

Agonistic Path

- Enhance social-relational competence
- Family and peer counseling
- Policies to support child care and parenting

Subordination Path

- Empowerment interventions
- Programs to prevent bullying and abuse
- Anti-discrimination policies

Negative Emotion Path

- Stress management for vulnerable subgroups
- Emotions may contribute to health damaging behaviors

THANK YOU

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