## Appendix 2

For better and more consistent model interpretation, this study focused on presenting the odds ratio (OR) for each independent variable in the results. Suppose that two groups (A and B) need to be compared, the (OR) is given (Abreu et al., 2008) by:

$$OR\_{j}=\frac{\frac{P(Y\leq j|x^{(A)})}{1-P(Y\leq j|x^{(A)})}}{\frac{P(Y\leq j|x^{(B)})}{1-P(Y\leq j|x^{(B)})}}=\frac{\frac{P(Y\leq j|x^{(A)})}{P(Y>j|x^{(B)})}}{\frac{P(Y\leq j|x^{(B)})}{P(Y>j|x^{(B)})}}=\frac{odds^{(A)}}{odds^{(B)}}$$

In its usual definition, OR is the ratio between two odds from binary events, but in Ordinal Logistic Regression, odds are defined by cumulative probabilities. For its interpretation, suffice it to recall that the response has been dichotomised, and that the event is to be classified until the category $j$ (Abreu et al., 2008). In the context of ordinal data, according to the proportional odds assumption, odds ratio will be the same for all categories ($j=1,\cdots ,J-1$) of the response (Abreu et al., 2008), and the interpretation of OR in OLR is the same as in a simple LR, where:

* $OR=1$ indicates that the independent variable does not affect the odds of the outcome;
* $OR>1$ indicates respondents are more likely to state a level of agreement “$J$” on the scale than a level of agreement $J-1$;
* $OR<1$ indicates respondents are less likely to state a level of agreement “$J$” on the scale than a level of agreement $J-1$.

One of the assumptions underlying ordinal logistic regression is that the 'slope' estimate between each pair of outcomes across two response levels are assumed to be the same regardless of partition, it is also called the “Proportional Odds Assumption”. Brant test was suggested by Brant (1990), and is able to detect the violation of the assumption. The output of Brant test is easy to interpret, if the probability (*p*-value) is greater than the alpha level (0.05), then the null hypothesis that the parameters (slope coefficients) are the same across response categories is accepted, in other words, the data satisfies this proportional odds assumption. **Table A2.1** shows the brant test result of all models in section 3.3, all *p*-values are greater than 0.05, suggesting that the proportional odds assumption is not violated.

**Table A2.1**: Brant test result (Omnibus).

|  |  |  |  |
| --- | --- | --- | --- |
| **Dependent variable** | **Chi-sq** | **df** | ***p*-value** |
| less stressed - during | 82.075 | 70 | 0.153 |
| less stressed - after | 89.890 | 70 | 0.055 |
| closer to nature | 83.112 | 66 | 0.076 |
| in a good mood | 68.081 | 68 | 0.474 |
| more alert  | 81.647 | 70 | 0.161 |
| accessibility increased | 63.088 | 66 | 0.579 |
| reliability of time increased | 83.655 | 66 | 0.070 |

**Table A2.2** shows a number of statistics of goodness of fit. Lipsitz and Hosmer–Lemeshow tests are two goodness of fit tests for Ordinal Logistic Regression model. Both tests assess whether or not the observed event rates match expected event rates in subgroups of the model population. All p-values in **Table A2.2** are above 0.05. Therefore, the null hypothesis that the observed and expected proportions are the same across all cuts is accepted. Hence, both tests support that all OLR models are of good fit.

**Table A2.2:** Goodness of fit metrics.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PseudoR-squared | AIC | Lipsitz test | Hosmer–Lemeshow test |
| **LRS** | ***p*-value** | **Chi-sq** | ***p*-value** |
| less stress - during | 0.10 | 6314.23 | 6.77 | 0.66 | 23.88 | 0.47 |
| Less stress - after | 0.09 | 6137.92 | 12.70 | 0.18 | 24.03 | 0.46 |
| closer to nature | 0.09 | 6160.70 | 15.63 | 0.07 | 35.93 | 0.06 |
| in a good mood | 0.08 | 5279.56 | 9.61 | 0.38 | 21.26 | 0.62 |
| more alert | 0.10 | 5910.58 | 8.55 | 0.48 | 29.95 | 0.19 |
| accessibility increased | 0.10 | 5831.79 | 3.58 | 0.94 | 21.00 | 0.64 |
| Reliability of time increased | 0.09 | 5967.85 | 7.19 | 0.62 | 32.06 | 0.13 |

*LRS: Likelihood Ratio Statistic.*

**Table A2.3:** Model Intercepts.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Question** | **Cuts** | **Coefficient** | **Std. Error** | **t-value** | **p-value** |
| Less stressed -during | Cut 1 | -0.733 | 0.340 | -2.153 | 0.031 |
| Cut 2 | 0.835 | 0.340 | 2.456 | 0.014 |
| Cut 3 | 2.445 | 0.343 | 7.122 | <0.001 |
| Less stressed -after | Cut 1 | -1.662 | 0.336 | -4.952 | <0.001 |
| Cut 2 | 0.241 | 0.333 | 0.724 | 0.469 |
| Cut 3 | 1.639 | 0.335 | 4.892 | <0.001 |
| closer to nature | Cut 1 | -1.450 | 0.339 | -4.275 | <0.001 |
| Cut 2 | 0.049 | 0.337 | 0.146 | 0.884 |
| Cut 3 | 1.796 | 0.339 | 5.295 | <0.001 |
| In good mood | Cut 1 | -1.824 | 0.375 | -4.862 | <0.001 |
| Cut 2 | 0.391 | 0.366 | 1.070 | 0.285 |
| Cut 3 | 2.654 | 0.370 | 7.178 | <0.001 |
| Less sluggish | Cut 1 | -0.983 | 0.342 | -2.874 | 0.004 |
| Cut 2 | 1.039 | 0.341 | 3.049 | 0.002 |
| Cut 3 | 2.989 | 0.346 | 8.645 | <0.001 |
| better accessibility | Cut 1 | -2.557 | 0.367 | -6.962 | <0.001 |
| Cut 2 | 0.016 | 0.360 | 0.045 | 0.964 |
| Cut 3 | 1.546 | 0.361 | 4.277 | <0.001 |
| higher time reliability | Cut 1 | -2.256 | 0.361 | -6.241 | <0.001 |
| Cut 2 | -0.101 | 0.356 | -0.285 | 0.775 |
| Cut 3 | 1.503 | 0.357 | 4.210 | <0.001 |

*Cut 1: Strongly Disagree or disagree|Neither agree nor disagree*

*Cut2: Neither agree nor disagree|Agree*

*Cut3: Agree|Strongly Agree*