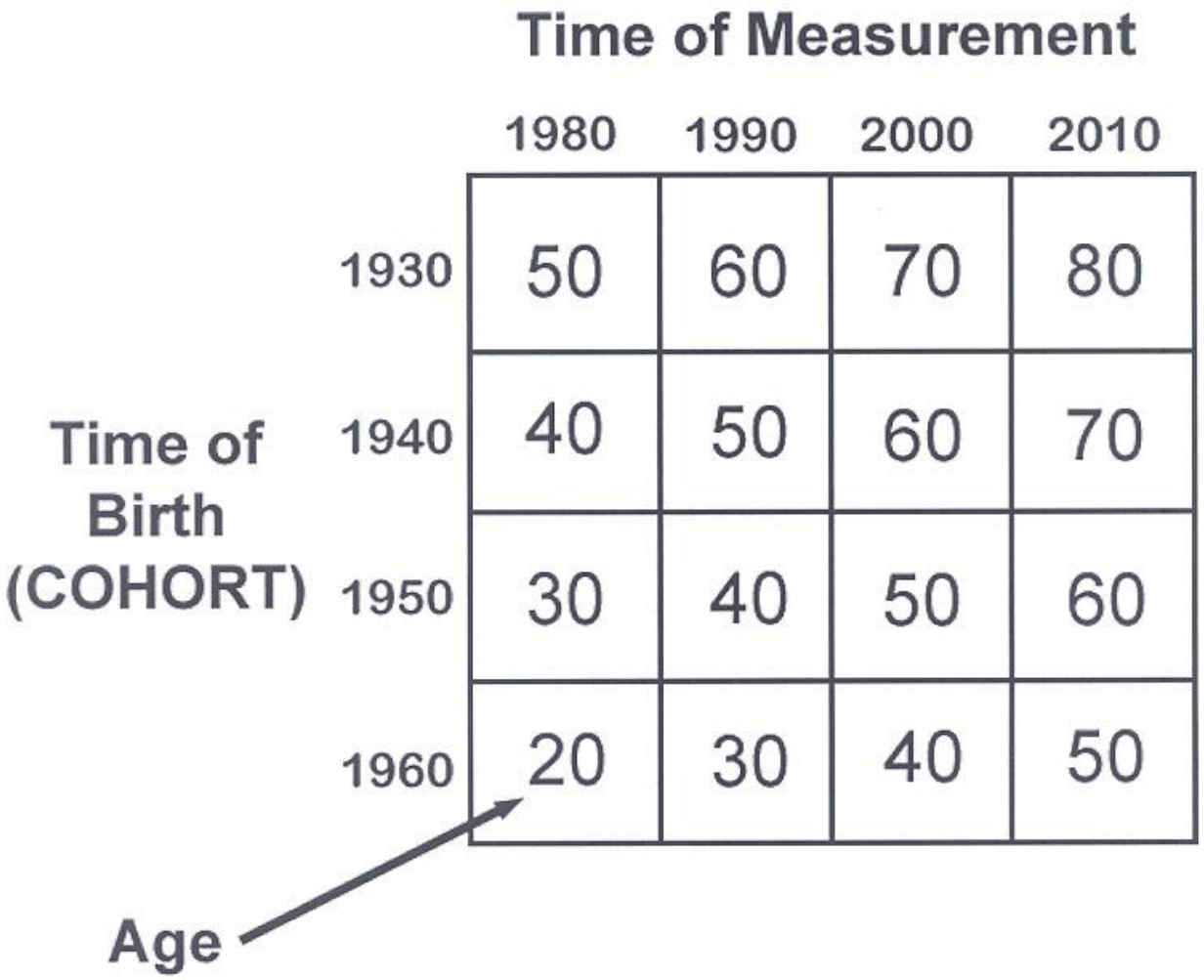
K.W. Schiae's General Developmental Model

- All experimental studies of aging involve three inter-related factors:

  AGE
  TIME of measurement
  Birth **COHORT**

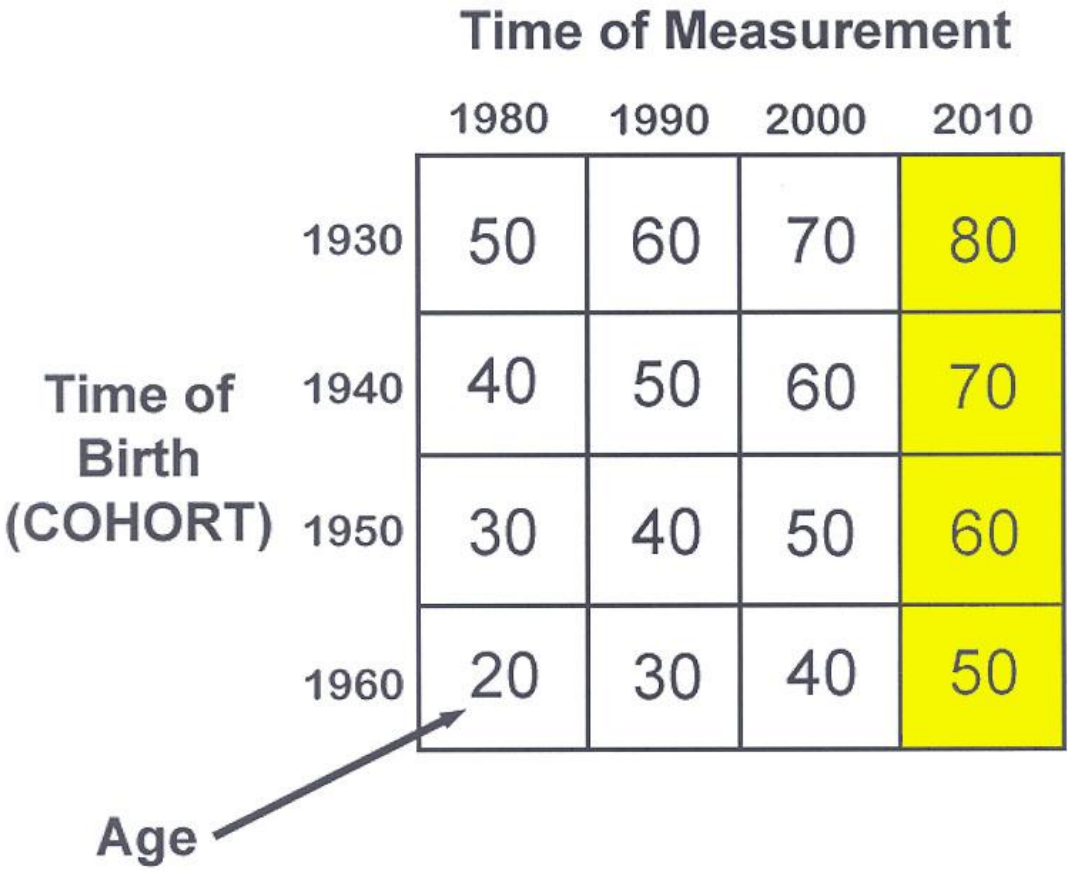
- In traditional CROSS-SECTIONAL and LONGITUDINAL experimental designs, two of these factors must be "confounded" with one another (more about this to follow).

General Developmental Design Matrix



Cross-Sectional Design

Definition: This design compares two or more groups of individuals that differ in chronological age, at a single point in time ("Age Differences")



Which TWO FACTORS are confounded?

Advantages of Cross-Sectional Designs

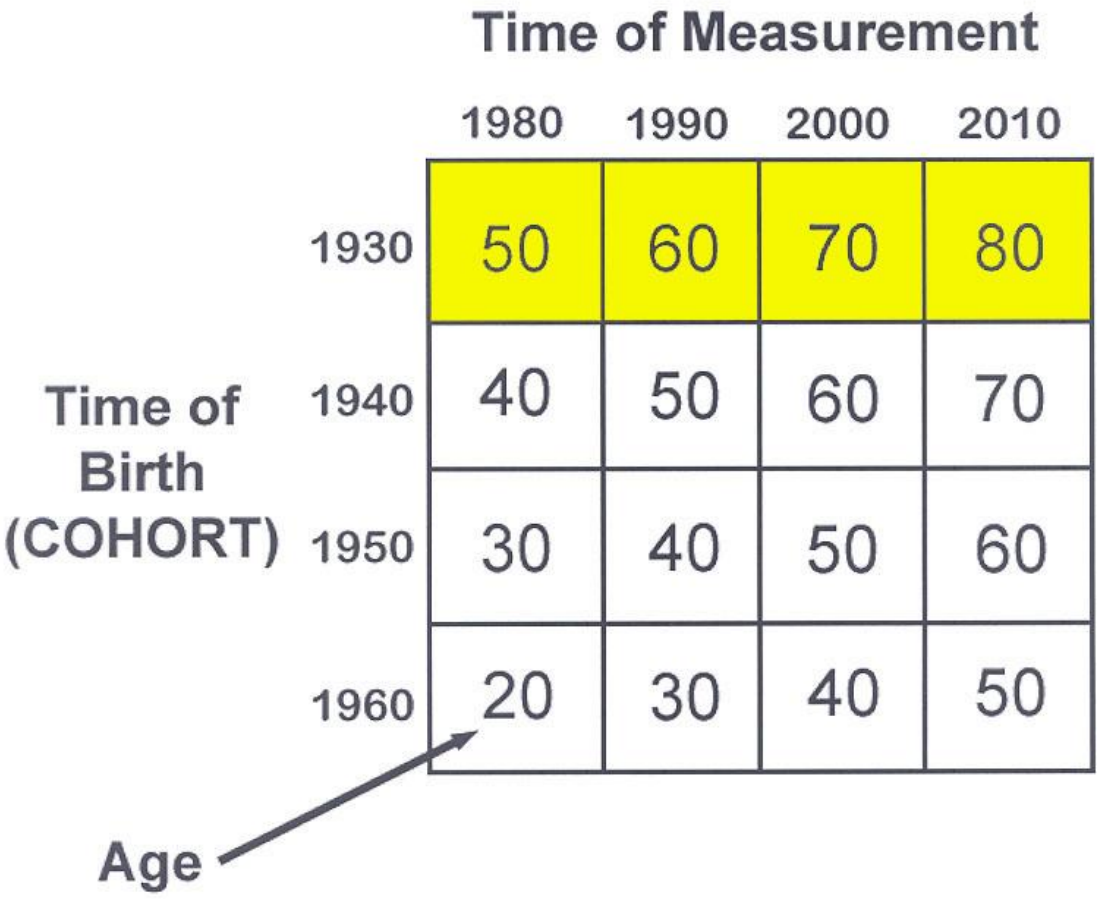
- Quick
- Economical
- Contemporary (techniques & hypotheses)

Disadvantages of Cross-Sectional Designs

- AGE x COHORT confound
- Over-Estimates age-related declines/losses
- “aging” must be inferred since it is never directly observed
- Examines phenomena at the “group” rather than “individual” level (Good for theory; not so good for application)

Longitudinal Design

Definition: This design compares a group of individuals drawn from the same birth cohort, across progressive periods of time ("Age Changes")



Which two factors are confounded?

Advantages of Longitudinal Designs

- Examines real “age changes” rather than mere “age differences”
- Eliminates the Age x Cohort confound

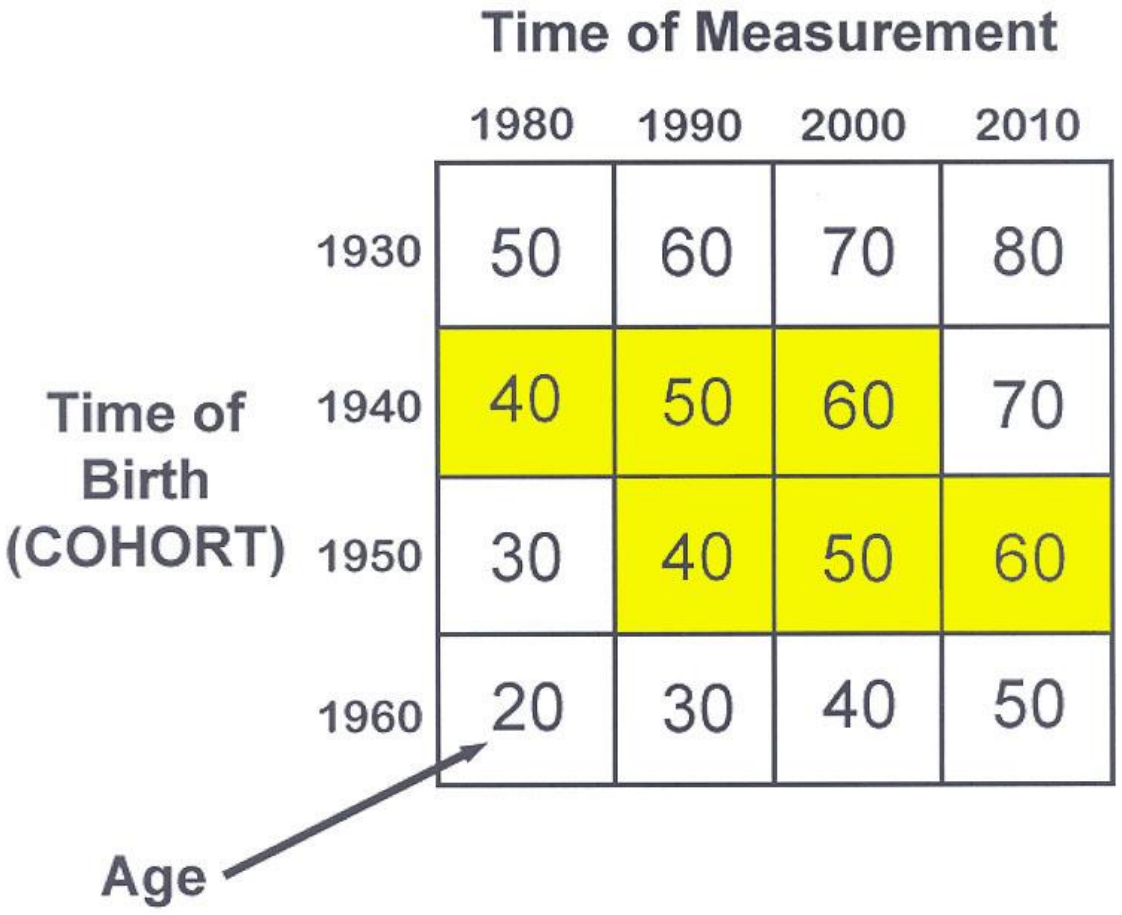
Disadvantages of Longitudinal Designs

- *Systematic* loss of subjects across time
- Under-estimates magnitude of age-related change
- Testing effects (due to “repeated measures”)
- Expensive (time and treasure)
- Experimenter(s) age too!
- Professionally risky: research questions become obsolete; publication delay has negative impact

Schiae's Alternative Designs for Developmental (Aging) Research

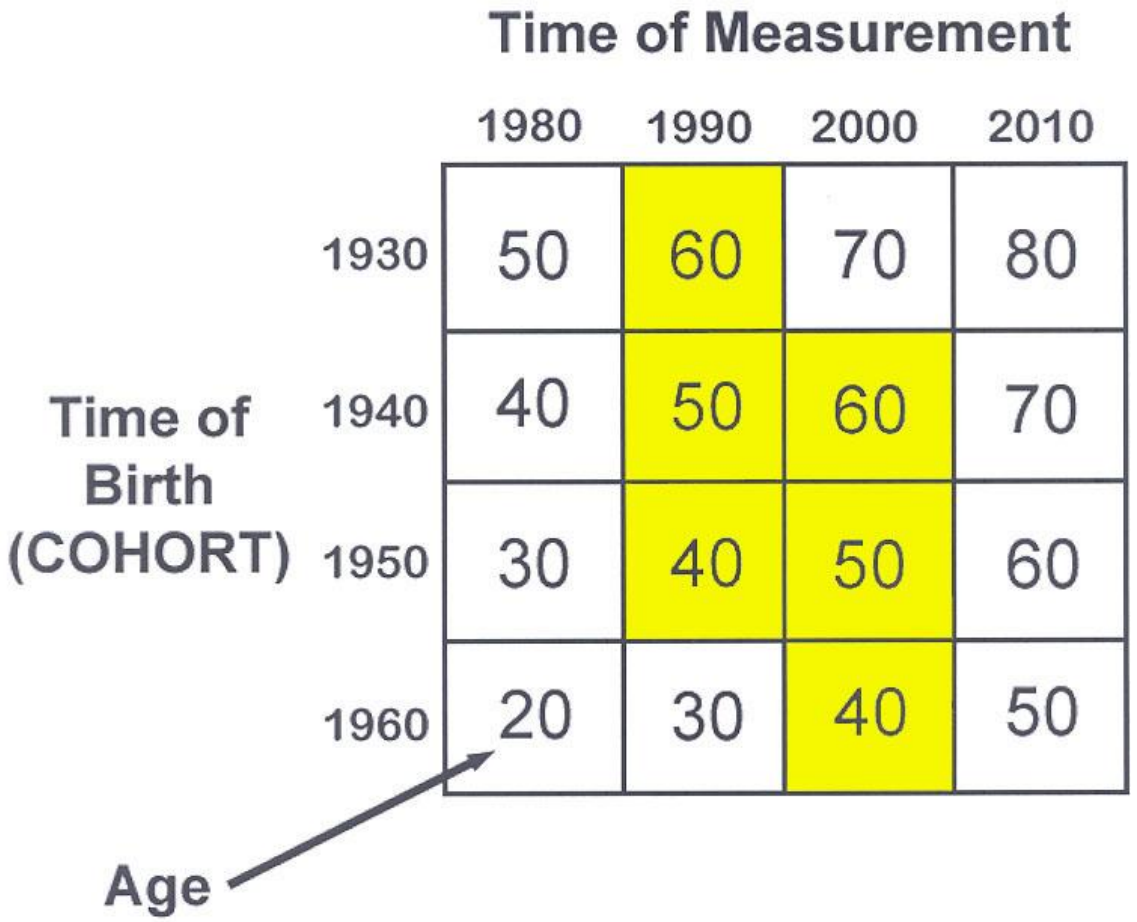
Cohort-Sequential Design

Consists of two or more concurrent longitudinal designs separated in time; allowing generalization of “age changes” across generations



Time-Sequential Design

Consist of two or more replications of a cross-sectional design separated by time of measurement; segregates Age and Time factors but confounds both with Cohort



Time-Lag Design

Holds Age constant and samples at widely separated Times of measurement; segregates the effects of birth cohort and time of measurement (at the expense of Age)