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Examining the causal relationship between job control, health behaviours, psychological distress and health status in the Canadian working population

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What is job control?

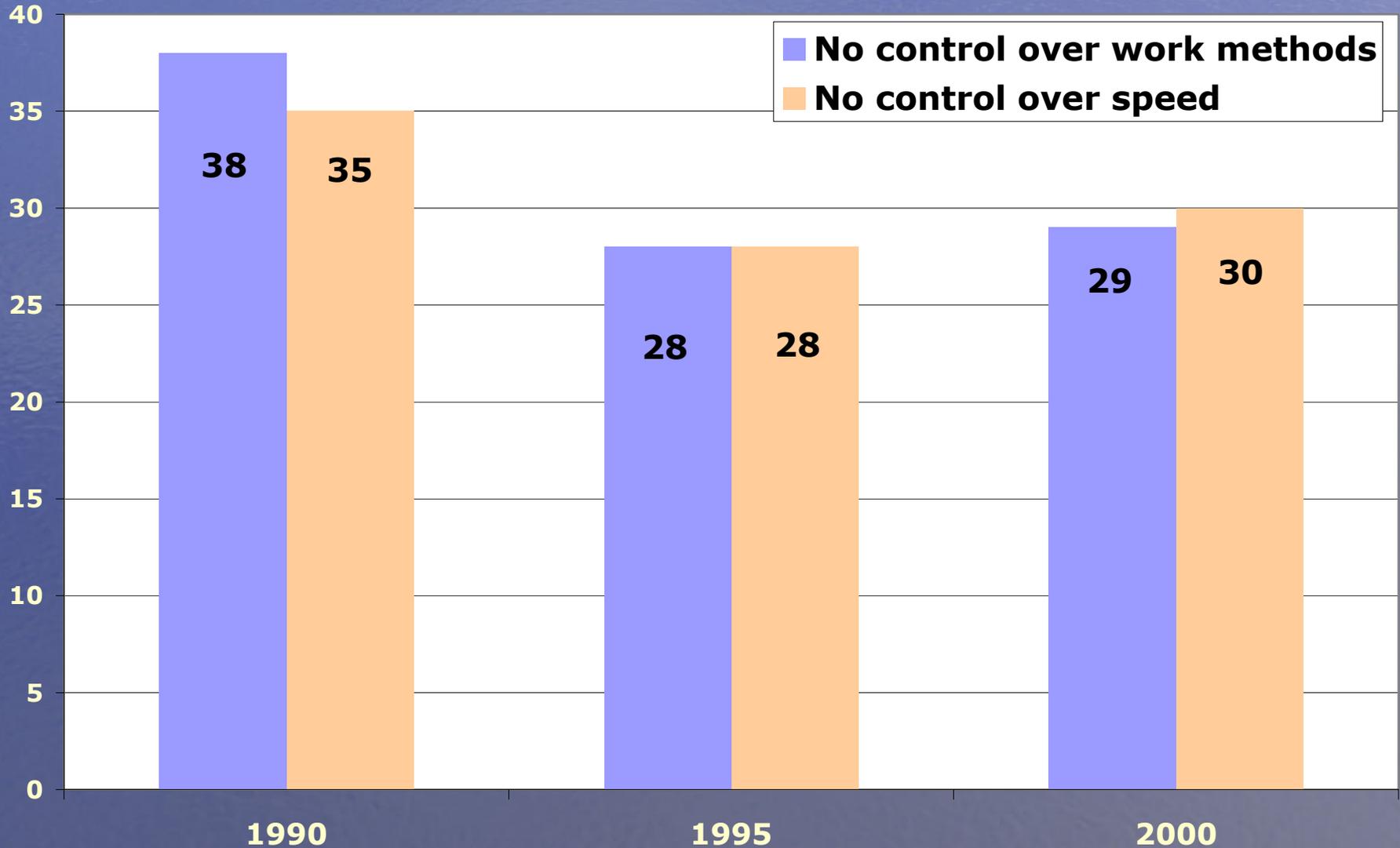
- A dimension of the psychosocial work environment
 - *“the range of opportunities given to an individual to meet his or her need of well being, productivity and positive self-experience”*

(Siegrist and Marmot, 2004)

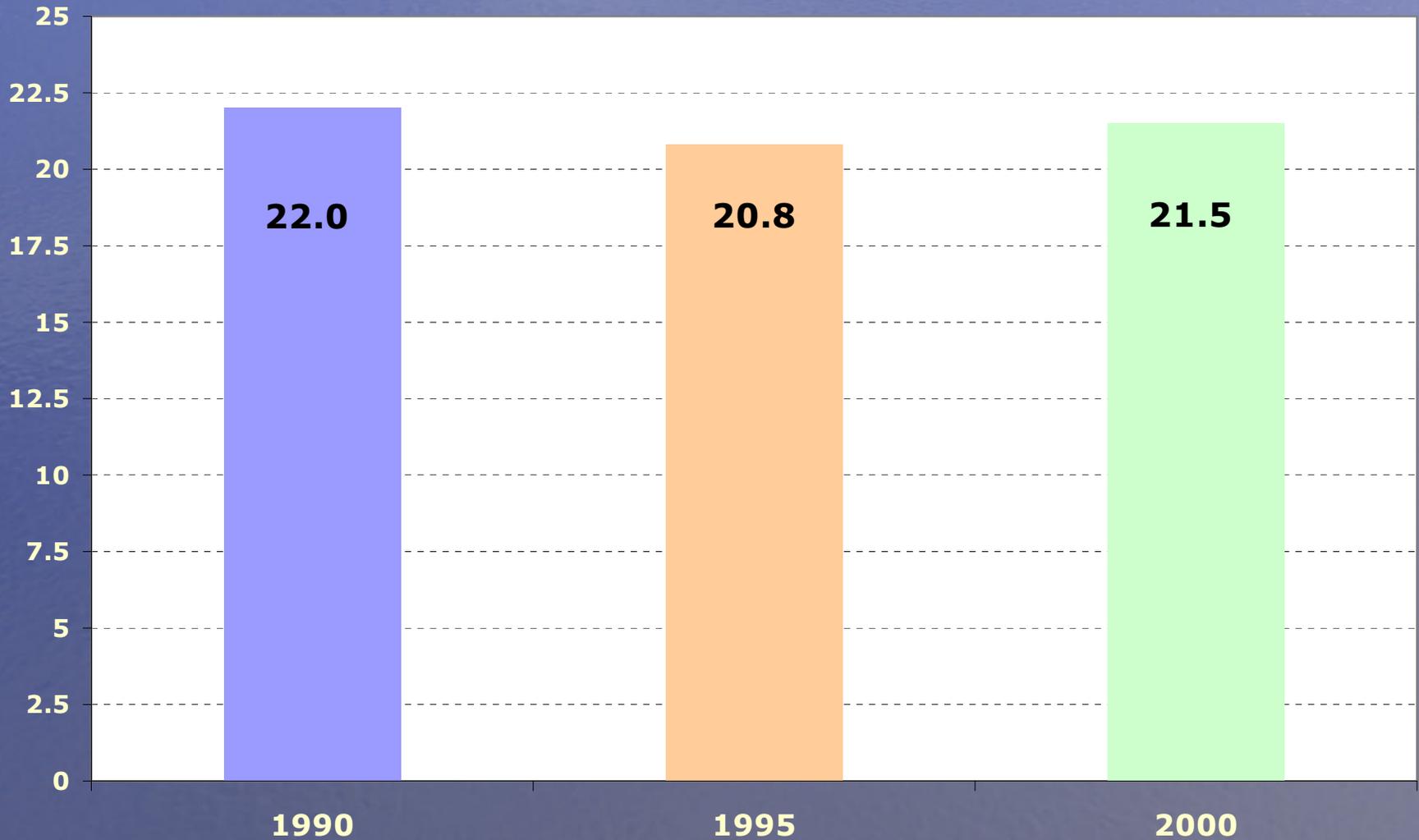
- An individual's ability to:
 - Make decisions over the way they work
 - Utilize their skills

**Evidence that work
characteristics are
changing?**

Percent of employees reporting low job control. E.U. 1990 to 2000

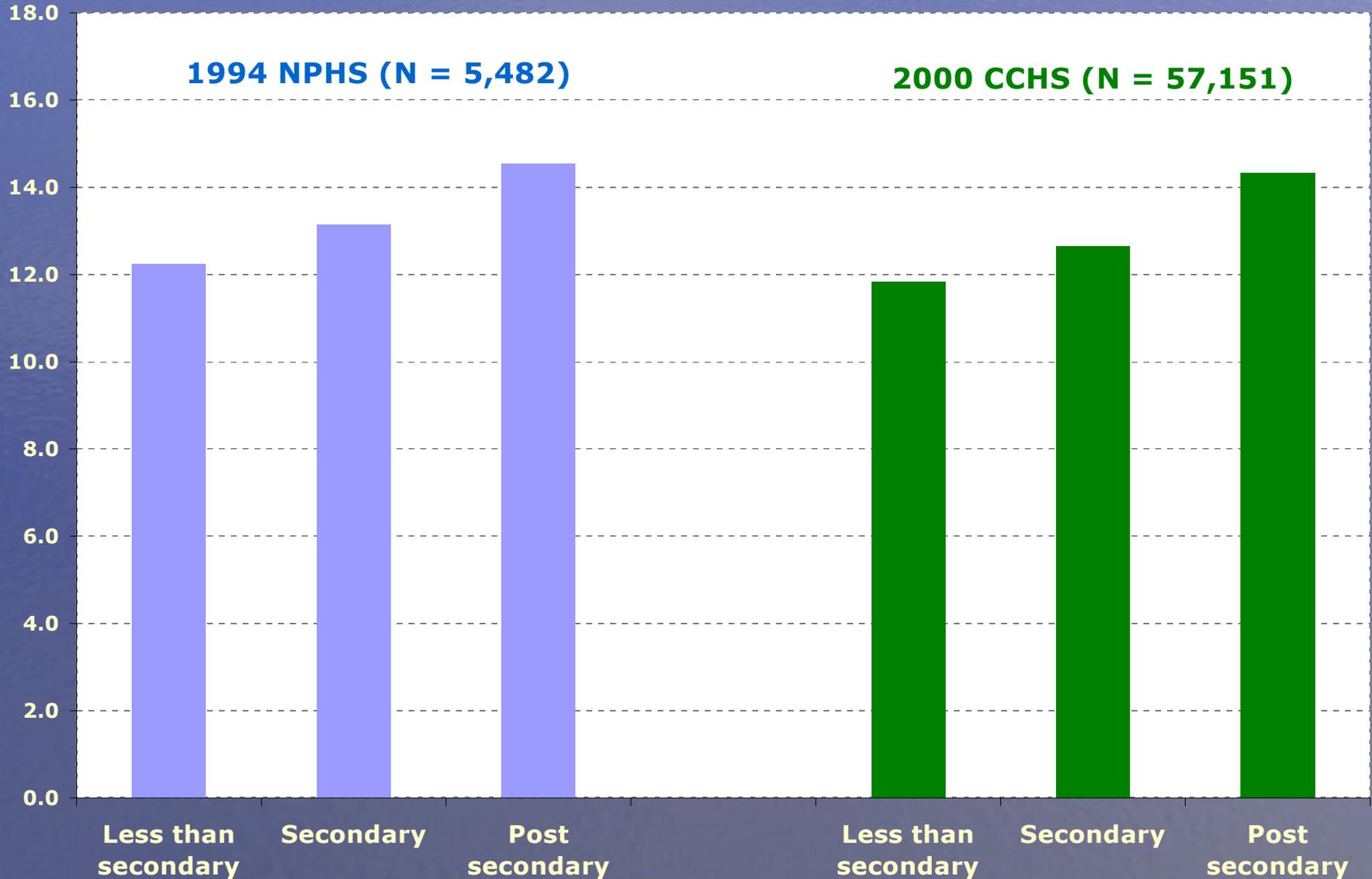


Changes in levels of job control. Denmark 1990 to 2000



Source: Burr et al, 2003

Average level of job control by education level. Canada 1994 and 2000



Job control in Canada

- Canadian studies report limited change in job control (and most other psychosocial work stress measures) over time at the workforce level
- This could be because
 - The psychosocial work environment is not changing;
 - The environment is changing, but we are measuring the wrong dimensions;
 - or we are measuring the right dimensions, but not precisely enough, or with questions not designed to detect change.

Job Control in Canada

- While average scores indicate no change, this does not help us understand if job control is increasing or decreasing among particular labour force sub-groups
- Job control is a relative and subjective measure. The real job control reflected by a given score may be changing relative to a more objective measure

Does job control cause poor health?

The research evidence

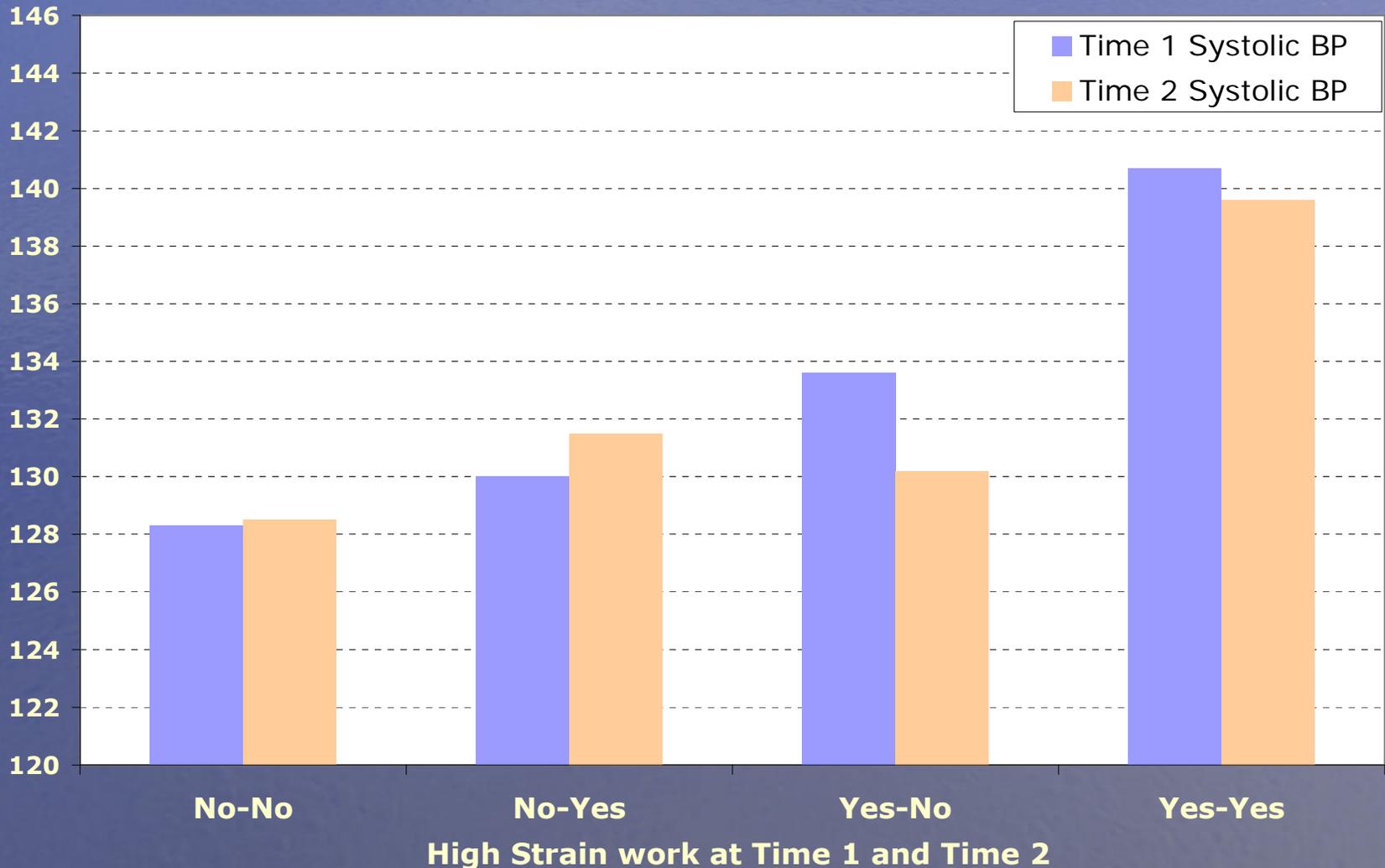
1. Temporality
2. Plausibility
 - via neuro-hormonal response (allostatic load)
 - via changes in health behaviours
3. Consistency
4. Biological gradient (dose-response)

Factors linking SES to CVD

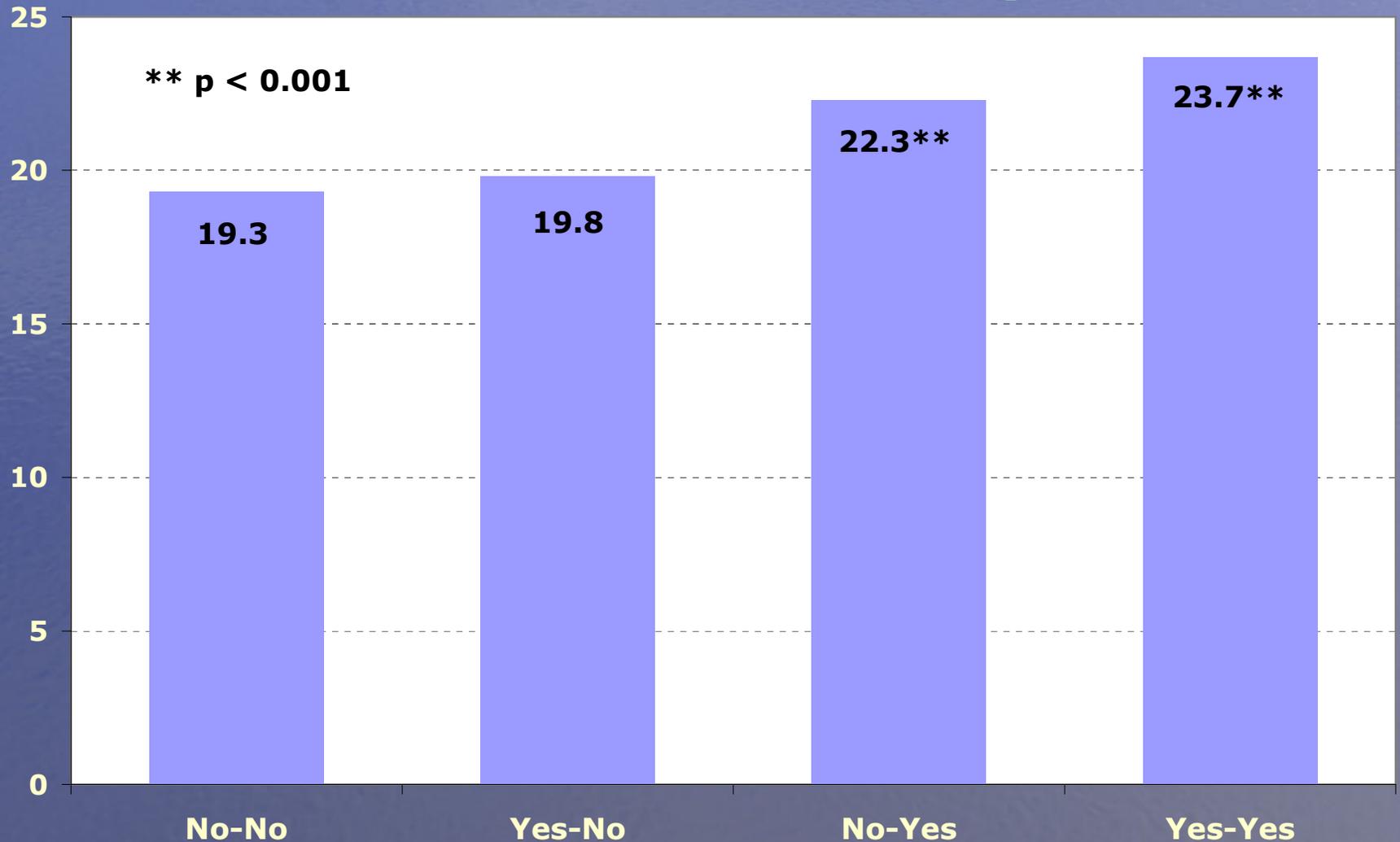
- Job control and other psychosocial work stressors
 - Good evidence of temporality, biological plausibility, consistency, dose-response (x-sect only)
 - More evidence required on the effects of changing job control
- Depression
 - Good evidence of temporality and biological plausibility
 - Reverse causation or unmeasured antecedents possible
 - Studies have not completely adjusted for traditional CVD risks
 - Treating depression symptoms is unlikely to be effective in reducing heart disease risk

Evidence that changes in the work environment are associated with changes in health at the individual level

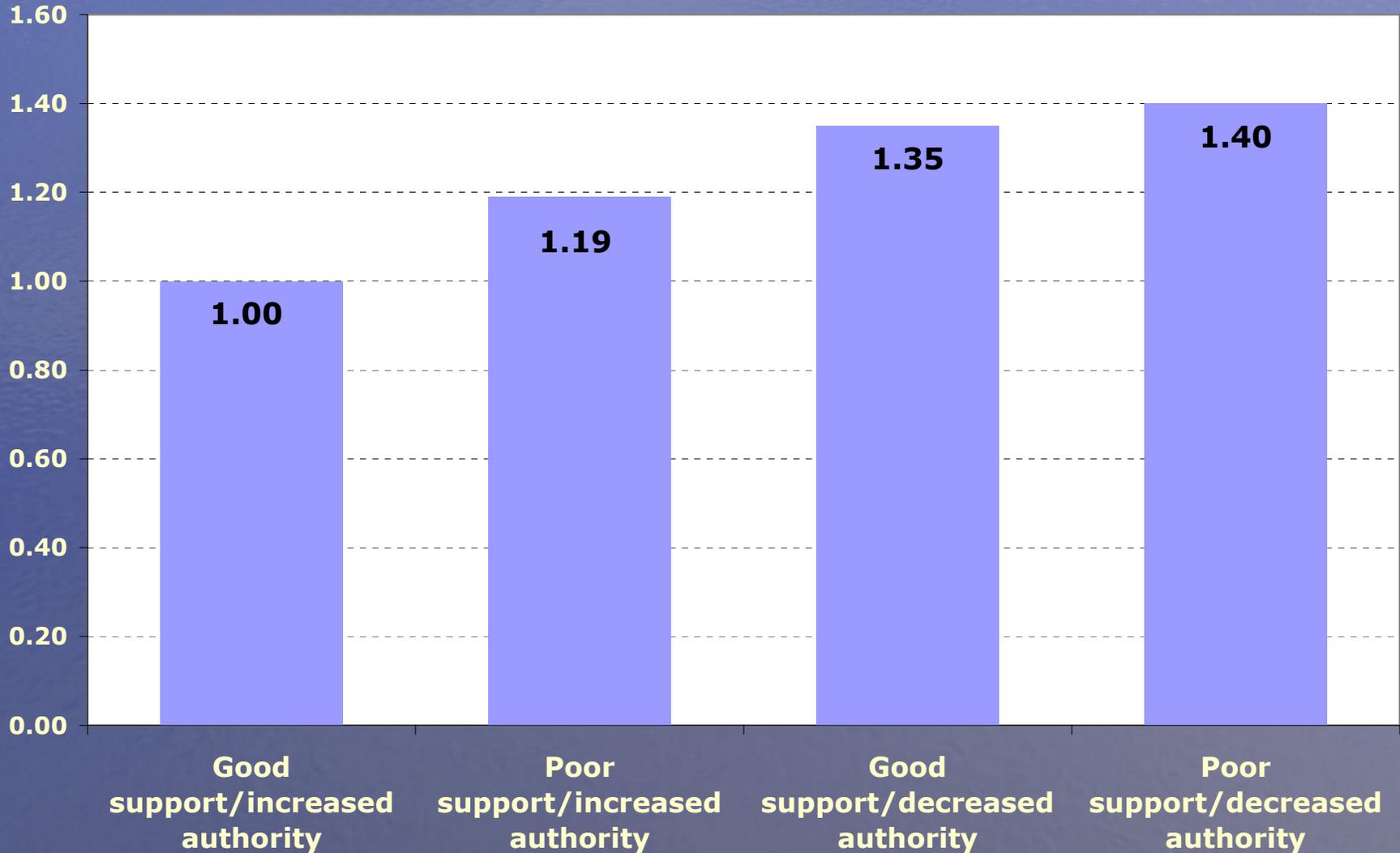
Changes in work and changes in blood pressure over three years. (N = 195)



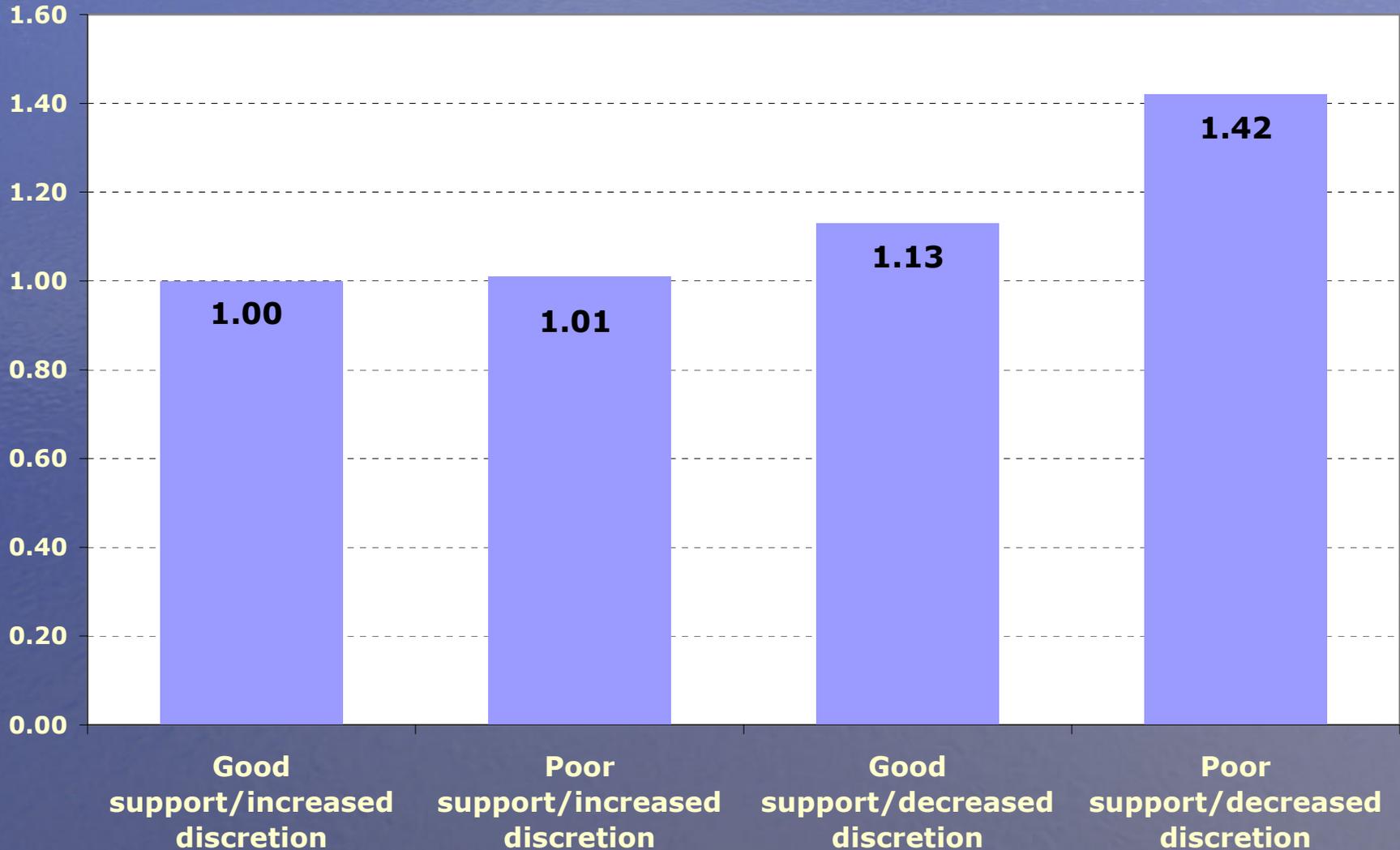
Changes in exposure to high strain work over 18 months and psychological distress at follow-up



Risk of sick leave after changes in decision authority.

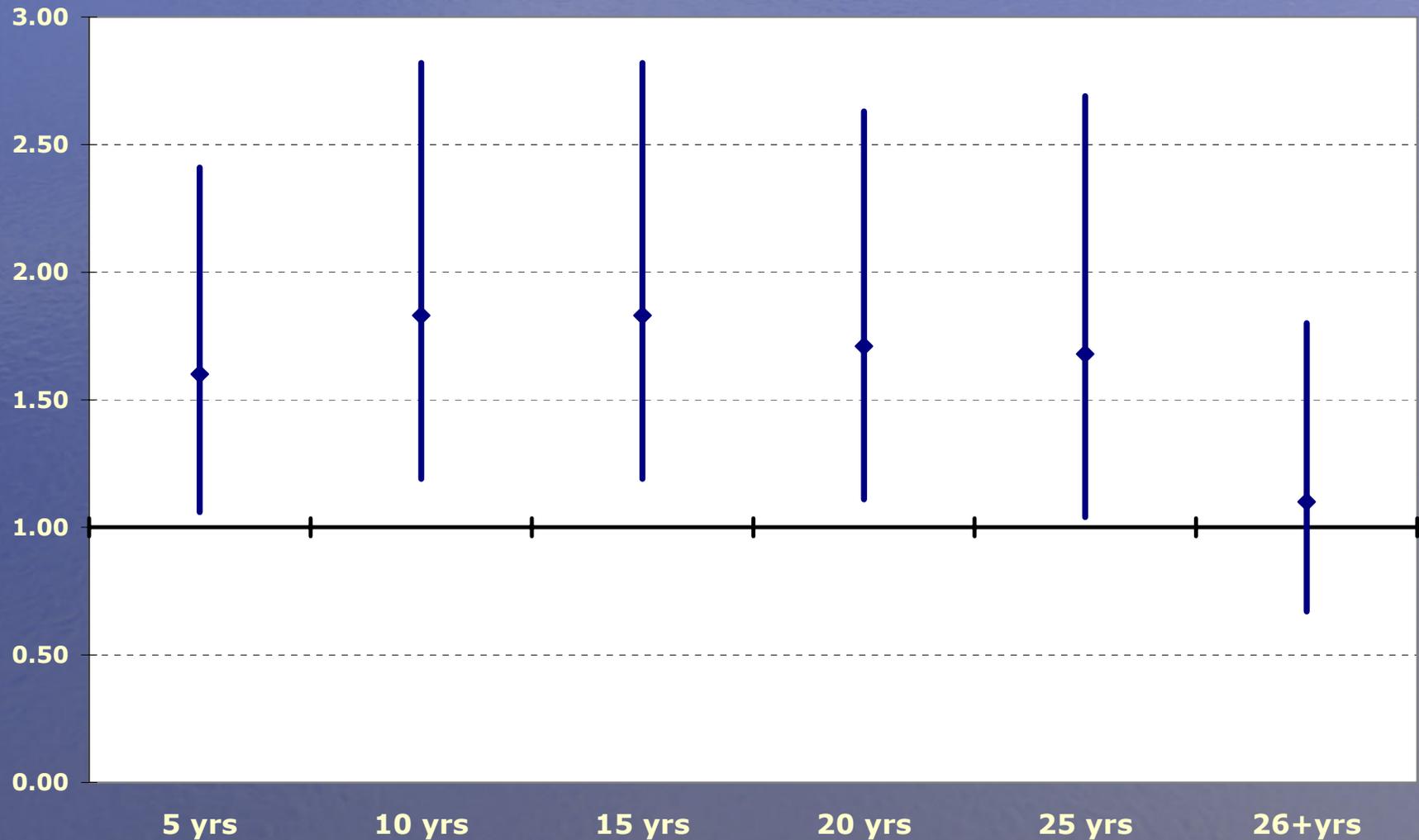


Risk of sick leave after changes in skill discretion

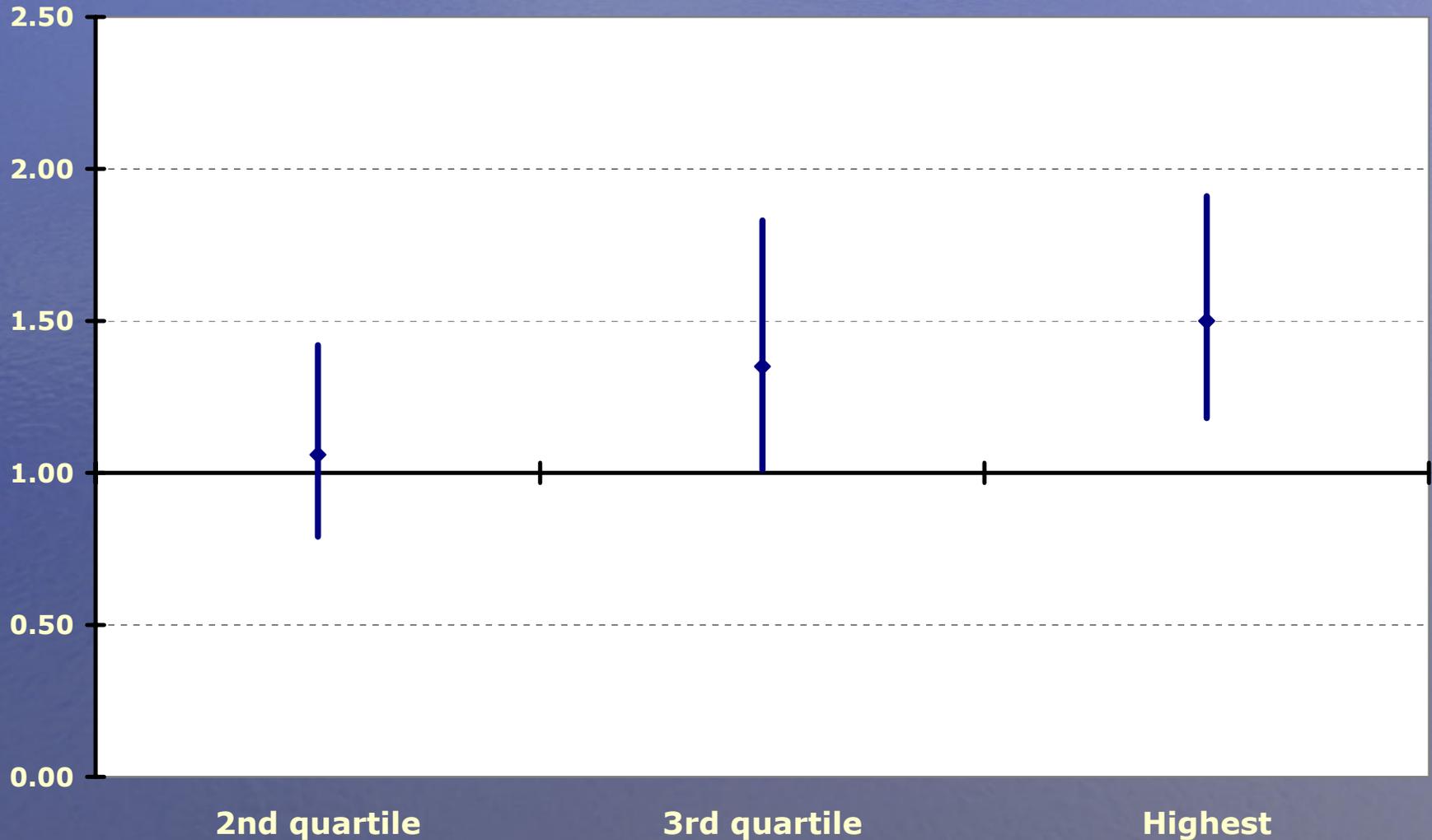


Evidence that high exposures to certain job characteristics are associated with poorer levels of health

Relative risk for CVD mortality and cumulative exposure to low job control



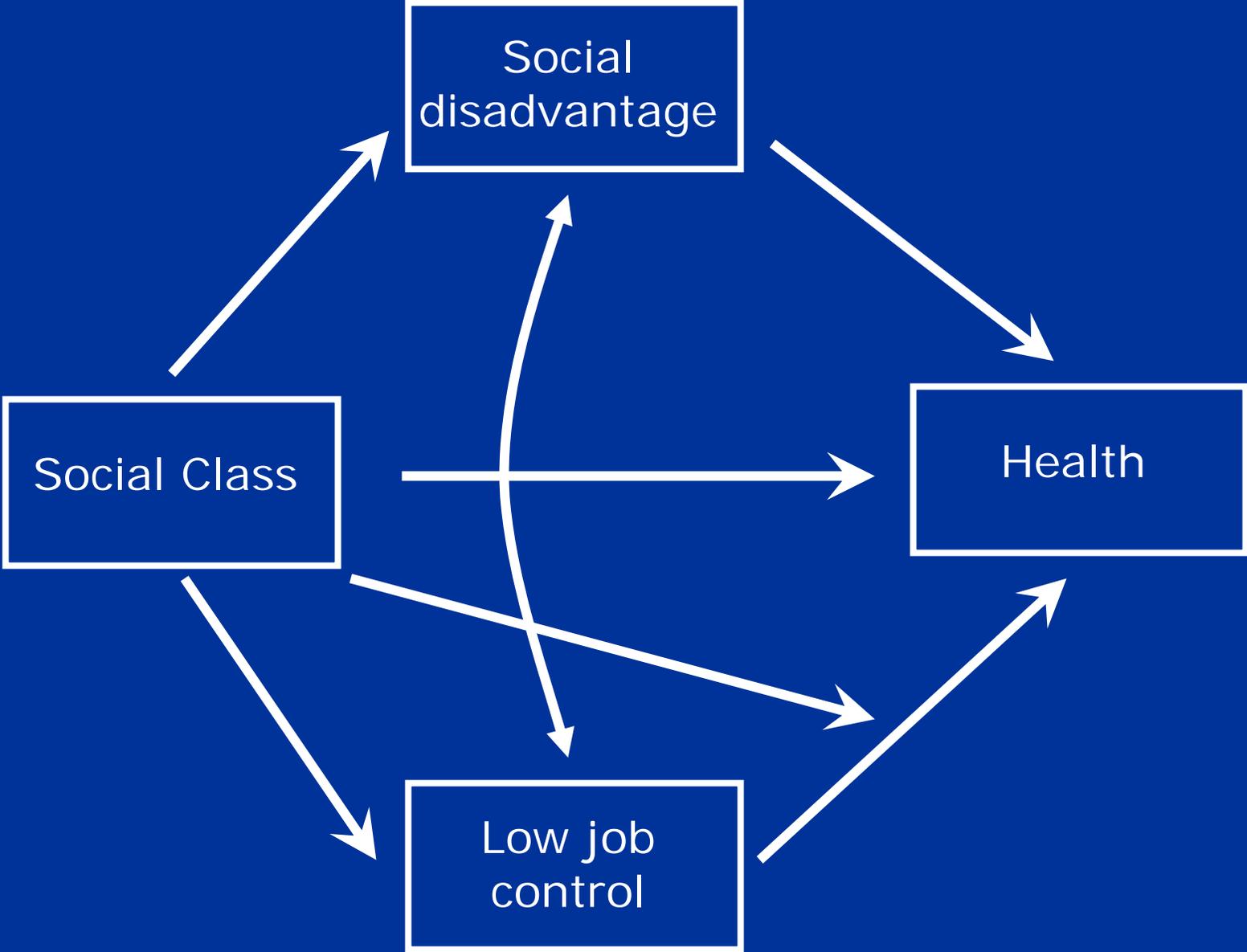
Quartiles of exposure to low decision latitude and all cause mortality



Three explanations of why an association exists between job control and health

- 1. Marmot Model:** Low job control causes poor health, and is a mediator in the relationship between social class and health
- 2. Macleod and Davey Smith model:** The relationship between low job control and health is non-causal, produced through the association between low job control and material deprivation.
- 3. Landsbergis Model:** The effects of low job control on health may be stronger in lower social class groups

Three explanations of why job control is associated with health



Objectives – Paper one

To examine:

1. the different pathways (direct and indirect) through which low job control affects health status
2. the effect of other measures associated with low socioeconomic status on health status; and the degree to which they attenuate the relationship between low job control and health status
3. if the association between low job control and health status differs across levels of socioeconomic status

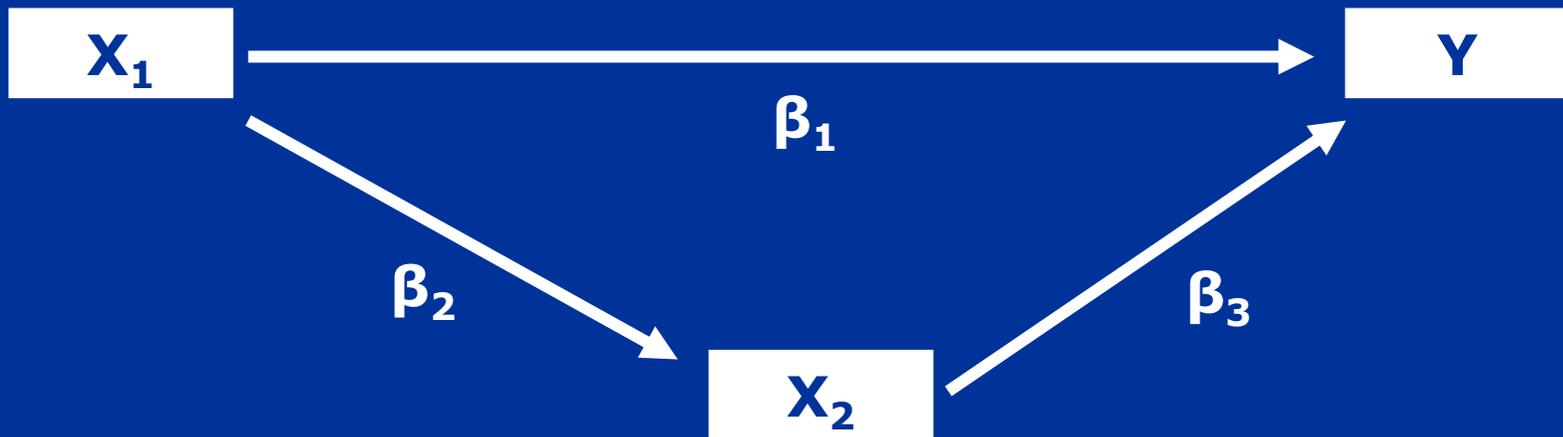
Data

- **Source:** Longitudinal Canadian National Population Health Survey ('94, '96, '98, '00, '02)
- **Sample:** respondents aged 25 to 60 years, who were non-self-employed labour force participants, working more than 20 hours per week, without physical or mental limitations restricting the type or amount of work they could do at baseline (N = 4,886).
- After non-response and longitudinal attrition N = 3,441 (70%)

Path Analysis

Allows

- modeling of the pathways between proximal and distal factors between job control and health status (i.e. including intermediate outcomes)
- estimates of direct and indirect effects



Direct = β_1

Indirect = $\beta_2 \times \beta_3$

Total Effects = Direct plus indirect

Path Analysis (cont)

Allows

- assumptions of independence between independent variables to be relaxed

However,

- path analysis is not a solution for bad measurement or common method variance.
- coefficients in Mplus for categorical outcomes are probit coefficients

Outcomes

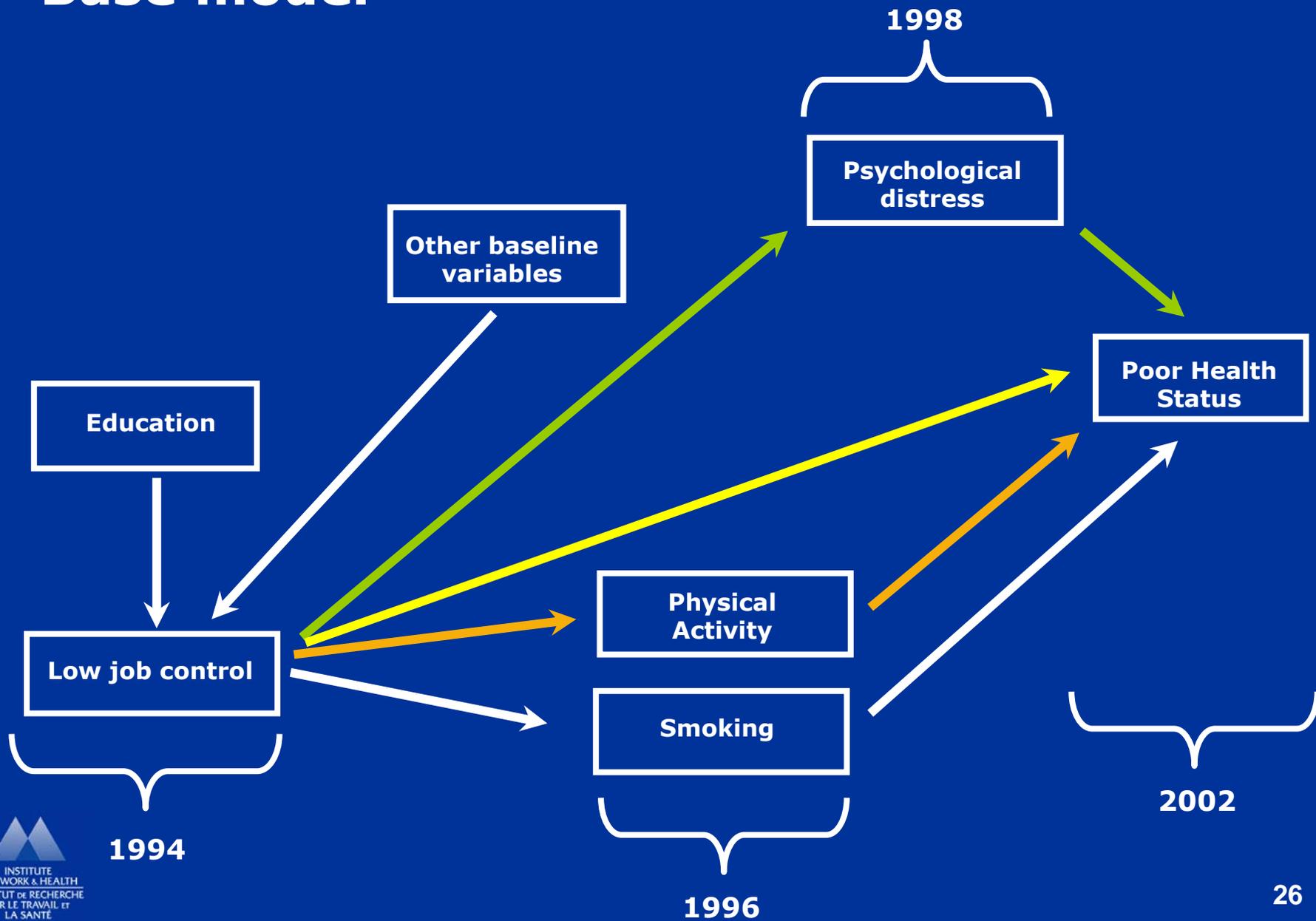
Main outcome

- Self-rated health: 5-point scale (excellent to poor)

Intermediate outcomes

- Leisure time sport and recreational activity: 19 items; frequency and duration used to calculate energy expenditure (kcal/kg/day)
- Smoking: 6-level categorical variable (never to 25+ /day)
- Psychological distress: six questions from UM-CIDI

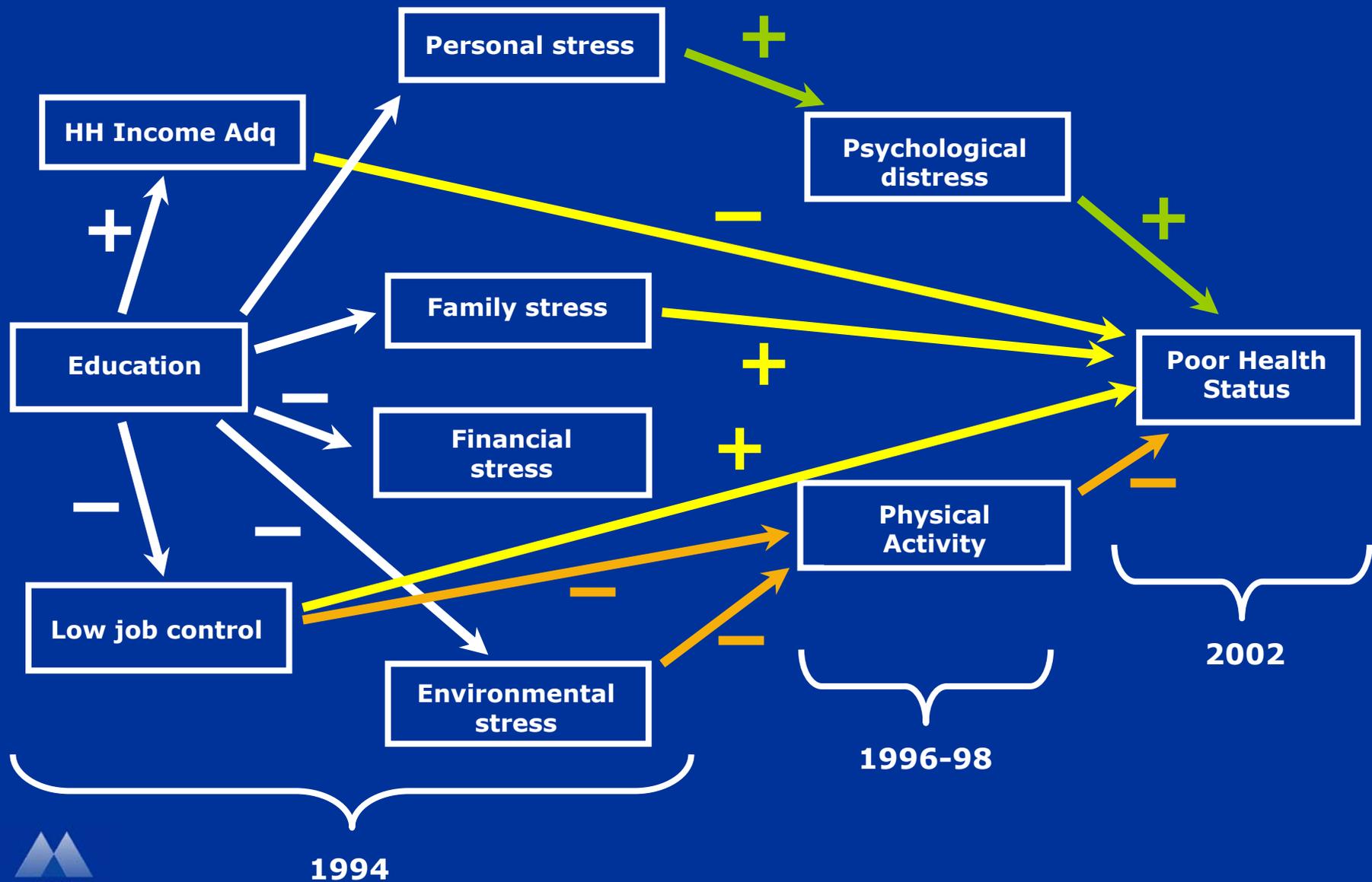
Base model



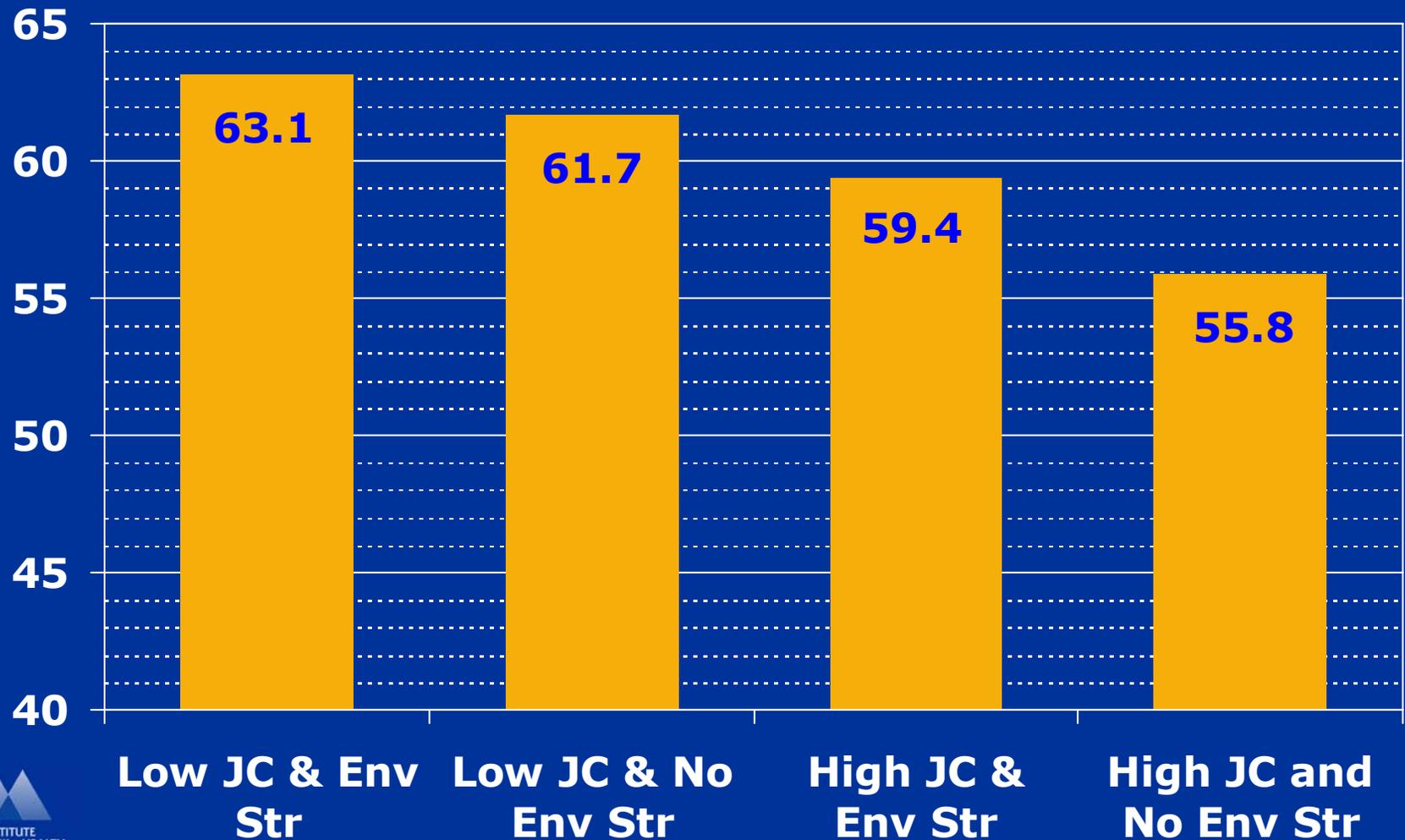
Measures of social disadvantage

- Personal stress
 - (e.g. too much is expected of you by others)
- Environmental stress
 - (e.g. your neighborhood or community is too noisy or polluted)
- Family stress
 - (e.g. someone in your family has an alcohol or drug problem)
- Financial stress
 - (e.g. you don't have the money to buy the things you need)
- Household income adequacy

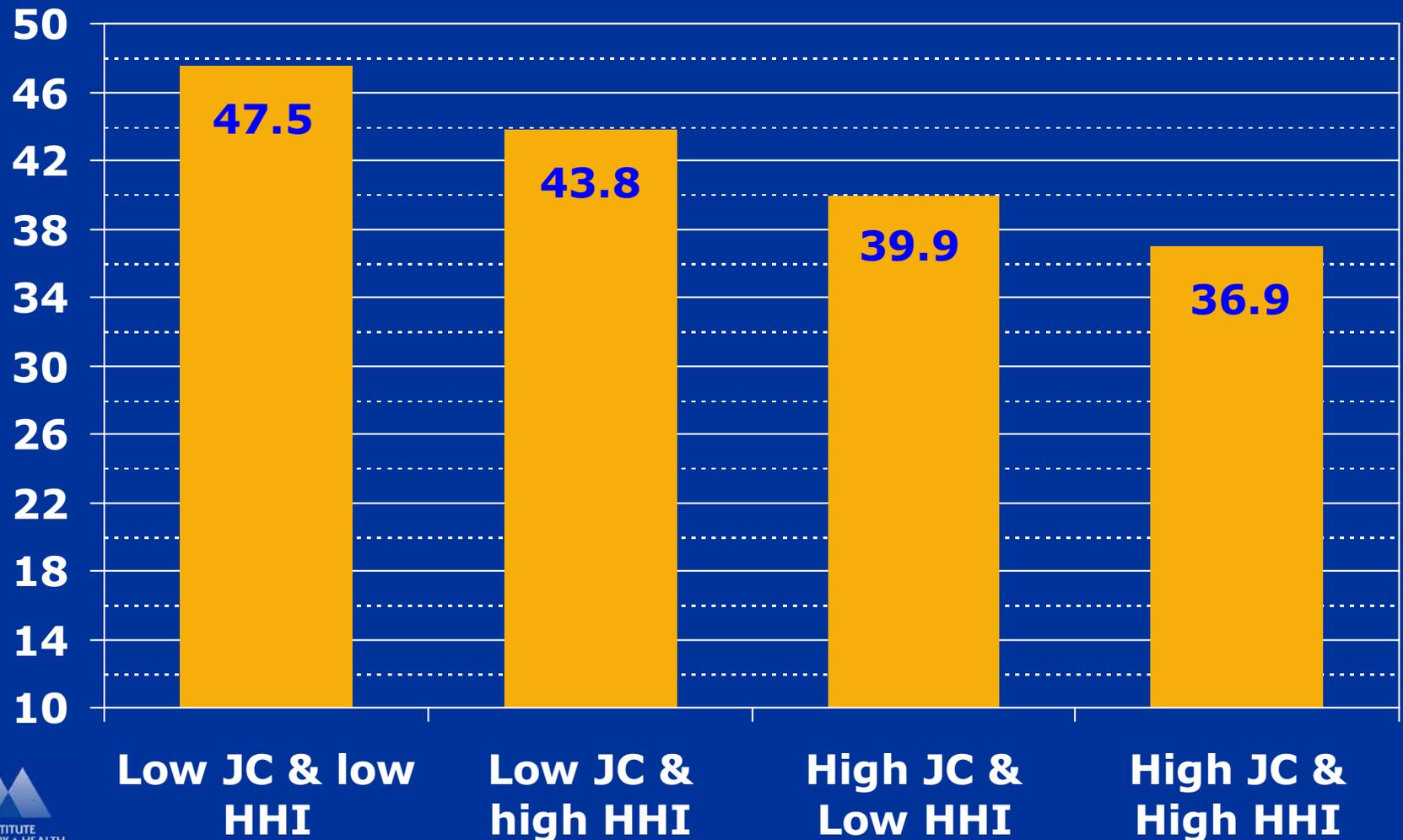
Results



Percent of respondents who were inactive in 1996 by baseline job control and environmental stress in 1994



Percent of respondents in good, fair or poor self-rated health in 2002 by baseline job control and household income adequacy in 1994



Conclusions

- Low job control has both indirect and direct effects on self-rated health over time;
- Other factors associated with lower education appear to have an additive, rather than a confounding, effect on health status and on physical activity
- Social context should be incorporated into studies examining level and changes in physical activity
- Is the measurement of job control outdated/insensitive to current job realities?

Practical and policy implications

- Although associated with lower socioeconomic status, job control has an independent impact on health status and physical activity
- Changing job control – either intentionally or unintentionally – in either a positive or negative direction will impact on physical activity and self-rated health status.
- Ongoing monitoring of the psychosocial work environment should be undertaken
 - Including measurement aspects of different aspects of work

Future Research

- Does job control influence other related factors (e.g. social activities)?
- Do changes in job control (and environmental stress) result in differences in level of physical activity or self-rated health?

For more information

- Smith, P.M., Frank, J.W., Mustard, C.A. and Bondy, S.J. (2008) Examining the relationships between job control and health status: a path analysis approach. *Journal of Epidemiology and Community Health*, 62 (1), 54 -- 61.
- Smith, P.M. and Beaton, D.E. (2008) Measuring change in psychosocial working conditions: methodological issues to consider when data are collected at baseline and one follow-up time-point. *Occupational & Environmental Medicine*, 65 (4), 288 -- 296
- Smith, P.M., Frank, J.W., Bondy, S.J. and Mustard, C.A. (2008) Do changes in job control predict differences in health status? Results from a longitudinal national survey of Canadians. *Psychosomatic Medicine*, 70 (1), 85 -- 91.



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