AGE AND LIFE SATISFACTION: GETTING CONTROL VARIABLES UNDER CONTROL
Age/life satisfaction “U-shape”?
Age/life satisfaction “U-shape”?

But: models must exclude individual-level controls
- (Glenn 2009, Hellevik 2017)
<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.07</td>
<td>0.000</td>
</tr>
<tr>
<td>Age$^2$/100</td>
<td>0.07</td>
<td>0.000</td>
</tr>
<tr>
<td>Female</td>
<td>0.13</td>
<td>0.000</td>
</tr>
<tr>
<td>Religiosity</td>
<td>0.07</td>
<td>0.000</td>
</tr>
<tr>
<td>Partner</td>
<td>0.52</td>
<td>0.000</td>
</tr>
<tr>
<td>Unemployed</td>
<td>-0.57</td>
<td>0.000</td>
</tr>
<tr>
<td>Friends</td>
<td>0.60</td>
<td>0.000</td>
</tr>
<tr>
<td>Health</td>
<td>-0.69</td>
<td>0.000</td>
</tr>
<tr>
<td>Income</td>
<td>0.09</td>
<td>0.000</td>
</tr>
<tr>
<td>Education:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower secondary</td>
<td>0.14</td>
<td>0.123</td>
</tr>
<tr>
<td>Upper secondary</td>
<td>0.28</td>
<td>0.002</td>
</tr>
<tr>
<td>Vocational</td>
<td>0.27</td>
<td>0.007</td>
</tr>
<tr>
<td>Tertiary</td>
<td>0.41</td>
<td>0.000</td>
</tr>
<tr>
<td>ESS Round 5</td>
<td>0.10</td>
<td>0.001</td>
</tr>
<tr>
<td>Constant</td>
<td>6.34</td>
<td>0.000</td>
</tr>
</tbody>
</table>

N: 28,634
Prob > F: 0.000
Adjusted R$^2$: 0.226
“Other determinants”:

Religiosity

Education

Sex

Age

Health

Partner

Children

Income

Unemployment

Social

SWB
Sec. 10.2 Controlling for Other Variables
Unemployment → Income ← Happiness
Unemployment coefficient (with income controlled): a “direct effect”
Unemployment coefficient (with income controlled): a “direct effect”

- “Net effect”? Net of what??
Unemployment coefficient (with income controlled): a “direct effect”

“Net effect”? Net of what??

• “Net of the effects of other variables”
Unemployment coefficient (with income controlled): a “direct effect”

“Net effect”? Net of what??
- “Net of the effects of other variables”
- Net of the *indirect* effect of *unemployment itself*
  - Unemployment reduces income, and the lower income reduces life-satisfaction
Core distinction

- Confounders
  - Variables that are antecedents of the outcome ($Y$) and main IV of interest ($X$)
Core distinction

- Confounders
  - Variables that are antecedents of the outcome (Y) and main IV of interest (X)

- Intervening variables
  - Variables that determine the outcome (Y) but are determined by the main IV of interest (X)
Core distinction

- Confounders
  - Variables that are antecedents of the outcome (Y) and main IV of interest (X)

- Intervening variables
  - Variables that determine the outcome (Y) but are determined by the main IV of interest (X)

- Control variables:
  - Include confounders
  - Exclude intervening variables
Model of age → life satisfaction

- Control variables:
  - None?
Model of age $\rightarrow$ life satisfaction

- Control variables:
  - None?
  - Cohort & period
Model of age $\rightarrow$ life satisfaction

- Control variables:
  - None?
  - Cohort & period
  - If multi-country study:
    - Country
    - Sex
Model of age → life satisfaction

- Function
  - Quadratic? (age and age-squared)
Model of age $\rightarrow$ life satisfaction

- **Function**
  - Quadratic? (age and age-squared)
    - Coefficients difficult to interpret
    - Conclusions typically drawn via asterisks (significance)
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  - Better: split the sample (cut-off: 45)
    - Does LS decrease towards middle age, and then rise after?
Model of age → life satisfaction

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    - Coefficients difficult to interpret
    - Conclusions typically drawn via asterisks (significance)
  - Better: split the sample (cut-off: 45)
    - Does LS decrease towards middle age, and then rise after?
    - If so, how much?
Model of age $\rightarrow$ life satisfaction

- Data:
  - World Values Survey
    - Waves 1-6
    - All countries with participation in at least 2 waves (so: 69 total)
Model of age → life satisfaction

Data:
- World Values Survey
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  - N=304,131
Model of age $\rightarrow$ life satisfaction

- **Data:**
  - World Values Survey
    - Waves 1-6
    - All countries with participation in at least 2 waves (so: 69 total)
    - N=304,131
  - Y: life satisfaction on 1 to 10 scale
Model of age → life satisfaction

Data:

- World Values Survey
  - Waves 1-6
  - All countries with participation in at least 2 waves (so: 69 total)
  - N=304,131
- Y: life satisfaction on 1 to 10 scale
- Mixed effects model (cross-classified, Yang 2008)
Model of age → life satisfaction

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
</tr>
<tr>
<td>Age</td>
<td>-0.012</td>
</tr>
<tr>
<td>Female</td>
<td>0.092</td>
</tr>
<tr>
<td>Constant</td>
<td>6.914</td>
</tr>
<tr>
<td>( \sigma^2 ) Cohort</td>
<td>0.003</td>
</tr>
<tr>
<td>( \sigma^2 ) Survey year (period)</td>
<td>0.096</td>
</tr>
<tr>
<td>( \sigma^2 ) Country</td>
<td>0.720</td>
</tr>
<tr>
<td>( \sigma^2 ) Residual</td>
<td>4.912</td>
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Likelihood ratio test Chi\(^2\) 27330.18 ***

N 182,744

*p<0.05  ** p<0.01  ***p<0.001
Model of age → life satisfaction

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<thead>
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<th></th>
<th>45 and older</th>
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<td></td>
<td>b</td>
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<td>Age</td>
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<tr>
<td>σ² Cohort</td>
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<td>0.002</td>
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Cohen’s d (40-year change): \(d = (0.0023 \times 40) / 2.5 = 0.037\)
Model of age $\rightarrow$ life satisfaction

- Results at country level
  - U-shape: Czech Republic, Mexico, Turkey
Model of age → life satisfaction

- Results at country level
  - U-shape: Czech Republic, Mexico, Turkey
  - Continuous increase: Australia
Model of age → life satisfaction

- Results at country level
  - U-shape: Czech Republic, Mexico, Turkey
  - Continuous increase: Australia
  - Continuous decrease: Bulgaria, Georgia, Moldova, Pakistan, Romania, Serbia, Slovenia, Spain, Ukraine
Conclusion

- No U-shape of life satisfaction
  - Instead, only a small decline before middle age
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  - No *substantial* increase after middle age
Conclusion

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- Analytical angles:
  - No individual-level control variables
  - Consider effect size, not just “significance”