Modifying the composite time trade-off method to improve its discriminatory power in health state utility elicitation

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In cost-effectiveness analysis of health technologies, health state utilities are used. They are often elicited with a composite time trade-off method (cTTO). Alas, cTTO discriminatory power is hindered by

(i) respondents' non-trading (NT) of time for quality;
(ii) censoring of utilities at -1; and
(iii) poor correlation of negative utilities with state severity. We investigated if modifying cTTO can mitigate these effects.

We interviewed 478 students who each valued 10 EQ-5D-5L health states in one of three arms. Arm A used a standard cTTO, expanded with two questions to explore reasons for NT and censoring. Arms B and C used a modified TTO to overcome loss aversion, to unify the tasks for positive and negative utilities, and to enable eliciting utilities <-1.

In arms B and C vs A, we observed less NT (respectively, 4.2% and 4.4% vs 10.1%), more of strictly negative utilities (37.8% and 39.6% vs 25.2%), and more utilities lower or equal than -1 (17.9% and 29.9% vs 9.5%). The average utility of state 55555 dropped to -2.148 and -2.517 from -0.526. In arm A, enabling finer trades reduced NT, and the censored values typically were resolved as <-1. Arms B and C yielded an intuitive association between negative utilities and state severity. These arms were considered more difficult and resulted in more inconsistencies.

The discriminatory power of cTTO can be improved, but it may require increasing the difficulty of the task. The standard cTTO may overestimate the utilities, especially of severe states.
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