

# Developing a Taiwan-Specific Value Set for the Asian Preference-Based Measure 7 Dimensions (AP-7D)

An empirical valuation study

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中國醫藥大學  
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國立臺灣大學

National  
Taiwan  
University

## The sample was sex-balanced but younger and more educated

50.4%

male

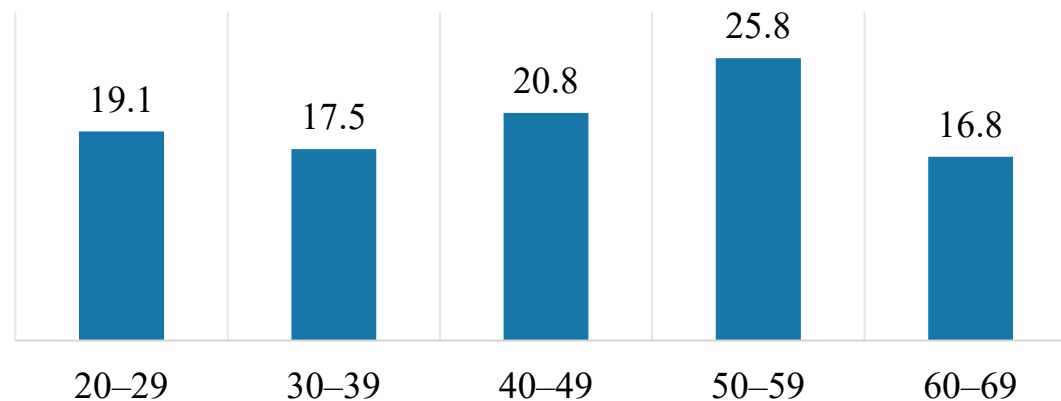
49.6%

female

2,582

DCE respondents

### Age distribution



### Representativeness caveats

- No respondents aged  $\geq 70$
- University/postgraduate education: 57.9%
- Higher-income households overrepresented

# Results by the conditional logit model

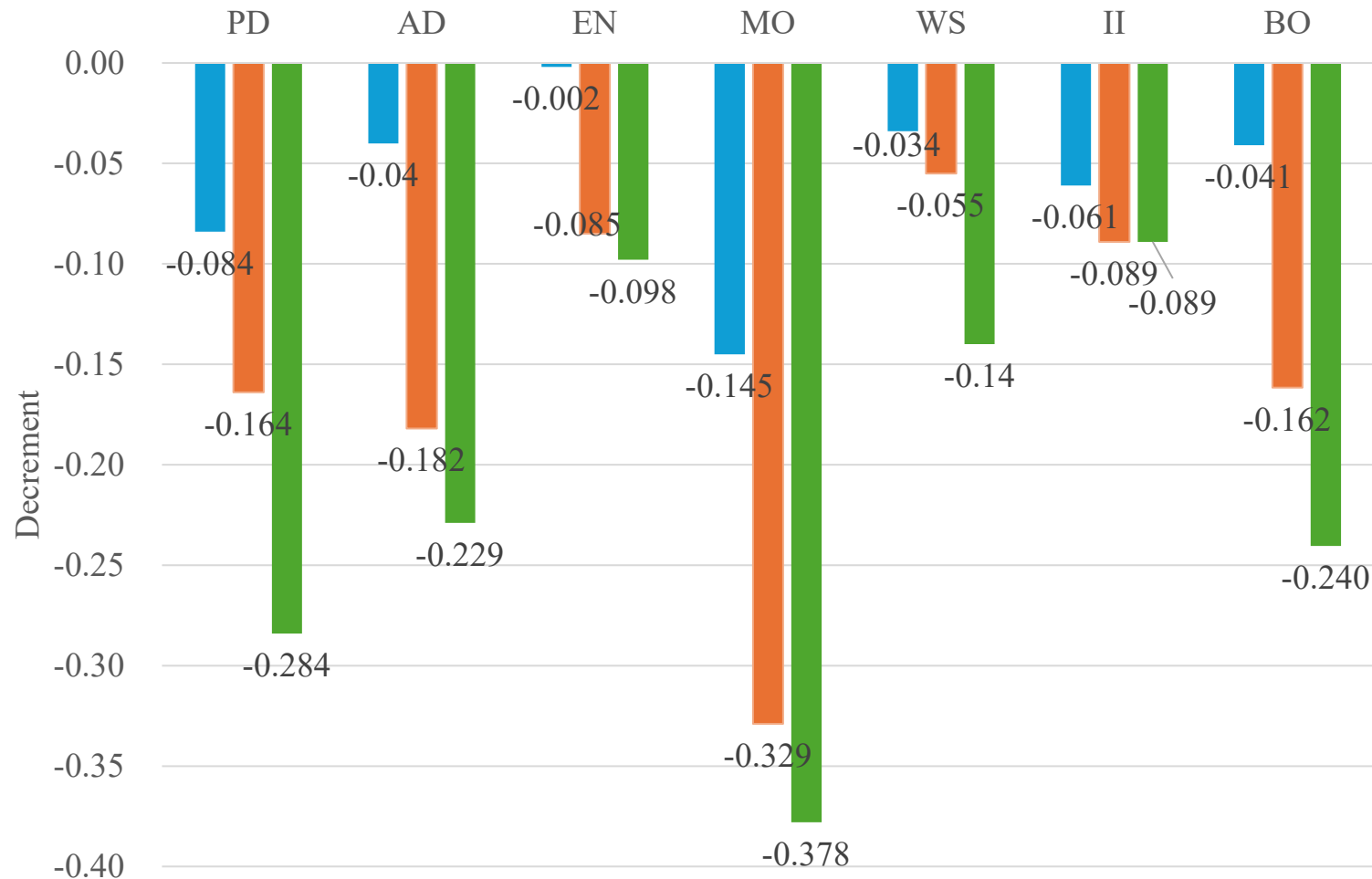
|                      |   | Mixed effects model     |       |                       |       |                                |       |                                 |       | Fixed effects model       |       |                         |        |
|----------------------|---|-------------------------|-------|-----------------------|-------|--------------------------------|-------|---------------------------------|-------|---------------------------|-------|-------------------------|--------|
|                      |   | Model 1 (unconstrained) |       | Model 2 (Constrained) |       | Model 3<br>(unconstrained, N4) |       | Model 4<br>(unconstrained, N34) |       | Model5<br>(unconstrained) |       | Model6<br>(panel logit) |        |
| Effect               |   | Estimate                | SE    | Estimate              | SE    | Estimate                       | SE    | Estimate                        | SE    | Estimate                  | SE    | Estimate                | SE     |
| Time                 |   | 1.036                   | 0.017 | 1.001                 | 0.020 | 1.086                          | 0.022 | 1.039                           | 0.042 | 0.251                     | 0.008 | 0.156                   | 0.006  |
| PD x Time            | 2 | -0.080                  | 0.011 | -0.095                | 0.011 | -0.103                         | 0.012 | -0.088                          | 0.012 | -0.019                    | 0.004 | -0.012                  | 0.003  |
|                      | 3 | -0.162                  | 0.010 | -0.156                | 0.011 | -0.149                         | 0.010 | -0.164                          | 0.013 | -0.034                    | 0.004 | -0.027                  | 0.003  |
|                      | 4 | -0.293                  | 0.010 | -0.264                | 0.012 | -0.267                         | 0.011 | -0.291                          | 0.011 | -0.066                    | 0.004 | -0.044                  | 0.003  |
| AD x Time            | 2 | -0.040                  | 0.012 | -0.048                | 0.011 | -0.061                         | 0.011 | -0.043                          | 0.014 | -0.023                    | 0.004 | -0.010                  | 0.004  |
|                      | 3 | -0.179                  | 0.012 | -0.166                | 0.010 | -0.186                         | 0.010 | -0.183                          | 0.011 | -0.054                    | 0.004 | -0.038                  | 0.003  |
|                      | 4 | -0.230                  | 0.011 | -0.223                | 0.011 | -0.226                         | 0.012 | -0.227                          | 0.012 | -0.065                    | 0.004 | -0.040                  | 0.004  |
| EN x Time            | 2 | -0.009                  | 0.011 | -0.071                | 0.011 | -0.004                         | 0.011 | 0.007                           | 0.013 | 0.006                     | 0.004 | 0.004                   | 0.003  |
|                      | 3 | -0.070                  | 0.010 |                       |       | -0.073                         | 0.010 | -0.091                          | 0.011 | -0.004                    | 0.004 | -0.015                  | 0.003  |
|                      | 4 | -0.107                  | 0.010 | -0.094                | 0.011 | -0.087                         | 0.012 | -0.103                          | 0.011 | -0.013                    | 0.004 | -0.016                  | 0.003  |
| MO x Time            | 2 | -0.136                  | 0.011 | -0.127                | 0.010 | -0.155                         | 0.009 | -0.151                          | 0.010 | -0.042                    | 0.004 | -0.031                  | 0.003  |
|                      | 3 | -0.321                  | 0.012 | -0.299                | 0.012 | -0.323                         | 0.011 | -0.312                          | 0.013 | -0.075                    | 0.004 | -0.056                  | 0.003  |
|                      | 4 | -0.363                  | 0.010 | -0.332                | 0.011 | -0.365                         | 0.013 | -0.367                          | 0.011 | -0.087                    | 0.004 | -0.075                  | 0.003  |
| WS x Time            | 2 | -0.023                  | 0.011 | -0.016                | 0.011 | -0.009                         | 0.010 | -0.016                          | 0.009 | 0.001                     | 0.004 | -0.012                  | 0.003  |
|                      | 3 | -0.036                  | 0.012 | -0.044                | 0.013 | -0.037                         | 0.013 | -0.035                          | 0.013 | -0.020                    | 0.004 | -0.034                  | 0.003  |
|                      | 4 | -0.142                  | 0.011 | -0.129                | 0.011 | -0.111                         | 0.013 | -0.135                          | 0.013 | -0.030                    | 0.004 | -0.040                  | 0.003  |
| II x Time            | 2 | -0.068                  | 0.013 | -0.055                | 0.011 | -0.059                         | 0.011 | -0.066                          | 0.012 | -0.021                    | 0.004 | -0.009                  | 0.003  |
|                      | 3 | -0.082                  | 0.010 | -0.073                | 0.010 | -0.077                         | 0.013 | -0.073                          | 0.013 | -0.028                    | 0.004 | -0.016                  | 0.003  |
|                      | 4 | -0.068                  | 0.011 |                       |       | -0.054                         | 0.010 | -0.075                          | 0.011 | -0.027                    | 0.004 | -0.020                  | 0.004  |
| BO x Time            | 2 | -0.045                  | 0.013 | -0.029                | 0.013 | -0.034                         | 0.014 | -0.028                          | 0.014 | -0.013                    | 0.004 | -0.015                  | 0.004  |
|                      | 3 | -0.155                  | 0.012 | -0.150                | 0.011 | -0.156                         | 0.011 | -0.145                          | 0.010 | -0.035                    | 0.004 | -0.039                  | 0.003  |
|                      | 4 | -0.254                  | 0.010 | -0.218                | 0.014 | -0.233                         | 0.010 | -0.236                          | 0.011 | -0.051                    | 0.004 | -0.050                  | -0.254 |
| N4                   |   | -                       | -     | -                     | -     | -0.072                         | 0.013 | -                               | -     | -                         | -     | -                       | -      |
| N34                  |   | -                       | -     | -                     | -     | -                              | -     | 0.006                           | 0.040 | -                         | -     | -                       | -      |
| # of inconsistencies |   | 1                       |       | 0                     |       | 1                              |       | 1                               |       | 3                         |       | 1                       |        |
| # of observations    |   | 193,650                 |       | 193,650               |       | 193,650                        |       | 193,650                         |       | 193,650                   |       | 193,650                 |        |
| DIC                  |   | 97,895.3                |       | 97,819.3              |       | 97,946.0                       |       | 98,477.0                        |       | NA                        |       | NA                      |        |
| AIC                  |   | NA                      |       | NA                    |       | NA                             |       | NA                              |       | 133,459.4                 |       | 127,547.8               |        |

## Model 2 provided the most coherent **mixed-effects** specification

| Model | Specification       | DIC             | Inconsistencies |
|-------|---------------------|-----------------|-----------------|
| 1     | Unconstrained       | 97,895.3        | 1               |
| 2     | <b>Constrained</b>  | <b>97,819.3</b> | <b>0</b>        |
| 3     | Unconstrained + N4  | 97,946.0        | 1               |
| 4     | Unconstrained + N34 | 98,477.0        | 1               |

**Selected model**    **Lowest DIC + no ordering inconsistency**

# Utility loss generally increased with AP-7D severity (Model 2)



## Reading the pattern

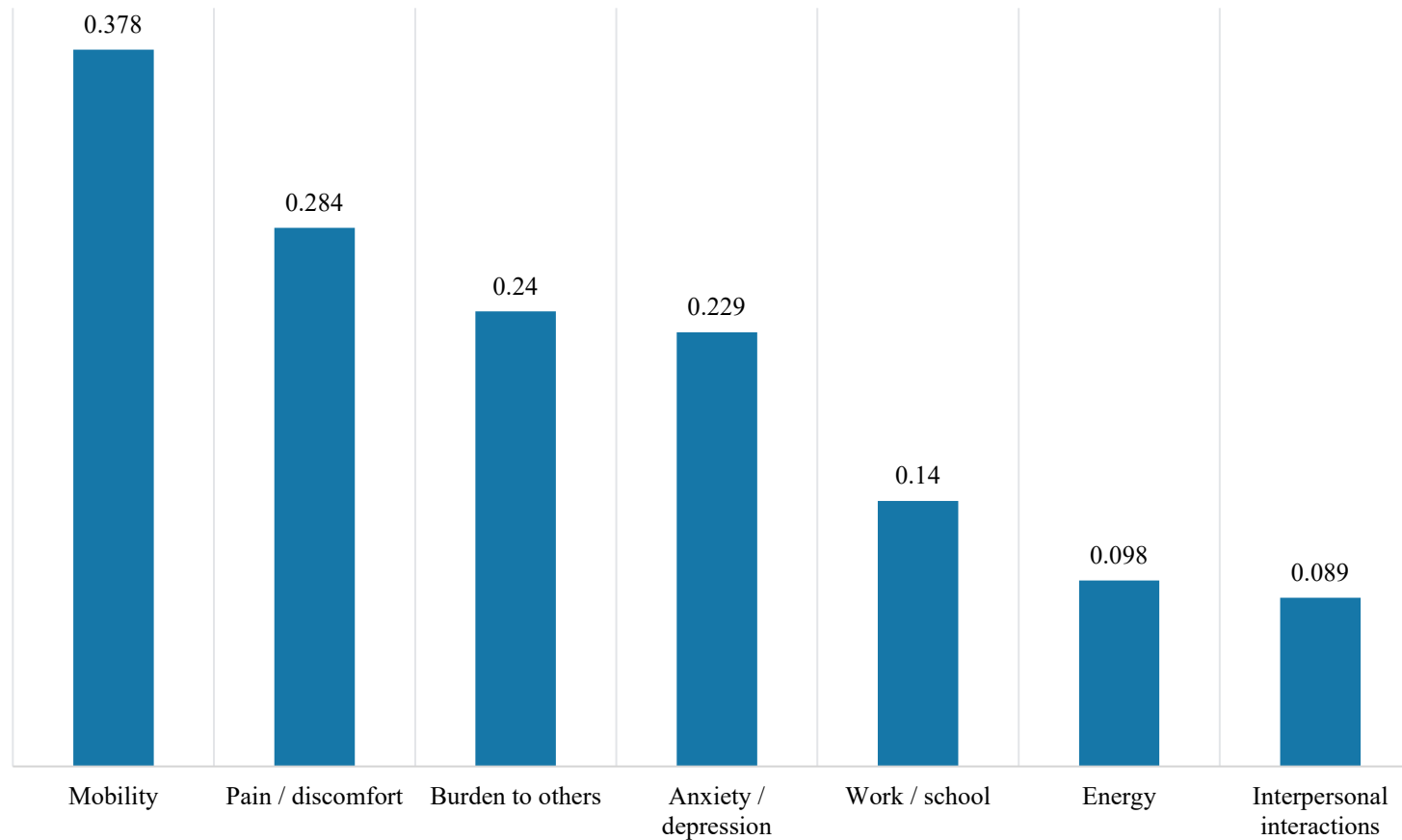
All decrements were negative.

Most dimensions showed larger losses at higher severity.

II plateaued between Levels 3 and 4.

**Bars show the absolute magnitude of each negative decrement relative to Level 1.**

# Mobility was the dominant driver of worst-state utility loss



**- 0.378**

**Mobility Level 4**

Largest single  
decrement in the  
Taiwan value set

**Physical function mattered most, but emotional and culturally salient social domains also contributed materially.**

# The Taiwan algorithm converts any AP-7D profile into utility

$$\text{Utility} = 1 - \Sigma \text{ level-specific decrements}$$

## Illustrative profile

PD2 AD3 EN4 MO1 WS2 II3 BO4

### Observed scale

**0.998**

second-best

**- 0.458**

worst state

Utility

= 1.000-0.084 (PD2)-0.182 (AD3)-0.098 (EN4)-0 (MO1)-0.034 (WS2)-0.089 (II3)-0.240 (BO4)

**=0.273.**

Use the coefficient corresponding to each non-reference level; Level 1 contributes zero decrement.

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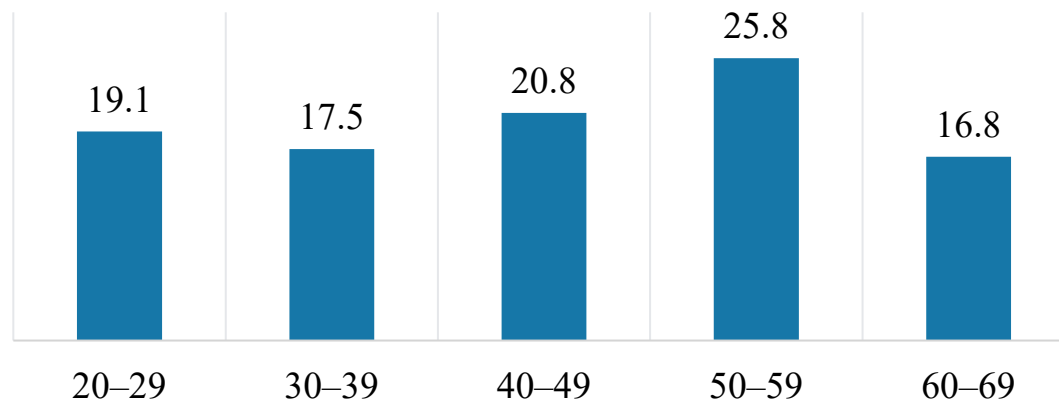
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# **Taiwan preferences produce an interpretable and culturally grounded AP-7D value set.**

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- 01 Model 2 was the most coherent specification.**
- 02 Mobility generated the largest utility decrement.**
- 03 Taiwan–Japan contrasts reinforce the need for localization.**



Thank for your attention  
Questions are welcome