Religious activity, life and ADL disability-free life expectancy in Taiwan

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Background

* Religion is an historical determinant of health.

* The last couple of decades have seen a burgeoning of interest in the association.

* Consensus across the health literature that religion is good for your health.
Mechanisms

* Mechanisms often described in terms of social characteristics.

* Does this hold where Judeo-Christian religion is not dominant, such as in Taiwan?

* Buddhism, as an example, is often centered on meditative private solitary activity.

* Only a small percent of the research on religion and health has looked at Asia.
Motivations

1) Determine whether and to what extent the link between religion and health persists in Taiwan.

2) Contrast private versus public religious expression.

3) Estimate precise effects of religious activity on total life and healthy life.
Data characteristics

* Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan.
* Age 53+.
* No ‘Mainlanders’.
* N = 3,739.
Data structure

Wave 1: 1999
- Respondents: $N = 3739$
- Missing: $N = 3071$
- Died: $N = 149$
- Total response rate = 91%

Wave 2: 2003
- Respondents: $N = 3071$
- Missing: $N = 2421$
- Died: $N = 519$

Wave 3: 2007
- Respondents: $N = 2421$
- Missing: $N = 367$
- Died: $N = 951$

Total response rate = 91%
* Years of life total and free of ADL disability estimated by IMaCh 0.97.¹

A multinomial transition model is estimated wherein:

\[
\log\left(\frac{p_{ij}}{p_{ii}}\right) = a_{ij} + b_{ij} \times \text{age} + c_{ij} \times \text{sex} + d'_{ij} \times \text{religious activity}'
\]

With coefficients a, b, c and d’ used to PREDICT transition probabilities.

Probabilities become input for life expectancies and their variances.

Measuring ADL disability

Bathing
Dressing/undressing
Eating
Getting out of bed
Standing up or sitting in a chair
Moving about inside the house
Using the toilet

Can do all by yourself without help = 0
Has difficulty with at least one = 1
Raw data one year transition probabilities, by sex and baseline status

<table>
<thead>
<tr>
<th>Baseline status</th>
<th>Follow-up status</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not disabled</td>
<td>Not disabled</td>
<td>.9545</td>
<td>.9557</td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
<td>.0117</td>
<td>.0223</td>
</tr>
<tr>
<td>Died</td>
<td></td>
<td>.0338</td>
<td>.0210</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1.0000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

1 Assuming one transition per 4 years with equal spacing over time
Raw data one year transition probabilities, by sex and baseline status

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<th>Baseline status</th>
<th>Follow-up status</th>
<th>Men</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Disabled</td>
<td>Not disabled</td>
<td>0.0370</td>
<td>0.0465</td>
</tr>
<tr>
<td></td>
<td>Disabled</td>
<td>0.7386</td>
<td>0.8105</td>
</tr>
<tr>
<td></td>
<td>Died</td>
<td>0.2244</td>
<td>0.1430</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

\(^1\) Assuming one transition per 4 years with equal spacing over time
Measuring religious activity

1. Private: Frequency of praying, burning incense, worshipping or meditating at home.

2. Public: Frequency of going to temple or church.

5 response categories entered as 4 dummy variables:

- Often
- Sometimes
- Rarely
- Never
- No affiliation
Percent distribution of frequency of private and public religious activity

- Often
- Sometimes
- Rarely
- Never
- No affiliation
Total life expectancy by religious activity

MEN
- Often
- Sometimes
- Rarely
- Never

WOMEN
- Often
- Sometimes
- Rarely
- Never

Age
- 55
- 65
- 75
- 85
Total life expectancy by religious activity, including non-affiliated
Total life expectancy by religious activity
Showing 95% CIs for Often and Never
ADL disability-free expectancy by religious activity

**MEN**

- Often
- Sometimes
- Rarely
- Never

**WOMEN**

- Often
- Sometimes
- Rarely
- Never
ADL disability-free expectancy by religious activity, including non-affiliated

**MEN**
- Often
- Sometimes
- Rarely
- Never
- No affiliation

**WOMEN**
- Often
- Sometimes
- Rarely
- Never
- No affiliation
Total life expectancy by religious activity, including non-affiliated

**MEN**
- Often
- Sometimes
- Rarely
- Never

**WOMEN**
- Often
- Sometimes
- Rarely
- Never
Total life expectancy by religious activity, including non-affiliated

MEN

WOMEN

Age

often
sometimes
rarely
never
no affiliation
Total life expectancy by religious activity
Showing 95% CIs for Often and Never

MEN

WOMEN

Age

Often
Never

Often
Never
ADL disability-free expectancy by religious activity

- **MEN**
  - Often
  - Sometimes
  - Rarely
  - Never

- **WOMEN**
  - Often
  - Sometimes
  - Rarely
  - Never

Age:
- 55
- 65
- 75
- 85

Expectancy:
- 0
- 5
- 10
- 15
- 20
- 25
- 30

Legend:
- Often
- Sometimes
- Rarely
- Never
ADL disability-free expectancy by religious activity

MEN

- Often
- Sometimes
- Rarely
- Never
- No affiliation

WOMEN

- Often
- Sometimes
- Rarely
- Never
- No affiliation
ADL disability-free... religious activity
Showing 95% CIs for Often and Never

MEN

WOMEN

Often
Never

Age

Often
Never

Age
Conclusions (1)

* The religion and health association persists in Taiwan across demographic outcomes.

* The association persists across public and private religious domains.

Conclusions (2)

* Mechanisms beyond those related to social interaction are key explanatory factors that link religion and health.

Research is increasingly indicating multiple and complex pathways through which religion may promote health outcomes.¹

* Those without religious affiliation are not necessarily disadvantaged.

Thank you