

The Life Course Perspective

Instructor: Jackie Torres, PhD (she/her)

Friday, February 9, 2021, 8:45am – 10:15am

Zoom

What are the life-course exposures that matter for your area of interest?

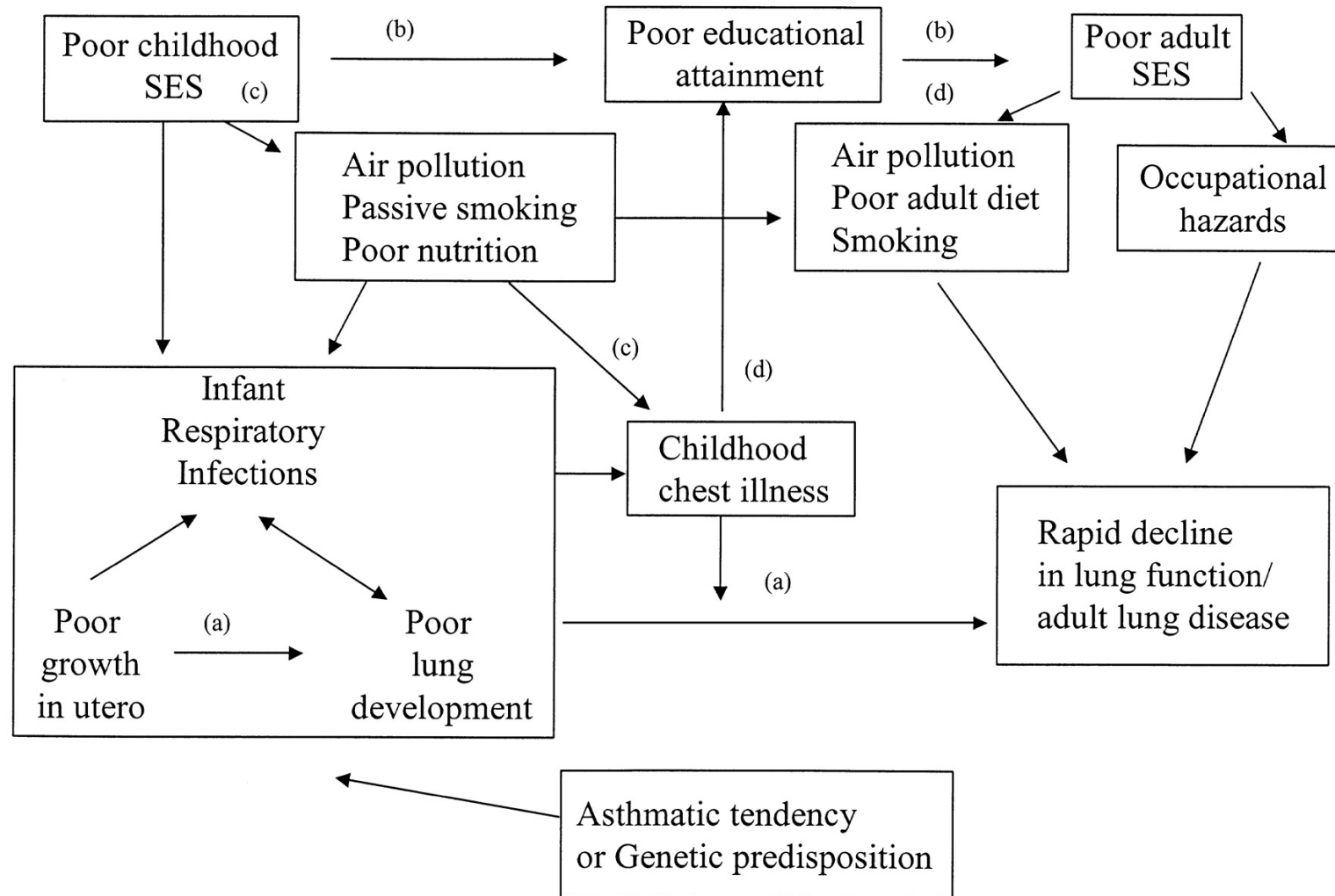
The life-course perspective is...

- A collection of theories with testable hypotheses about:
 - Pathways linking exposures across the life-course to (late-life) health
 - With a focus on temporal ordering of exposures and mechanisms
- What life-course perspective is not:
 - Synonymous with longitudinal research - although longitudinal research is often necessary to test life-course hypotheses
 - Synonymous with the collection or inclusion of variables from across the life-course – although those are

Life Course Epidemiology:

- The study of long-term effects of physical and social exposures during gestation, childhood, adolescence, young adulthood and later adult life on health outcomes and disease risk
- Aims to identify biological, behavioral, psychosocial pathways that operate across the life-course and across generations

Integrating the Biological & Psychosocial



Key life course models

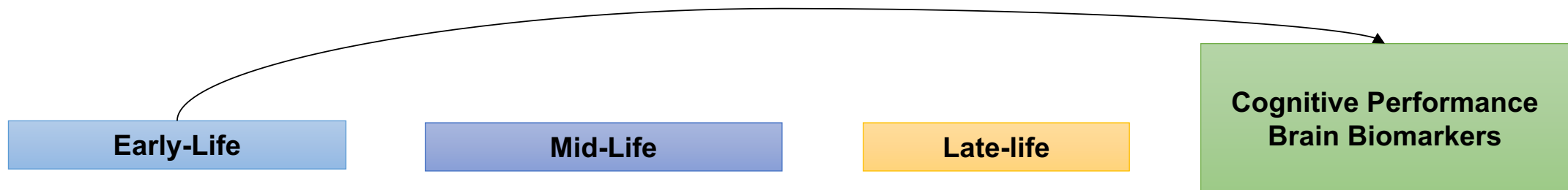
Primary Life Course Models

- Critical/sensitive periods (w/ effect modification)
- Accumulation of risk
 - Pathways

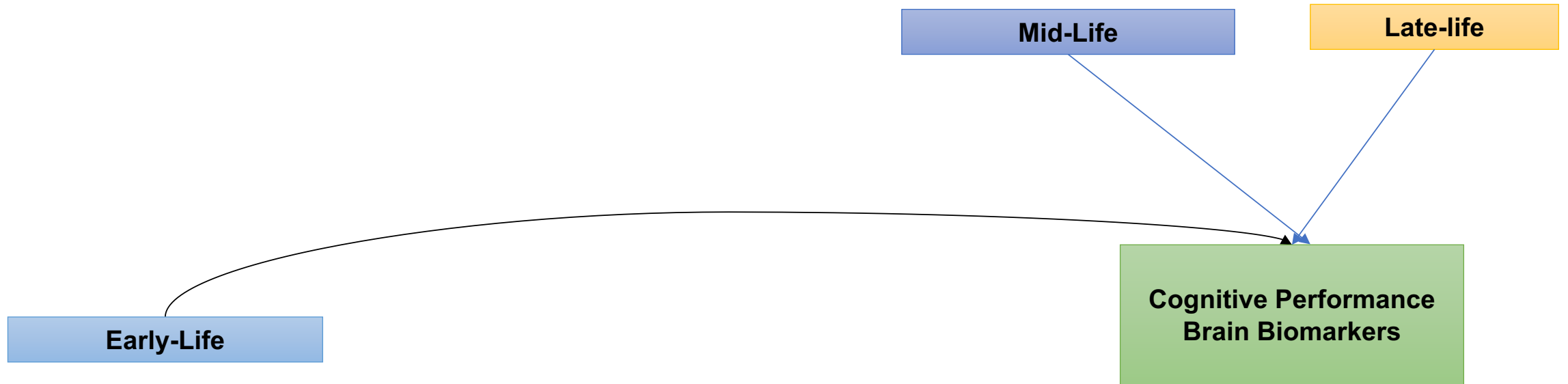


1. Critical Period Model

- “Exposure acting during a specific period has lasting or lifelong effects on the structure or function of organs, tissue and body systems which are not modified in any dramatic way by later experience.”

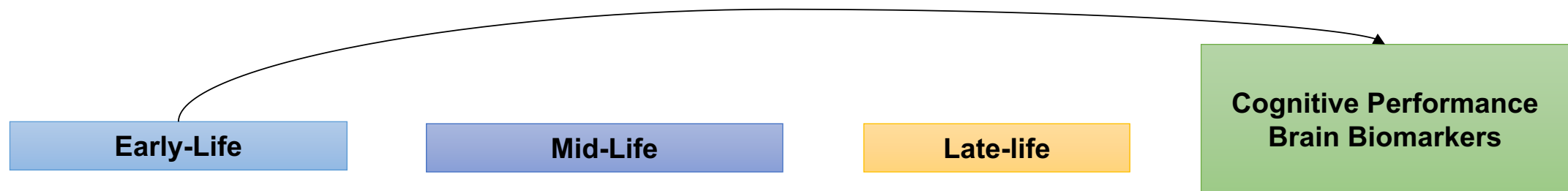


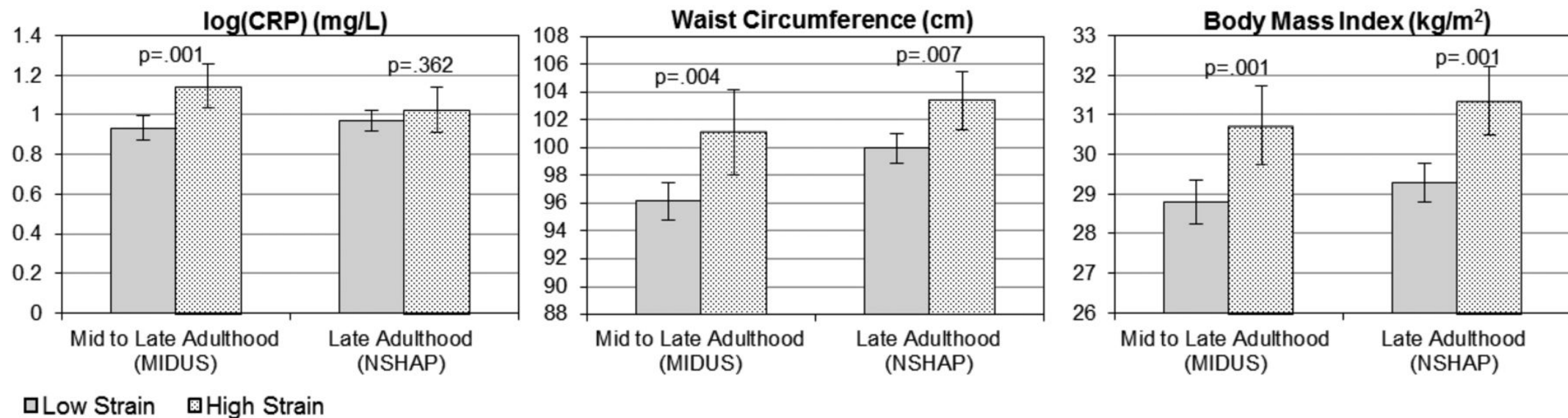
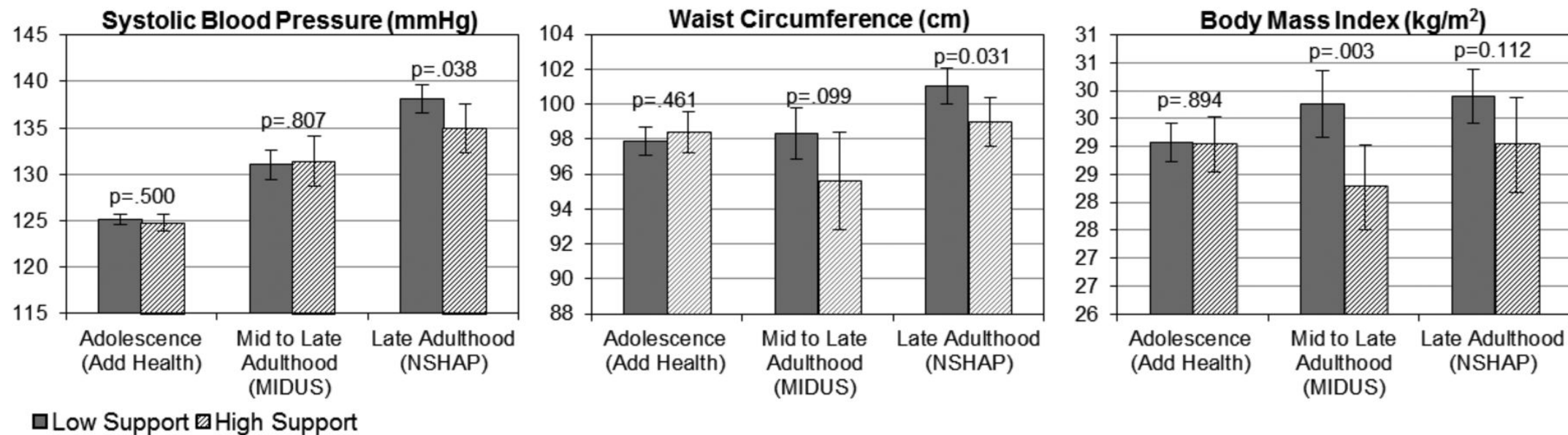
2. Critical Period Model with Effect Modification



Critical vs. Sensitive Periods

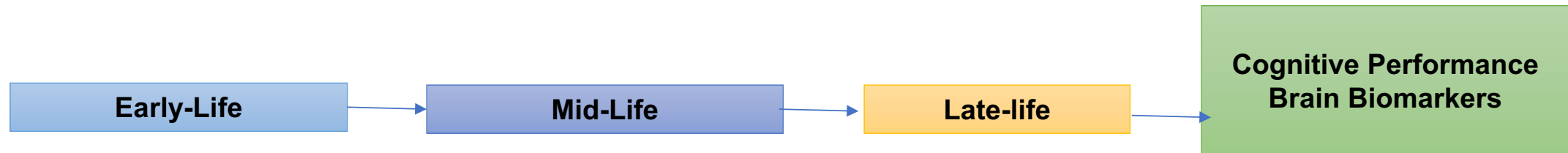
- Critical = limited time window in which an exposure has an effect; no effect outside that time window
 - Exposure not associated with increased/decreased risk outside this window
- Sensitive = time window in which an exposure has a stronger effect than at other times
 - Exposure more strongly associated with increased/decreased risk outside this window





3. Accumulation of Risk

- Cumulative insults and during the life course increase risk
 - Longer duration of exposure may have cumulative physiological impacts e.g. allostatic load
- Independent vs. clustered insults
- Additive (summary score) vs. **pathways** (mediation)



What were the core hypotheses tested in the article by Power and authors?

Your competing life-course
hypotheses and ideal data sources

Causal Contrasts Relevant for the Life-Course Perspective

Childhood	Mid-life	Late-Life
0	0	0
1	0	0
1	1	0
0	0	1

0 = not exposed

1 = exposed

Mishra et al. A structured approach to modelling the effects of binary exposure variables over the life course. *Int J Epidemiol.* 2009. 38: 528-537.

LCP Data Opportunities & Challenges

- Birth cohorts:
 - e.g. Danish registry
- Data linkages
 - e.g. 1940 Census to U.S. HRS and other aging cohort studies
 - e.g. Merging cohort studies together from across the life-course
- Natural experiments
 - e.g. Dutch famine, compulsory schooling laws
- Retrospective assessment of life-course conditions

Table 2. Distribution of Changes in Retrospective Reports, by Change in Current Health: PSID (1999–2001) and HRS (1996–1998)

Category	PSID		HRS	
	Ordinal %	Dichotomous %	Ordinal %	Dichotomous %
Retrospective Report Unchanged	55.3	94.7	54.2	91.1
Childhood Health “Improved”/ Current Health Improved	8.8	0.1	3.2	0.5
Childhood Health “Improved”/ Current Health Unchanged	9.6	1.8	12.9	4.5
Childhood Health “Improved”/ Current Health Declined	3.0	0.5	7.1	0.6
Childhood Health “Declined”/ Current Health Declined	8.1	0.2	7.5	0.6
Childhood Health “Declined”/ Current Health Unchanged	11.0	2.1	12.9	2.7
Childhood Health “Declined”/ Current Health Improved	4.3	0.5	2.3	0.0
Total Concordant Changes	16.9	0.3	10.7	1.1
Total Discordant Changes	7.3	1.0	9.4	0.6

Next Week:

Lecture & Readings:
Multimorbidity & chronic disease