A multiple-group approach to the study of 12-month psychiatric comorbidity across the adult lifespan:

the EU-WMH project.

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Overview

• Introduction

• The EU-WMH project

• Methodology

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• Conclusions
Introduction

• Studies of mental illness using standardised diagnostic instruments often report very low levels of clinical disorders in later life (McDowell et al. 2013)

• Scholars are divided as to whether this finding is realistic (Ernst and Angst 1995) or not (Snowdon 2001)

• Psychiatric comorbidity is also a feature of mental illness (Hettema 2008)

• Again the literature is divided as to whether this is real or artifactual (First 2002)

• Purpose of the analysis is to examine the psychiatric comorbidity of common mood and anxiety disorders in Europe across the adult lifespan. Where are the older adults?
The EU-WMH project

- 10 European countries participated in the World Mental Health (WMH) surveys (n=37,289):
  - Belgium - Italy - Portugal
  - Bulgaria - The Netherlands - Romania
  - France - Northern Ireland - Spain
  - Germany

- Nationally representative multistage probability samples of adults 18+ years assessed using the Composite International Diagnostic Instrument (CIDI) (Kessler and Üstün 2004)

- Common 12-month DSM-IV mood and anxiety disorders (without hierarchy) assessed in all 10 countries:
  - major depressive episode (MDE)
  - dysthymia (DYS)
  - generalised anxiety disorder (GAD)
  - agoraphobia with/without panic (AGO)

  - panic disorder (PD)
  - social phobia (SO)
  - specific phobia (SP)

- Results compared with a wider range of disorders assessed in Bulgaria, N. Ireland, Portugal and Romania
Methodology

• Multiple-group latent class analysis (Lazarfeld and Henry 1968) used to group the 12-month disorders according to patterns suggested by the data.

• Measurement invariance assessed at the item-level for the groups/countries and age, and at the scale-level for the other covariates (gender, martial status and urbanicity).

• Constraints on predictors of class membership and direct covariate effects assessed using e.g. Modification Indices, Expected Parameter Changes, statistical power (Saris et al. 2009).

• Model fit statistics included BIC, SSA-BIC.

• Models fitted in Mplus (Muthén and Muthén 1998-2013).
Results

- 4-class solution most appropriate for the common 12-month mood and anxiety disorders (BIC 46759.60, SSA-BIC 46554.04, Entropy 0.88)

- One class varied slightly in interpretation between countries due to measurement non-invariance associated with MDE, SP

- Highly depressed class present in countries with the highest (N. Ireland, Portugal) and lowest (Bulgaria, Romania) 12-month disorders

<table>
<thead>
<tr>
<th>Country</th>
<th>Class 1: Minimally affected</th>
<th>Class 2: Moderately depressed/cothymic</th>
<th>Class 3: Highly depressed/dysthymic</th>
<th>Class 4: Comorbid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>91.4%</td>
<td>7.4%</td>
<td>0.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>93.0%</td>
<td>6.2%</td>
<td>0.7%</td>
<td>0.1%</td>
</tr>
<tr>
<td>France</td>
<td>85.5%</td>
<td>12.2%</td>
<td>0.0%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Germany</td>
<td>95.7%</td>
<td>2.4%</td>
<td>0.0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Italy</td>
<td>94.9%</td>
<td>3.7%</td>
<td>0.0%</td>
<td>1.4%</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>92.6%</td>
<td>6.1%</td>
<td>0.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>N. Ireland</td>
<td>83.0%</td>
<td>10.9%</td>
<td>1.8%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Portugal</td>
<td>80.0%</td>
<td>16.0%</td>
<td>1.9%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Romania</td>
<td>96.3%</td>
<td>2.0%</td>
<td>0.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Spain</td>
<td>95.0%</td>
<td>4.4%</td>
<td>0.0%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Results

- Comorbid class at least twice as large in N.Ireland as elsewhere
Results

• Odds of belonging to the moderately depressed (relative to minimally affected class) declines with age in most Western European countries. Highly depressed and comorbid classes peak mid-life.

![Graph showing log odds of Class 2 (moderately depressed) vs Class 1 (minimally affected) membership across different ages and countries.]

e.g. Unadjusted Odds (N. Ireland)

<table>
<thead>
<tr>
<th>Age</th>
<th>Minimally affected</th>
<th>Moderate depression</th>
<th>Highly depressed</th>
<th>Comorbid</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>100</td>
<td>23.34 (14.02, 38.85)</td>
<td>2.12 (1.16, 3.86)</td>
<td>4.09 (1.10, 15.17)</td>
</tr>
<tr>
<td>45</td>
<td>100</td>
<td>17.26 (10.74, 27.73)</td>
<td>4.20 (2.46, 7.19)</td>
<td>5.25 (2.30, 11.93)</td>
</tr>
<tr>
<td>65</td>
<td>100</td>
<td>9.58 (5.99, 15.34)</td>
<td>2.24 (1.49, 3.36)</td>
<td>3.03 (1.52, 6.03)</td>
</tr>
<tr>
<td>80</td>
<td>100</td>
<td>5.12 (0.29, 9.01)</td>
<td>0.59 (0.29, 1.18)</td>
<td>1.19 (0.45, 3.12)</td>
</tr>
</tbody>
</table>
Results

- Odds of belonging to the moderately depressed or highly depressed classes (relative to minimally affected class) increases with age in Eastern European countries. Comorbid class peaks mid-life.

The shape of these relationships is unchanged after adjustment for sociodemographic variables.
Results

- Probability of 12-month dysthymia increases with age across all classes and all countries ($\beta=0.25$ (SE 0.06), $p<0.001$)
- Probability of 12-month social phobia decreases with age across all classes and countries ($\beta=-0.23$ (SE 0.06), $p<0.001$)
- Makes a substantive difference in the highly depressed and comorbid classes
Results

• These effects are unchanged after adjustment for sociodemographic variables.

• Effects associated with gender, marital status and urbanicity on class membership are homogenous across classes and countries e.g. odds ratios for gender (relative to minimally affected class):

<table>
<thead>
<tr>
<th>Gender</th>
<th>Class 2 (Moderately depressed/cothymic)</th>
<th>Class 3 (Highly depressed/dysthymic)</th>
<th>Class 4 (Comorbid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>2.75 (1.80,4.21), p&lt;0.001</td>
<td>1.82 (1.19,2.78), p=0.01</td>
<td>2.61 (2.16,3.16), p&lt;0.001</td>
</tr>
</tbody>
</table>

* Bulgaria, N. Ireland, Portugal and Romania only

• Measurement non-invariance for gender at the scale level: probability of 12-month specific phobia higher in females than males across all classes and countries (β=0.95 (SE 0.10), p<0.001)
Results

- When a wider range of disorders is included
  - intermittent explosive disorder (IED)
  - bipolar disorders (BI)
  - posttraumatic stress disorder (PTSD)
  - alcohol abuse/dependence (AL)
  - adult separation anxiety (ASA)

Mental illness among older adults is reported primarily in terms of mood and phobic disorders.
Discussion

• Patterns of comorbidity don’t correspond exactly to the DSM metastructure or other commonly suggested patterns (Krueger 1999) and vary slightly with the number of countries and disorders studied. High levels of comorbidity in N. Ireland worrying.

• Older adults increasingly unlikely in the West to experience depression/anxiety in later life. How realistic is this?
  – In N. Ireland, among adults 25 years and over with mental illness who were known to their Health Care Trust (excluding those with dementia) 10.2% were 75 years and over (DHSSPSNI 2008)
  – Lieden 85+ study: 15.4% of participants with clinically significant depression (Stek et al. 2004)

• The CIDI hasn’t been specifically validated among older community-dwelling adults and not at all in Eastern countries.
**Discussion**

- Although the number of adults in the highly depressed class declines with age in NI/Portugal (and increases with age in Romania/Bulgaria), within this class the probability of ‘double depression’ (MDE/DYS) increases with age.

- Double depression has a worse course trajectory than major depression alone (Rhebergen *et al.* 2009): patients recover more slowly, relapse more quickly, have more intense experience of suicidality (Keller and Shapiro 1982, Klein *et al.* 2006, Holm-Denoma *et al.* 2006).

- Decreasing probability of social phobia with age- common in the literature. Is this likely to be realistic? Social isolation (common among older adults) a risk factor for mental illness (Chou *et al.* 2011).
Discussion

- Situations giving rise to social phobia decline with age or become less distressing (Mohammadi et al. 2006, Cairney et al. 2007)
- Older adults may not find their fears ‘unreasonable’: the construct may be invalid among older adults (Karlsson et al. 2010).

- Mental illness in later life is dominated by mood and phobic disorders: how realistic is this?
  - 15% of older adults are self-confessed worriers (Wisocki 1994)
  - Common fears include personal health, loved ones, falls, crime and victimisation (Kogan and Edelstein 2004, OFMDFM 2009, Blay and Marinho 2012)
  - Need for more research specifically about anxiety in later life (Wittchen et al. 2011)
  - Incidence of alcohol-use disorders relatively high among older adults and this is not always reflected in research (Caputo et al. 2012), as is the burden of bipolar disorder among adults in general (Karam 2013)
Conclusions

• **Limitations:**
  - Cross-sectional data: confounding of temporal effects
  - The disorders assessed vary slightly between countries
  - Limited sociodemographic variables: lack of comparable data across countries, computationally intensive
  - Analyses just consider illness at the 12-month disorder level
  - Are clinical diagnoses appropriate in later-life?

• **Conclusions:**
  - Continued doubts on suitability for CIDI to assess mental illness among older adults: needs proper validation
  - Prevalence of common mental disorders likely to be underestimated among older adults in a wide variety of countries
  - Reasons for differences among younger adults between East and West not clear (Layard 2005).
References

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