



# How do individuals value health states? A qualitative investigation



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## ABSTRACT

Despite the importance of health state values in informing resource allocation in health care, there is arguably little known about how individuals value health. Previous studies have shown that a variety of non-health factors and beliefs are important in valuing health, but there is less evidence in the literature about how individuals' beliefs affect their preferences or what role non-health factors play in the process of forming preferences. This study investigated the thought processes of 21 U.K. based participants in March 2013 who valued health states using semi-structured interviews and a think-aloud protocol, with the aim to better understand the relationship between health states, the individual's underlying beliefs, and the individual's preferences.

Participants followed several stages in valuing health. First, participants interpreted the health states more concretely, relying on their imagination and their experience of ill health. Participants judged how the concrete health problems combined with their personal interests, circumstances, and environment would affect them personally. Ultimately, participants valued health by estimating and weighing the non-health consequences of the health states. Six consequences were most frequently mentioned: activities, enjoyment, independence, relationships, dignity, and avoiding being a burden. At each stage participants encountered difficulties and expressed concerns.

The findings have implications for methods of describing health, for example, whether the focus should be on health or a broader notion of well-being and capability. This is because the consequences are similar to the domains of broader measures such as the ICECAP measures for adults and older people, and the Warwick-Edinburgh Mental Wellbeing Scale. The findings suggest the need for testing whether individuals are informed about the health states they are valuing. Participants valued health by estimating the non-health consequences of health states and these estimates relied on individuals' beliefs about the interaction of the health state and their personal and social circumstances.

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## 1. Introduction

To measure the benefits of health interventions, health economists ask members of the general public to value health states. These values are important in determining resource allocation in health care because economists use these values to calculate Quality Adjusted Life years (QALYs) (Drummond et al., 2005). QALYs are the preferred measure of benefit of health interventions in cost-effectiveness analyses conducted for the National Institute for Health and Care Excellence (NICE) (NICE, 2013), and for similar agencies such as the Scottish Medicines Consortium (Cairns, 2006)

and the Dutch National Health Care Institute (NZi, 2015). QALYs, and hence health state values, have an important role in informing resource allocation decisions in health care.

Various techniques are used to value health states (Brazier et al., 2007). These techniques include the Time Trade Off (TTO) and Discrete Choice Experiments (DCEs) (Brazier et al., 2007). These techniques require participants to imagine alternatives where they live in certain health states for a certain number of years and to make choices between those alternatives (Brazier et al., 2007). While health state valuation techniques are well established in the health economics literature, there have been questions about whether participants are able to validly complete these tasks (Baker and Robinson, 2004; Brazier et al., 2007; Lloyd, 2003). Such tasks are cognitively complex and participants are likely to have little experience with the health states they are valuing (Brazier et al., 2007; Hausman, 2006). In addition, preferences are believed to

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be constructed and not pre-existing (Slovic, 1995) further casting doubt about the ability of individuals to undertake such tasks (Lloyd, 2003). The concern about the ability of participants to value health states has prompted research into better understanding how individuals value health.

Little is known about how people evaluate health states (Hausman, 2006). Early qualitative work by Robinson et al. (1997) investigated the thought processes of participants completing the TTO and the Visual Analogue Scale. Several studies have shown that a range of non-health factors, from the family situation to the desire to avoid being a burden, are important in valuing health (Baker and Robinson, 2004; Osch and Stiggelbout, 2007; Robinson et al., 1997; van der Pol and Shiell, 2007). Although these studies provide information on the range of factors considered in health state valuation, none of them provide an explanation of how individuals value health states and the role of non-health factors in developing preferences over health states. Understanding how individuals value health can provide information on whether individuals complete health state valuation tasks as expected by researchers and provide information about how health state valuation tasks could be improved.

The aim of this study was to investigate how people value health states, specifically this study sought to answer the following questions: (a) what makes a health state better than another? (b) what is the role of the non-health factors in developing preferences over health states? and (c) what is the connection between individuals' beliefs about non-health factors, the health state, and preferences over health states?

## 2. Methods

Think-aloud interviews followed by a qualitative semi-structured interview were conducted with participants in the UK. During the interview participants completed both TTO and DCE health state valuation tasks. A think-aloud protocol means that participants were asked to verbalise their thoughts while completing each valuation task, which was used to understand participants' thought processes (Ericsson and Simon, 1993). Think-aloud interviews have been used in the health economics field to investigate tasks such as questionnaire completion (Al-Janabi et al., 2013) and health state valuation (Baker and Robinson, 2004). A concurrent think-aloud protocol was used, which means that data were obtained while participants were completing the task. This avoids participants having to recall their thoughts after a task had been completed, which may result in participants adding information generated after the task had already been completed (Ericsson and Simon, 1993). After the valuation task, a semi-structured interview was conducted to further explore participants' thoughts and beliefs. Individual semi-structured interviews allow for in-depth investigation and detailed understanding of personal motivations and decisions (Coast, 1999; Ritchie, 2003, 37). At the end of the interview, participants completed a standard background questionnaire.

Each participant completed eight DCE and three TTO tasks (see Table 1). The number of states allowed the interview to be completed in one hour and to spend equal amounts of time on both tasks. These tasks were chosen because they were being considered for the EQ-5D-5L valuation (Devlin and Krabbe, 2013). Both the order of the DCE and TTO techniques as well as the health states within each technique were randomised because of the possibility of participants' thought processes being influenced by their earlier choices. In the DCE task participants were asked to choose between two health states. The DCE was implemented as a self-complete method using pen and paper. The composite-TTO using TTO boards was used (Devlin and Krabbe, 2013) (tasks

**Table 1**  
Health states used in study.

DCE state A <sup>a</sup>		DCE state B <sup>a</sup>	
Years	State	Years	State
10	33243	10	33234
10	21221	10	12131
10	13323	10	31332
8	43312	10	33411
5	34454	5	43544
10	23211	10	12311
5	33341	5	53321
8	22432	10	22233
TTO states <sup>a</sup>			
13321			
13443			
54435			
31212			

<sup>a</sup> Each digit represents the level of each dimension, (i.e. 1 is no problems and 5 is unable/extreme problems). The order of the digits is the order of the dimension in the questionnaire.

available from authors). The health states were described using the EQ-5D-5L, a frequently used measure of health status that contains five dimensions: mobility, usual activities, self-care, pain or discomfort, and anxiety or depression (Herdman et al., 2011). Each dimension has five levels ranging from no problems to extreme problems/unable to. The health states were selected so that participants valued problems in each domain and with different severities.

### 2.1. Sampling

We aimed to recruit 20 participants based on reviewing similar research. The sample size of qualitative work is generally small due to diminishing returns, lack of need for statements about prevalence, and rich data (Coast, 1999; Spencer et al., 2003, 83). Participants were purposely sampled by age and gender because there is some evidence that age and gender are related to health state values (Dolan and Roberts, 2002) and this could be the result of different thought processes. Participants were recruited by emailing three sources: an online directory of voluntary, community, faith sector, and health or social care organisations in Sheffield (Sheffield Community Information Service, 2015), a list of students and staff from the University of Sheffield, and the snowball method (where participants in the study identify further participants (Ritchie et al., 2003a)). Six randomly selected organisations from the Sheffield community organisation groups were contacted, these organisations were focused on a range of activities from Scrabble to Handbell ringers. Participants were reimbursed a £10 gift voucher. The ethics committee of the School of Health and Related Research at the University of Sheffield gave ethical approval for this study.

### 2.2. Interview protocol

All interviews were conducted by one of the authors (MK) on the University of Sheffield campus in Sheffield, England. The interviewer was a PhD student, who had undergone training in qualitative methods. The think-aloud protocol guidelines, describing the instructions for the participants, were taken from Ericsson and Simon (1993). The think-aloud section of the interview started with a practice task of choosing between two cars to familiarise participants with thinking aloud. A standard text was read to participants explaining the think-aloud process. If participants became quiet during the interview, they were reminded to

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