Life Course Modelling Methods and Challenges

The Power of Programming
15th October 2016

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 633595.

Estelle Lowry

The DynaHealth Action

- The DynaHEALTH action focuses on bio-psycho-social pathways, which lead to impaired glucose tolerance and affect healthy and active aging.

Science 8 April 1977:
Vol. 196 no. 4286 pp. 129-136
DOI: 10.1126/science.847460

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ARTICLES

The need for a new medical model: a challenge for biomedicine

GL Engel

ABSTRACT

The dominant model of disease today is biomedical, and it leaves no room within tis framework for the social, psychological, and behavioral dimensions of illness. A biopsychosocial model is proposed that provides a blueprint for research, a framework for teaching, and a design for action in the real world of health care.

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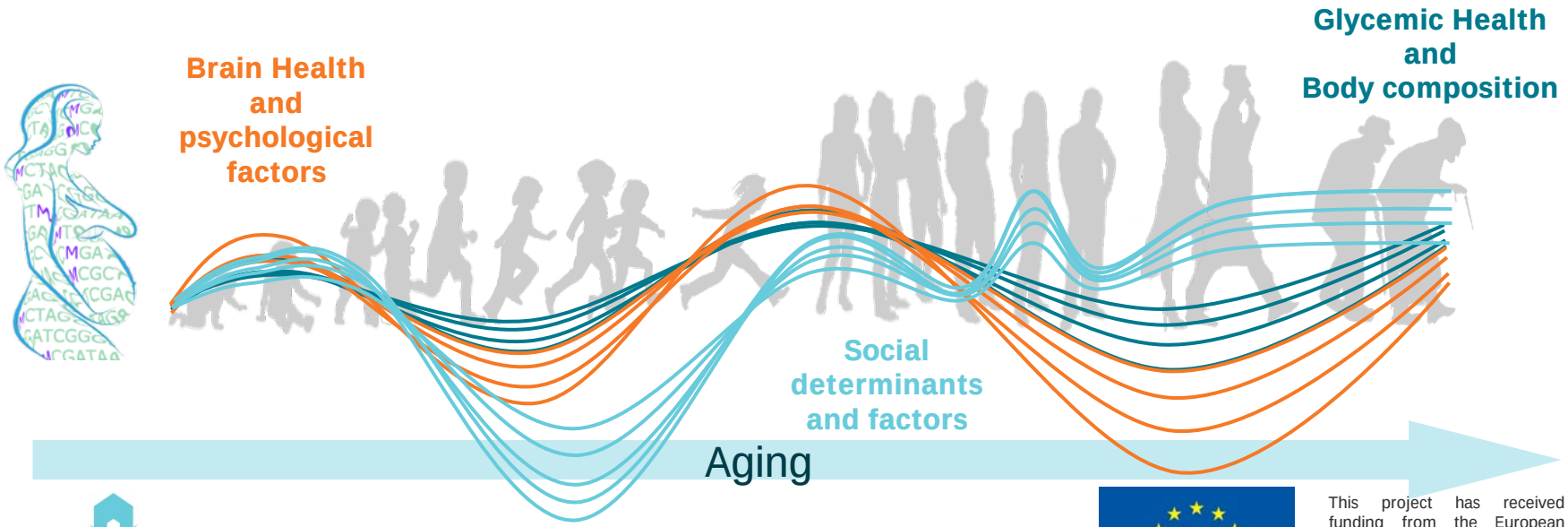
What is Life Course Modelling?

- the study of **long-term effects** of physical and social exposures during gestation, childhood, adolescence, young adulthood and later adult life on later health or chronic disease risk.

- It includes studies of the **biological, behavioural and psychosocial pathways** that operate across an individual's life course, as well as across generations



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Why a Life Course Approach?

- To build and test theoretical models that postulate pathways linking early exposures to later life health outcomes
- To integrate biological and psychosocial pathways
- To study how socially patterned exposures during the life course influence adult disease risk

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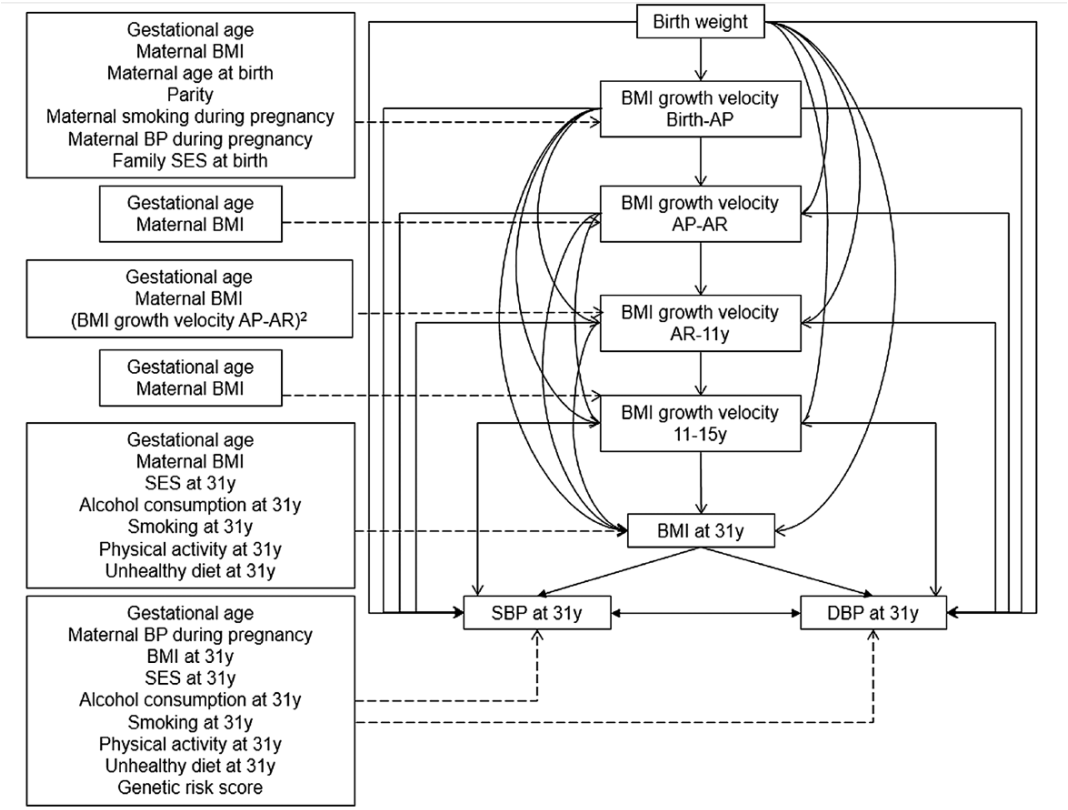
Modelling Methods

- Structure Equation Modelling



Kaakinen, M *et al*. 2014
J Epidemiol Community Health.

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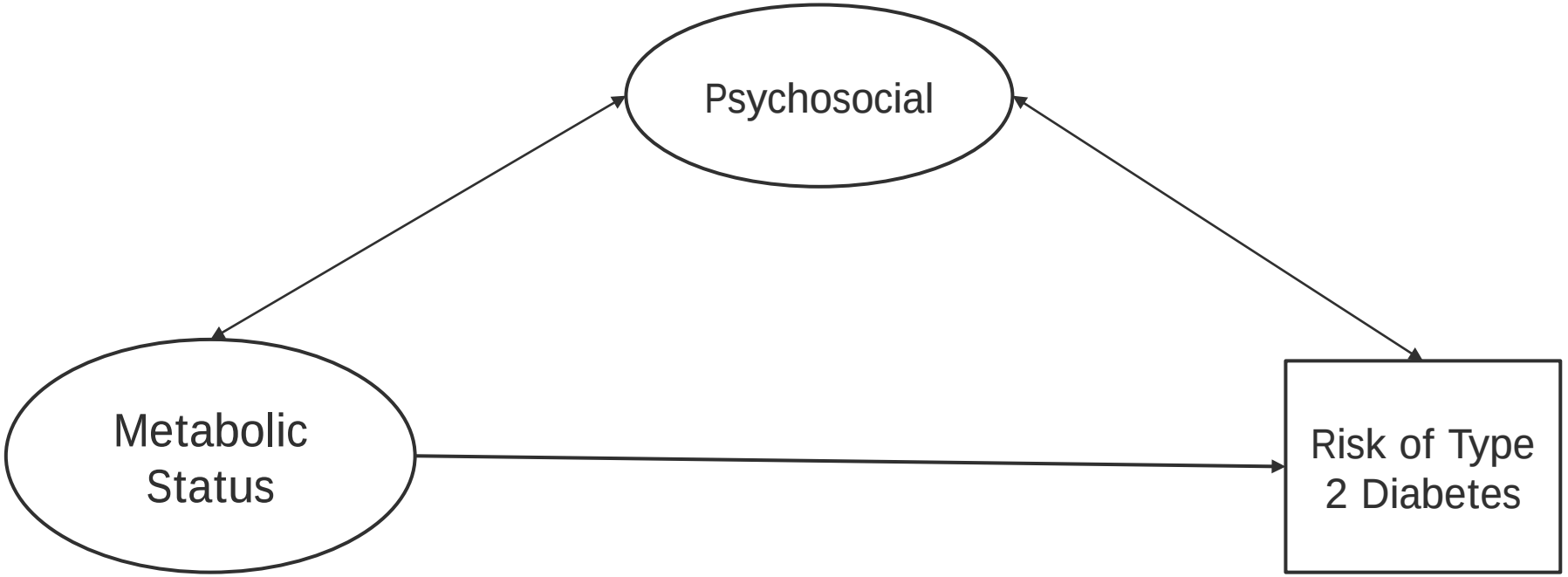
Structure Equation Model



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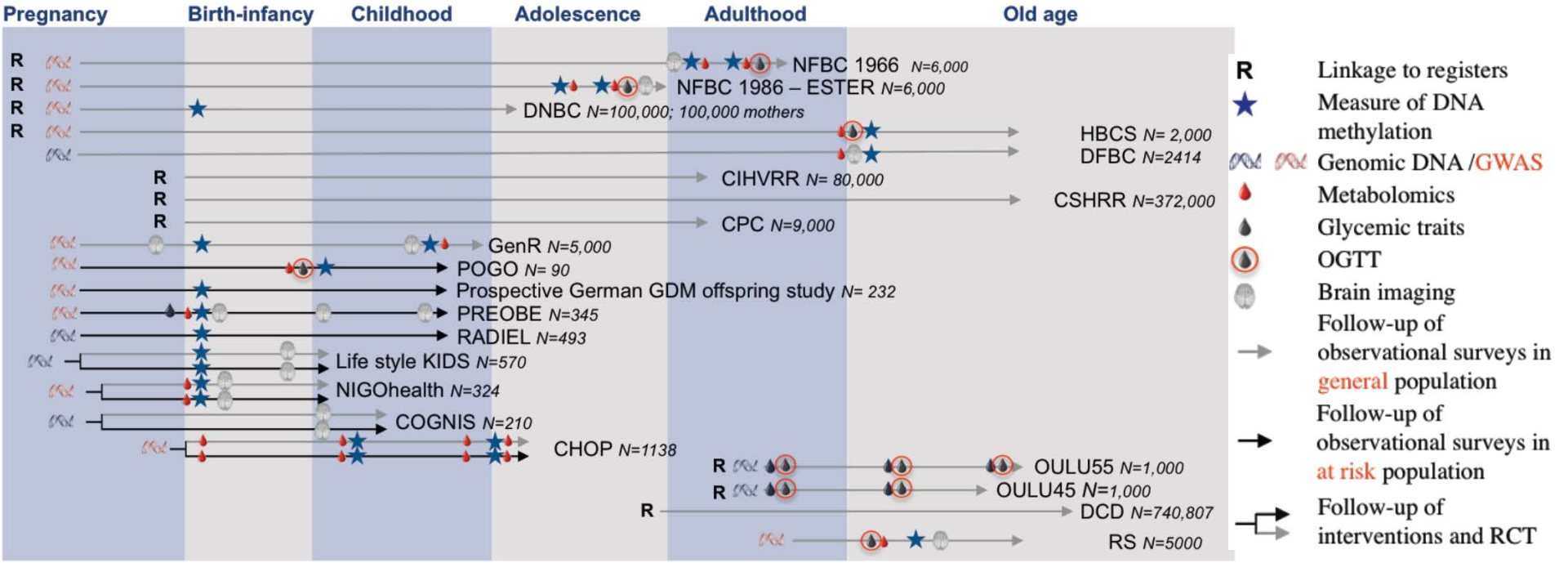
Analytical Challenges

- Difficulties modelling repeat observations, latent exposures, or multiple interactive or small effects
- Longitudinal data: missing data, omitted exposures, and measurement error
- Challenges for design and analysis of epidemiological studies.



Future Challenges for Researchers

- Changing individuals need to be studied in a changing world
- Incorporation of interactive effects of genetic and environmental factors across the life course.
- Translation of knowledge into interventions and policy recommendations designed to improve the long term health of individuals, social groups, and societies

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Preliminary Work

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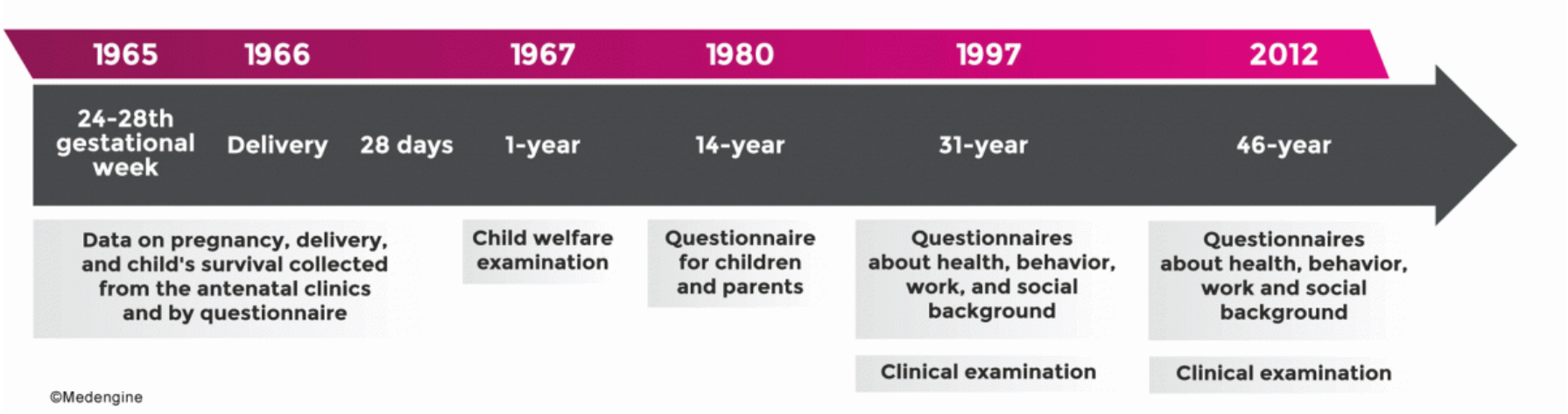
Pilot Cohort

Northern Finland Birth Cohort 1966



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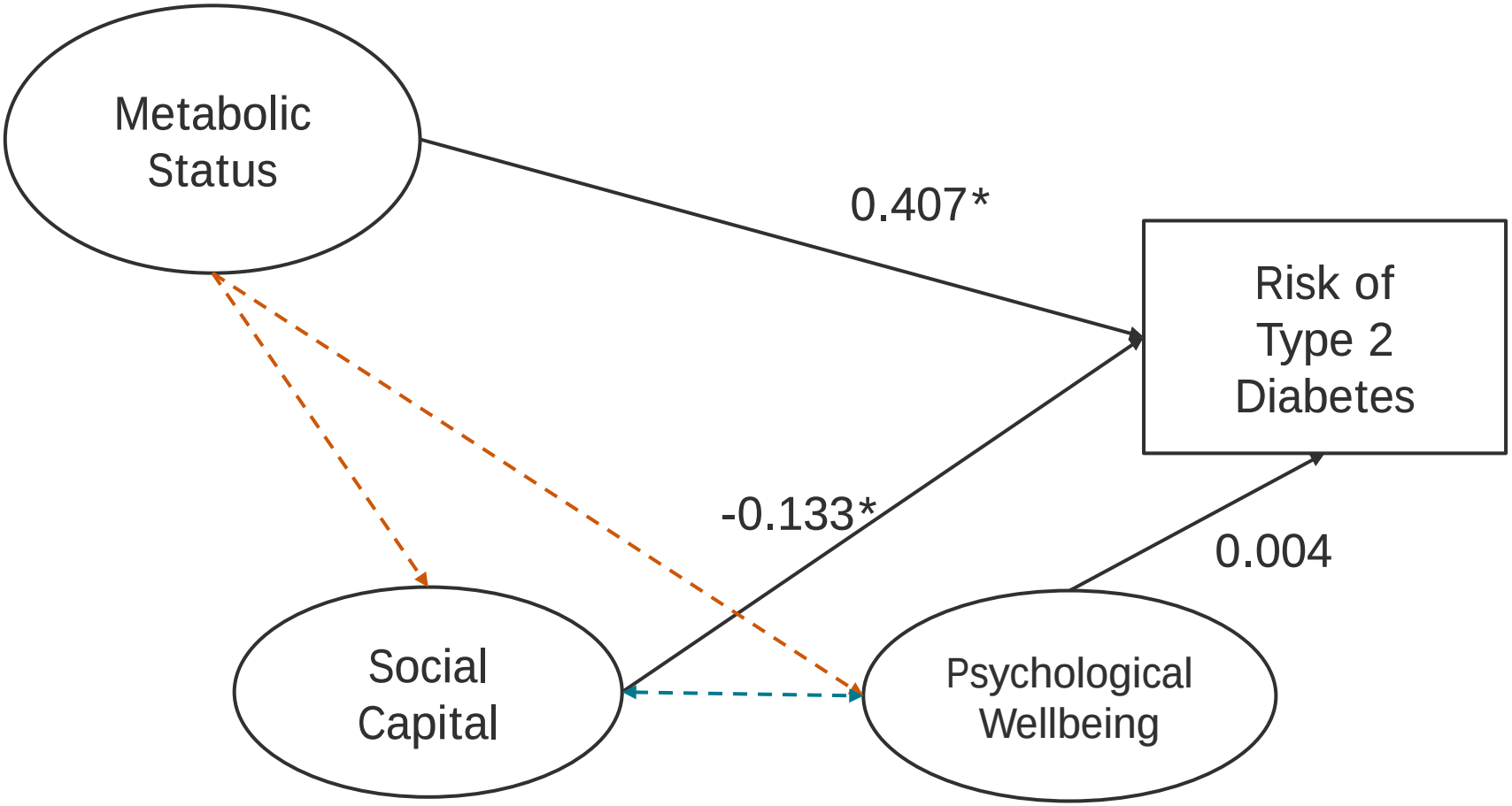
Structure Equation Model



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Thank you

Oulu
Marjo-Riitta Järvelin
Sylvain Sebert
Nina Rautio
Ville Karhunen
Sirkka Keinänen-Kiukaanniemi
Leena Ala-Mursula
Jouko Miettunen

Imperial
Inga Prokopenko

Brunel
Alex Lewin

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