Research Methods in Aging

1. Static vs. Dynamic Approach
2. Within Group vs. Between Group Differences
3. 3 factors influencing within group differences
4. 3 fundamental effects in aging research
5. 4 developmental study designs
6. Experimental Study Designs

How to study Aging

- Developmentally **static** approach
  - goal is to describe people at a single, specific age period
  - age-group contrasts in a cross-sectional study
  - tends to show large age differences

- Developmentally **dynamic** approach
  - goal is to understand the process of change
  - longitudinal designs which show age changes
### Within-Group Differences vs Between-Group Differences

- Within-Group - Older adults show more heterogeneity (differences) than young children
- Between-Group - Older adults are different from people at other stages of the lifespan

### 3 factors influencing within-group differences

- Normative age-graded influences
- Normative history-graded influences
- Non-normative life events

#### 1. Normative age-graded influences

- Strong tie with chronological age
- Biological changes and societal expectations, thus CULTURE.
2. Normative history-graded effects

- Events that act on specific groups of people who experience them at about the same stage of development.

3. Non-Normative Life Events

- Major turning points not experienced by everyone - idiosyncratic- which shape the direction of an individual's development.

Research Methods

Why are old people so conservative?

- Do they BECOME conservative?
  - If so, why & how?
- Were they always that way?
  - If so, why & how?
3 Fundamental Effects in aging research

- AGE EFFECTS
- COHORT EFFECTS
- TIME OF MEASUREMENT EFFECTS

Age Change Effects

- reflect differences due to biological, societal, and psychological changes
- inherent changes within the person and are not caused by the passage of time, per se (as we age, we get taller; gray hair, wrinkles)

Cohort Effects

- Age differences due to the historical period in which one was raised
Time of Measurement Effects

- the social, historical, and political influences of the time period in which the data is collected
- Ex: Political attitudes are affected by whether there’s been any major international or national events in the recent past

The kinds of questions we ask influence the Research Methods we choose, which influence the type of data gathered and the conclusions that can be drawn.

Cross-sectional designs

- A comparison of people varying in some specific variable (age, cohort, gender, race) at a single point in time
- demonstrates group-level differences
Example

- A cross-sectional design contrasting 20 and 40 yr olds in 1980

<table>
<thead>
<tr>
<th>Birth Cohort</th>
<th>1960</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of Measurement</td>
<td>1980</td>
<td></td>
</tr>
</tbody>
</table>

Key Points: Cross-sectional

- Are "quick"
- Are relatively inexpensive
- Controls for Age Differences (Time of Measurement), but cannot control for Age Changes or Cohort Differences

Longitudinal designs

- a study in which a single cohort is followed over a period of time
- demonstrates age change
Example

Longitudinal design of change from age 20 to 40 for people born in 1960

<table>
<thead>
<tr>
<th>Birth Cohort</th>
<th>1980</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 20</td>
<td>-</td>
<td>Age 40</td>
</tr>
</tbody>
</table>


Key Points: Longitudinal

- Is expensive in terms of $, time, staff
- Out-dated measures, ‘testing effect’
- Drop-outs & Death
- Controls for Age Changes, but cannot control for Age Differences (Time of Measurement) or Cohort Differences.

Time-lag designs

- A comparison of people of the same age from different cohorts tested at different times of measurement
Example

- Compare 20 yr olds across cohorts and times of measurement

<table>
<thead>
<tr>
<th>Birth Cohort</th>
<th>Age 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Age 20</td>
</tr>
<tr>
<td>1980</td>
<td>Age 20</td>
</tr>
<tr>
<td>1960</td>
<td>Age 20</td>
</tr>
<tr>
<td><strong>Time of Measurement</strong></td>
<td>1980</td>
</tr>
</tbody>
</table>

Key Points: Time-lag

- Very Expensive
- Controls for Cohort Differences, cannot control for Age Change or Age Differences (Time of Measurement)

Sequential designs - Key Points

- Begins to disentangle the 3 confounds
- Controls for Age Change, Age Differences, and Cohort Differences
- Schaie’s ‘Most Efficient Design’ (pgs. 116-120)
Example
- Simultaneous cross-sectional & longitudinal, depending on whether rows, columns, or diagonals

<table>
<thead>
<tr>
<th>Birth Cohort</th>
<th>Age 20</th>
<th>Age 40</th>
<th>Age 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>Age 20</td>
<td>Age 40</td>
<td>Age 60</td>
</tr>
<tr>
<td>Time of Measurement</td>
<td>1980</td>
<td>2000</td>
<td>2020</td>
</tr>
</tbody>
</table>

So, are old people conservative?
- A **cross-sectional** study will show whether old people are more conservative than young people
- A **longitudinal** study will show whether people in a specific group become more or less conservative with age
- A **time-lag** design will show whether current old people are more conservative than previous cohorts of old people
- A **sequential** design will show whether or not old people are more conservative than young people at one point in time, over time, and across different cohorts

Experimental Studies
- Hard to do experimental studies on aging...cannot randomly assign people an age. Hard to say that getting old, causes...
- Often likely that age is a ‘proxy’ variable for something else going on in the body/mind
1. **Experimental Studies**

- **Age-comparative Studies**
  - Match age groups on demographics
  - Randomly assign different age groups to different independent variable groups
  - Use a pretest and posttest of dependent variable for each age group (before and after the independent variable)
  - Nonequivalent control group, pretest-posttest

```
Old Group
Young Group
```

*Show older group gained more from the intervention than younger group. Not so much difference.

- **Single Age Group Experiments**
  - Only study older adult age groups over a period of time.
  - Different older adult experimental & control groups
  - One group of older adults receives a pretest, receives intervention, and receives a posttest
  - One group of older adults receives a pretest, receives ‘standard care’, and receives a posttest