Work in progress - not for citation or quotation

Paper prepared for the Health Economists' Study Group winter 2013 meeting, Exeter

The capability approach in health economics: are we applying it correctly?

Milad Karimi[1,*], John Brazier, Suzy Paisley

Health Economics and Decision Science, School of Health and Related Research, The University of Sheffield

Abstract

Several papers have advocated the application of the capability approach in health economics and over the last years there have been several attempts to apply the approach. These attempts are critically assessed in this paper.

Some problems with current methods of measuring and valuing capabilities are identified. These problems may cause issues in the interpretation of measures such as the ICECAP. The reason for these problems may be the interpretation of the capability approach literature by health economists. The 'underspecified' nature of the capability approach and some of Sen's ambiguous writing may have led to several interpretations which can be challenged.

It is argued that the necessity to elicit capabilities rather than functionings is either a misinterpretation or has not been adequately defended. Several other interpretations are prevalent in the health economics literature, such as that the capability approach requires us (a) to widen the evaluative space, (b) to focus on equity concerns, (c) to use public rather than personal preferences and (d) to be expert centered. There is a lack of support in the capabilities literature for these claims.

It is argued that several features of the capability approach are already included in existing preference based methods. Nevertheless, the capability approach can improve current practices of valuing health states and some ideas for future research are discussed.

1. The capability approach

The capability approach is a theory about the assessment of an individual's well-being (Robeyns, 2005b). This theory was developed by Sen (1979) in "Equality of What" and later expanded in various other texts (Sen, 1987a,b, 1992, 1999).

*Corresponding author: Milad Karimi, mkarimi@sheffield.ac.uk

[1]Milad Karimi is funded by a studentship from the the Faculty of Medicine, Dentistry and Health at the University of Sheffield.

Sen (1987a, pp. 7-9) conceptualized well-being as consisting of 'functionings', which are things someone can do and be, and 'capabilities', which are combinations of functionings available to a person. This approach is in contrast to utility based accounts (which may focus on happiness, desire-fulfillment, or choice) and resource based accounts (focusing on income or commodities) (Clark, 2005, p. 1343).

Functionings refer to all the various valuable activities that one can engage in and various things one can be. Examples are someone's level of nutrition, education, happiness, or leisure hours. Measuring functionings is not always enough to assess well-being. Sen argues that there should be a role for freedom, which is represented by capability Sen (1993, p. 38). Capability refers to combinations of functionings that one can choose from. The importance of capability is based on the importance of (a) choice, and (b) advantage or opportunity Sen (1993, pp. 38 - 40). My life is improved by me having the choice not to attend HESG, even when my preferred alternative is to attend HESG. A person who is fasting, has the capability and opportunity to eat and is better off than someone starving due to poverty. Capability thus reflects the intrinsic value of having choices, and the opportunity for a better combination of functionings.

Robeyns (2006) reviewed a wide range of applications of the capability approach. These have included the assessment of development projects (Alkire, 2002), the identification of the poor (Robeyns, 2005a), and the assessment of deprivation caused by disability (Zaidi and Burchardt, 2005). This displays the flexibility of the approach as it can be adapted to many different needs.

2. The capability approach in health economics

As the influence of this approach has grown in various fields, health economists have considered the application of the capability approach. Cookson (2005) argued that the "direct estimation and valuation of capability sets" is not feasible since it is difficult to secure agreement about the list of functionings, to estimate capabilities rather than functioning, and to value and compare capability sets. Cookson (2005) suggests re-interpreting the QALY as an imperfect index of the value of an individual's capability set. In this way the QALY

would include the non-separability of health and well-being. The "Capability-QALY" could also include impact on non-health functionings and incorporate subgroup diversity in the value of health states (Cookson, 2005).

Verkerk et al. (2001) argued that incorporating notions of functionings, capabilities and conversion factors could allow quality of life research to develop beyond its current applications. They argued that the capability approach draws attention to the fact that (a) the selection of an outcome measure should depend on the research question; (b) quality of life cannot be reduced to happiness; (c) measuring capability solves issues of adaptation; (d) freedom has intrinsic importance for well-being; and (e) changes to the broader socio-political environment can improve quality of life.

Coast et al. (2008b) argue that the capability approach "provides a richer evaluative space enabling better evaluation of many interventions such as those within public health, health promotion and social marketing." Similarly, Lorgelly et al. (2010) emphasise the fact that the capability approach allows for measuring a broader set of dimensions, which is useful for a field such as public health since interventions may produce outcomes beyond health.

Several authors have suggested that the capability approach better represents the beliefs of the general public about equity. Lorgelly et al. (2010) argued that the capability approach is concerned with equity and equality, which makes it useful for public health interventions that involve reducing inequalities. Coast et al. (2008b) argue that adopting the capability approach will mean that health economists need to think carefully about ethical concerns and value judgements.

Although not explicitly naming the capability approach, (Hausman, 2010) argues that health states should be valued in terms of capability enhancement, which can be understood as an application of the capability approach (Wolff et al., 2011).

3. 'Capability measures' in health economics

The capability approach has been criticized as being difficult to implement (Sugden, 1993, p. 1953). In health economics practical challenges are (a) the choice between functionings or capabilities; (b) the selection of the functionings or capabilities; (c) the measurement of

those functionings or capabilities; and (d) the valuation of those functionings or capabilities (Coast et al., 2008b,c). The focus in this paper is on applications for the economic evaluation of interventions rather than on health policy. Applications such as the "health capability" model (Ruger, 2010) or the assessment of equivalent income for disability policy (Kuklys, 2005) that do not focus on economic evaluation are not considered.

Within health economics, existing measures are a public health measure (Lorgelly et al., 2008); the ICECAP family, which consists of a version for older people (Coast et al., 2008a), an adult version (Al-Janabi et al., 2012), and a measure for economic evaluation in end of life settings which is in development (University of Birmingham, 2012b); a chronic pain measure (Kinghorn et al., 2010); a social care measure (Netten et al., 2012); and a recently developed mental health measure (Simon et al., 2012). Another recent approach aims to measure women's well-being and quality of life in developing countries, but this is still in development (Greco et al., 2011). Much of this work is ongoing, and the following comments may not reflect the final results. Nevertheless it is instructive to consider current efforts. Sample questions from the questionnaires are shown in the appendix.

3.1. Public health measure

The public health measure elicits capabilities by using the phrase "am able to" and "am free to" (Lorgelly et al., 2008). For example, they ask "Are you able to meet socially with friends", rather than 'Do you meet'. In some questions they directly asks why someone did not achieve a functioning, for example they ask whether someone did not want to or could not afford to buy a house.

The domains were selected based on the work by Anand et al. (2005), who created a survey instrument to elicit capabilities at the individual level. Anand et al. (2005) used questions from the British Household Panel Survey which fit into Nussbaum's capabilities list[2]. The domains were defended as representing the dimensions on Nussbaum's list. Lorgelly et al. (2008) refined and reduced that list by using qualitative (such as focus groups) and

[2]Nussbaum argued for a list of "central human functional capabilities", consisting of (1) life, (2) bodily health, (3) bodily integrity, (4) senses, imagination, and thought, (5) emotions, (6) practical reason, (7) affiliation, (8) other species, (9) play, and (10) control over one's environment (Nussbaum, 2001, pp. 78-80)

quantitative (such as factor analysis) methods. They did not create an index, but argued that it would be possible to do so.

3.2. Mental health measure

Simon et al. (2012) are refining the public health measure for use in outcome measurement in mental health interventions . This is a work in progress, but the aim appears to be to maintain the structure of the public health measure by Lorgelly et al. (2008), but modify the questions to be more appropriate for a mental health intervention.

3.3. ICECAP family

The ICECAP-O questionnaire was developed for use in health and social care interventions for the elderly (Coast et al., 2008a). A version for all adults has since been developed (Al-Janabi et al., 2012). The questionnaires elicit capabilities by asking questions such as whether "I am *able* to be completely independent [italics added]" or "I *can* have all the enjoyment and pleasure that I want [italics added]" (Coast et al., 2008a). The capabilities list was in both surveys created by in-depth interviews with the target population (Grewal et al., 2006; Al-Janabi et al., 2012). Both measures use best-worst scaling [3] for valuation. Best-worst scaling presents respondents with a state and asks them to pick the best and worst attribute in that state (Coast et al., 2008a). The pair of attribute levels chosen represents the maximum difference "in the part-worth utilities" of the state, which can be used to obtain utilities for the each attribute level (Flynn et al., 2007).

The measures are valued on a scale where 0 represents having no capabilities and 1 represents having full capabilities. Being dead was not valued by measuring preferences, rather the measure was anchored on a "philosophical basis" and being dead was argued to have the same value as an absence of capabilities (Coast et al., 2008a).

3.4. Chronic pain measure

Kinghorn (2010) has created a questionnaire for people suffering from chronic pain. It similarly included language of "being able to", although it also included questions on functionings. The list was created by interviewing patients with chronic pain and investigating

[3]The ICECAP-A is in the process of being valued (University of Birmingham, 2012a)

how chronic pain affects their lives. This instrument was valued using multi-attribute valuation (Kinghorn et al., 2009, 2010). The idea of multi-attribute valuation is to develop weights for each domain, to develop scores for each attribute level and to select a functional form to combine the two.

3.5. Social care measure

The adult social care outcomes toolkit draws upon some concepts of the capability approach (Netten et al., 2012). On each domain they measure functionings for the lower levels, while for for the higher outcomes they aim to measure capabilities. The aim for the higher levels is to assess whether needs are met at the desired level and thus they distinguish capabilities by how happy someone is with their functionings. The questionnaire uses best-worst scaling to develop preference weights (Netten et al., 2011).

4. Critical review of capability measures

The practical challenges of applying the capability approach are to choose between functionings or capabilities, the selection of the functionings or capabilities, their measurement, and the valuation process (Coast et al., 2008b,c). The measures can be reviewed in these respects.

4.1. Selecting domains

Different methods were used to obtain the capabilities list. The public and mental health measures use questions from the British Household Panel Survey to select their domains and questions. The ICECAP and chronic pain measures use qualitative interviews with the target population to generate the list. Both these methods however are used outside the capability approach. It appears that there is little difference between capability measures and 'traditional' measures such as the EQ-5D in the selection of domains.

4.2. Breadth of the domains

A focus of the capability based measures has been on breadth in the descriptive system. The capability approach supported focus on an alternative domain, a broad range of 'higher order' capabilities rather than health functionings. Although this is different from measures

that focus on health, it does not seem that the capability approach is needed to extend health-related measures to include non-health dimensions.

4.3. Eliciting capabilities

All instruments attempt to elicit capabilities. To obtain capabilities the measures include phrases such as "are you able to", rather than "do you"[4]. This seems problematic however, because a capability set refers to jointly feasible functionings, i.e. "combinations of valued functionings" (Sen, 2009, p. 234). A true capability set is a set of all functionings combinations available to someone. Consider someone who has a choice between the following functionings combinations: {Adequate housing and No food; No housing and Adequate food; Inadequate housing and Inadequate food}. For this person, there is no clear answer to (1) 'Are you able to feed yourself?' and (2) 'Are you able to obtain housing'. The answer to one question depends on the other. It may not be clear to a respondent that the questionnaire is asking for jointly feasible answers.

Similarly, when answering the ICECAP-O, I may believe that 'I can have all of the love I need', but only if I 'have a little of the enjoyment I want'. At the same time I believe that I can only have a 'little of the love I need' if I want to have 'all the enjoyment I want'. What do I fill in?

If the levels on each domain are jointly feasible, it would represent one combination of functionings. Even in this case we are not sure which functioning combination that is. For example, it may be the best one that the person could ever hope to achieve given their opportunities, or one they could achieve had their preferences been different. If the attributes levels selected are only individually feasible then the interpretation of a state seems difficult.

4.4. Valuation

Much of the emphasis has been on the descriptive phase, although there are some differences in the valuation phase. The ICECAP uses best-worst scaling rather than more conventional methods such as the time trade off or standard gamble. Coast et al. (2008a)

[4]The approach in the public health measure to directly ask why a functioning is not achieved is innovative and promising but not often used and may not be practical in short questionnaires

argue that "respondents are asked only to specify which attribute levels they think are the best and the worst. Hence, it can be argued that values and not preferences are elicited, because individuals are not asked to trade one thing for another. Thus, the best-worst scaling approach may come closer to eliciting values that would satisfy Sen's interpretation than measures produced by other methods advocated by economists". The difference between best-worst scaling and other methods in this respect are debatable, given the foundation of best-worst scaling in random utility theory (Flynn et al., 2007).

The distinction between values and preferences seems to suggest that choosing between dimensions is against the capability approach or that by not making direct trade-offs one avoids using preferences. Yet, Sen (2004b, p. 13) claims that a person's preferences are a "central issue" in the valuation of capabilities. Sen (1987a, p. 13) did disagree with "using a binary relation of choice" as the measure of well-being, but this was referring to the 'revealed preference' approach, which is not directly equivalent to choosing in an indexing exercise.

Furthermore, Sen (1987a, p. 21) stressed the need for reflection and evaluation rather than taking the strength of desires as a metric of benefit. Whether people are specifying rather than choosing "which attribute levels they think are best" does not capture all the relevant concerns. The act of choosing is hard to avoid in any exercise of indexing.

Additionally, it is doubtful if this is an adequate method to value a capability set. Valuing a capability set is not the same as functionings. The value of a capability set, in most situations, cannot be simply equated to the value of its best or selected functionings (Sen, 1987a, p. 39) as may be currently assumed in the ICECAP measures. Consider the previous example of {Adequate housing and No food; No housing and Adequate food; Inadequate housing and Inadequate food}. If someone's current and preferred functioning combination is "Inadequate housing and Inadequate food". If we remove "Adequate housing and No food" from his capability set, we have surely changed the value of his capability set, but not that of his selected and preferred functioning combination.

We cannot assume, without further justification, that the combination of {I have all the love I need and I have all the enjoyment I need} has the same value as that of {I *can* have all the love I need and I *can* have all the enjoyment I need}, since the capability

phrasing implies both choice and uncertainty. More generally, we should consider how to value an intervention that has improved capabilities, but not functionings. If two social care interventions improve capabilities similarly but only one improves functionings, are they as valuable? There is no indication that the difficult issue of valuing a set of functioning combinations is considered during the valuation phase by any of the measures.

4.5. Summary

Overall, there seems to be two main differences between capability based measures and measures such as the EQ-5D: the evaluative space and the move from functionings to capabilities. Yet, the expansion of the evaluative space does not seem to require the capability approach, while the elicitation and valuation of capabilities seems to cause conceptual problems. Thus it is fair to ask what the benefit of using the capability approach was compared to using traditional-preference based health related quality of life measure, expanded to non-health aspects if required.

5. (Mis)Interpretations of the capability approach

The capability approach was developed over a period of time and in various different texts. Sen placed emphasis on different aspects of his approach in different texts, which can cause issues with interpretation (Cookson, 2005, p. 818). These issues are further increased due to the underspecified nature of the capability approach. A few common interpretations in the health economics literature should be considered.

1. *We must assess capabilities and not functionings*

Lorgelly et al. (2010) note that the capability approach "suggests that wellbeing should be measured not according to what individuals actually do (functionings) but what they can do (capabilities)". Similarly Coast et al. (2008c) acknowledge the importance of functionings, but conclude that capability is the "basis upon which Sen recommends evaluation".

Although Sen has put strong emphasis on the concept of capability, the above interpretations are not necessarily what is suggested by the capability approach in practice.

Commenting on the distinction between freedom and achievement (i.e. capability and functioning) Sen (2006) claims "moral and political philosophy as well as normative social choice had use for each of these concepts, with their somewhat varying focus". While development in particular may suit the notion of capability and freedoms well, it is not clear that the same applies to health or social interventions. For example, Sen (2002b) argues that "in most situations, health achievement tends to be a good guide to the underlying capabilities, since we tend to give priority to good health when we have the real opportunity to choose (indeed even smoking and other addictive behaviour can also be seen in terms of a generated "unfreedom" to conquer the habit, raising issues of psychological influences on capability)".

This suggests the need to be discriminating in whether we consider achievements or opportunities. It may be self-evident to assess fasting different from starving, but not self-evident for functionings such as enjoyment. It may be self-evident to value the ability to practice religion, rather than actually practicing religion. But it is not self-evident to value an intervention that provides the ability to lower obesity, rather than one that actually reduces obesity.

It would seem necessary to produce reasons why functionings are lower than capabilities, and to assess the normative adequacy of those reasons, since there must be other examples than fasting and starving. For example, are there cases where two groups with similar capabilities, but not functionings, should be treated differently?

Furthermore, many of the examples that are used to argue for capabilities relate to the assessment of well-being or the decision to intervene. For example, intervening to provide food for the hungry may be more appropriate than intervening to provide food for someone fasting. However, the questionnaires that are considered in this paper explicitly aim to assess the benefits of interventions. It is possible to argue against helping someone who has the capability for enjoyment, even though they do not achieve actual enjoyment. It is much less convincing to argue that an intervention's benefit should be measured based on the changes in possible and not actual enjoyment. Since we are concerned with measuring the benefits of interventions, the case for measuring functionings, the actual effects of an intervention, seems stronger.

In addition, to defend the need for measuring capabilities, we would have to believe that there is a systematic difference in the achievement of functionings to capabilities ratios between different interventions (since we are assessing interventions and not individuals). The use of capabilities also raises difficult normative issues about personal responsibility and free-will. Given the large practical challenge of measuring and valuing capabilities, it seems that the use of capabilities needs to be defended explicitly for this context before it is applied.

2. *The capability approach requires us to widen the evaluative space*

Various authors viewed widening the evaluative space as a benefit of the capability approach. This is correct, if by space we mean information beyond utility values. The capability approach however, does not suggest that our descriptive system must always consist of higher-order or more intrinsic valuable capabilities (friendship vs. mobility). It suggests something perhaps quite obvious, that is to use the evaluative space that is relevant for the task (Sen, 2004a). If the aim an intervention is to improve health, the EQ-5D can be appropriate, even if it doesn't measure non-health functionings.

The emphasis is not on widening but on the justification of the selected functionings or capabilities (Sen, 1993, p. 32), as the selection of functionings is seen as an important evaluative task. We might thus focus on how the public health and mental health measures have adapted and justified the use of questions from other questionnaires, rather than on how broad they are.

An appropriate justification for the domains is the importance of capabilities to the target group, for example the ICECAP measures were based on in-depth interviews with members of the general public. However, the capability approach does not require that the list of functionings come from the target population. Since one of the problems often mentioned in the capability literature is adaptation, eliciting the list from the target population may not be enough.

3. *The capability approach and equity*

Coast et al. (2008c) note that while extra-welfarism may advocate maximising health, "Sen's work on capability is much more concerned with issues of equity and distribution". But the capability approach is not a complete theory of justice and therefore it can neither advocate maximization nor equalization of capabilities (Sen, 2009, p. 232). It is true that many people involved in the capability approach have been concerned with equality or equity, and concerned with the appropriateness of maximizing welfare. However, this does not mean that the the capability approach is primarily concerned with, or more importantly justifies equity considerations. The ethical considerations must come from outside the capability approach.

4. *The role of personal and 'public preference'*

The role of preferences is a distinguishing part of the capability approach. Coast et al. (2008b) argue that "the capability approach avoids the use of individuals' own preferences in evaluation". Furthermore, within extra-welfarism (which was partly based on the capability approach) "the source of values need not be the individual. . . preferences are still incorporated but they are public or community preferences, rather than individual preferences" (Coast et al., 2008c).

To consider the role and meaning of preferences, we need to consider Sen's disagreement with utility accounts of well-being. One of these disagreements was with desire-satisfaction or happiness being equated with well-being (Sen, 1987a, p. 21). He preferred to view the assessment of well-being as an evaluative task, a reflective activity and not an automatic assessment in terms of desire-fulfillment or happiness level. This reflective activity does not need to be undertaken by the public or the community; it may simply be done by the person in question (Sen, 1987a, p. 20). Sen's concern was to investigate the identification of preference satisfaction with well-being and not the replacement of personal with public preferences. Public preferences may be as unreflective as any individual's preferences.

Sugden (2006) claimed that the capability approach implies that "we as ethical theorists, can claim to know better than some particular individual what is good for her" and that it was based on "allowing collective judgements about rational desire to override individuals'

actual desires". Sen (2006) argued however that his approach was based on the "Smithian device of introducing an imagined "impartial observer" to assess one's own understanding" and the "use of the Rawlsian device of insisting on "public reasoning" to assess our own unscrutinized assessments".

This distinction is important during the valuation phase. For example, being dead was valued as the absence of capability in the ICECAP measures on a philosophical basis, to avoid using preferences (Coast et al., 2008a). Yet their philosophical basis can be re-stated as a preference about the value of being dead compared to other capability states. What is relevant is not whether it is labelled a preference or a philosophical view, but the reasoning behind that valuation. In fact the valuation of Coast et al. (2008a) seems unusual, as it is not obvious that not having "any of the love and friendship that I want" and being alive is the same as not having it because I am dead. While one can argue that "personal preferences are not seen by Sen as being definitive for the generation of weights or values to be given to different capabilities" (Coast et al., 2008b), a solution is to consider the nature of preference and to engage in reflective valuation, rather than to use public preferences.

5. *The capability approach as an expert centred approach*

Coast et al. (2008b) argue that "the capabilities literature takes a more expert-centred approach than that of the health and health economics literatures". Similarly Wolff et al. (2011) claim that "the capability approach elicits from experts (often clinicians) the impact of various health conditions on capability to function", although they do acknowledge that others could value or elicit capabilities as well.

Although it may be a common interpretation, it is not clear why the capability approach should be expert centred. It is true the capability approach is more concerned with a person's objective situation or functionings than welfarism, but that requires the assessment of facts and not the use of experts. The use of material situations rather than mental states is the primary focus, not the inclusion of experts. For example, to contrast subjective and objective measures of health for several groups Sen (2002a) used life expectancy and self reported morbidity not any assessments of experts. His suggestion for "scrutinising the

statistics on self perception of illness in a social context by taking note of levels of education, availability of health facilities, and public information on illness and remedy" does not need to lead to an expert centred approach.

6. Discussion

This paper has attempted to critically review the theoretical and practical benefits of the application of the capability approach to health economics. It argues that the use of capabilities still needs to be defended for the purpose of economic evaluation of health or social interventions. Attention needs to be paid to the jointly feasible nature of capabilities and the difference in valuation of capability and functionings.

The capability approach shows that there is no easy way to define well-being that is appropriate to every task. The definition of functionings is part of the task and analysts must emphasize the justification of the evaluative space rather than broadening the evaluative space. The capability approach does not need to be criticised for being expert-centred. In regards to equity concerns, we cannot rely on the capability approach as an alternative to the maximization principles. While measures such as ICECAP have value because they measure higher level and non-health domains, this value does not depend on them eliciting capabilities rather than functionings.

The capability approach can be helpful in other ways. First, we must acknowledge that current methods of economic evaluation overlap with the capability approach (Wolff et al., 2011). Indeed the capability approach and the 'quality of life approach' have been compared before (Robeyns, 2006, p. 370). Health states are assessed by functionings and not just mental states. These functionings are focused on important domains, selected by reasoned assessment (Brooks, 1996). Furthermore, health economists have tried to deal with adaptation, by valuing health states using the opinion of the general public and not patients living in those states.

Several ideas from the capability approach may help to improve current methods for valuing health states. A concept such as agency goals — goals not dependent on personal well-being — could be used to analyse the nature of preferences that are elicited. For exam-

ple, qualitative work has shown that respondents make choices during the standard gamble that are opposed to their own well-being (Baker and Robinson, 2004). Health economist may need to consider if these values have to be adjusted.

Conversion factors — the circumstances and environment that determine how resources are converted to functionings — may be important in evaluating health states. Particular attention could be paid to the difference between the consequences of health limitations rather than the actual health limitations. This means that preferences that do not correctly consider conversion factors may be inadequate.

Accepting the capability approach will require health economist to consider the role of preferences in determining the value of health states. This can include considering the role of desires, happiness, and reasoned assessment in valuation of outcomes. Health economist could consider the difference between basic and non-basic preferences (Sen, 1970, pp. 56-70). Basic preferences may be understood as pure tastes, over which little discussion is possible. Non-basic preferences are those that depend on tastes as well as beliefs and information, and which are open to reasoning (Hausman, 2006).

Sen's work on non-formal rationality, rationality understood 'reasoned scrutiny' rather than an internal consistency criteria (Sen, 2004b, pp. 44-47) may allow health economist to go beyond 'given preferences' (Sen, 2004b, p. 302), and to consider their construction.

Further attention could be given to the social choice nature of health state valuation, including the possibility of more explicit valuation (what determines the preferences of the general public over health states?), and the potential of deliberation and public scrutiny in evaluating health states.

Appendix - sample questions from the measures

ICECAP-A

1. Feeling settled and secure (Al-Janabi et al., 2012)
I am able to feel settled and secure in all areas of my life
I am able to feel settled and secure in many areas of my life
I am able to feel settled and secure in a few areas of my life
I am unable to feel settled and secure in any areas of my life

ICECAP-O

2. Thinking about the future (Coast et al., 2008a)
I can think about the future without any concern
I can think about the future with only a little concern
I can only think about the future with some concern
I can only think about the future with a lot of concern

Public Health measure

6. Are you able to meet socially with friends, relatives or work colleagues? (Y) (N) (Lorgelly et al., 2008, Appendix 2)

14. For which of the following reasons, if any, have you not bought your home? (Lorgelly et al., 2008, Appendix 2)
[Please tick ALL that apply]
I cannot afford to buy
I cannot obtain a mortgage
I think it is a bad time to buy
There is a lack of available housing to buy
Some other reason

Chronic Pain

F. Over the past month, I have been able to do things that I consider to be worthwhile and productive (for example: paid work, managing the home, voluntary work)(Kinghorn, 2010, Appendix page A53)
As often as I could before my pain and as much as I have wanted to
With some restriction and difficulty
Rarely, and with great difficulty
Not at all

Social care

Personal cleanliness and comfort (Netten et al., 2012)
I feel clean and am able to present myself the way I like
I feel adequately clean and presentable
I feel less than adequately clean and presentable
I don't feel at all clean or presentable

References

Al-Janabi, H., Flynn, T., and Coast, J. (2012). Development of a self-report measure of capability wellbeing for adults: the ICECAP-A. *Quality of life research*, 21(1):167–176.

Alkire, S. (2002). *Valuing freedoms: Sen's capability approach and poverty reduction*. Oxford University Press, Oxford.

Anand, P., Hunter, G., and Smith, R. (2005). Capabilities and well-being: evidence based on the Sen–Nussbaum approach to welfare. *Social Indicators Research*, 74(1):9–55.

Baker, R. and Robinson, A. (2004). Responses to standard gambles: are preferences 'well constructed'? *Health Economics*, 13(1):37–48.

Brooks, R. (1996). EuroQol: the current state of play. *Health policy*, 37(1):53–72.

Clark, D. (2005). Sen's capability approach and the many spaces of human well-being. *Journal of Development Studies*, 41(8):1339–1368.

Coast, J., Flynn, T., Natarajan, L., Sproston, K., Lewis, J., Louviere, J., and Peters, T. J. (2008a). Valuing the ICECAP capability index for older people. *Social science & medicine*, 67(5):874–882.

Coast, J., Smith, R., and Lorgelly, P. (2008b). Should the capability approach be applied in health economics? *Health economics*, 17(6):667–70.

Coast, J., Smith, R., and Lorgelly, P. (2008c). Welfarism, extra-welfarism and capability: the spread of ideas in health economics. *Social science & medicine (1982)*, 67(7):1190–8.

Cookson, R. (2005). QALYs and the capability approach. *Health Economics*, 14(8):817–829.

Flynn, T., Louviere, J., Peters, T., and Coast, J. (2007). Best–worst scaling: What it can do for health care research and how to do it. *Journal of Health Economics*, 26:171–189.

Greco, G., Skordis-Worrall, J., and Mills, A. (2011). Measuring women's wellbeing and quality of life in rural malawi: A mix-methods approach. iHEA.

Grewal, I., Lewis, J., Flynn, T., Brown, J., Bond, J., and Coast, J. (2006). Developing attributes for a generic quality of life measure for older people: preferences or capabilities? *Social Science & Medicine*, 62(8):1891–1901.

Hausman, D. (2006). Valuing health. *Philosophy and Public Affairs*, 34(3):246–274.

Hausman, D. (2010). Valuing health: a new proposal. *Health Economics*, 19(3):280–296.

Kinghorn, P., Robinsin, A., and Smith, R. (2010). Using A Multi-Attribute Value Method to Weight Capabilities. In *8th European Conference on Health Economics,*.

Kinghorn, P., Robinson, A., and Smith, R. (2009). Can we value 'capability'? findings from a pilot study applying a multi-attribute value method. Paper Presented to the Health Economists' Study Group – January 2009.

Kinghorn, P. B. (2010). *Developing a Capability Approach to Measure and Value Quality of Life : An application to chronic pain*. PhD thesis.

Kuklys, W. (2005). *Amartya Sen's Capability Approach: Theoretical Insights And Empirical Applications*. Springer.

Lorgelly, P., Lawson, K., Fenwick, E., and Briggs, A. (2010). Outcome Measurement in Economic Evaluations of Public Health Interventions: a Role for the Capability Approach?

Lorgelly, P., Lorimer, K., Fenwick, E., and Briggs, A. (2008). The Capability Approach: developing an instrument for evaluating public health interventions. *University of Glasgow, Section of Public Health and Health Polciy*.

Netten, A., Burge, P., Malley, J., Potoglou, D., Towers, A., Brazier, J., Flynn, T., Forder, J., and Wall, B. (2012). Outcomes of social care for adults: developing a preference-weighted measure. *Health Technology Assessment*, 16(16).

Netten, A., Forder, J., Malley, J., Smith, N., and Towers, A.-M. (2011). Additional guidance: Scoring ASCOT v2.1. Technical report.

Nussbaum, M. (2001). *Women and Human Development*. Cambridge University Press, New York, NY.

Robeyns, I. (2005a). Assessing global poverty and inequality: Income, resources, and capabilities. *Metaphilosophy*, 36(1-2):30–49.

Robeyns, I. (2005b). The capability approach: a theoretical survey. *Journal of Human Development*, 6(1):94 – 114.

Robeyns, I. (2006). The Capability Approach in Practice. *Journal of Political Philosophy*, 14(3):351–376.

Ruger, J. P. (2010). Health capability: conceptualization and operationalization. *American journal of public health*, 100(1):41–9.

Sen, A. (1970). *Collective choice and social welfare*. Holden-Day, San-Francisco.

Sen, A. (1979). Equality of what? *Tanner lectures on human values*.

Sen, A. (1987a). *Commodities and capabilities*. Oxford University Press, Oxford.

Sen, A. (1987b). The Standard of Living: Lecture I, Concepts and Critiques. In Hawthorn, G., editor, *The Standard of Living*, pages 1 – 19. Cambridge University Press, Cambridge.

Sen, A. (1992). *Inequality Reexamined*. Oxford University Press, Oxford.

Sen, A. (1993). Capability and well-being. In Nussbaum, M. and Sen, A., editors, *The Quality of Life*, pages 30–53. Oxford University Press, Oxford.

Sen, A. (1999). *Development as freedom*. Oxford University Press, Oxford.

Sen, A. (2002a). Health: perception versus observation. *British medical journal*, 324(13).

Sen, A. (2002b). Why health equity? *Health economics*, 11(8):659–66.

Sen, A. (2004a). Capabilities, Lists, and Public Reason: Continuing the Conversation. *Feminist Economics*, 10(3):77–80.

Sen, A. (2004b). *Rationality and Freedom*. Harvard University Press, Cambridge.

Sen, A. (2006). Reason, Freedom and Well-being. *Utilitas*, 18(01):80–96.

Sen, A. (2009). *The Idea of Justice*. Harvard University Press, Cambridge.

Simon, J., Anand, P., Gray, A., Rugkasa, J., Yeeles, K., and Burns, T. (2012). Operationalising the capability approach for outcome measurement in mental health studies. In *Health Economics Study Group 2012*.

Sugden, R. (1993). Welfare, resources, and capabilities: A review of inequality reexamined by amartya sen. *Journal of Economics Literature*, pages 1947–1962.

Sugden, R. (2006). What We Desire, What We Have Reason to Desire, Whatever We Might Desire: Mill and Sen on the Value of Opportunity. *Utilitas*, 18(01):33–51.

University of Birmingham (2012a). Icecap-a. Retrieved from http://www.birmingham.ac.uk/research/activity/mds/projects/HaPS/HE/ICECAP/ICECAP-A/index.aspx.

University of Birmingham (2012b). Icecap-scm. Retrieved from http://www.birmingham.ac.uk/research/activity/mds/projects/HaPS/HE/ICECAP/ICECAP-SCM/index.aspx.

Verkerk, M., Busschbach, J., and Karssing, E. (2001). Health-related quality of life research and the capability approach of Amartya Sen. *Quality of life research*, 10(1):49–55; discussion 57–58.

Wolff, J., Edwards, S., Richmond, S., Orr, S., and Rees, G. (2011). Evaluating interventions in health: a reconciliatory approach. *Bioethics*, 26(9):455–463.

Zaidi, A. and Burchardt, T. (2005). Comparing incomes when needs differ: equivalization for the extra costs of disability in the u.k. *Review of Income and Wealth Series*, 51(1):89 – 114.