The Capability Approach: A Critical Review of Its Application in Health Economics

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Abstract: The capability approach is an approach to assessing well-being developed by Amartya Sen. Interest in this approach has resulted in several attempts to develop questionnaires to measure and value capability at an individual level in health economics. This commentary critically reviews the ability of these questionnaires to measure and value capability. It is argued that the method used in the questionnaires to measure capability will result in a capability set that is an inaccurate description of the individual's true capability set. The measured capability set will either only represent one combination and ignore the value of choice in the capability set, or represent one combination that is not actually achievable by the individual. In addition, existing methods of valuing capability may be inadequate because they do not consider that capability is a set. It may be practically more feasible to measure and value capability approximately rather than directly. Suggestions are made on how to measure and value an approximation to capability, but further research is required to implement the suggestions.

1 Introduction

The capability approach is an approach used in well-being assessment developed by Amartya Sen (1980) in “Equality of what” and expanded in his later works (see for example, Sen 1987a; Sen 1992; Sen 1999). Sen (1987a, pp. 7–9) argued that well-being consists of ‘functionings’, which are the things someone achieves to do or be, and ‘capability’, which are potential combinations of functionings available to an individual. The capability approach can be contrasted with utility-based approaches, which entirely focus on happiness, preference-satisfaction, or choice; and resource-based accounts, which entirely focus on income or commodities (Clark, 2005). Several papers have discussed the capability approach in relation to health economics theoretically (Anand, 2005; Coast et al., 2008b; Cookson, 2005). More recently, there have been practical applications of the capability approach with several attempts to develop questionnaires to measure and value capability at an individual level. In this commentary, the new questionnaires are critically reviewed to assess whether they are able to operationalize the capability approach by accurately measuring and valuing capability.

Section 2 describes two key ideas of the capability approach, functionings and capability. Section 3 reviews existing questionnaires. Sections 4 and 5 discuss and identify problems with the methods used to measure and value capability. The remainder of the paper suggests possible solutions and concludes.

2 Functionings and capability

Functionings and capability are two important aspects of an individual’s well-being. Functionings are the various activities one engages in, such as work or leisure

activities, or various things one is, such as happy or literate. An individual's life and well-being can be described by the combination of the functionings they achieve. Sen (1999, p. 75) has argued that measuring the achieved combination of functionings of an individual is not always enough to assess well-being. Well-being should include an individual's "freedom to achieve". This freedom is represented by an individual's capability (Sen, 1993, p. 38). Capability is the set of potential combinations of functionings available to an individual (Sen, 2009, p. 234, 1999, p. 75, 1987a, p. 9) and represents the potential ways the individual could choose to live.

The need for capability in the assessment of an individual's well-being is based on the importance of choice and opportunity (Sen, 1993, pp.38–40). An individual's well-being can be improved by having more choices. For example, someone who can choose between multiple careers is better off than someone who is limited to one career only, even if both individuals prefer the same career. The capability approach assumes that additional choices can improve well-being even if the preferred choice of an individual was already available to him, and in this respect differs from the standard welfare economic approach to welfare evaluation that assumes that the utility of a set is determined by its most valued or preferred element (Bleichrodt and Quiggin, 2013; Cookson, 2005; Sen, 1987a).

Capability is also important because an individual may have better opportunities available to him than what he is currently achieving. An often-quoted example is that someone voluntarily fasting may have the same nutritional intake as someone who is starving. Yet, the individual who is fasting has the capability and opportunity to eat and is therefore better off than someone starving because of poverty. The notion of capability in assessing well-being reflects the importance of both the intrinsic value of

having choices and the opportunity to achieve more valuable functionings (Sen, 1999, pp. 75–76).

The difference between capability and functionings can be shown graphically (Cookson, 2005; Herrero, 1996; Sen, 1987a, p. 24). In Figure 1, the two axes represent two functionings. Points A and A' are two combinations of functionings, represented by the points (2,2) and (3,4). A capability set can be represented as the equivalent of a budget constraint, showing all the various combination of functionings that an individual can achieve (Cookson, 2005; Herrero, 1996; Sen, 1987a, p. 24). For example, the area C_1 represents all the functionings combinations an individual can achieve. An individual with the capability set C_1 can achieve point A, but not point A'. Capability is thus described in functionings terms and is a set made up of points in the space of functionings, i.e. capability is simply a set of combinations of functionings (Sen, 1993, p. 38). Note that the capability set C_1 implies a trade-off between the two functionings but a trade-off is not necessary. A capability set with no trade-offs between the two functionings can be represented by a rectangular area such as C_2 (Herrero, 1996).

[Figure 1 here – Graphical representation of two functionings and two capability sets, C_1 and C_2]

3 Overview of existing capability questionnaires

A number of capability-based questionnaires have been developed for use in healthcare. The OCAP-18 for use in public health (Lorgelly et al., 2015) and the Oxford CAPabilities questionnaire-Mental Health (OxCAP-MH) for use in mental health (Simon et al., 2013) are both based on previous work on a generic capability questionnaire (Anand et al., 2009, 2005). The ICEpop CAPability (ICECAP) family

consists of the ICECAP-O for older people (Coast et al., 2008a), the ICECAP-A for adults (Al-Janabi et al., 2012), and the ICECACP-SCM for end of life settings (Bailey et al., 2014). There is a measure for those experiencing chronic pain (Kinghorn et al., 2015). There is also the adult social care outcomes toolkit (ASCOT) which combines both functioning and capability (Netten et al., 2012). The questionnaires are described in Table 1. The next paragraphs discuss the methods the questionnaires use for measuring and valuing capability.

[Table 1 approximately here]

All the questionnaires mentioned above, except the ASCOT, attempt to describe an individual's capability set by including phrases such as "being able to" or "can" in each item. For example, to identify potential functionings within the capability set regardless of whether they are achieved or not, they may ask whether one *is able to* feel secure, *free to* decide or *can* enjoy. In comparison, questions that focus on functionings would only ask whether one feels secure, does decide, or is enjoying. The ASCOT considers "whether or not people are able to achieve their desired situation" as a measure of capability (Netten et al., 2012).

None of the capability questionnaires have used the choice-based techniques of time trade off or standard gamble but their valuation techniques resemble preference elicitation methods used in health economics. The measure by Kinghorn (2010) was valued using the multi-attribute value method, which is similar to the multi-attribute utility theory but does not use uncertainty or choice. The ICECAP-A, ICECAP-O, and the ASCOT questionnaires use best-worst scaling, in which respondents are presented with a state and asked to pick the best and worst attribute in that state given the attribute level (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). These methods are similar to those used in health economics to value preference-based measures such as the HUI-3, the EQ-5D, and the SF-6D, and no particular aspect of the valuation task is changed for valuing capability.

The next two sections consider whether these questionnaires are able to overcome two difficulties in operationalizing the capability approach: measuring and then valuing capability sets (Cookson, 2005).

4 Problems with measuring capability

The capability questionnaires aim to measure an individual's capability set, but the method of using phrases such as "are you able to" or "can you" fails to achieve a valid measure of capability because it measures each domain independently of other domains. The questionnaires, in effect, ask an individual to respond with their highest possible achievement on each functioning, and therefore measure the vector of (Max(f_1) ,…, Max(f_n)), where f_i are the various functionings measured. If an individual's capability set was C_1 in Figure 1, combining the highest achievable level for each functioning would result in the measured capability set (3,4), if an individual's capability was C_2 the measured capability set would be (2,2).

There are two problems with using phrases such as "are you able to" or "can you" in the question as a method of measuring capability. The type of problem depends on whether there are trade-offs between the functionings, i.e. whether the capability set is more like C_1 or C_2 in Figure 1. First, if there are trade-offs between any of the functionings, this method will measures a point outside an individual's actual capability set. The elicited set therefore will be a combination that is not achievable by the individual. For example, the point (3,4) would be measured for capability set

C_1 in Figure 1, but this point is not in the capability set C_1. The extent of this problem depends on how many trade-offs there are between dimensions, but there is little empirical research available on this issue.

The second problem is that one combination of functionings is not an accurate description of an individual's entire capability set. If there are no trade-offs between functionings, this method will identify the unique dominant functionings combination, one that is better than all other functionings combinations on one functioning and at least as good as all others on all other functionings. In Figure 1, the point (2,2) is a dominant combination for set C_2. Although the combination (2,2) is inside the capability set C_2, that one combination is not representative of all the various combinations that the individual with capability set C_2 can achieve. Because all the various combinations have not been elicited, the range of choices available to the individual is not elicited. In the capability approach, an individual's well-being can be improved by having more choices and therefore measuring the choices that an individual has is critical in assessing their well-being.

Additionally, using phrases such as "are you able to" or "can you" to measure capability will fail to distinguish between individuals with different capability sets. In Table 2, the capability set of individual one and two are both measured at (4,4) but individual four has less choice. This can happen because having access to a higher level of functioning does not *automatically* imply having access to lower levels (Sen, 1987a, p. 43). For example, imagine measuring an individual's ability to find employment. A situation is imaginable where an individual is able to work either 40 hours or zero hours per week, but not 30 or 20 because they do not have access to part-time work. Measuring only one combination is generally not enough to describe the capability set of an individual.

[Table 2 here]

Note that the issue is not whether individuals can in practice distinguish between capability and functionings or whether individuals report their capability or functionings when completing the questionnaires, though these are important questions and deserve empirical study (see, for example, Al-Janabi et al. (2013)). Rather, taken at face value, the phrasing of the questions ("are you able to" or "can you") suggest that the individual will report their highest possible achievement on each domain.

In summary, capability questionnaires generally measure an individual's highest possible achievement in each domain independent of other domains. The capability set measured using this method may be unachievable by the individual and does not measure the whole capability set of the individual. The measured capability set is therefore not a valid measure an individual's range of choices or opportunities in life. This is problematic because choice and opportunity are the reasons why capability, and not achieved functioning, is used in assessing well-being.

5 Problems with valuing capability

Existing questionnaires have not accurately valued the choice aspect of capability because they have all only valued one combination of functionings. The value of the entire capability set is then assumed to be equal to the value of only one combination in that capability set. Using that method the value of the capability set of individual one in Table 2 is assumed to be equal to the value of point (4,4), rather than the entire set. Valuing capability sets requires additional considerations because capability is an entire set comprised of various combinations of functionings. Ideally, the valuation of a set must take into consideration both the

number and quality of options available in the set. The valuation of a set is therefore more complicated than the valuation of a single combination (Cookson, 2005) and "the problem of set-evaluation raises interesting and difficult problems" (Sen, 1987a, p. 38). The problem of evaluating a set has not yet been adequately addressed in the health economics literature.

6 Possible ways forward

Considerable progress has been made in operationalizing the capability approach in health economics but operationalizing a new concept is bound to face practical challenges. There are possibilities to overcome existing limitations. One possible solution is to avoid measuring an individual's entire capability set, and rather measure an approximation to the individual's capability set. Measuring an approximation to capability may be practically more feasible than measuring an entire capability set.

Measuring an approximation to capability can be done in two stages. First, the aim can be to measure a 'maximal element' (Sen, 1987a, p. 44), which is either the dominant functioning combination or the most valued functioning combination. In Figure 1, the dominant functioning combination would be (2,2) for capability set C_2 and the most valued functioning combination would be a point on the curve for capability set C_1. Recall that when no dominant combination exists the conventional method for measuring capability would result in a combination that is not achievable. Therefore, further research is required to develop a method for measuring the most valued functioning. One potential method for measuring the most valued functioning is to ask an individual for their highest possible achievement given what they have answered on previous questions, but the practicality of this approach is not clear.

A second stage is to expand the maximal element with a measure of choice or freedom, which improves on existing questionnaires because those questionnaires do not account for the degree of choice available to an individual. Further research will be required to develop of an adequate measure of choice.

Once ‘approximate capability’ has been measured, it would need to be valued on an interval scale if it is to be used in conventional economic evaluations. The value of approximate capability can be seen as a combination of the degree of choice and the maximal element (Sen, 1987a, p. 44). Choice-based valuation techniques would have to be tested to see if they can be used to value such a combination. For example, researchers would need to investigate whether participants could trade-off the maximal element with the measure of choice.

Measuring an approximation to capability is one potential solution to overcome existing limitations. It is a more limited operationalization of the capability approach but it has two benefits. First, measuring an approximation to capability avoids the possibility of measuring a functionings combination that is not achievable. Second, it provides conceptual clarity because it is clear that only one combination of functionings is measured.

7 Conclusion

The attempt to operationalize the capability approach in health economics is a welcome development and it has involved a large degree of research, especially on identifying important domains for a well-being measure. Much progress has been made on measuring and valuing capability, but existing methods have important limitations. Existing methods for eliciting capability do not measure a set of various combinations of functionings. Therefore, they do not elicit capability as originally

intended in the capability approach. By eliciting capability independently per functioning, the resulting set represents a point outside the capability set or only a dominant combination. The measured capability set ignores the choices available to an individual, despite choice being an important aspect of capability. The problem of valuing a set rather than a single combination has not yet been adequately investigated in health economics.

The direct measurement and valuation of capability has proven challenging. There are good practical reasons for preferring to measure an approximation of capability. A possibility of focusing on the maximal element along with a measure of choice was suggested. Measuring and valuing an approximation to capability can avoid existing limitations but its implementation will require further research.

Table 1 - Overview of capability questionnaires developed for use in healthcare

Questionnaire	Target population	Domains or functionings	Example of Questions	Wording used to measure Capability	Valuation method
OCAP-18[1]	Public health services	Life expectancy, Daily activities, Suitable Accommodation, Neighbourhood safety, Potential for assault, Freedom of expression, Imagination and creativity, Love and support, Losing sleep, Planning one's life, Respect and appreciation, Social networks, Discrimination, Appreciate nature, Enjoy recreation, Influence local decisions, Property ownership, Employment discrimination	"I am free to decide for myself how to live my life." (5 point scale: Strongly agree to Strongly disagree) "In the past 4 weeks, how often have you been able to enjoy your recreational activities?" (5 point scale: Always to Never)	Using the phrase "am able to" and "am free to" Or, directly as why someone did not achieve a functioning	No valuation, temporarily used equal weights
OxCAP-MH[2]	Mental health services	Everything above minus employment discrimination, but including activities/employment	"I am able to influence decisions affecting my local area" (5 point scale: Strongly agree to Strongly disagree) "How likely do you think it is that you will experience discrimination?" (5 point scale: Very likely to Very unlikely)	Same as OCAP-18	Equal points for each level of each domain and zero following death

[1] Source: (Lorgelly et al., 2015)
[2] Source: (Simon et al., 2013)

ICECAP-A[3]	Adults	Stability Attachment Autonomy Achievement Enjoyment	1. Feeling settled and secure I am able to feel settled and secure in all areas of my life (4) I am able to feel settled and secure in many areas of my life (3) I am able to feel settled and secure in a few areas of my life (2) I am unable to feel settled and secure in any areas of my life (1)	Using the phrase "I am able to be" or "I can"	Best-worst scaling
ICECAP-O[4]	Older people	Attachment Security Role Enjoyment Control	1. Love and Friendship I can have all of the love and friendship that I want (4) I can have a lot of the love and friendship that I want (3) I can have a little of the love and friendship that I want (2) I cannot have any of the love and friendship that I want (1)	Using the phrase "I am able to be" or "I can"	Best-worst scaling[5]
Chronic Pain[6]	Patients with Chronic Pain	Love and social inclusion, Enjoyment, Respect and Identity, Remaining physically and mentally active, Independence and autonomy, Societal and family roles, Physical and mental well-being, Feeling secure about the future	1. Being loved and having friendship. I am able to have a lot of love and contact with friends or family I am able to have quite a lot of love and contact with friends or family I am able to have little love and contact with friends or family I am not able to have any love or contact with friends or family	Using the phrase "being able to"	Multi-attribute value (MAV) method

[3] Source: (Al-Janabi et al., 2012; Flynn et al., 2013)
[4] Source: (Grewal et al., 2006)
[5] Source: (Coast et al., 2008a)
[6] Source: (Kinghorn et al., 2015; Kinghorn, 2010)

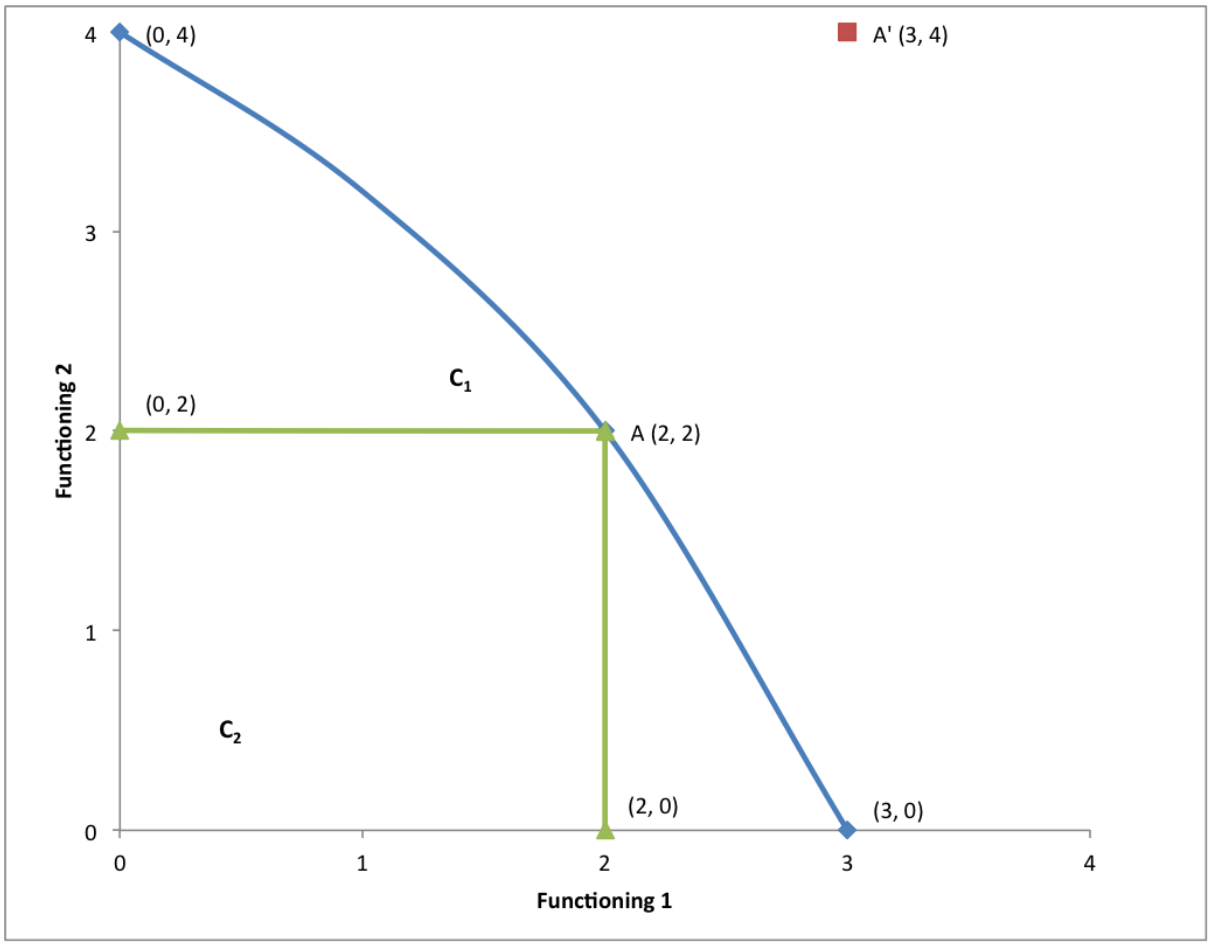
Ascot – SCRQoL SCT4[7]	Social care services	Control over daily life Personal cleanliness and comfort Food and drink Personal safety Social participation and involvement Occupation Accommodation cleanliness and comfort Dignity	"Which of the following statements best describes how much control you have over your daily life?" I have as much control over my daily life as I want I have adequate control over my daily life I have some control over my daily life but not enough I have no control over my daily life	By assessing "whether or not people are able to achieve their desired situation"	Best-worst scaling

[7] Source: (Netten et al., 2012)

Table 2 – Examples of capability sets, and the measured capability sets according to methods used in existing questionnaires

Individual	Capability set	Capability measured and valued
1	(1,1) (2,2) (3,4) (4,4)	(4,4)
2	(1,1) (4,4)	(4,4)

Figure 1



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