**Appendix S1**

**Model specification of maximum-difference model**

The maximum-difference model assumes that the questionnaire respondent identified what they considered to be the best and the worst options in any particular multiple-choice set of answers. Thus, they chose the pair perceived to be the farthest apart in terms of “degree of desirability” (in our case). If a multiple-choice set contains items, then there are possible best–worst pairs from which the respondent can select. Then, the difference in desirability of items and may be represented by

where represents the desirability on an underlying latent scale of items and represents the error component. The probability that a respondent will select items and from the multiple-choice set as the best and the worst, respectively, is represented by the probability that will be larger than , the differences between all other possible pairs in the multiple-choice set:

Assuming that is independent and has an identical Gumbel distribution, a conditional logit model can be derived. The reason we applied the conditional logit model is that our model includes the effects of message framing on preferences using interaction term variables. Although a mixed logit model, which can accommodate preference heterogeneity, is generally superior to the conditional logit model, the mixed logit model is not suitably applied when we seek the effects of interaction term variables. The probability that the respondent will select item as the best and item as the worst from options is expressed as follows (Finn & Louviere 1992):

The parameters can be estimated by the maximum likelihood method.