HARMONIZING MEASURES OF DEPRESSIVE SYMPTOMS: THE CONSORTIUM ON INTERPLAY OF GENES AND ENVIRONMENT ACROSS MULTIPLE STUDIES

Presenter: Margaret Gatz for the IGEMS Consortium
Studies

**DANISH TWIN REGISTRY**  
University of Southern Denmark

**MADT**  
Middle-Age Danish Twin study

**LSADT**  
Longitudinal Study of Aging Danish Twins

**MTSADA**  
Minnesota Twin Study of Adult Development and Aging

**Swedish Twin Registry**

**TOSS**  
Twin Offspring Study in Sweden

**SATSA**  
Swedish Adoption/Twin Study of Aging

**Gender**  
Health among Men and Women in Aging

**OCTO Twin**  
Origins of Variance in the Old-Old

**Midlife in the United States**  
Twin Screening Project
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GOALS of IGEMS

1. Harmonize social phenotypes and aging outcomes to enable combined analysis

2. Investigate the impact of early and current social context effects and G and E interplay on late-life functioning
Methods leading to combined analysis

- Develop common administrative file structure:
  - demographic variables, last vital status, age at each assessment, and reasons for non-participation

- Create spreadsheets for measures that correspond to constructs in the model:
  - include questions and response options

- Where a common metric not available, collect a new sample who completed questionnaires corresponding to all of the ways that different studies assessed a particular phenotype
## Crosswalk Sample

<table>
<thead>
<tr>
<th></th>
<th>Men &lt;60</th>
<th>Women &lt;60</th>
<th>Men 60+</th>
<th>Women 60+</th>
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</thead>
<tbody>
<tr>
<td>MTurk</td>
<td>N= 192</td>
<td>215</td>
<td>32</td>
<td>27</td>
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<tr>
<td>TrialMatch</td>
<td>N= 16</td>
<td>120</td>
<td>116</td>
<td>224</td>
</tr>
<tr>
<td>Healthy Minds</td>
<td>N= 3</td>
<td>6</td>
<td>15</td>
<td>37</td>
</tr>
<tr>
<td>Other</td>
<td>N= 2</td>
<td>1</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>N= 213</td>
<td>342</td>
<td>194</td>
<td>312</td>
</tr>
</tbody>
</table>
Depressive Symptoms Measures

**CESD: 4 Swedish + 3 U.S. Studies**
- 20 items
- 4-point response scale
- 4 subscales
  - Depressed mood
  - [Lack of] well-being
  - Psychomotor retardation
  - Interpersonal difficulties

**CAMDEX: 2 Danish Studies**
- 17 items
- 3-point response scale
- 2 subscales
  - Affect [sad mood and lack of well-being]
  - Somatic [cognitive difficulties, slowing, loss of energy]
Categories of Harmonization Methods

- **Rational:** logical, semantic, lexical, recasting methods
- **Empirical:** proportional scoring or percentiles; use of IRT to create conversion table
- **Configural:** concept or factorial level
Mean scores on CESD and CAMDEX for Crosswalk Sample
Map of Item Difficulties

CES-D

CAMDEX

Not-worth-living (camd18)
Crying (cesd17)
Nervous (camd14)
Speak-slowly (camd9)
People-unfriendly (cesd15)
People-disliked (cesd19)
Eating (cesd2)
Failure (cesd9)
Sad, depressed (camd15)
Fearful (cesd10)

Shake-the-blues (cesd3) Just-as-good-as (cesd4)
Enjoyed-life (cesd16) Lonely (cesd14) Depressed (cesd6)
Happy (cesd12) Sad (cesd18) Bothered-by-things (cesd1)
Get-'going' (cesd20) Talked-less (cesd13)
Hopeful (cesd8)

Diff-concentrate (camd8) Optimistic-future (camd17)
Lost-pleasure (camd5) Diff-coping (camd3) Feel-lonely (camd12)
Lost-energy (camd6)
On-your-own (camd7)
Line of Identity plot of CAMDEX predicted v actual

![Line of Identity plot of CAMDEX predicted vs actual](image)
Line of Identity plot of CAMDEX-8 predicted v actual
Summary and Conclusion

- Create linked sample administered both CESD and CAMDEX in counterbalanced order with unrelated material in between (vocabulary)

- Apply rational, empirical, and configuration harmonization methods
  - For CES-D and CAMDEX, the empirical method (IRT) was preferable to the configural method
  - Different measures pose different harmonization issues that might lead to different choices of harmonization method

- Based on crosswalk sample, calculate raw score conversion table to move forward with pooled analyses