Online supplement 1

**Supplementary table 1.1. Item response theory model parameters.**

|  |  |  |  |  |  |  |
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|  |  |  | Label | *Discriminability* | *Difficulty* | *95% CI* |
| **Questionnaire 2** |  |  |  |  |  |  |  |  |
|  | *Do you drink beer?* | beerunQ2 | 2.38 |  | ( | 2.26 | - | 2.50 | ) |
|  |  | Less than one unit per day | beerunQ2>=1 |  | -0.13 | ( | -0.16 | - | -0.09 | ) |
|  |  | 1-2 units per day or more than two units per day | beerunQ2>=2 |  | 2.33 | ( | 2.25 | - | 2.41 | ) |
|  |  | More than one unit per day | beerunQ2=3 |  | 3.10 | ( | 2.98 | - | 3.23 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *Do you drink wine?* | wineunQ2 | 2.08 |  | ( | 1.97 | - | 2.20 | ) |
|  |  | Less than one unit per day | wineunQ2>=1 |  | -0.14 | ( | -0.18 | - | -0.10 | ) |
|  |  | 1-2 units per day or more than two units per day | wineunQ2>=2 |  | 3.21 | ( | 3.07 | - | 3.35 | ) |
|  |  | More than one unit per day | wineunQ2=3 |  | 4.31 | ( | 3.99 | - | 4.63 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *Do you drink liquor?* | spirunQ2 | 2.97 |  | ( | 2.79 | - | 3.15 | ) |
|  |  | Less than one unit per day | spirunQ2>=1 |  | -0.33 | ( | -0.36 | - | -0.29 | ) |
|  |  | 1-2 units per day or more than two units per day | spirunQ2>=2 |  | 2.55 | ( | 2.46 | - | 2.63 | ) |
|  |  | More than one unit per day | spirunQ2=3 |  | 3.28 | ( | 3.12 | - | 3.45 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
| **Questionnaire 3** |  |  |  |  |  |  |  |  |
|  | *Have you drunk alcohol in the last year?* | drink12Q3 | -3.94 |  | ( | -4.40 | - | -3.47 | ) |
|  |  | Yes | drink12Q3=2 |  | -1.27 | ( | -1.33 | - | -1.21 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *How often do you drink alcohol?* | alko1Q3 | 2.57 |  | ( | 2.46 | - | 2.67 | ) |
|  |  | Less than once a month | alko1Q3>=2 |  | -1.54 | ( | -1.62 | - | -1.46 | ) |
|  |  | About one a month | alko1Q3>=3 |  | -0.36 | ( | -0.41 | - | -0.31 | ) |
|  |  | 2-3 times per month | alko1Q3>=4 |  | 0.05 | ( | 0.01 | - | 0.10 | ) |
|  |  | About once per week | alko1Q3>=5 |  | 0.71 | ( | 0.66 | - | 0.76 | ) |
|  |  | 2-4 times per day | alko1Q3>=6 |  | 1.58 | ( | 1.53 | - | 1.63 | ) |
|  |  | Every day or almost every day | alko1Q3>=7 |  | 2.46 | ( | 2.37 | - | 2.54 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *How many bottles of beer did you drink last week?* | bottweoQ3 | 1.59 |  | ( | 1.50 | - | 1.69 | ) |
|  |  | 1 | bottweoQ3>=1 |  | 0.57 | ( | 0.52 | - | 0.63 | ) |
|  |  | 2 | bottweoQ3>=2 |  | 1.18 | ( | 1.11 | - | 1.25 | ) |
|  |  | 3 | bottweoQ3>=3 |  | 1.72 | ( | 1.64 | - | 1.81 | ) |
|  |  | 4 | bottweoQ3>=4 |  | 2.04 | ( | 1.94 | - | 2.14 | ) |
|  |  | 5 | bottweoQ3>=5 |  | 2.35 | ( | 2.24 | - | 2.47 | ) |
|  |  | 6 | bottweoQ3>=6 |  | 2.57 | ( | 2.44 | - | 2.70 | ) |
|  |  | 7 | bottweoQ3>=7 |  | 2.86 | ( | 2.71 | - | 3.01 | ) |
|  |  | 8 | bottweoQ3>=8 |  | 3.12 | ( | 2.95 | - | 3.29 | ) |
|  |  | >= 9 | bottweoQ3=9 |  | 3.67 | ( | 3.44 | - | 3.90 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *How many glasses of wine did you drink last week?* | glasweoQ3 | 1.24 |  | ( | 1.14 | - | 1.33 | ) |
|  |  | 1 | glasweoQ3>=1 |  | 0.58 | ( | 0.51 | - | 0.65 | ) |
|  |  | 2 | glasweoQ3>=2 |  | 0.94 | ( | 0.86 | - | 1.01 | ) |
|  |  | 3 | glasweoQ3>=3 |  | 1.69 | ( | 1.58 | - | 1.80 | ) |
|  |  | 4 | glasweoQ3>=4 |  | 2.17 | ( | 2.03 | - | 2.31 | ) |
|  |  | 5 | glasweoQ3>=5 |  | 2.74 | ( | 2.56 | - | 2.93 | ) |
|  |  | 6 | glasweoQ3>=6 |  | 3.06 | ( | 2.85 | - | 3.27 | ) |
|  |  | 7 | glasweoQ3>=7 |  | 3.56 | ( | 3.31 | - | 3.81 | ) |
|  |  | 8 | glasweoQ3>=8 |  | 4.04 | ( | 3.74 | - | 4.34 | ) |
|  |  | >= 9 | glasweoQ3=9 |  | 4.69 | ( | 4.30 | - | 5.07 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *How many drinks of liquor did you drink last week?* | drinkweoQ3 | 1.30 |  | ( | 1.21 | - | 1.39 | ) |
|  |  | 1 | drinkweoQ3>=1 |  | 0.95 | ( | 0.88 | - | 1.02 | ) |
|  |  | 2 | drinkweoQ3>=2 |  | 1.47 | ( | 1.38 | - | 1.56 | ) |
|  |  | 3 | drinkweoQ3>=3 |  | 2.09 | ( | 1.97 | - | 2.22 | ) |
|  |  | 4 | drinkweoQ3>=4 |  | 2.53 | ( | 2.37 | - | 2.68 | ) |
|  |  | 5 | drinkweoQ3>=5 |  | 3.00 | ( | 2.81 | - | 3.19 | ) |
|  |  | 6 | drinkweoQ3>=6 |  | 3.39 | ( | 3.17 | - | 3.60 | ) |
|  |  | 7 | drinkweoQ3>=7 |  | 3.72 | ( | 3.47 | - | 3.96 | ) |
|  |  | 8 | drinkweoQ3>=8 |  | 4.09 | ( | 3.80 | - | 4.37 | ) |
|  |  | >= 9 | drinkweoQ3=9 |  | 4.70 | ( | 4.33 | - | 5.07 | ) |
|  |  |  |  |  |  |  |  |  |  |  |
|  | *How often do you drink five units of alcohol?* | excessQ3 | 1.62 |  | ( | 1.54 | - | 1.71 | ) |
|  |  | 1-4 times per year | excessQ3>=2 |  | -0.35 | ( | -0.40 | - | -0.29 | ) |
|  |  | 5-10 times per year | excessQ3>=3 |  | 0.65 | ( | 0.59 | - | 0.70 | ) |
|  |  | Once per month | excessQ3>=4 |  | 1.25 | ( | 1.18 | - | 1.31 | ) |
|  |  | 2-3 times per month | excessQ3>=5 |  | 1.70 | ( | 1.62 | - | 1.78 | ) |
|  |  | Once per week | excessQ3>=6 |  | 2.21 | ( | 2.11 | - | 2.31 | ) |
|  |  | 2-4 times per week | excessQ3>=7 |  | 3.09 | ( | 2.95 | - | 3.23 | ) |
|  |  | Almost every day or every day | excessQ3>=8 |  | 3.57 | ( | 3.39 | - | 3.75 | ) |

**Figures for Item Response Theory modeling of alcohol consumption**

**Boundary Characteristic curves for indicators of the alcohol use continuum**

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| **Questionnaire 2** |  |
|  |  |
| *Do you drink beer?*Less than one unit per day - beerunQ2>=11-2 units per day or more than two units per day - beerunQ2>=2More than one unit per day - beerunQ2=3 | *Do you drink wine?*Less than one unit per day - wineunQ2>=11-2 units per day or more than two units per day - wineunQ2>=2More than one unit per day - wineunQ2=3 |

|  |  |
| --- | --- |
|  |  |
| *Do you drink liquor?*Less than one unit per day - spirunQ2>=11-2 units per day or more than two units per day - spirunQ2>=2More than one unit per day - spirunQ2=3 |  |

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| --- | --- |
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|  |  |
| **Questionnaire 3** |  |
|  |  |
| *Have you drunk alcohol in the last year?* Yes - drink12Q3=2  | *How often do you drink alcohol?* Less than once a month - alko1Q3>=2About one a month - alko1Q3>=32-3 times per month - alko1Q3>=4About once per week - alko1Q3>=52-4 times per day - alko1Q3>=6Every day or almost every day - alko1Q3>=7 |
|  |  |
| *How many bottles of beer did you drink last week?* 1 - bottweoQ3>=12 - bottweoQ3>=23 - bottweoQ3>=34 - bottweoQ3>=45 - bottweoQ3>=56 - bottweoQ3>=67 - bottweoQ3>=78 - bottweoQ3>=8>= 9 - bottweoQ3=9 | How many glasses of wine did you drink last week? 1 - glasweoQ3>=12 - glasweoQ3>=23 - glasweoQ3>=34 - glasweoQ3>=45 - glasweoQ3>=56 - glasweoQ3>=67 - glasweoQ3>=78 - glasweoQ3>=8>= 9 - glasweoQ3=9 |
|  |  |
| How many drinks of liquor did you drink last week? 1 - drinkweoQ3>=12 - drinkweoQ3>=23 - drinkweoQ3>=34 - drinkweoQ3>=45 - drinkweoQ3>=56 - drinkweoQ3>=67 - drinkweoQ3>=78 - drinkweoQ3>=8>= 9 - drinkweoQ3=9 | How often do you drink five units of alcohol?1-4 times per year - excessQ3>=25-10 times per year - excessQ3>=3Once per month - excessQ3>=42-3 times per month - excessQ3>=5Once per week - excessQ3>=62-4 times per week - excessQ3>=7Almost every day or every day - excessQ3>=8 |
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| **Information functions for all items** | **Information function across all items** |
|  |  |
| Do you drink beer? beerunQ2Do you drink wine? wineunQ2Do you drink liquor? spirunQ2Have you drunk alcohol in the last year? drink12Q3How often do you drink alcohol? alko1Q3How many bottles of beer did you drink last week? bottweoQ3How many glasses of wine did you drink last week? glasweoQ3How many drinks of liquor did you drink last week? drinkweoQ3How often do you drink five units of alcohol? excessQ3 |  |
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| **Alpha reliability by score level (i.e. 1-(score standard error)2)** | **Test Characteristic curve (i.e. the latent variable – test score association)** |
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