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# The validity of time trade-off values in calculating QALYs: constant proportional time trade-off versus the proportional heuristic

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## Abstract

In order to calculate quality adjusted life years (QALYs) from time trade-off (TTO) responses, individual preferences are required to satisfy the *constant proportional time trade-off* (CPTTO) assumption. Respondents who use a simple proportional heuristic may appear to satisfy CPTTO but will in fact generate preference reversals for states that are associated with a maximal endurable time (MET). Using data from 91 respondents, the study reported here examines the extent to which valuations satisfy the CPTTO assumption and the extent to which they might be generated by the proportional heuristic. The results suggest that respondents are using a proportional heuristic that casts doubt on the validity of using the TTO method to calculate QALYs for health states that are associated with MET preferences.

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## 1. Background

The quality adjusted life year (QALY) approach seeks to combine the value of changes in length and quality of life into a single composite measure. The main issues in the calculation of QALYs are concerned with how to describe and then value different states of health. To allow comparisons across different programmes, a health state descriptive system must allow for different dimensions of health to be combined to form an overall single index. A number of descriptive systems have been specifically designed for this purpose (Brazier et al., 1999), and the EQ-5D (see Fig. 1) is one of the most widely used of these (Brooks,

### Mobility

1. No problems walking about
2. Some problems walking about
3. Confined to bed

### Self-Care

1. No problems with self-care
2. Some problems washing or dressing self
3. Unable to wash or dress self

### Usual Activities

1. No problems with performing usual activities (e.g. work, study, housework, family or leisure activities)
2. Some problems with performing usual activities
3. Unable to perform usual activities

### Pain/Discomfort

1. No pain or discomfort
2. Moderate pain or discomfort
3. Extreme pain or discomfort

### Anxiety/Depression

1. Not anxious or depressed
2. Moderately anxious or depressed
3. Extremely anxious or depressed

### Note:

For convenience each composite health state has a five digit code number relating to the relevant level of each dimension, with the dimensions always listed in the order given above. Thus 21223 means:

- |   |  |
|---|--|
| 2 | Some problems walking about                    |
| 1 | No problems with self-care                     |
| 2 | Some problems with performing usual activities |
| 2 | Moderate pain or discomfort                    |
| 3 | Extremely anxious or depressed                 |

Fig. 1. The EQ-5D descriptive system.

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