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Measuring Quality of Life at the Centre for Health Economics

Description of instruments, interview props and their administration

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ABSTRACT

The Centre for Health Economics (formerly Centre for Health Program Evaluation) has been conducting interviews to elicit quality of life (QoL) for almost two decades and gained considerable experience in the administration of these. The principal methods used have been the Time Trade-off (TTO) and Person Trade-off (PTO) supplemented by the Visual Analogue Scale (VAS). Recently the Relative Social Willingness to Pay (RS-WTP) has been developed at the Centre. This research paper documents the methods which have been employed and the visual props used during interviews.

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Introduction

Economic evaluation of health services has increasingly incorporated an assessment of the quality of life (QoL) of the health state before and after the health service has been delivered. Cost Utility Analysis (CUA) achieves this by basing the evaluation of benefits upon the number of Quality Adjusted Life Years (QALYs) gained by the service where QALYs equal the number of life years gained times an index of the 'quality of life'. In practice 'quality of life' is equated with preferences or in economists' terminology, 'utility'. Preferences, in turn, have been measured several ways as described in Torrance's seminal (1986) article.

The question of which of these is most appropriate for economic evaluation remains unresolved and the 'meta' question of *how to evaluate the techniques* has received little attention. The initial view was that the standard gamble (SG) should be the gold standard because, if the orthodox Von Neumann-Morgenstern assumptions of Expected Utility Theory (EUT) were correct, then the standard gamble would, indeed, produce an index of the strength of people's preferences. However it is almost universally recognised that these assumptions are an unrealistic description of individual behaviour and, in the present context, they can be very misleading (Richardson and Pope 2009). In particular, people's capacity to assess risk in a quantitatively consistent way and their reaction to real life risk is so far removed from the idealised behaviour envisaged in orthodox economic theory that the assessment of 'utility' with the standard gamble is highly problematical.

An alternative approach to the question of selecting a technique is to ask what the different instruments measure and whether or not this corresponds with what society seeks to achieve in its health services (Richardson 1994; Richardson 2002). This encounters the problem that 'society' and 'decision makers' do not provide clear guidelines as social goals are generally expressed in general and ambiguous terms (such as 'quality of life').

In the absence of a gold standard or clear social guidelines economists have generally gravitated to either the standard gamble (SG) or more often to the Time Trade-off (TTO) technique. The former is still defended theoretically as being closest to orthodox theory. The latter is adopted for a variety of reasons: it gives similar results to the SG and is simpler or as Richardson (1994) argues, it attempt to measure directly what the QALY purports to measure – the number of years of normal or excellent health which are equally valued as a larger number of years of poor health. If the label 'Healthy Year Equivalents' (HYE) had not been used for a different metric it would be a good descriptive label for the numbers produced by the TTO.

The TTO is the instrument used to derive utility weights in all of the Assessment of Quality of Life (AQoL) instruments developed at the Centre for Health Economics to date. The standard gamble

has not been used largely because of the ambiguity arising from its reliance upon an understanding of risk, noted above.

Three other instruments used at the CHE are described here. First, the Person Trade-off (PTO) is a social analogue to the TTO and has been advocated strongly by Nord (1995). Secondly, the Relative Social Willingness to Pay (RS-WTP) instrument has been developed at the CHE as an alternative way of incorporating a social perspective, ie one where the rater is asked to conduct an assessment on behalf of society (or Medicare or a hospital) rather than an evaluation on the assumption that they are, personally, in the health state. Third, VAS has been used at the CHE because of the ease and speed of its administration. In the context of QALYs' interpretation of the VAS is problematical and at the CHE it has been transformed into an estimate of the TTO equivalent score before use in the AQoL instruments.

A detailed comparison of instruments is given in Richardson et al. (2008).

Each technique uses some other metric to produce a number for the value of a health state. The TTO uses a number of years, PTO uses numbers of people, RS-WTP uses numbers of dollars and a VAS uses the abstract numbers on a linear scale.

Part 1 Instruments and Props

Time Trade-off (TTO)

Time Trade-off (TTO) is a technique used to elicit a subject's assessment or evaluation of any health state and is based upon a person's willingness to trade off years of life left to live (set at 10 years) for a reduced number of years of excellent health. The interviewer continually presents two different health states for the subject to choose between, one held constant for a fixed length of time in the health state being evaluated, the other varying the time lived in excellent health, until the two health states are equally preferred. This equivalence point gives a measure of the maximum amount of time the subject would be willing to trade to be in the preferred health state (excellent health).

It is used mostly in face to face interviews although it has been used in group situations such as classrooms. Several attempts have been made at the CHE to develop mail versions of the instrument but the resulting numbers indicated that the instrument was 'invalid': the accompanying tests suggested the subjects did not properly understand the task.

Because of its novelty for most people, the TTO is initially difficult to understand and (following methods pioneered by Torrance (1986)) the CHE has relied upon the use of an interview board (visual prop) in the context of an interview.

The interview board is shown in Figure 1. It is placed in front of and facing the subject so that it is easily accessible to them. As it is something new, it is introduced gradually as being made up of two halves. The top half contains a box in which to place the health state being evaluated. The bottom half of the board contains a 10 year scale above a blank window between Excellent Health (utility =1.00) in the box on the left and Death (utility = 0.00) on the right. Distinguishing the top and bottom halves is important as the subject is asked to choose between the two. While 10 years has been used as the common time frame at the CHE, variations in this are possible.

Figure 1. TTO interview board

TTO Imagine you will be in the health state described for the remaining 10 years of your life, and it won't change.

Health state being evaluated

years

0 1 2 3 4 5 6 7 8 9 10

Excellent Health.

My physical, mental, emotional and social wellbeing is excellent.

Death
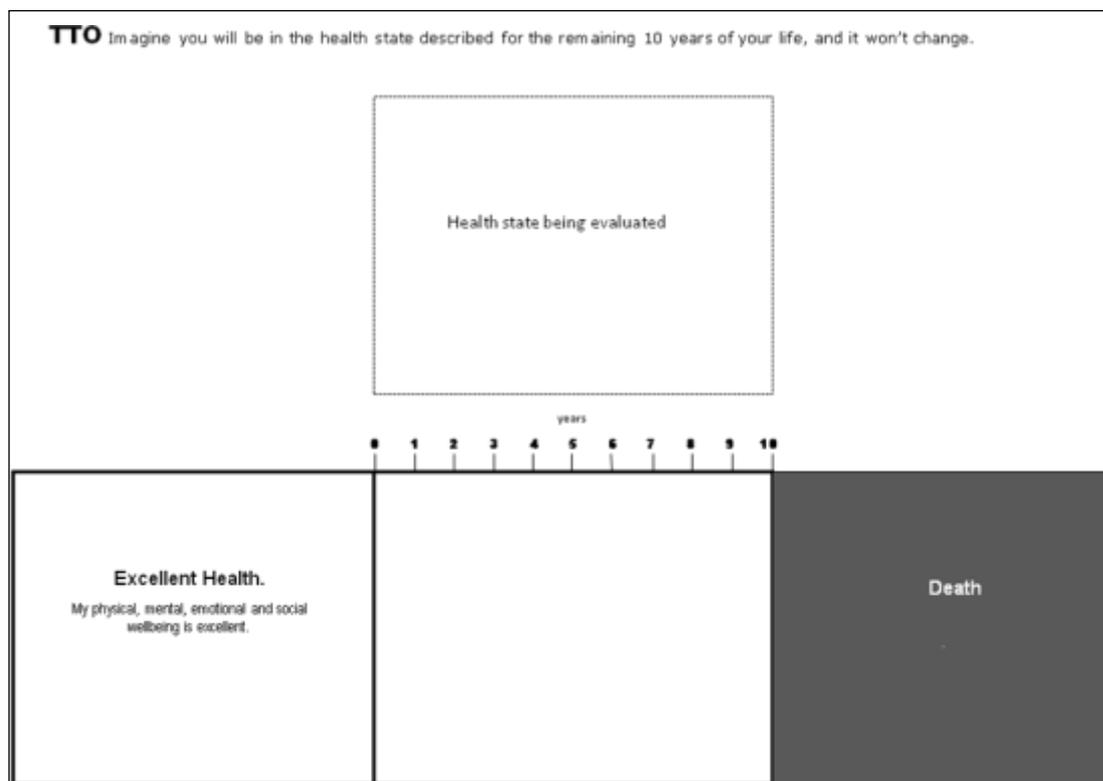
Perspectives: Subjects are asked to adopt different perspectives in the various techniques. In a TTO interview subjects are asked to adopt the perspective of the patient and imagine that they are in the health state in the top box of the interview board. They are also asked to imagine that they have 10 years left to live from their present real age and that the entire 10 years will be lived in the condition described in the health state. It is important that people are encouraged to focus on themselves remaining in the health state for the 10 years and not to imagine that they would pursue any therapy to improve their health or that their health will deteriorate with age. If the latter occurred they would no longer be in and evaluating the health state in the box but in another health state. It may take more than one attempt on the part of the interviewer to assist the subject to imagine themselves in the health state described.

Subjects also tend to 'focus' on the negative aspects in the health state and do not consider that some parts of their health are excellent. An important role of the interviewer is to describe the health state fully to minimise or avoid this 'focusing effect.'

Face icons indicate excellent health in the dimension with a smile, bad health with an unhappy face, and partial ill health with a flat line mouth. Figures 2 and 3 are examples used in the development of the AQoL-6D and AQoL-8D instruments respectively.

The 'Excellent Health' box may contain the different dimensions in the HRQOL universe being measured and smiling face icons in all dimensions. The 'Death' box is commonly shaded black. The 10 year scale shown is divided into one year intervals but can be sub-divided.

Figure 2. AQoL-6D TTO (showing 6 dimensions)

TTO Imagine you will be in the health state described for the remaining 10 years of your life, and it won't change.

Health state being evaluated

years

0 1 2 3 4 5 6 7 8 9 10

independent living
relationships
mental health
coping
no pain
senses

Excellent Health.
My physical, mental, emotional and social wellbeing is excellent.

Death
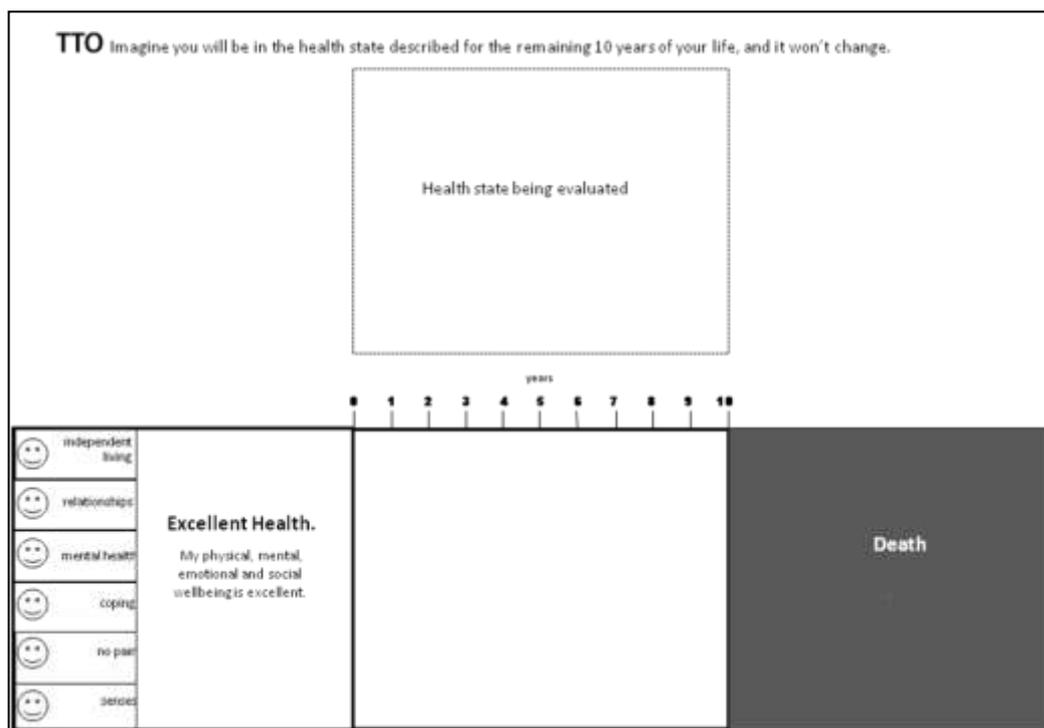
Figure 3. AQoL-8D TTO (showing 8 dimensions)

Health state being evaluated

years

0 1 2 3 4 5 6 7 8 9 10

Independent Living
Life Satisfaction
Mental Health
Coping
Relationships
Self worth
Pain
Senses

I have **excellent health**. My physical, mental, emotional and social wellbeing is excellent.

Death
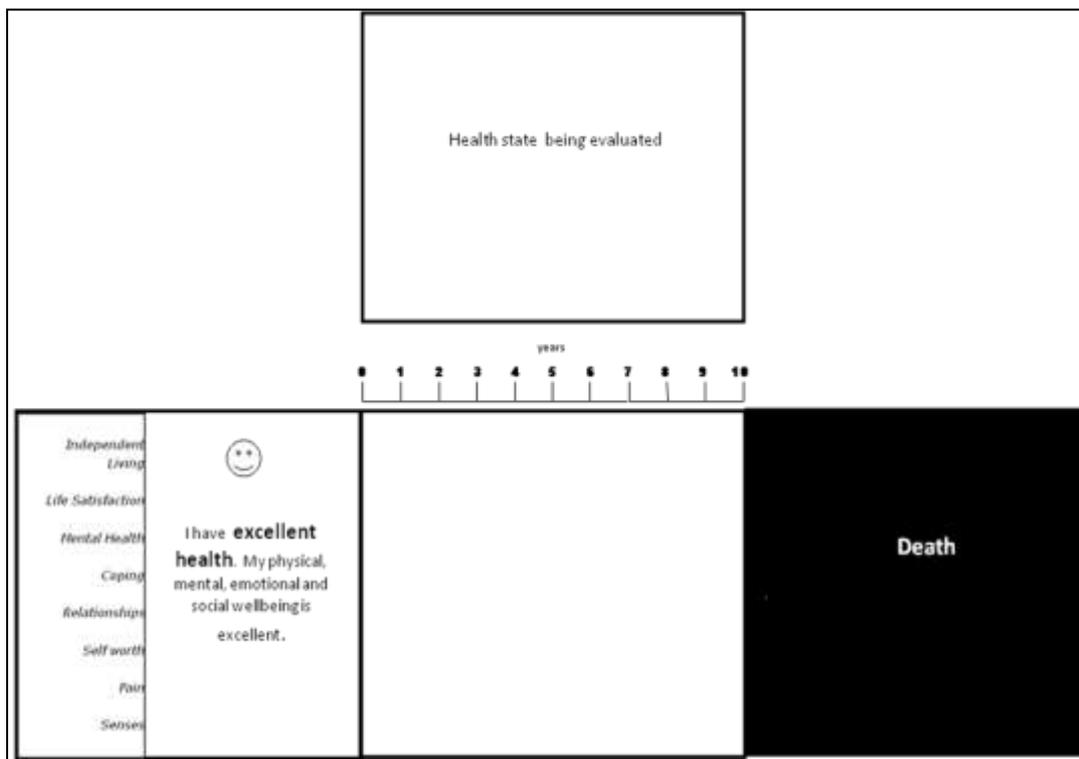
As the name implies, the aim of a TTO question is to determine from the subject how much of their 10 years they would be prepared to trade off in order to have excellent health. They are repeatedly asked to make a choice between living out their full 10 years in the health state in the top box (which is less than excellent health) or living for various, shorter times in excellent health, ie trading off some time. The choice is between quantity and quality of life. The window between 'Excellent Health' and 'Death' contains a sliding slide which moves left and right under the 10 year scale. The slide indicates the number of years in 'Excellent Health' to its left and the number of years in 'Death' to its right.

Initially the TTO concept will be new for the subject, as will be the board. A proven way of starting the interview is to set the slide at 10 on the scale. This position represents 10 years in excellent health (and 0 years in death).The person is asked whether they would prefer their full 10 years in the health state being evaluated or 10 years in Excellent Health. Without waiting for a considered reply and to avoid embarrassment (because the subject may think it is a trick question), the interviewer can then go on to say that, of course, the subject would prefer to live it in excellent health. The subject agrees and the ice is broken.

The slide is then moved only a little, to 9, and the question is asked whether they would prefer 10 years in the health state or 9 years in excellent health and die 1 year earlier, ie trade off 1 year. Unless the health state is very good, most people would make this trade.

The slide is then moved down to the left end of the scale, to 0, 2 or 3 (depending upon the severity of the health state). The question then is 10 years in the health state above or, say, 3 years in excellent health and to trade off 7 years. Unless the health state is quite bad, most people will not trade.

The slide might then be moved to 8 and a similar question asked. This technique of making large changes to the left and right is known as 'Flip-Flop' or 'Ping-Pong'. It is employed to minimise or avoid 'creeping' bias caused by small changes in one direction.

It is important with a new concept like TTO to be able to ask the same TTO question in various ways as this will assist people to understand. It is especially important that interviewers' TTO questions always contain the three key elements and do so in various orders. These are (1) the health state; (2) the meaning of 'excellent health'; and (3) death.

> *Order 1, 2, 3*
>
> *Would you prefer to live out your full 10 years in the health state or choose to have 8 years in excellent health and trade off 2 years (or die 2 years earlier)?*

> *Order 3, 2, 1*
>
> *Would you prefer to trade off or give up 2 years of your life and have 8 years in excellent health rather than your full 10 years in the health state?*

> *Order 2, 3, 1*
>
> *Would you prefer to have 8 years in excellent health and trade off 2 years (or give up 2 years or die 2 years earlier) rather than live out your 10 years in the health state?*

Variations to use occasionally include:

How much of the 10 years would you be willing to give up to have excellent health?

Is the condition so bad that you would settle for 3 years of excellent health and give up 7 years?

If the health state being evaluated represents fairly good health, the person may be happy to live out the 10 years in the health state rather than trade off any time. This 'non-trader' would yield a score of 10 despite having less than excellent health.

Non-traders need to be challenged. They can be asked if they would be prepared to trade off, say, 3 months (or less) and have 9.75 years (or more) in excellent health rather than the whole 10 years lived out in the health state. Care and attention must be placed on factors such as the speed of the person's deliberation and the lack of confidence in their response.

An interview will generally progress in the following manner:

Step 1: Ask the person to choose between 10 years excellent health and 10 years in the health state. Either the interviewer may answer this or the person should answer 'excellent health'.

Step 2: Move the slide to 9 years of excellent health and repeat the question. Often the person is prepared to trade off some time and will select the 9 years.

Step 3: Involves a *flip-flop* or *ping-pong* down to, say, 3 (depending on the health state). Unless the health state represents quite bad health, the person will generally reject this option.

The person's trade off point is therefore between 9 and 3 years. Depending on how quickly or slowly they responded to the first questions the slide may be set somewhere between 5 and 8.

These are suggested figures only and the course of the interview depends, in part, upon the health state and the interviewer's assessment of the person's response.

The point is finally reached where the person hesitates or has trouble deciding. This is, for them, the point at which <u>10 years in the health state is equivalent to the reduced time in excellent health</u>. The questions should continue with small changes above and below this point and end when the subject answers 'yes' to the following question:

Is this the maximum length of time you would be willing to trade off to have excellent health?

Record the number of years in excellent health (n). Dividing this figure by 10 yields an estimate of the utility. The disutility is what results when the utility is subtracted from 1.00. More precise estimates require adjustment for a person's rate of time preference which affects their valuation of life in the distant future.

Algebraically, if 'U' is the utility of the health state, n is the number found above and '0.00' and '1.00' represent death and full health respectively

$$U.10 \text{ years} = n \cdot 1.00 + (10 - n) \cdot 0.00$$

from which $U = n/10$.

TTO Worse than Death (TTO wtd)

On occasion the health state may represent such poor health that, in the flip-flop in Step 3, a person may readily trade off a large amount of time, say 8 years, and be happy to live for only 2 years in excellent health rather than live 10 years in the health state. In this case, the interviewer might ask the TTO question with the slide placed at 1. The person may also readily accept this figure and choose to trade off 9 years. The person is then asked whether the health state is so bad that he would rather be dead than live any time in the health state.

> *"Would you rather be dead than live for any time in the health state?"*

If the answer is yes, the TTO template is replaced with the TTO wtd template (Figure 4) and a different question is asked.

Again the layout of the board is explained. The top health state is now Death, with the health state being evaluated now placed on the left and Excellent Health on the right with the scale in the middle.

Figure 4. TTO worse than death
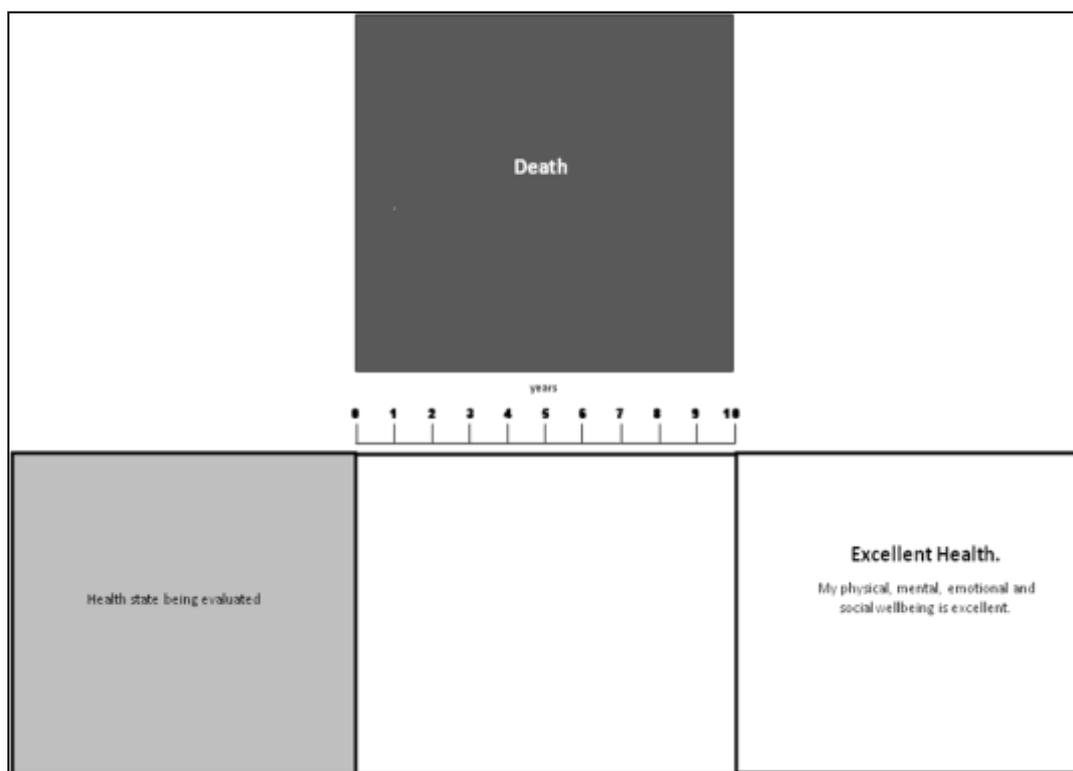
The TTO wtd question:

> *A moment ago, you said that you would rather be dead (top box) than live for any time in the health state (left). Now I want you to imagine that you still have only 10 years to live and that at some time in the future, a (presently undiscovered) treatment will restore you to excellent health for the remainder of the 10 years. What is the maximum length of time you would be willing to live in the health state if you*

knew that the <u>rest of the 10 years would be lived in excellent health</u>? The alternative is to be dead.

The flip-flop technique is again used to determine the final answer.

Algebraically, if the maximum number is 'n', and U is the utility:

O = n.U + (10-n).1

U = -(10 – n)/n

The interpretation of resulting, negative numbers is problematical. It is discussed at length in Richardson and Hawthorne (2001). The numbers cannot be directly compared with positive utilities.

TTO- and TTO+

TTO interviews are time consuming and costly. The TTO- and TTO+ were developed to increase the number of health states which could be evaluated during an interview. A multi attribute (MA) health state is made up of combinations of responses from various items and dimensions and, in our case, evaluated using the TTO technique. By changing the responses which make up the health state, we can produce other health states which differ only to a small extent from the original. Appreciation of this related health state is cognitively undemanding. In the AQoL-8D, two deteriorations (health state- and health state--) and two ameliorations (health state+ and health state++) were produced and used in TTO interviews.

Health state- is worse than health state, and health state-- is worse than health state-. In a similar way the response levels in the health state are changed to improve the health state to health state+ and further to health state++. Hence 5 measurements are made (instead of 1) using variations on a theme. These may be coded as TTO, TTO-, TTO--, TTO+, TTO++.

SELF-TTO 1 and SELF-TTO 2 and Variations

The TTO described here has what is usually described as a 'personal perspective' as it asks a person to imagine themselves as being in the different health states. It is, nevertheless, 'impersonal' from another perspective. The person is not asked to think of themselves as they are, but as they would be in a potentially very different health state. The 'Self TTO' attempts to alter the 'frame of reference' or the 'evaluation starting point' to increase the realism of the instrument and obtain an alternative metric.

The person is asked to imagine that they will remain in their current health, unchanged, for the 10 years they have left to live. The TTO question is asked – how much of their life with their existing QoL would they sacrifice for excellent health – and a value is elicited for the existing QoL. This was labelled 'Self TTO 1'.

In the development of the AQoL-8D, the person's responses to the 35 items were read to them and presented as a 'verbal' health state made up of their AQoL8D responses, a SELF health state. They were then asked the TTO question about the 'SELF' health state. The response was labelled 'Self TTO 2'.

As in TTO- and TTO+, four (4) variations were made of the SELF health state, some amelioration, some deterioration. Commonly, members of the public had good health so more deteriorations than ameliorations were made. Patients on the other hand, often had quite poor

health so it was often possible to make 2 ameliorated and 2 deteriorated health state. The health state were labelled S, S-, S--, S+, S++.

Person Trade-off: PTO1 and PTO2

PTO1

TTO adopts a 'personal perspective: it asks subjects to imagine themselves in a health state. PTO adopts the 'social or 'impersonal' perspective of someone who is evaluating the health service on behalf of a society. Presentational variants include the instruction to the subject to imagine themselves on a committee advising Medicare (as in RS-WTP) or as a hospital bureaucrat on a board allocating hospital resources. At CHE we have preferred the latter framing. In each case the subject has a limited budget and needs to decide which service or treatment to fund for patients. The technique uses numbers of people to determine social value. It can be conceptually quite challenging as the task is unfamiliar.

The interview board for the first variant, PTO1, is shown in Figure 5 and used in conjunction with the visual aid shown in Figure 7.

Figure 5. PTO1
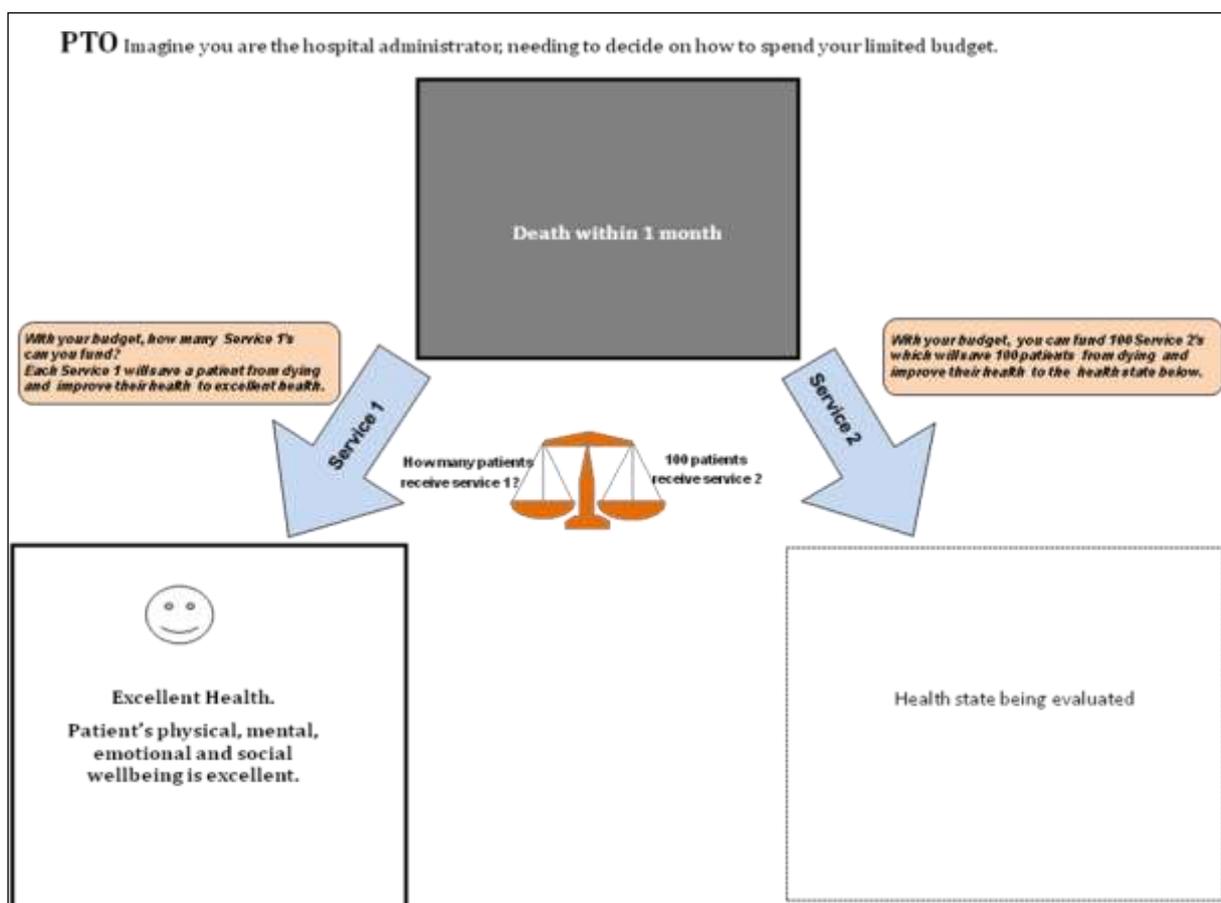
The subject is asked to imagine that they must decide where the budget will be spent and which of two services to fund.

> *As a health administrator with a finite budget you have to choose which service will give you most value for money.*

The template and the PTO interview generally are quite complex so the subject will require careful explanations. The box 'death within 1 month' represents a group of people (much larger than 100) facing imminent death. There are 2 life-saving services or treatments or procedures available to you as the hospital administrator. Service 1 will save a person from death and restore them to excellent health. Service 2 will also save a person from death but leave them in the health state.

Subjects are told they have enough money to use service 2 100 times and save100 people from death. Everyone else needing treatment and facing imminent death will die.

The PTO question asks:

> *How many people would you need to save using service 1 to choose to fund it rather than fund service 2 for these two options to be equally valuable? Remember, service 2 will save the life of 100 people but leave them in the health state described. Service 1 will save people's life and restore them to excellent health. Those who are untreated will die.*

As with the TTO, a ping-ponging technique may be used increasing then decreasing the number receiving service 1 by incrementally smaller and smaller amounts. Subjects may need to be 'tempted' with the possibility of more or less services (analogous to ping-ponging in the TTO). When they have eventually chosen the number, n, which makes the two ways of spending the budget of equal value to them, the value of the health state (or more strictly the service) may be estimated.

If the social value of the health state is V,

$$100 (V - 0) = n. (1-0.00)$$
$$V = n/100$$

A variant of PTO1 is to change the program so that 100 patients are treated by service 1 (death to full health) and a variable number receive service 2 (death to the health state). In this case the algebra at the point of equal value becomes:

$$100 (1 - 0.00) = n (V - 0.00)$$
$$V = 100/n$$

A disadvantage with this approach is that n has no upper limit and people have cognitive difficulty with numbers over 100. Very large numbers may be reported which mean that the health state is very bad but the cardinal value of the number may have little meaning.

PTO2

The visual aid for the second version of the PTO used at the CHE is shown in Figure 6 and is used in conjunction with the prop in Figure 7. In contrast with PTO1 where 100 people's lives are saved and left in the health state, in this version 100 people are shifted from the health state to full health by the second service. Service 1 is a life saving treatment, service 2 improves quality of life. How many people would have to be saved from dying and restored to excellent health using service 1 to be equivalent to improving the quality of life of 100 people from the health state to excellent health?

Figure 6. PTO2
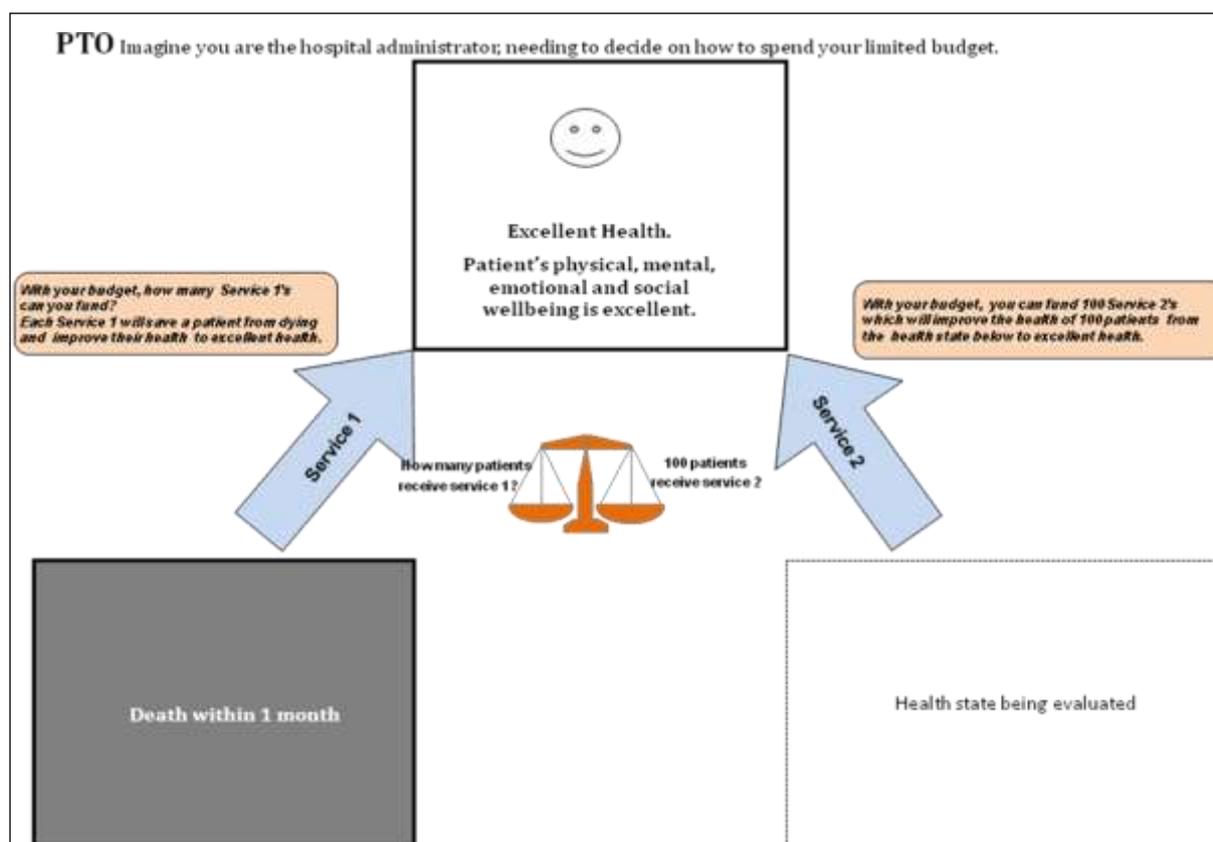
After a similar series of questions a number of patients, n, is identified such that saving the life of these n people and returning them to excellent health is assessed as being of equal value as the 100 patients being returned from a health state to excellent health. This results in the algebraic calculation

$$100 (1 - V) = n.1.00$$
$$V = 1 - n/100$$

A second version of PTO2 reverses the data. Option 1 is for 100 people to be saved to full health; option 2 for n people to be returned from the health state to full health.

$$n (1 - V) = 100.1.00$$
$$V = 1 - 100/n$$

As with the second version of PTO 1 this option is problematical when the values of n become large.

A useful summary of the two PTO instruments is given in Figure 8.

Figure 7. People cards used in PTO
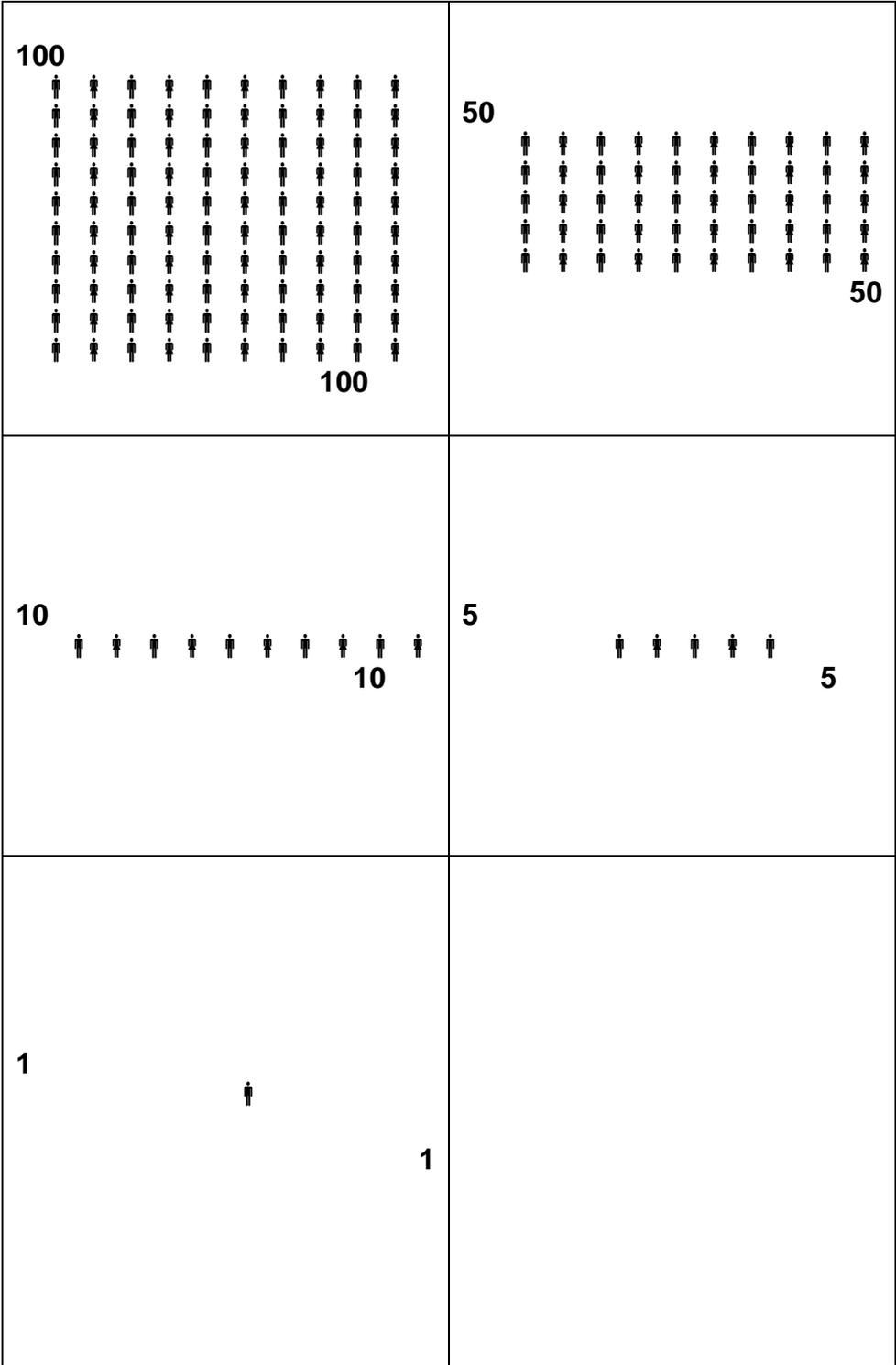
Figure 8. Utility calculation in PTO
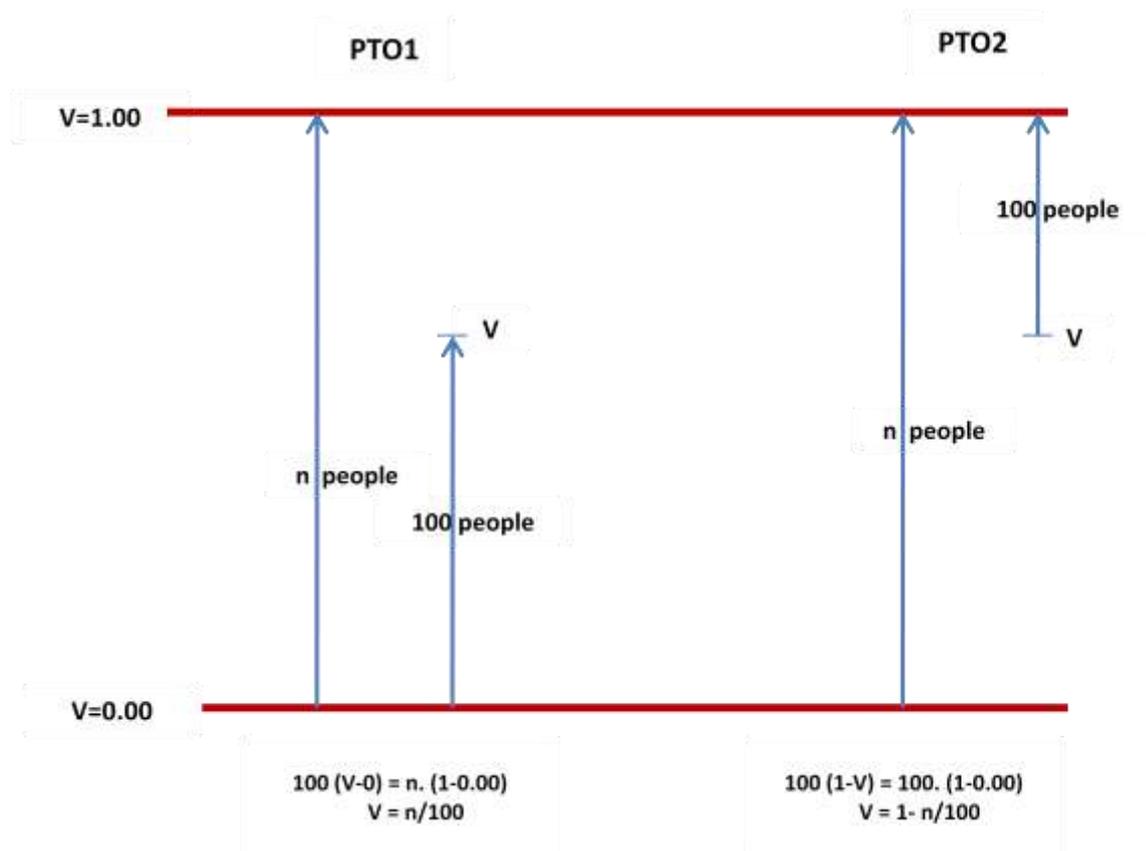
Relative Social Willingness to Pay (RS-WTP)

The RS-WTP was developed at the CHE and to date has been reported in only one publication (Richardson, Iezzi et al. 2007). It is similar to the PTO in adopting a social perspective. Unlike the PTO it uses dollars, not people, to establish relative value. The visual prop used for this instrument is shown in Figure 9.

Figure 9. Relative Social Willingness to Pay (RS-WTP) instrument
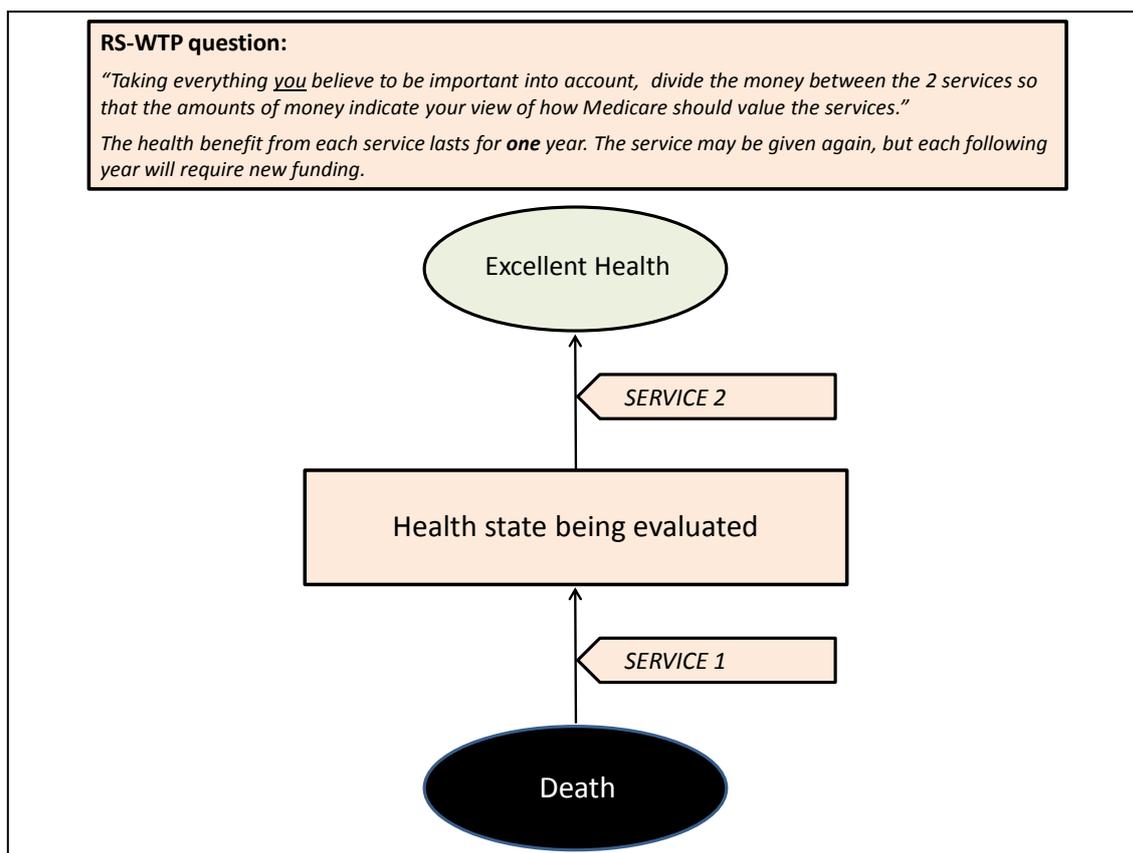
The instrument is administered by first telling subjects that they are on a government committee that must decide how much Medicare should pay for different medical services and that a population survey has found that Australians and the Australian government believe Medicare should pay up to $40,000 per year on 2 services to save a person from dying and restore them to full health.

Service 1 will take a person about to die to the Health State Being Evaluated. Service 2 will take anybody in the health state to excellent health.

The total health benefit of service 1 and service 2 together is equivalent to saving a person's life and restoring them to excellent health for a year although the services may be given to different people.

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The RS-WTP question is presented as follows:

We are asking you to take everything you believe to be important into account and divide the money between service 1 and service 2 so that the amounts of money indicate your view of how Medicare should value the services.

Understand that in this exercise, anyone who is about to die and receives service 1 will improve to health state A. Anybody already in health state A who receives service 2 – whether the same person who received service 1 or a different person – will improve to excellent health.

It is important for the interviewer to discuss what each of the services accomplishes.

If the amount a person will spend on service 1 and 2 $n and $(40,000 - n) respectively, then

V_1 = relative social value of service 1 = n/40,000

V_2 = relative social value of service 2 = (40,000 - n)/40,000

Stepped RS-WTP

At the time of writing an alternative format of the RS-WTP questions is being developed to avoid a bias which may result from starting at death in each question. The alternative also builds in the need for subject reflection. The approach is illustrated in Figure 10.

Figure 10. The step RS-WTP
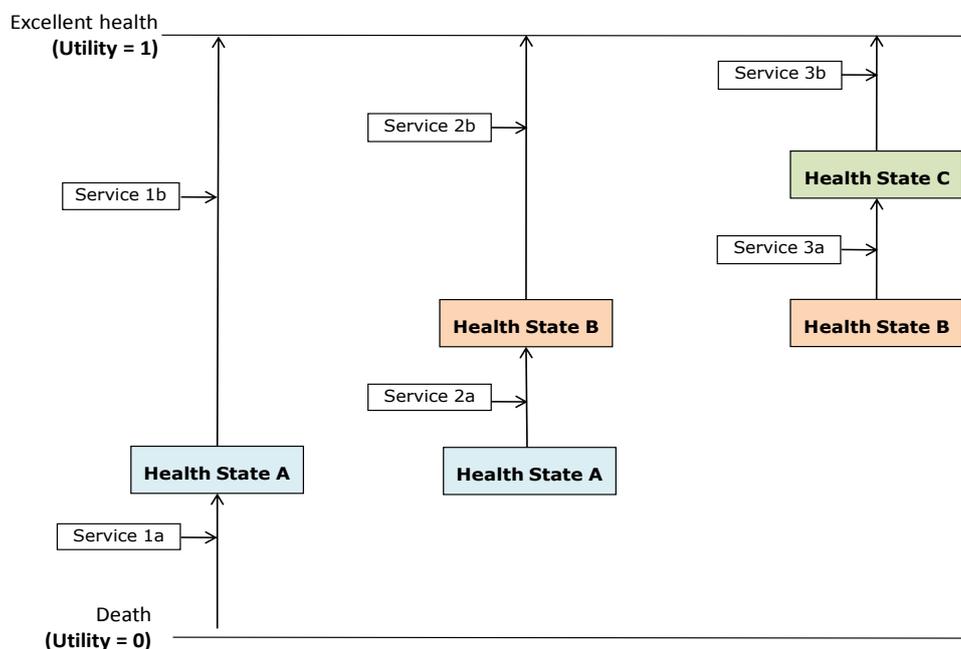
In the first step, subjects are asked to evaluate health state A as described above for the RS-WTP. The initial budget is $40,000 which, as described above, is divided between service 1a and 1b.

In step 2 the RS-WTP is repeated but with service 2a and 2b taking patients (not from death but) from health state A (the state evaluated in step 1) to a new health state B. Service 2b takes patients from there to full health. The budget available is the amount allocated to service 1b in step 1.

In step 3 this procedure is repeated with service 3a and 3b corresponding to a move from health state B to a new health state C and from this health state to excellent health respectively. The budget is the amount allocated to service 2b. At the end of these three steps subjects are asked to compare the amount allocated to service 3b with the amount allocated to service 1a and to judge whether the relative amounts appear to be satisfactory. If not they are asked to revise all their allocations.

This procedure is being administered via the web and may be accessed at:
http://che/buseco.monash.edu.au/index.php?sid=69853

Visual Analogue Scale (VAS)

TTO measures the health state from the perspective of the person receiving the health services, the patient. The metric for measurement is years of life. PTO adopts the perspective of the provider of health services, the hospital administrator. The metric is the number of people. RS-WTP evaluates the health state from the perspective of a member of a government committee advising Medicare and quantifies preferences using dollars as the metric.

VAS may be used to measure from any perspective. In the context of the AQoL it has been used, like the TTO, from the perspective of someone asked to consider how they would value the health state if they were in the health state.

The visual analogue scale is a fixed line, anchored with the 'best' condition at one end and the 'worst' condition at the other, and no words describing intermediate positions. The health states being evaluated are placed alongside the graduated scale. The subject is asked to draw a line from each health state to cross the scale at the point which would represent their valuation of the health state. The scale generally used at CHE is vertical and is marked in intervals from 0-100, with best health at 100 and worst at 0. The end points of the scale can have various descriptions, but it is important that they are clear as they represent the 'anchor points'.

Variations in the scales used are

- Item Best/Item Worst scale: the item best is placed at 100, the item worst at 0.00. The intermediate response levels are placed beside the scale. The subject is asked to draw a line from each health state. Lines may not cross in this as the response levels are clearly hierarchal.

Figure 11 illustrates this using an item about the frequency of feeling afraid.

- Dimension Best/Dimension Worst scale: the dimension best is placed at 100, the dimension worst at 0.00. Dimensions generally contain several items. The item worst health states are placed beside the scale. Lines may cross in this case as the item worsts are not related in any hierarchal order.

In Figure 12 the dimension used is 'Senses' from AQoL -6D and AQoL-8D. This contains three items which relate to vision, hearing and communicating.

Worse than Death scale: 100 represents Excellent Health and 0 represents Death, with the scale descending to minus 25 for Worse than Death valuations. The dimension worst health state for one dimension (while all other dimensions are considered excellent) is placed beside the scale. The subject is again asked to draw a line to show how good or bad they think the health state would be if they were in it.

See Figure 13: the example used is the Senses dimension earlier.

Figure 11. VAS on item best/item worst scale
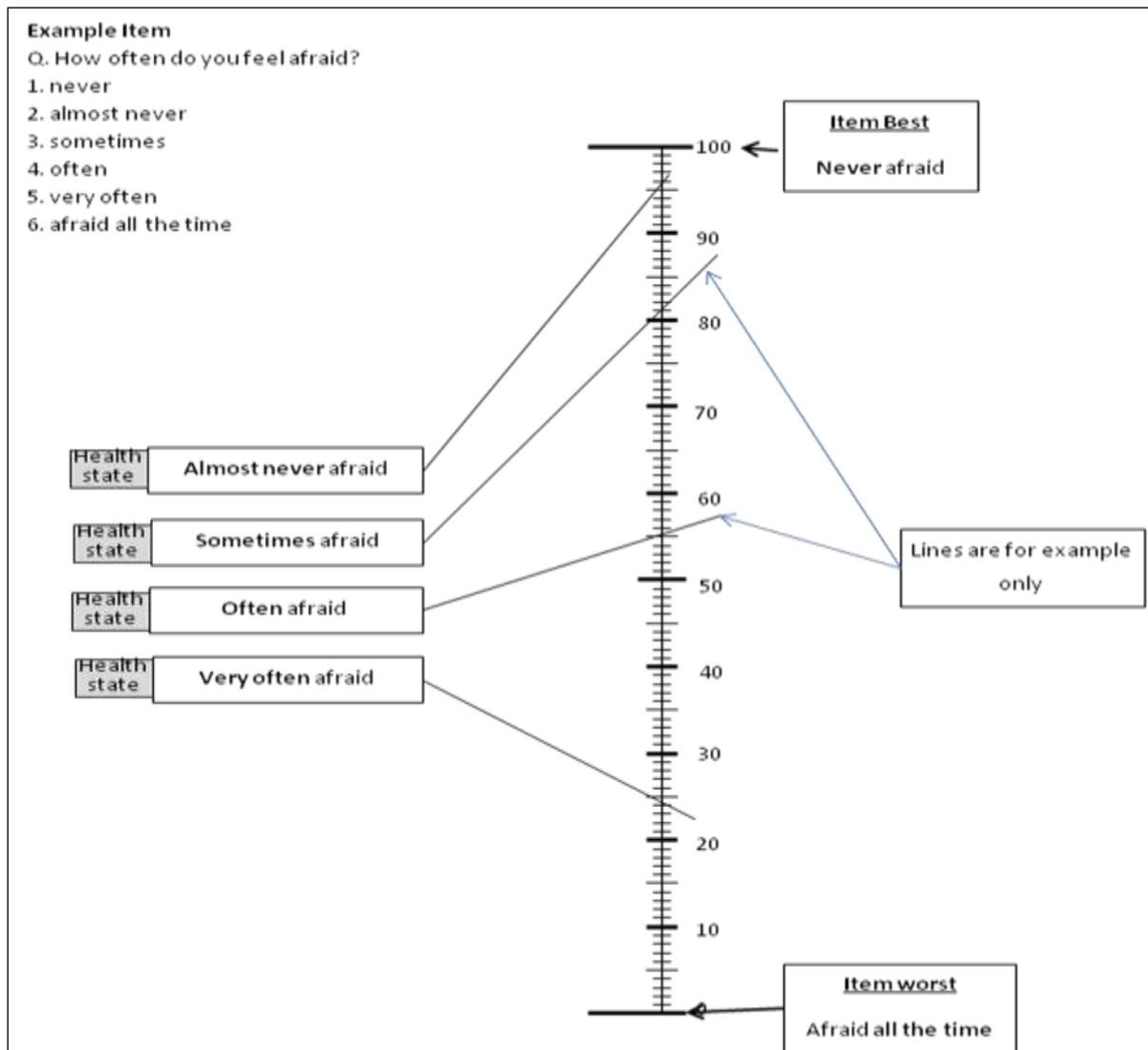
**Figure 12. VAS on dimension best/dimension worst scale**

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18
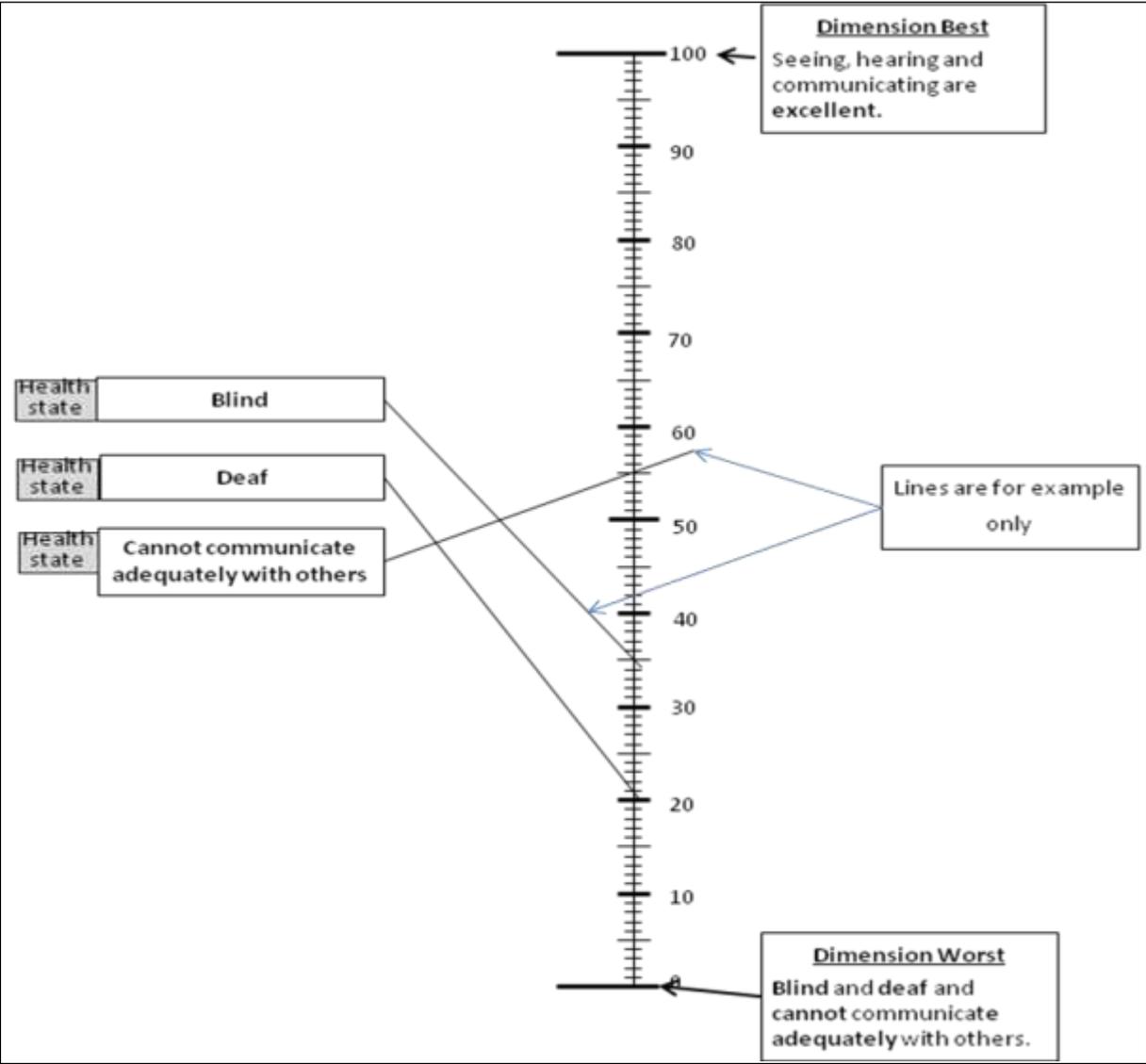
Figure 13. Dimension worst on a life/death/worse than death scale
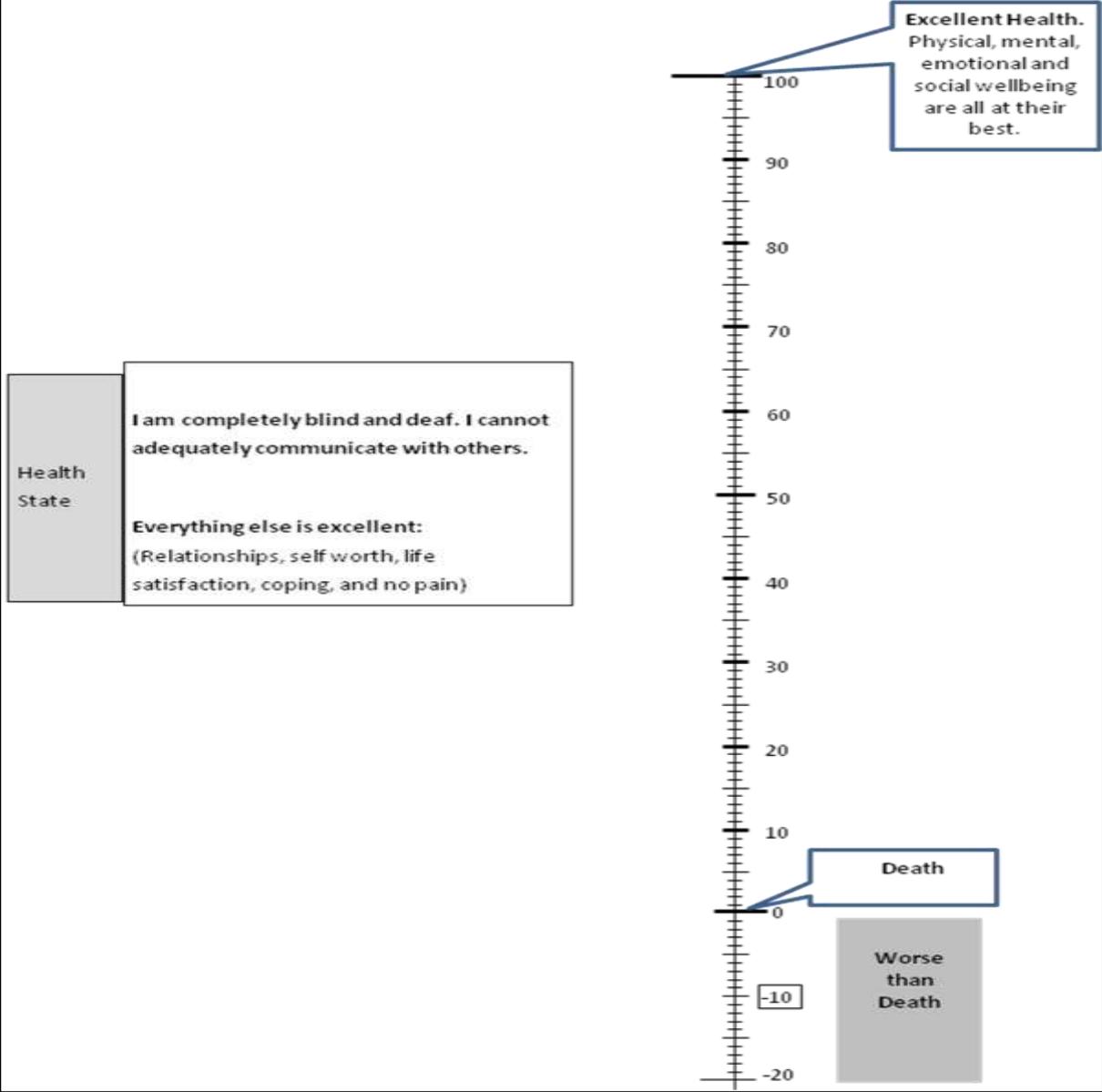
Part 2: Simulated Interview

Italicised text represents the interviewer speaking to the subject. Three interview techniques are presented: (i) TTO; (ii) PTO; and (iii) RS-WTP.

> *Today we will use 3 types of interview techniques. The aim of each technique is to get a measurement from you for each health state which indicates your feeling about it.*
>
> *With the first technique – the Time Trade-off or TTO – we will ask you to be the patient in the condition. You may be in the hospital bed and you will give your answers from that point of view.*
>
> *With the second technique – the Person Trade-off or PTO – we will ask you to stand back from the hospital bed and be the hospital manager responsible for the whole hospital who needs to decide how to spend the budget and which service/ward/patients to fund.*
>
> *With the third technique – the Relative Social Willingness To Pay or RS-WTP – we will ask you to be even more removed, this time part of a committee advising Medicare how to divide an amount between 2 services.*
>
> *The 3 levels can be represented as in Figure 14. We will ask you to wear 3 different hats.*

Figure 14. Three levels scenario
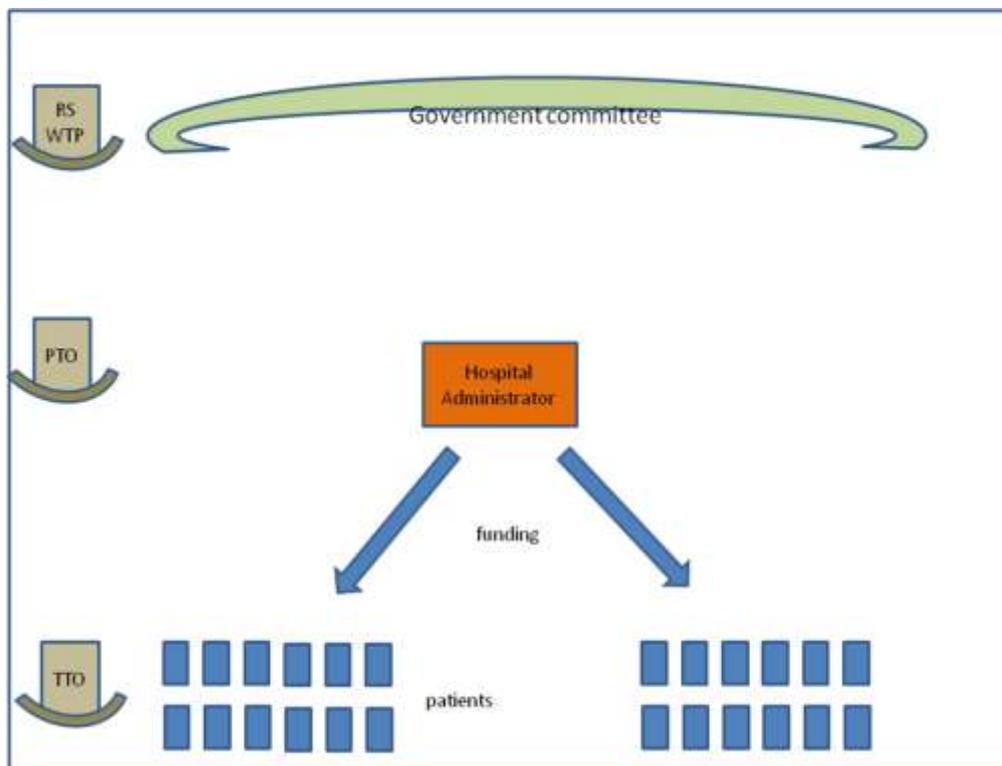
TTO Interview

Place the following card before the subject

> **Time Trade-off**
>
> **You are the RECEIVER of health services**
>
> **(PATIENT)**

> *This is the first hat we would like you to put on; the point of view to adopt. For each question it is very important that you think carefully about what it would be like for you in the health states.*
>
> *You will be asked to choose which of two options you prefer.*
>
> *For example, which health state would you prefer if you had 10 years left to live but you were unable to communicate with other people, or the second option of living for only 5 years but in excellent health with no problems communicating This is the sort of question you will be asked.*

Present the interview materials as simply as possible. Introduce the bare board (see Box 1 for a physical description) without any template.

Box 1 Construction of TTO and TTO wtd board

The TTO board is made from 2 layers of art mount-board and accommodates templates A3 in size. A window (13 cm wide and 10 cm tall) is cut from the top layer (in the middle 2 cm from the bottom) and a slide, half white, half black, is inserted from the side between the 2 layers.
On one side, the slide has white on the left half and black on the right half for the TTO question; on the other side, it has black on the left half and white on the right half for the TTOwtd question. Some pieces of mount-board need to be glued between the top and bottom layers to create a comfortable sliding space for the slide. A handle made from sticky tape is attached on the line between white and black to enable the slide to be moved back and forth.

> *This is the board we use. It has a slide which moves left and right. We will record the number at which the line dividing the white and black portions is placed by the end of each question.*

Move the slide back and forth to demonstrate the movement.

Figure 15. Time Trade-off board

Score determined by position of this line dividing white and black

Slide

Handle attached here

Window cut out so that slide shows through
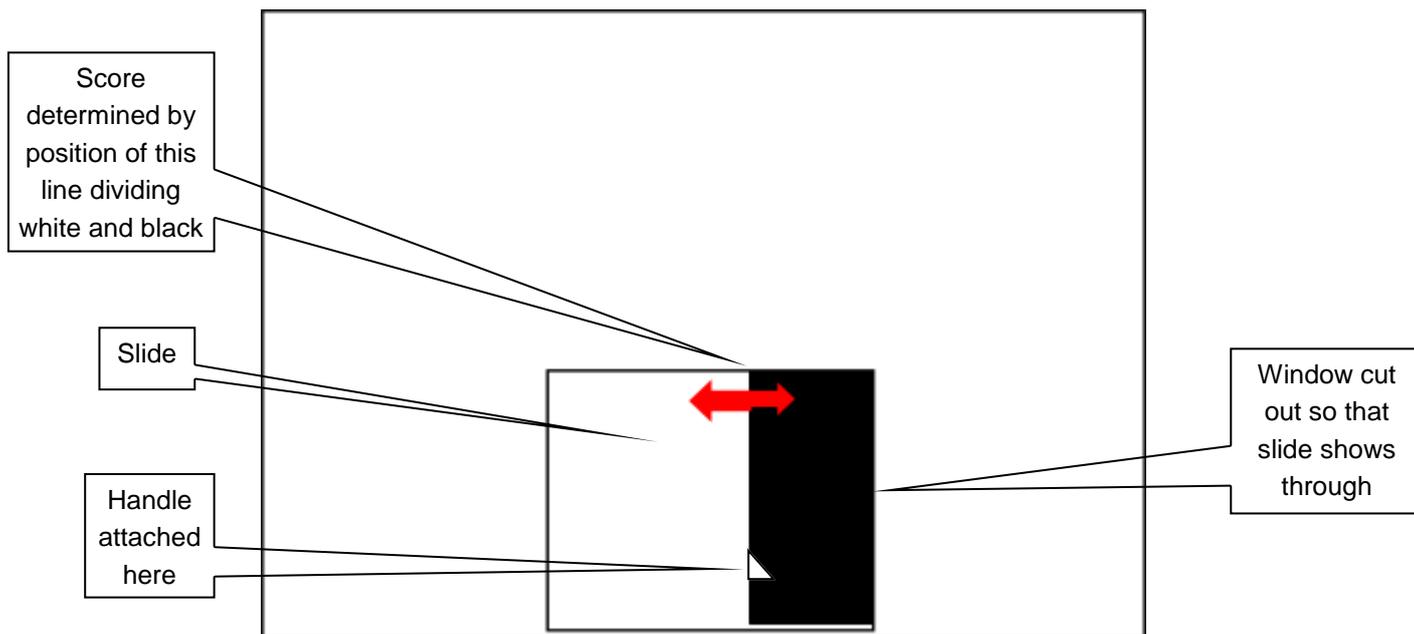
Place the TTO template onto the board.

> *This is the template we use for this part of the interview which we call Time Trade-off. We will place whatever health state we want you to evaluate in the top box.*

Indicate the box labelled 'health state being evaluated'

Figure 16. Time Trade-off board in use

Slide set at 6 years

TTO Imagine you will be in the health state described for the remaining 10 years of your life, and it won't change.

Health state being evaluated

years

0   1   2   3   4   5   6   7   8   9   10

Excellent Health.
My physical, mental, emotional and social wellbeing is excellent.

Death
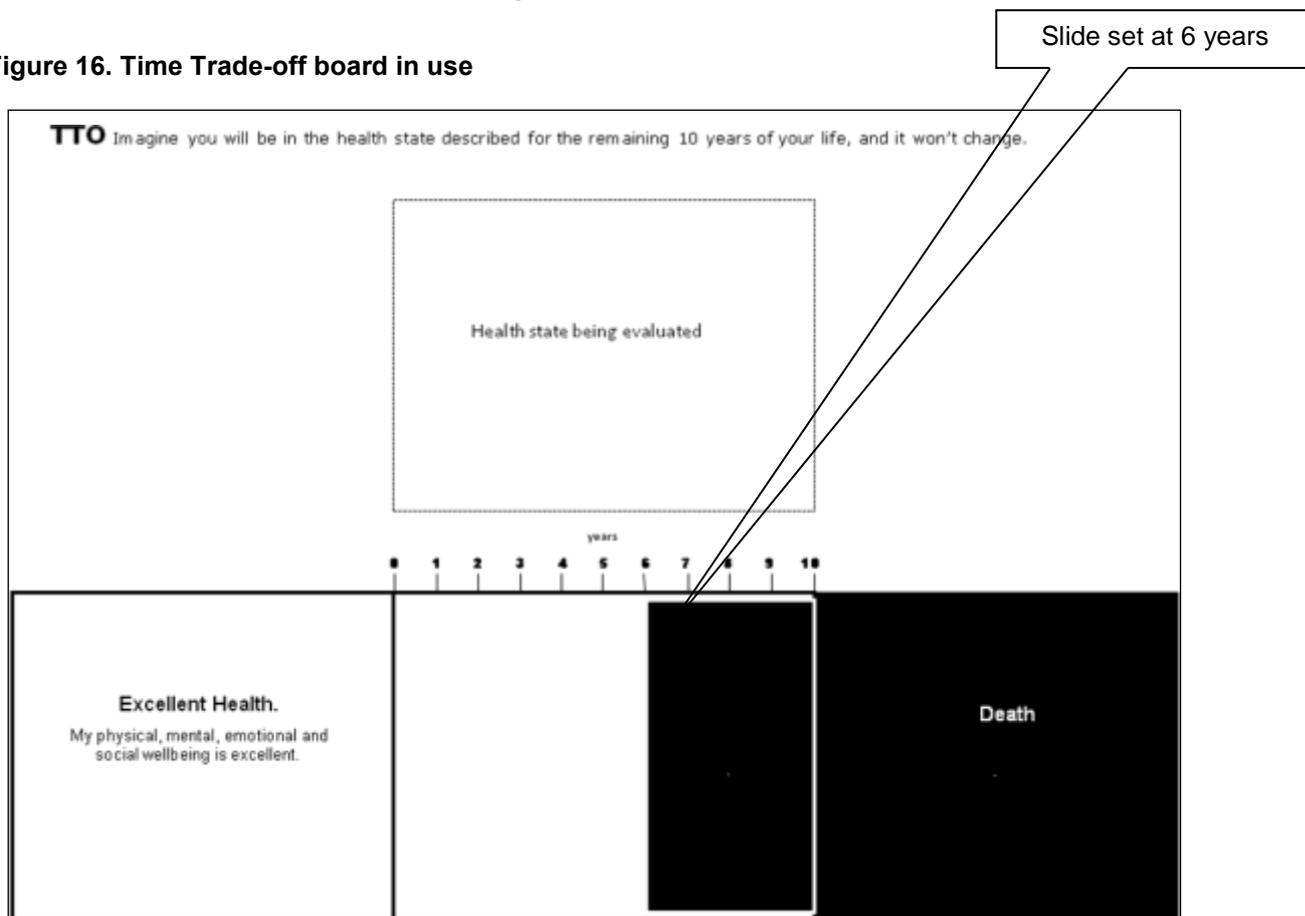
On the top is a health state we will ask you to evaluate. Below the health state is a scale which measures the next 10 years of life. To the left, the white area represents excellent health (no illness whatsoever), the black area to the right represents death. The slide will go backwards and forwards.

You will be asked to imagine yourself in the health state being evaluated with 10 years to live. You will then be offered a choice. This option will be for excellent health but for less years of life.

Place the slide as shown in figure 16

If the slide was in the present position, it would represent the option of 6 years in excellent health (white) and giving up 4 year of life, that is, dying 4 years earlier (black).

Place the health state being evaluated on the TTO template/board.

When you are thinking about the health state, we need you to consider that all that can be done has been done, no further improvement is possible, but it will not get worse.

You have 10 years to live unchanged, and I stress unchanged, in that state. This is the most important part – that you are able to imagine yourself in this health state. You will not get worse with age; but you will not improve.

Imagine that you are in this particular health state, looking forward to the last 10 years of your life in that condition. A doctor tells you that there is a treatment which will restore you to excellent health but it does have the side effect of definitely shortening your life. Would you consider taking the treatment? We will ask you what the maximum amount of time you are willing to give up or trade off.

This choice is represented below with the white representing excellent health on the left and death on the right. If the slide was placed on 7, it would mean that you would choose a treatment which would give you 7 years of excellent health and die 3 years earlier, that is, give up 3 years.

Is that clear? Do you understand that you are being asked to choose between 10 years in the health state or a smaller number of years in excellent health that is, living some years less?

Repeat the explanation if necessary until the subject obviously understands the technique.

So let's start with the first health state. I will read out the health state to you.

I will read out the health state. [Read] *Now I would like you to take your time, read it carefully and think about being in this state.*

Give a little time but prompt if necessary to think about the health state.

It is important that the subject understands the whole health state, both the good and bad aspects of the health state. There are various questions to help avoid a 'focusing' effect where the subject

seems to notice only the bad aspects of the health state. A test of their comprehension is to ask them the following:

> *What do you think of that health state?*

> *What don't you like about it?*

> *What do you like about it?*

Questions such as these, particularly at the beginning, serve to train the subject to read the whole health state more carefully. Contemplating and ensuring appreciation of the health state is a key issue. Depending on their level of comprehension, you may proceed to read the whole health state.

> *I would like you to imagine that you are in the condition described with 10 years to live. The health state represents the best state you can possibly have for these 10 years. You cannot improve it in any way.*

Set the slide on 10

> *If I set the slide to the extreme right, on 10 years, it means living for 10 years in excellent health. If you had a choice between living out your full 10 years in the health state or living for the 10 years in excellent health, which would you choose?*

The answer to this is obvious. However the subject may be confused initially, thinking it to be a trick question. So, after a few moments pause, interrupt their thinking process with the following:

> *Of course you would choose 10 years in excellent health.*

To which they answer: **'Yes'**

Or you may allow the subject to consider and answer: *'10 years in excellent health'.*

The aim of either of these questions is to 'break the ice' – the subject has responded. Next move the slide to 9 and ask the following question:]

> *Would you prefer to live 9 years in excellent health and die one year earlier than live the full 10 years in the health state?*

Possible Answer 1a: The subject answers 'No' to 9 years in excellent health.

If the health state being evaluated represents very good health, the subject may think that they could easily live the whole 10 years in the health state, or at least, not be willing to trade off any time. They would choose 10 years in the health state, thereby <u>refusing to trade</u>.

The slide can be tried at 9 years 6 months and 9 years 9 months.

> *Would you be willing to live 3 months less if the remainder of your 10 years could be lived in excellent health rather than live your full 10 years in the health state?*

If the answer is still 'No', the person is a <u>non-trader</u> and the score is 10. The utility for this is 1.0. They are not saying that there is no difference between the health state and excellent health. They might still consider the health state worse than excellent health but are not willing to give up any time to avoid it.

Possible answer 1b: The subject answers 'Yes' to 9 years in excellent health.

Move the slide down to '2' (flip-flop) and ask the TTO question again

> *If you have a choice of your last 10 years in the health state or 2 years in excellent health and give up 8 years, which would you choose?*

Possible answer 2a: The subject answers a strong and immediate 'No' to giving up 8 years of life. You then know that their trade off point is somewhere between 2 and 9. Now move the slide up to 7 and ask the TTO question again.

> *Would you prefer to live for 7 years in excellent health and give up 3 years rather than live the full 10 years in the health state?*

Depending on how quickly and confidently the person answers will determine your next step. The slide can be flip-flopped back and forth until the person almost cannot decide between the health state or excellent health. This is the point of equivalence we are measuring, the point at which they have trouble deciding, or their decision is slow in coming. Once they settle on a trade off point ask whether the years being traded off are the maximum they are willing to trade.

Possible answer 2b: If the subject readily answers '*yes'* to 2 years in excellent health rather than 10 years in the health state, they obviously think the health state is very bad. The interviewer needs to check whether the subject thinks the health state is worse than death.

Ask about 1 year:

> *Would you prefer to live for just one year in excellent health rather than 10 years in the health state?*

If the answer is still strongly '*Yes'*, ask the following:

> *Is the health state so bad that you would rather be dead than live for any time in the health state?*

If the answer is 'Yes', say the following:

> *In that case, I will ask you another question.*

Turn the board over for the TTO worse than death question. (See Figure 4). Place the health state being evaluated on the left.

> *Now the template is a little different. Death is on top of the board. The health state being evaluated is on the left and excellent health is on the right.*
>
> *A moment ago, you said you would rather be dead than live for any time in the health state. Now I want you to imagine that a cure will be found for the health state to restore a person in that health state to excellent health. How long would you be willing to live in the health state if you knew a cure would be found and you could live the rest of the 10 years in excellent health?*

Start near the left:

> *Could you live in this health state for 1 year if you knew that a cure was coming after that time which would give you excellent health for the remaining 9 years of your life?*

Most people would say yes so move it to 5 years and ask the same question.

> *Could you endure the health state for 5 years if you knew the last 5 years of your life would be in excellent health.*

Most people would say no, so the answer will be obtained somewhere in between 1 and 5.

If the answer was 3 years in the health state followed by 7 years of excellent health, the interviewer would score it as '**3wtd**'.

This process continues until the point of 'indifference' or indecision is reached and this number of years is recorded.

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PTO Interview

The visual aid for the second version of the PTO used at the CHE is shown in Figure 5 and is used in conjunction with the prop in Figure 7.

Place the following card before the subject.

> *Now we would like you adopt the following perspective.*

<div style="border:1px solid black;padding:1em;text-align:center">

Person Trade Off

You are the PROVIDER of health services

(eg a Hospital Administrator)

</div>

Place the A3 template (Figure 5 PTO1) before the subject.

> *Here is the template we use in PTO. The 'death within 1 month' represents imminent death. The service 1 and service 2 arrows represent two life saving treatments or services. One will leave people in excellent health; the other in the health state we are evaluating.*
>
> *I'd like you to imagine that you are a health bureaucrat or hospital administrator – you are the one who signs the cheques and decides where the budget will be spent. You have to decide which patients get the health services.*
>
> *As a health bureaucrat with a limited budget you have to choose which of two services will give you most value for money. They are both life saving services: one restores anyone saved to excellent health; the other restores anyone saved to the health state.*
>
> *You have a budget which is large enough to fund 100 service 2's – to give service 2 to 100 people. This will save 100 people from dying. They will end up in the health state we are evaluating. On the other hand, if you put your budget into Service 1, whoever you save will be fully restored to excellent health.*
>
> *As a health administrator with a finite budget you have to choose which service will give you most value for money.*
>
> *How many people would you need to save using service 1 to choose to fund it rather than fund service 2 for these two options to be equally valuable? Remember, service 2 will save the life of 100 people but leave them in the health state described. Service 1 will save people's life and restore them to excellent health. Those who are untreated will die.*

Subjects do find it difficult to know where to begin. A useful start is to place the <u>100 people card</u> on the top 'imminent death' box and ask:

> *If it cost the same for either service to save 100 people which service would you fund?*

Clearly the answer is service 1. The interviewer can either proffer this response or wait for the subject to overcome their suspicion about a trick question and make the obvious answer.

> *You would fund service 1 of course as the 100 saved by service 1 would be restored to excellent health (to which the subject readily agrees).*

Place the 100 people card on the service 2 side and cards representing 95 people on the service 1 side.

> *What about if you could save 100 using service 2 but only 95 using service 1?*

Most people would choose service 1 and save the 95 people – and will have made their first trade.

As with the TTO, a flip-flop technique may be used, increasing then decreasing the number receiving service 1 by incrementally smaller and smaller amounts.

Place cards adding to 20 people on the service 1 side.

> *If you could fund only 20 service 1s and save 20 people (80 more people would die) and restore them to excellent health, would you put the money into service 1 or would you prefer to fund service 2 and save 100 people who will end up in the health state?*

Possible answer 'Yes': Subject obviously thinks the health state is bad and would be prepared to sacrifice another 80 people and save only 20 people to end up in excellent health.

Place the 5 people card on the service 2 side.

> *What about 5 people saved to excellent health rather than 100 people saved to the health state?*

Possible answer 'No': The number of people saved by service 1 will have to be increased.

Generally, if the subject chooses 'service 1', decrease the number receiving service 1 until the subject chooses service 2. If the response is 'service 2', increase the numbers receiving service 1 until the person chooses service 1. A point will be reached where the sides are equivalent and the number receiving service 1 is recorded as the score.

RS-WTP Interview

The visual aid is shown in Figure 17.

Place the following card before the subject.

Now we would like you adopt the following perspective.

Relative Social Willingness to Pay

You are a MEMBER OF A COMMITTEE

which advises Medicare how to distribute the budget between 2 services.

Place the template (an A3 size version of Figure 14) before the subject.

This is the template we will use in this part of the interview. The page contains 3 health states: Death, Excellent Health and the health state being evaluated, and 2 services: 1 and 2.

Place the health state on the template in the box 'health state being evaluated'.

This is the first health state to evaluate. Service 1 is a life saving treatment which saves a person from dying and improves them to the condition of the health state. Service 2 improves the person's quality of life from the health state to excellent health.

You are now on a government committee that must decide how much Medicare should pay for different medical services.

A population survey has found that Australians and the Australian government believe Medicare should pay up to $40,000 per year for services which would increase a person's life by one year in excellent health. In the present case, this takes 2 services, one of which saves a person from dying and would leave them in the health to a health state being evaluated, the other takes them to excellent health.

The total health benefit of service 1 and service 2 together is equivalent to saving a person's life and restoring them to excellent health for a year. But the services may not necessarily be given to the same person.

Understand that in this exercise, anyone who is about to die and receives service 1 will improve to the health state. Anybody already in health state who receives service 2 – whether the same person who received service 1 or a different person – will improve to excellent health.

We are asking you to divide the money between service 1 and service 2 so that we can obtain your opinion of the relative benefit of the 2 services.

I will explain the health state. [Read]

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What do you think of that health state?

What don't you like about it?

What do you like about it?

Read the RS-WTP question (at the top of the template Figure 17) to the subject:

Taking everything <u>you</u> believe to be important into account, divide the money between the 2 services so that the amounts of money indicate your view of how Medicare should value the services. The health benefit from each service lasts for <u>one</u> year. The service may be given again, but each following year will require new funding.

Record the dollar amounts for the 2 services.

Figure 17. RS-WTP template

RSWTP question:

"Taking everything you believe to be important into account, divide the money between the 2 services so that the amounts of money indicate your view of how Medicare should value the services."

*The health benefit from each service lasts for **one** year. The service may be given again, but each following year will require new funding.*

Excellent Health

SERVICE 2 improves a person's health from the health state to excellent health

Health state being evaluated

SERVICE 1 saves a person from death and leaves them in the health state

Death
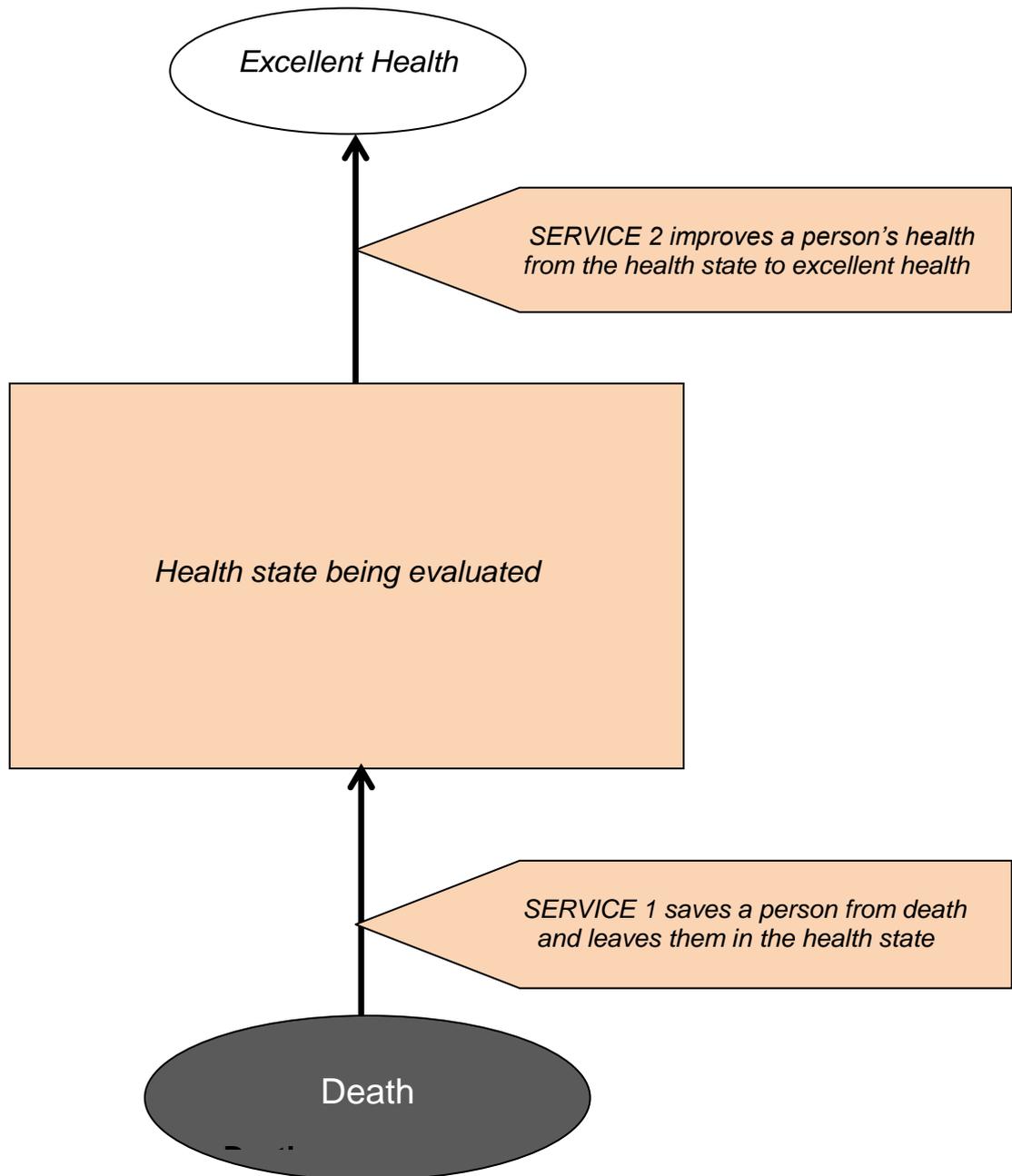
Part 3: Training of interviewers

Quality of Interviewers

Choosing interviewers with the right temperament and exceptional communication and conceptual skills is very important. A good temperament is both sensitive and pragmatic. Smart casual dress and appearance is important as they represent the employer institution and interviewees will be interacting with members of the public from all socioeconomic groups.

The quality of data depends as much on the quality of the interviewer as it does on the quality of the subject. If the interviewer is unable to grasp the concepts involved in the various techniques, they will not be able to communicate them properly, the subject will not understand and the answer will be invalid.

Think of an analogy such as throwing a ball to a small child. The ball can be thrown in such a way that the child is almost guaranteed to catch it.

Blind subjects (who could not benefit from the props) were asked after completing TTO interviews what assisted them to understand what was to be done. Their response was that having the same question put several different ways was very beneficial. (Refer to TTO 1-2-3). Communication skills are the key to different presentations of the same question.

Training

Training at CHE is very efficient and involves an introduction by the project manager, either face to face or in a group, ranging from 90 minutes to 3 hours, covering instrument development and the purpose of deriving weights. In the following days, after studying all the interview materials, trainees sit in on 2 interviews conducted by experienced interviewers, followed by two 'dummy' (training) interviews on their own at home with friends or family. The training interviews are taped with a digital voice recorder for auditing and teaching purposes. They can also be given a video or audio recording of an actual interview for review. All the necessary props are supplied for the training interviews.

Only when interviewers seem competent are they given real interviews to do with the project manager or an experienced interviewer observing and contributing where necessary. They may have varying levels of supervision during their first 10 interviews.

Minimising Bias and Auditing

To minimise bias from individual interviewers and ensure maximum homogeneity in the individual interview techniques, one or two interview sessions between interviewers should be held during data collection. This has proved quite eye-opening – and useful – in the past.

As well, a representative sample of interviews should be voice recorded for auditing purposes.

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