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# The Value of Freedom: A Review of the Current Developments and Conceptual Issues in the Measurement of Capability

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## ABSTRACT

In health economics, proponents of the capability approach argue that the value of health improvements should be evaluated in broad domains which reflect the capabilities of an individual. Instruments have been developed to measure these domains. These instruments operationalise the measurement of capability in different ways. The objective of this study is to analyze specifically how instruments operationalise the capability approach.

Using a comprehensive pearl growing search methodology, we identified ten instruments. The content of these instruments was analysed in three stages. First, the definition of capability that was used for the development of an instrument was identified. Then, an analysis was conducted on how this definition was operationalised in the instrument's development. Lastly, the content of the instruments was compared with the concept "option freedom", which provides a more comprehensive definition of capability, to study whether the instruments measure capability or other aspects that are relevant for wellbeing assessment.



We conclude that, despite using a shared definition of capability, the instruments differ in their methods to measure capability. Some instruments might miss content that reflect the burdens that people experience while achieving their capabilities in certain contexts. This might be due to the unclear conceptualisation of capability by Sen.


## KEYWORDS

Capability approach; instrument development; wellbeing; outcome measurement; health; Patient reported outcome measures

## Introduction

Health Technology Assessment (HTA) is the practice of bridging the gap between evidence and decision-making (Banta 2003). Technology assessment has been defined as a form of policy research, which aims to assess the effects of applying technology (Banta 2009). One part of the evidence used in

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healthcare to measure these effects are self-administered instruments that assess the value of new interventions. These instruments are used to capture differences in quality of life (QoL). In conventional health economic evaluations, the information collected by these instruments is used to calculate quality adjusted life years (QALYs). A QALY is a measure that combines information about both length of life and health related quality of life by giving life years a preference adjusted quality of life weight (Lorgelly et al. 2010). In some countries, QALYs are used to assess the value of interventions (Whitehead and Ali 2010). However, it has been argued that the informational base of existing self-administered instruments that aim to measure the effect of interventions is too narrow, since they focus predominantly on health outcomes and miss the broader impact that an intervention might have on a person's life (Coast, Bailey, and Kinghorn 2018; Lorgelly et al. 2010). In the current study, what is meant by informational base is the content of these instruments, or, in other words, the domains and questions of the instruments. An informational base that is too narrow might result in an under- or overestimation of the potential value that interventions may have. A framework of evaluation that provides a possible answer to these concerns is the capability approach conceived by Amartya Sen (Sen 1985a).

Proponents of the capability approach argue that the wellbeing of individuals should be at the centre of policy evaluations. Wellbeing should then be assessed in terms of capability. Capability, citing Sen, “... reflects the alternative combinations of functionings the person can achieve, and from which he or she can choose one collection” (Nussbaum and Sen 1993) (A glossary of terminology can be found in Table 1). A functioning is understood as being what an individual does or is, or the realised opportunities of an individual. An example of the difference between functioning and capability is, that an individual who fasts or who chooses not to eat is considered to be better off than an individual who is starving due to a famine, even though the level of food intake (i.e. functionings) is similar (Sen 2001).

**Table 1.** Glossary of terms.

<b>Term</b>	<b>Explanation</b>
<i>Functioning</i>	The things that an individual does or is, in the context of the opportunities or options that an individual realises.
<i>Capability</i> , Nussbaum and Sen (1993)	A reflection of the alternative combinations of functionings that an individual can achieve, from which an individual chooses a set.
<i>Option freedom, options and access to options</i> , Pettit (2003)	The concept “option freedom” is one way to understand what kind of freedom a capability is. Option freedom consists of options and access to options. Options represent alternative opportunities, access to options represents the ability of individuals to realise those options. This access can be blocked or burdened.
<i>Wellbeing</i>	An objective assessment of how well-off an individual is in a set of dimensions.
<i>Development paper</i>	The paper that provides information about the theoretical framework of an instrument and explains the qualitative choices made by the researchers to translate the theoretical framework to an instrument.

In the present study, the wellbeing of an individual is understood as an objective judgment of how well-off an individual is in a set of domains. A number of theories exist on what kind of domains are important for someone to be considered well-off. These theories are not within the scope of this the current study; an overview of theories can be found in Alkire (2002).

Wellbeing could then be evaluated in terms of functionings, capabilities or a combination of both. Throughout the years, Sen has increasingly prioritised evaluating wellbeing in terms of capability (Clark 2005). However, some authors have argued that Sen's conceptualisation of capability is unclear (Robeyns 2017).

Originally, Sen understood capability as a positive freedom (Robeyns 2017). Positive freedom is defined by Berlin (1969) as the presence of control or mastery that an individual has over his or her own life. This can be contrasted with negative freedom, where freedom is conceptualised as the absence of obstructions or limitations. Conceptualising capability as a positive freedom is, however, problematic. Berlin argues that within the concept of positive freedom, there is the assumption that a distinction can be made between a "true" and "untrue" self; people who are not in control over their urges are assumed to not follow their true selves; thus, they are not free. Positive freedom is strongly perfectionist, in Berlin's view, since it purports that there is a "correct" way to live (Robeyns 2017). Consequently, by limiting an individual's negative freedom (i.e. by limiting someone's ability to follow her or his urges), it is possible to improve this individual's positive freedom (Robeyns 2017; Berlin 1969). This is in conflict with Sen's understanding of capability (Robeyns 2017).

Given this conflict, efforts have been made to come to a clearer understanding of capability. Robeyns (2017) proposes that a capability is best understood as an "option freedom". The concept of option freedom has been developed by Pettit (2003) as a theory of freedom. Option freedom consists of two elements: how options can be accessed and the characteristics of options themselves. Options are the alternatives that individuals can realise. They can be characterised in terms of their quantity, as well as how they are qualitatively different from each other. Using the terminology of Pettit, the access to these options can be "blocked", which means it is impossible to access an option, or "burdened", which signifies that an individual might be able to access an option, but with difficulties.

In relation to conceptualising capability, option freedom has several advantages over Sen's definition. The first advantage is, that option freedom is not as perfectionist as positive freedom. Secondly, option freedom explicitly defines the importance of being able to access options without limitations and burdens. This idea shows parallels with the concept of negative freedom, in which freedom is conceptualised as the absence of limitations and burdens (Berlin 1969). As mentioned, these limitations are not addressed in Sen's

concept of capability. Thus, Pettit's option freedom provides a more comprehensive conceptualisation of capability than Sen's definition (Robeyns 2017).

When assessing well-being, there is another question to consider: which capabilities should be evaluated? Sen did not propose a definitive list of capabilities, arguing that different individuals and groups prefer different kinds of capabilities in relation to their wellbeing. Thus, he argues that such a list should be developed democratically, with involvement from the public (Sen 2005). The decision by Sen to not create a definitive list of capabilities has resulted in researchers developing lists themselves, in order to operationalise the approach (Robeyns 2003). Arguably the most influential list has been created by Nussbaum (2003). Nussbaum proposed ten basic capabilities that are central to a person's wellbeing: length of life; health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment. Within the context of health economics, this list has been used as a starting point to create instruments for empirical research and the measurement of capabilities (Lorgelly et al. 2015; Simon et al. 2013; Kibel and Vanstone 2017). These instruments aim to assess the wellbeing of individuals in terms of capability, hereafter called capability instruments.

Apart from the instruments based on Nussbaum's list, other capability instruments have been developed in recent years. These capability instruments have been developed in various settings (Mitchell et al. 2017; Helter et al. 2020) and are developed to evaluate the capabilities of individuals in various domains. These domains are key areas in an individual's life that he or she should be able to fulfil in order to achieve a higher level of wellbeing.

An earlier review of capability instruments by Helter et al. (2020) focused on the applications, the psychometric performance and the valuation of capability instruments. However, their review did not include an analysis of the conceptual choices made by the authors to operationalise the measurement of capability. Given that instruments differ in their domains and questions, detailed analysis is needed of the processes leading to the inclusion of particular domains and selection of the questions measuring capability. Such an examination is necessary to understand differences in the constructs that are measured by the currently available instruments (Mitchell et al. 2017). Perhaps the instruments differ in their ability to measure aspects relevant for the assessment of capability in certain populations. There is thus a need to review the concepts of capability used by researchers and how these concepts are operationalised to create the content of capability instruments (Mitchell et al. 2017).

To study the extent to which the instruments cover the assessment of capability, a clearer definition of capability can be used to study the content of those instruments. The concept "capability" can be understood in different ways. In this review, however, the concept "option freedom" is used as a "lighthouse" to

study what kind of domains and questions related to capability are included in the instruments (Bordage 2009).

The main objective of the present narrative literature review is to assess how the content of the capability questionnaires is related to the concepts of capability used by the researchers. This main objective was achieved by means of three secondary objectives: (1) to identify instruments that aim to assess capabilities that represent individuals' general wellbeing in the context of the evaluation of interventions in the healthcare sector; (2) to study the capability concepts that researchers use to develop capability instruments; (3) to examine if the instruments differ in their ability to measure capability, by comparing the overlap between the content of the instruments and a definition of capability based on the concept of option freedom.

## Methods

The “comprehensive pearl growing” method was used to identify instruments related to capability (Schlosser et al. 2006). The reason for using this method was that the search term “capability” generates an exuberant amount of hits unrelated to the capability approach. In this method, initial studies that are relevant for the literature review are used to further identify papers by searching for articles that have used these initial studies as a reference. Based on the references of the initial group of articles, a second search (“wave”) is conducted. This process is repeated in multiple waves until no new articles are identified.

Initial pearls were identified in PubMed and Web of Science with the search string (“Capability Approach”) AND (“Measure” OR “Outcome” OR “Empirical” OR “Index” OR “Operationalisation” OR “Instrument” OR “Questionnaire” OR “Attributes” OR “Domains” OR “Evaluation”). Articles were included and read when their abstracts: (1) contained information about the capability approach, (2) when they mentioned the measurement of wellbeing or (3) when they mentioned the measurement of wider domains that might be important for an individual's life. Included articles were analysed by JU. This analysis aimed to identify self-report instruments that measure capability wellbeing developed for the evaluation of interventions in the healthcare sector. Further adaptations or developments of capability instruments (such as translations, short- or proxy versions) were used to identify the original capability instrument. Articles were identified as pearls for further search waves when they included information about self-report instruments that fit our inclusion criteria.

The first literature search was conducted in September 2018 and aimed to identify relevant articles published *before* September 2018. With the search string, an initial list of abstracts was created. Based on this initial list, pearls were identified and a pearl growing search was conducted by JU. References

that cited pearls were added to the abstract list. From this list, articles were analysed when their abstracts were included according to the criteria presented above in order to identify further pearls. These steps were repeated until no further pearls were identified by JU. The full list of abstracts was then independently screened by KHV to ensure that all abstracts meeting criteria were included.

A review update was conducted between September 2018 and April 2021. This update followed the same steps as the first review, except for the screening of the abstract list. In the review update, this list was screened by JU and a random one-fifth selection of these abstracts was checked by KHV. From the 160 abstracts that were cross-checked in the second literature search in 2021, only five were excluded by JU which should have been included according to the inclusion criteria. Given that this was a small number and that the search was successful in identifying a range of instruments, it was decided that the remaining articles did not need to be cross-checked.

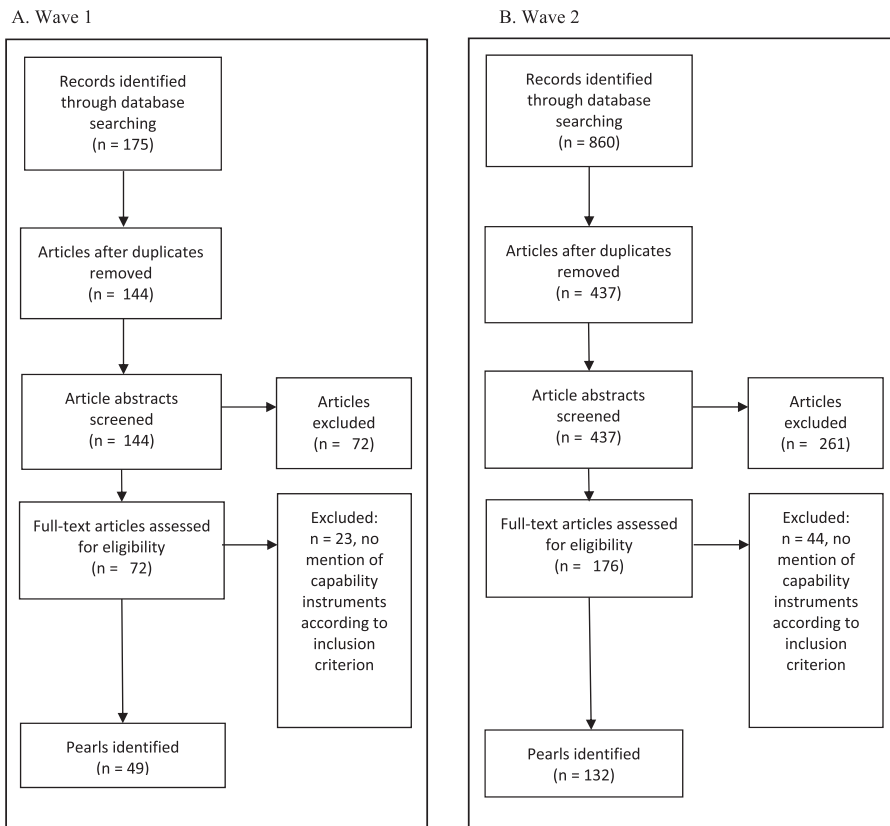
After identifying relevant instruments, the qualitative papers which describe how the included capability instruments were developed (hereafter termed “development papers”) were identified. Development papers contain information about how the capability approach was operationalised and explain how the content was created for each of the instruments. These development papers were then analysed.

The analysis of the development papers was conducted in three stages. In **stage 1**, the definition of capability used for operationalisation was identified as well as the reasons for using the capability approach as a framework for the construction of an instrument. In **stage 2**, the domains were extracted to study the content of the instruments in relation to the definition of capability used by the researchers. In **stage 3**, the overlap was assessed between the content of the instruments and the following elements from the concept of option freedom: access to options and options themselves. Content that did not overlap with elements of option freedom were categorised as either functionings, direct perceptions of freedom, or other content.

## Results

### *Literature Review – Comprehensive Pearl Growing*

After eight waves, no new pearls were identified (**Figure 1**). Over these eight waves, a total of 1,714 unique abstracts were screened (738 abstracts were identified in the 2018, 976 in 2021). From this list of unique abstracts, 566 full-text articles were assessed to identify capability instruments (268 articles in 2018, 298 in 2021). This resulted in a total of 264 pearls that were used to identify relevant capability instruments (144 pearls in 2018, 120 in 2021). A total of twelve capability instruments in various stages of development were identified as a



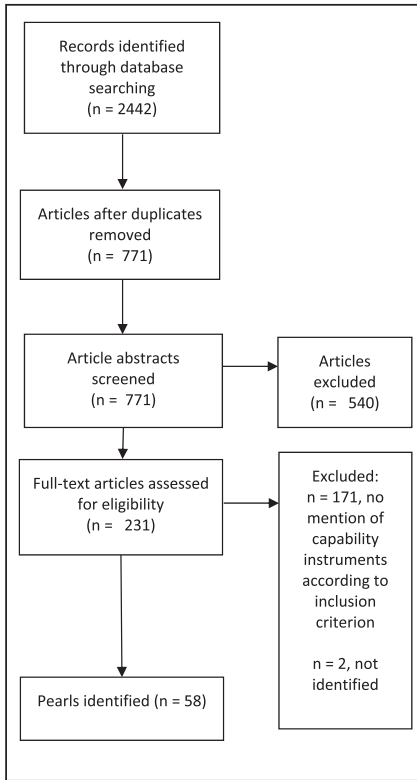
**Figure 1.** Flow diagram of search strategy.

result of the literature search. Nine instruments were identified in wave one, the remaining instruments were identified in wave two.

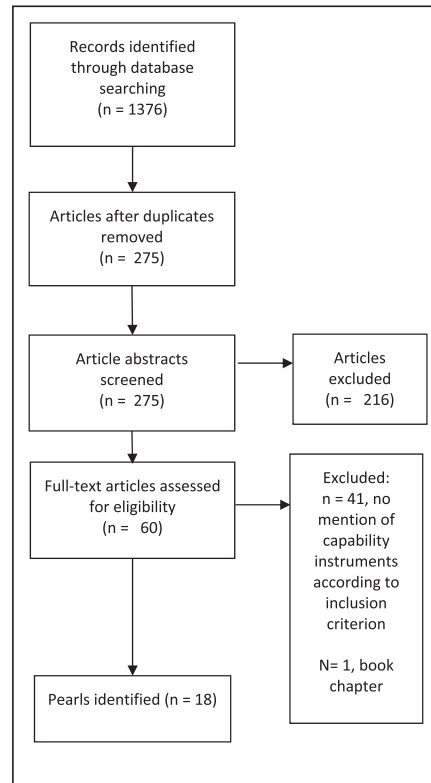
Table 2 contains descriptive information about the identified development papers (an extended version of this table can be found in Appendix Table 1). The twelve capability instruments were in various stages of development; some were in an early stage of development at the time of writing. For example, Kibel and Vanstone (2017) suggested that the results from their qualitative study could form the basis for the development of an instrument, though no instrument based on this qualitative study was identified. Others have been validated and used in a variety of settings, such as the ICEpop CAPability measure for Older people (ICECAP-O) (Grewal et al. 2006). At the time of this current review, developers of seven instruments presented how the content of the instruments (the questions and the domains) was generated in qualitative publications containing rich qualitative data (Kibel and Vanstone 2017; Grewal et al. 2006; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015). Rich qualitative data in this context means that the generation of domains and questions for the instruments was presented in research papers.



C. Wave 3



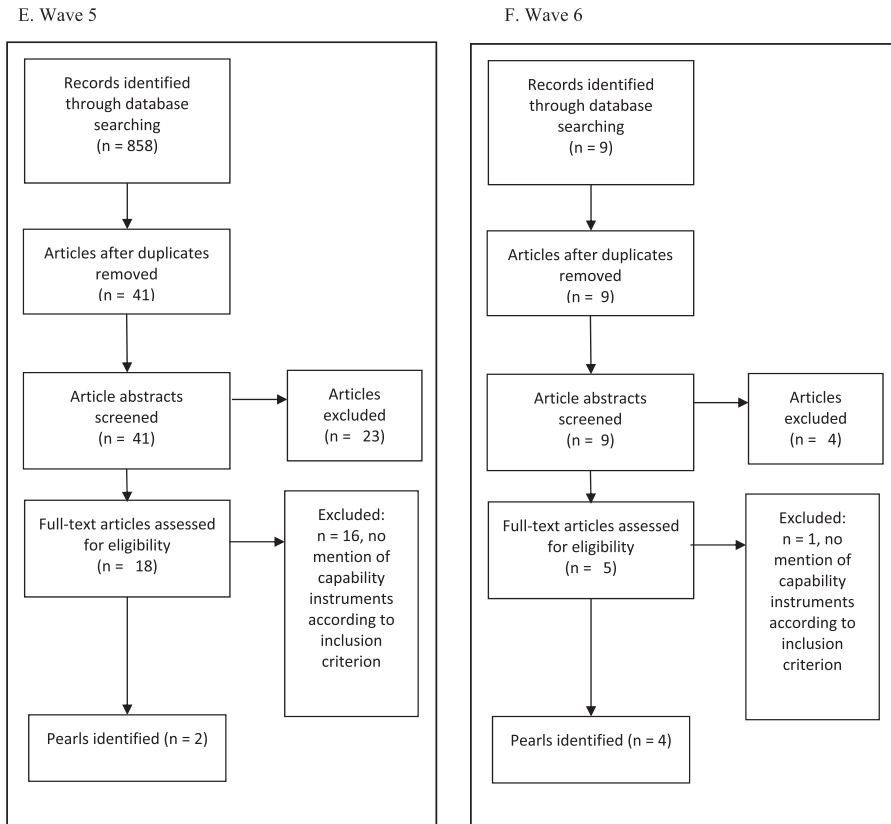
D. Wave 4

**Figure 1.** *Continued*

In these papers, the instrument developers presented their interpretations of the qualitative research along with providing illustrating quotes from participants.

### **Stage 1: Definition of Capability and Justification for Choosing the Capability Approach**

Table 3 provides an overview of the definitions of capability that were used and the justification for using the capability approach as a framework. Table 3 also gives an overview of whether the authors explicitly justify using the capability approach due to the added value of assessing wellbeing in terms of freedom, or whether the authors explicitly justify the use of the capability approach as a framework to elicit broad domains of wellbeing. In ten of the instruments, researchers chose the capability approach as an a-priori framework for the creation of an instrument (Lorgelly et al. 2015; Simon et al. 2013; Kibel and Vanstone 2017; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015; Netten et al. 2012; Månsdotter et al. 2017; Rijke et al. 2019). In these articles, the main reason given for



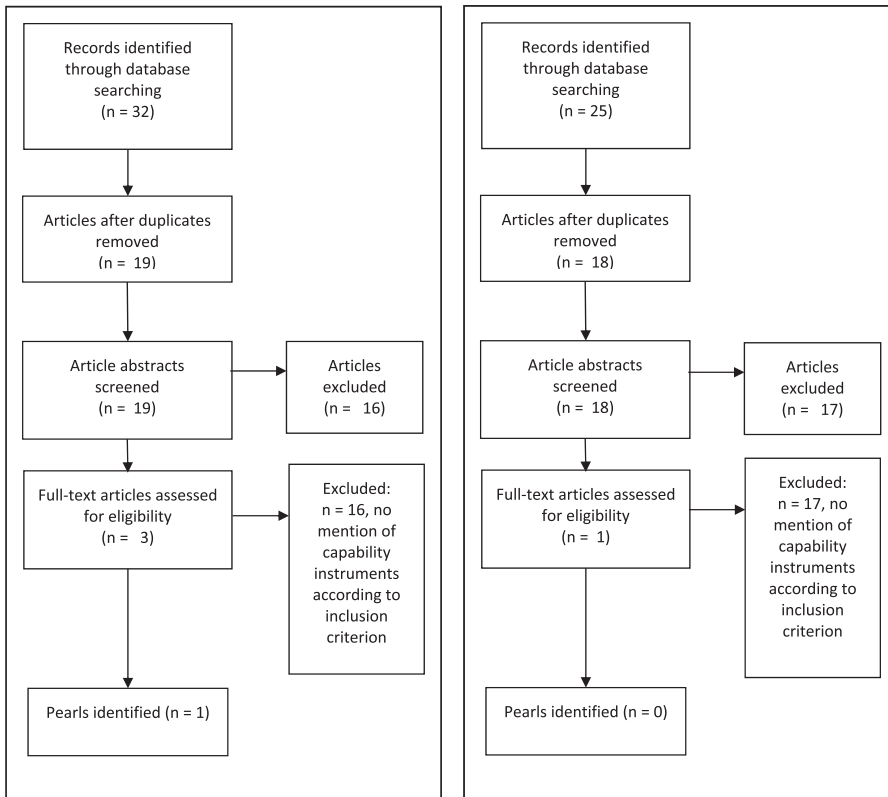
**Figure 1.** *Continued*

choosing the capability approach was its broad informational base in terms of wellbeing assessment (Lorgelly et al. 2015; Simon et al. 2013; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015; Netten et al. 2012; Månsdotter et al. 2017). Six of the instruments explicitly mention that one of the strengths of the approach is that it urges assessment of wellbeing with broad dimensions which are of importance to individuals (Kibel and Vanstone 2017; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Netten et al. 2012; Månsdotter et al. 2017). Four instruments explicitly mention that the strength of the capability approach is that it urges wellbeing to be evaluated in terms of the freedom of individuals (Lorgelly et al. 2015; Kinghorn, Robinson, and Smith 2015; Netten et al. 2012; Rijke et al. 2019).

The developers of the ICECAP-O (Grewal et al. 2006) used the capability approach as an a-posteriori framework. Here, the capability approach is used to interpret the findings of the qualitative study that was used to generate the content for the instrument. Furthermore, the development paper of the ICECAP Supportive Care Measure (ICECAP-SCM) does not mention the

G. Wave 7

H. Wave 8



**Figure 1.** *Continued*

capability approach, although the instrument itself is part of a series of capability instruments (Sutton and Coast 2014).

Eleven instruments (Lorgelly et al. 2015; Simon et al. 2013; Grewal et al. 2006; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015; Netten et al. 2012; Månsdotter et al. 2020; Rijke et al. 2019) defined capabilities according to Sen's concept (Nussbaum and Sen 1993). The concept of capability used for the development of these instruments is related to the notion of individuals' freedom in the sense that capability reflects what individuals "can do", are "able to achieve", or what "opportunities" they have.

### **Stage 2: Operationalisation of Definition**

Table 4 provides an overview of the content of instruments.

The development papers used a mix of qualitative research methods to develop or further refine the measurement of domains of capability. Nussbaum's list of basic capabilities was used as an a-priori source of domains to

**Table 2.** Descriptive information of identified capability instruments.

Instrument	Author(s)	Location	For which population the instrument was developed to assess wellbeing
ASCOT	Netten et al. (2012)	England	Adults in contact with social care services
CALY	(Månsdotter et al. 2017; Månsdotter et al. 2020)	Sweden	General population in Sweden
Capability-based questionnaire for assessing well-being in patients with chronic pain	Kinghorn, Robinson, and Smith (2015)	England	People affected by chronic pain
Child – and parent report questionnaire to explore capability of deaf children wearing a cochlear implant	(Rijke et al. 2019)	Netherlands	Deaf children wearing a cochlear implant
Diabetes specific instrument for measuring patient reported outcomes and experiences in the Swedish National Diabetes Register	Engström et al. (Engström et al. 2016; Engström et al. 2018)	Sweden	Adults affected by diabetes
ICECAP-A	Al-Janabi, Flynn, and Coast (2012)	England	General population
ICECAP-SCM	Sutton and Coast (2014)	England	People at the end of their lives
ICECAP-O	Grewal et al. (2006)	England	People of age 65+
Non-invasive prenatal testing related capability wellbeing questionnaire	Kibel and Vanstone (2017)	Canada	Adult women
OCAP-18	Lorgelly et al. (Lorgelly et al. 2015; Lorgelly et al. 2008)	Scotland	General population
OxCAP-MH	Simon et al. (2013)	England	Adults affected by mental health problems
Women’s’ Capability Index	Greco et al. (Greco et al. 2015; Greco 2013)	Rural Malawi	Adult women

Source: Authors’ elaboration

further develop and refine an existing instrument with focus group discussions (Lorgelly et al. 2015; Lorgelly et al. 2008) and as a topic guide for a secondary analysis of semi-structured interviews (Kibel and Vanstone 2017). For the development of the OxCAP-MH (Simon et al. 2013), an existing capability instrument based on Nussbaum’s list of capabilities was adapted to the mental health context. The developers of the CALY based their list of domains on a report from an investigation issued by the Swedish government, which listed ten freedoms that are important for the quality of life of individuals (Månsdotter et al. 2020). The developers argued that these freedom are comparable to Nussbaum’s list of capabilities (Månsdotter et al. 2020). The developers of the Adult Social Care Outcomes Toolkit (ASCOT) drew on earlier work in the field of outcome measurement in social care. Further information can be found on page 2 of Netten et al. (2012).

Some of the instruments did not start with a predetermined set of domains or questions. Four of these, the ICECAP-A (the adult version of the ICECAP measures), the ICECAP-O, the ICECAP-SCM and the capability based diabetes questionnaire identified domains with semi-structured interviews (Grewal et al. 2006; Sutton and Coast 2014; Engström et al. 2016; Al-Janabi, Flynn, and Coast

**Table 3.** Definitions of capability used and justification why the capability approach was chosen as a framework per instrument.

Instrument	Definition of capability used	Reason for choosing the capability approach as an a-priori framework	Explicit argument for broader domains (bold)	Explicit argument for measuring freedom (italic)
ASCOT	"Sen argues that utility (or experienced QoL [quality of life] derived from functionings) is not the sole object of value; rather, it is capability – understood as the substantive opportunities an individual has to be, or to do, a range of things – that is the prime object of value."	"... <i>focus on choice and control encourages us to aim to measure what people can do, rather than what they actually do, <b>across all aspects of SCRQoL</b></i> [social care related quality of life]."	X	X
CALY	"... according to Sen, the most important information to consider is capabilities, which refer to the opportunities to achieve a flourishing life according to an individual's own wishes"	" <b>Since public health interventions may impact other well-being components besides health and since social welfare policy and reform (education, labour market, social insurance, etc.) may also affect lifetime health</b> , it seems meaningful to establish a summary measure of capabilities."	X	-
Capability-based questionnaire for assessing well-being in patients with chronic pain	"The capability of a person is the alternative combinations of functionings the person can achieve, and from which he or she can choose one combination (Ibid.)."	"One strength of this approach, <i>which focuses on the freedom and ability of individuals to lead a life that they have reason to value, is its wide informational base. <b>This can incorporate more of what is important to patients</b></i> and allow for the evaluation of a broader range of interventions."	X	X
Child – and parent report questionnaire to explore capability of deaf children wearing a cochlear implant	"... capability extends beyond an individual's actual functioning by asking what range of valued activities and modes of being are available to him."	". ... In terms of their post-implant performance on hearing and speech tests, these children can generally achieve levels that are close to those of their normal-hearing peers [references]. Also in terms of self-reported quality of life, their scores tend not to differ from those obtained in their peers [references]. However, performance scores on standardised hearing and speech tests may merely predict poor performance in day-to-day conditions, ... while self-reported quality of life measures may be confounded by the response shift phenomenon, i.e., the respondents'	-	X

(Continued)

**Table 3.** Continued.

Instrument	Definition of capability used	Reason for choosing the capability approach as an a-priori framework	Explicit argument for broader domains (bold)	Explicit argument for measuring freedom (italic)
Diabetes specific instrument for measuring patient reported outcomes and experiences in the Swedish National Diabetes Register	"According to Sen, evaluation of the quality of life should focus on what individuals can do (capabilities) in relation to what they value as important in life rather than what they in fact do (functionings)."	adaptation to their (new) living conditions [references]. <i>The assessment of capability could then reveal whether, in spite of the cochlear implant and subsequent rehabilitation, children still experience constraints in pursuing their aspirations in terms of achievements and modes of being.</i>	X	-
ICECAP-A	"The approach advocates assessing capability (what an individual can do) rather than functioning (what they actually do) to avoid imposing a particular idea of what a good life constitutes and to reflect the importance of freedom to choose."	[following the definition] "Whilst the capability approach was pioneered in human development research, focusing on basic capabilities such as being able to have shelter and being able to be nourished, <b>there is recognition that measuring more complex capabilities can be useful for public policy.</b> "	X	-
ICECAP-SCM ICECAP-O	Not given; part of ICECAP paper series "the extent to which a person is able to function in a particular way, whether or not he or she chooses to do so"	Not given; part of ICECAP paper series Capability approach used a-posteriori to interpret results	NA NA	NA NA
Non-invasive prenatal testing related capability wellbeing questionnaire	"Its central normative proposition is that wellbeing assessments should be based on "what people can do"(their capabilities) as opposed to "what they actually do "(their functionings)."	<b>"A capabilities approach suggests ways in which people might value NIPT that go beyond clinical outcomes or quality of life."</b>	X	-
OCAP-18	"The capability approach suggests that wellbeing should be measured not according to what individuals actually do (functionings) but what they can do (capabilities)."	"Of interest in its application to public health is the evaluation space; it diverges from narrow utility space, which is concerned with the pleasure obtained from the consumption on goods and services, and <i>instead encapsulates an informational</i>	-	X

(Continued)

**Table 4.** The measurement of broad domains of freedom and measurement of capability.

Instrument	Measurement of capability	Social wellbeing	Mental Wellbeing	Physical wellbeing	Activity	Control	Other Domains
ASCOT	Through wording, aims to measure an ideal state per domain	<ul style="list-style-type: none"> <li>• Social participation and involvement</li> </ul>			<ul style="list-style-type: none"> <li>• Occupation</li> </ul>	<ul style="list-style-type: none"> <li>• Control over daily life</li> </ul>	<ul style="list-style-type: none"> <li>• Food and drink</li> <li>• Personal cleanliness and comfort</li> <li>• Personal safety</li> <li>• Accommodation cleanliness and comfort</li> <li>• Dignity</li> </ul>
CALY	Currently unclear	<ul style="list-style-type: none"> <li>• Social relations</li> </ul>	<ul style="list-style-type: none"> <li>• Health†</li> </ul>	<ul style="list-style-type: none"> <li>• Health †</li> </ul>	<ul style="list-style-type: none"> <li>• Occupation</li> </ul>	<ul style="list-style-type: none"> <li>• Security</li> </ul>	<ul style="list-style-type: none"> <li>• Time</li> <li>• Financial situation</li> <li>• Political resources</li> <li>• Knowledge</li> <li>• Living environment</li> <li>• Housing</li> </ul>
Capability-based questionnaire for assessing well-being in patients with chronic pain	Through wording of questions	<ul style="list-style-type: none"> <li>• Love and social inclusion</li> <li>• Societal and family roles</li> </ul>	<ul style="list-style-type: none"> <li>• Enjoyment</li> <li>• Physical and mental wellbeing†</li> </ul>	<ul style="list-style-type: none"> <li>• Physical and mental wellbeing†</li> </ul>	<ul style="list-style-type: none"> <li>• Remaining physically and mentally active</li> </ul>	<ul style="list-style-type: none"> <li>• Independence and autonomy</li> </ul>	<ul style="list-style-type: none"> <li>• Respect and identity</li> <li>• Feeling secure about the future</li> </ul>
Child – and parent report questionnaire to explore capability of deaf children wearing a cochlear implant	First assess the level of functioning. Then adaptive follow-up questions inquiring about capability. See appendix <a href="#">Table 2</a> for an example.	<ul style="list-style-type: none"> <li>• Relationship with parents</li> <li>• Social participation</li> <li>• Social skills</li> <li>• Communication</li> </ul>	<ul style="list-style-type: none"> <li>• Psychological well-being</li> </ul>		<ul style="list-style-type: none"> <li>• School participation</li> </ul>	<ul style="list-style-type: none"> <li>• Independence</li> </ul>	<ul style="list-style-type: none"> <li>• Information access</li> <li>• Assertiveness</li> </ul>
Diabetes specific instrument for measuring patient	Through domains focusing on whether diabetes limits the		<ul style="list-style-type: none"> <li>• How the patient feels</li> </ul>	<ul style="list-style-type: none"> <li>• Barriers</li> </ul>			<ul style="list-style-type: none"> <li>• Support from others</li> </ul>



reported outcomes and experiences in the Swedish National Diabetes Register *	person, and how individuals are able to deal with those limitations		• What worries the patient			• Capabilities to care for your diabetes	• Support from diabetes care provider • Medical devices and medical treatment
ICECAP-A	Through wording of questions	• Attachment	• Enjoyment		• Achievement	• Stability	• Autonomy
ICECAP-SCM	Through wording of questions	• Love and affection • Being supported	• Emotional suffering	• Physical suffering			• Choice • Dignity • Preparation
ICECAP-O	Through wording of questions	• Attachment	• Enjoyment		• Role	• Control Security	
Non-invasive prenatal testing related capability wellbeing questionnaire	Unclear	• Affiliation	• Emotions	• Life • Bodily health		• Bodily integrity • Control over one's environment	• Senses, imagination and thought • Practical reason • Care taking (for existing or potential children and family)
OCAP-18	Through wording of questions, or asking about limitations in freedom	• Affiliation	• Emotions	• Life • Bodily health	• Play	• Control over one's life	• Bodily integrity • Senses, imagination and thought • Practical reason • Species
OxCAP-MH	Through wording of questions, or asking about limitations in capability	• Affiliation	• Emotions	• Life • Bodily health	• Play	• Control over one's environment	• Bodily integrity • Senses, imagination and thought • Practical reason • Species

(Continued)



**Table 4.** Continued.

Instrument	Measurement of capability	Social wellbeing	Mental Wellbeing	Physical wellbeing	Activity	Control	Other Domains
Women's Capability Index	Through directly asking how much freedom someone has, wording of questions and asking about limitations in freedom	<ul style="list-style-type: none"> <li>• Community relations</li> <li>• Household wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>• Happiness</li> <li>• Inner wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>• Physical strength</li> </ul>			<ul style="list-style-type: none"> <li>• Economic security</li> </ul>

Source: Authors' elaboration. Please note that this is a rough comparison of the content of the different instruments, based on observations of similarities in the content of the instruments by the authors. The columns should not be interpreted as a complete overlap in content.

\* based on the domains included in the final instrument.

† One domain representing both physical and mental aspects of wellbeing.

2012). Semi-structured focus group discussions were used to develop content for the Women's Capability Index (WCI) (Greco et al. 2015). A capability-based questionnaire for assessing wellbeing in patients with chronic pain was developed with a combination of focus group discussions and interviews (Kinghorn, Robinson, and Smith 2015). The content for the child self-report and parent-report questionnaire to explore the capability of deaf children wearing cochlear implants was developed by examining literature, but also through conversations with parents of children with cochlear implants and using input from experts, who work in a cochlear implant team (Rijke et al. 2019).

Given the variety in the target uses of the instruments, it is not a surprise that there is a variation between the instruments in terms of the domains included. The content of instruments ranges from domains that are specifically relevant for Swedish diabetes patients (Engström et al. 2016) to broad domains relevant for the general population in England (Al-Janabi, Flynn, and Coast 2012). Furthermore, some domains, such as “food and drink” (Netten et al. 2012), could be described as covering “tangible” or “down-to-earth” elements that are key for an individual's wellbeing. Other domains, such as “respect and identity” (Kinghorn, Robinson, and Smith 2015), represented more “abstract” elements that are important for wellbeing. In spite of this variation, seemingly common elements could be identified across the instruments, which are presented in Table 4. For example, all of the studies identified domains related to mental and social wellbeing, and most studies included domains related to physical wellbeing. Only the ICECAP-A, the ICECAP-O, the ASCOT and the child self-report and parent-report questionnaire exploring the capability of deaf children who wear cochlear implants did not contain domains directly related to physical wellbeing (Grewal et al. 2006; Al-Janabi, Flynn, and Coast 2012; Netten et al. 2012; Rijke et al. 2019).

### ***Stage 3: The Content of Instruments and Elements of Option Freedom***

In general, the level of capability of individuals per domain was measured through the wording of questions. Different types of questions are used to measure capability. Seven instruments aim to estimate capability as objectively as possible by measuring the perceived ability of individuals to attain certain levels of capability in domains (Lorgelly et al. 2015; Simon et al. 2013; Grewal et al. 2006; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015; Engström et al. 2018). These instruments use response options such as “*I can have a lot of love, friendship and support*” (Al-Janabi, Flynn, and Coast 2012). In the development paper of the ICECAP-A, it is explicitly mentioned that these type of questions were developed to assess whether individuals are able to achieve full capability in the domains of the instrument without evaluating an individual's preferred state in those domains (Al-Janabi, Flynn, and Coast 2012). Other

instruments contain questions and response options that aim to measure a general perceived level of capability (Lorgelly et al. 2015; Simon et al. 2013; Sutton and Coast 2014; Greco 2013; Rijke et al. 2019), with questions such as “I am free to decide for myself how to live my life” (Lorgelly et al. 2015; Lorgelly et al. 2008).

Ten instruments contained questions and corresponding response options which capture the extent to which individuals are (able to) fulfil domains (Lorgelly et al. 2015; Simon et al. 2013; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Al-Janabi, Flynn, and Coast 2012; Netten et al. 2012; Engström et al. 2018; Greco 2013; Coast et al. 2008; Rijke et al. 2019). For example, the optimal response option of the domain “Feeling settled and secure” from the ICECAP-A is “*I am able to feel settled and secure in all areas of my life*” (Al-Janabi, Flynn, and Coast 2012). In the context of the concept “option freedom”, these instruments aim to measure the extent to which people are able to “access” different kinds of “options”.

One other component of “option freedom” is that the achievement of freedom can be burdened (see the introduction or Table 1 for an illustration). Eight instruments contained questions aiming to measure these burdens that influence the accessibility of options (Simon et al. 2013; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Engström et al. 2018; Greco 2013; Lorimer et al. 2007; Rijke et al. 2019). For example, the Oxford CAPabilities questionnaire-Mental Health (OxCAP-MH) contains questions such as “*Does your health in any way limit your daily activities, compared to most people of your age?*” (Simon et al. 2013). Other instruments contained questions that assess elements which facilitate “option access”, for example by assessing how individuals experience the support that they receive to achieve options (Lorgelly et al. 2015; Simon et al. 2013; Sutton and Coast 2014; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Netten et al. 2012; Engström et al. 2018; Rijke et al. 2019). Particularly the ASCOT and the capability based diabetes questionnaire focused on how care supports individuals to “access options”, with questions such as “*Do the support and services that you get from Social Services help you to maintain control over your daily life?*” from the ASCOT (Engström et al. 2016; Netten et al. 2012; Engström et al. 2018). As such, these instruments do not focus on “options” themselves, but rather on how various elements in individuals’ lives impact the ability of individuals to “access” these “options”.

Furthermore, although the a-priori theoretical framework of most of the instruments is based on assessing an individual’s wellbeing in terms of individuals’ capability, understood as a type of freedom, some instruments aimed to assess functionings that are detrimental for wellbeing (Lorgelly et al. 2015; Netten et al. 2012; Simon et al. 2013; Kibel and Vanstone 2017; Kinghorn, Robinson, and Smith 2015; Engström et al. 2016; Al-Janabi, Flynn, and Coast 2012; Greco et al. 2015). An example of this is a question from the

Capability-Based Questionnaire for Assessing Well-Being in Patients with Chronic Pain: “*My health and mental well-being (including: pain, depression, sleep, mobility, medication side-effects)*”, with the optimal response option “*I have no problems with my physical health or mental well-being*” (Kinghorn, Robinson, and Smith 2015). Some instruments included questions and response options which evaluate the emotional state of individuals in terms of happiness or depression, which can be seen as a functioning or an emotional experience derived from a functioning (Lorgelly et al. 2015; Simon et al. 2013; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Netten et al. 2012; Engström et al. 2018; Greco 2013). As such, these questions do not seem to assess a form of capability. An example is the domain “emotional suffering” from the ICECAP-SCM with the optimal response option “*I rarely experience emotional suffering*” (Sutton and Coast 2014). The developers of one instrument, the child – and parent report questionnaire to explore capability of deaf children wearing cochlear implants, clearly distinguished between capabilities and functionings in their a-priori framework and subsequently developed different types of questions to assess functionings and the capabilities related to those functionings (Rijke et al. 2019).

Appendix Table 2 presents a comparison of the content of the ten instruments that have already developed questions, compared to “options” and “access to options”, from the concept “option freedom” (as defined in the introduction and further summarised in Table 1). Some content could not be categorised according to components of “option freedom”. This type of content was categorised in one of three ways: as functionings, as individuals’ perceived freedom unrelated to specific options, or as other elements that are important for wellbeing.

Across the instruments there is a variation in the amount of questions that measure elements which have a negative influence on wellbeing, such as the burdens that people experience while accessing options (see introduction or Table 1 for an explanation about burdens), and elements which are positive for an individual’s wellbeing. For example, the ICECAP-A (Al-Janabi, Flynn, and Coast 2012) contains five questions that aimed to measure the fulfilment of a variety of capability domains and no questions aimed at measuring factors that might burden the achievements of those capabilities. The ICECAP-SCM (Sutton and Coast 2014) contains five questions that aim to measure the capability of individuals and also two questions that assess functionings, which can be considered to have a negative effect on wellbeing. These two questions aim to assess the level of physical and emotional suffering, with the optimal response option being the lack of experiencing significant physical discomfort or emotional suffering. The inclusion of questions that assess these negative elements is also observed in instruments developed with participants affected by chronic disease, such as diabetes (Engström et al. 2018), chronic pain (Kinghorn, Robinson, and Smith 2015) and deafness

(Rijke et al. 2019). One of the reasons for this difference might be that the participants of the ICECAP-A were relatively healthy compared to the participants of the other instruments.

Finally, some instruments contain questions that were developed to assess if a preferred state has been achieved (Grewal et al. 2006; Sutton and Coast 2014; Kinghorn, Robinson, and Smith 2015; Netten et al. 2012; Rijke et al. 2019). An example of such a question is, “*I have as much social contact as I want with people I like*” (Netten et al. 2012). Freedom, choice and preference fulfilment seem to be closely related in this interpretation of capability.

## Discussion

In summary, our analysis indicates that using the capability approach as a framework is mainly justified based on its broad informational base for assessing an individual’s wellbeing. The developers of a selection of the instruments use the capability approach as an a-priori framework because it acknowledges that wellbeing needs to be assessed with a broad informational domain. Other developers explicitly mention the benefits of evaluating wellbeing in terms of freedom. The operationalisation of the measurement of capabilities in the development papers was done in two consecutive steps: (1) the identification of the types of capabilities that specific groups of people consider to be important for their wellbeing; (2) the development of an instrument that aims to measure these capabilities. The content of these instruments is broad and informed by the respective populations for which these instruments were developed.

The *a-priori* frameworks used by authors to develop capability instruments were either based on the list of capabilities of Nussbaum or the concept of capability by Sen. The capability approach is characterised by the freedom that it gives to researchers to decide how to operationalise the approach, which might explain the variation in the content of the instruments. Even though the developers of the instruments share the objective to measure one concept of capability, in practice this concept can be understood in different ways. For instance, our analysis suggests that developers also included questions that are not freedom related, but are instead more related to the assessment of functionings, or the assessment of concepts which are difficult to categorise as either capabilities or functionings. Indeed, including a variety of questions to assess wellbeing in terms of both capabilities, functioning and other concepts may, in fact, lead to a broader assessment of wellbeing.

However, the constructs of capability, functioning (or other concepts) should be clearly defined since transferring different concepts into one would be problematic (Sen 1985a). Sen uses the concept “utility” as an example. Utility can be conceptualised as representing an individual’s happiness, or can be conceptualised as the individual’s optimisation of choice behaviour.

However, if both of these conceptions are simultaneously transferred into the concept of utility, one might conclude that people behave in a way that maximises their happiness. However, it is easy to imagine situations where people might, in fact, choose to behave in a way that goes against their own happiness (Sen 1985b). Using a concept of utility that combines both of these conceptualizations could thus be misleading.

Similarly, transferring various concepts that are individually distinct from each other into a single concept of capability might obscure some of the choices that researchers should consider when assessing wellbeing. Some of the instruments in this review assess wellbeing solely in terms of capabilities, while others contain content that reflect both capabilities and functionings. However, in light of the different kinds of information that capability and functioning reflect, it is unclear which domains are better assessed in terms of functionings and which in terms of capabilities. Interestingly, the researchers of the OCAP-18 asked members of the public precisely this question in regard to what they valued more in certain domains: functionings or capabilities (Lorgelly et al. 2015). To illustrate, for the “emotions” domain, participants were asked: “What, in your view, do you value more? Being *able* to enjoy the love, care and support of your family and friends or *actually* enjoying it”. In some domains, capabilities were clearly valued more, such as in the domain “expressing views”. In other domains, such as “adequate nourishment”, “planning of one’s own life” or “love, care and support”, the results were mixed with some participants preferring functioning and others capabilities. It is thus important that researchers clearly differentiate between these two concepts, as is done by Rijke et al. (2019) in the development of their instrument, because some aspects of wellbeing might benefit from being assessed in terms of capabilities, some in terms of functionings, and others by a combination of capabilities and functionings (Fleurbaey 2006).

From a measurement perspective, this discussion can be related to the concept of construct validity. The construct validity of an instrument represents whether a measure is successful in assessing the construct that it aims to measure according to the developers of that instrument (Strauss and Smith 2009). However, without a clear concept, such as Sen’s definition of capability, it is difficult to assess whether an instrument effectively reflects a certain construct in the first place (Strauss and Smith 2009). In practice, the operationalisation of the capability approach depends on developers’ interpretations. Therefore, the standard to which construct validity can be assessed is the developers’ own conceptualizations of the approach. Given this vicious circle, it is difficult to rank instruments in their ability to measure capability.

Still, the comparison of the content of the instruments with components from the concept “option freedom” led to an important observation (concepts definition Table 1). It seems that instruments developed with participants who were more disadvantaged covered more content that reflect the individuals’

ability to “access options”, as well as content related to assessing functionings that are detrimental for wellbeing. Perhaps unsurprisingly, this suggests that the inclusion of disadvantaged groups has an effect on the inclusion of content in instruments related to the burdens that people might experience whilst achieving their capabilities. However, this observation is important, since there is limited evidence that some capability instruments seem to miss content that might be relevant for the assessment of capability in their target populations. Various studies have compared conventional health economic outcome instruments with capability instruments, and the authors argue that even though some capability instruments seem to capture broader aspects of wellbeing, others are relatively insensitive in assessing physical health problems in certain populations (Engel et al. 2017; Davis et al. 2013; Hackert, van Exel, and Brouwer 2017; Khan and Richardson 2018). The assessment of these burdens is key for a comprehensive assessment of the capabilities of individuals (Robeyns 2017).

Determining a clear definition of capability before operationalisation is a potential solution to the issues discussed above. Choosing a clear definition of capability is difficult; however, the expertise of conceptual thinkers in the field of the capability approach provides guidance. Robeyns (2017) proposes that capability is best understood as option freedom. By conceptualising capability according to Pettit’s theory of option freedom, one stresses the importance of both having options, as well as the access to those options, which can be blocked or burdened. Consequently, the role of the burdens that people might experience becomes more obvious to researchers interested in operationalising the approach. A further benefit of using a clearer concept of capability for the development of an instrument is that it might help researchers decide whether a certain domain is better assessed in terms of functioning or in terms of capability, or perhaps a combination of the two.

Two recent literature reviews also focused on the use and applications of capability instruments. One review, by Mitchell et al. (2017), focused on the general application of capability instruments in the field of health that went beyond their use in the evaluation of interventions. Furthermore, a recent review by Helder et al. (2020) focused on the applications and the psychometric properties of capability instruments. These reviews included some capability instruments that have not been included in the current review. The review by Mitchell et al. (2017) included instruments developed for different purposes, such as the assessment of the built environment in the context of the capability approach (Lewis 2012b, 2012a), the assessment of capabilities for a healthy diet and physical activity (Ferrer et al. 2014) and the assessment of capability to utilise healthcare (Nikiema, Haddad, and Potvin 2012). These instruments were not eligible for inclusion because they did not assess capabilities that are relevant for an individual’s general wellbeing in the context of the evaluation of interventions. The review by Helder et al. (2020) included capability instruments that focus on assessing various functionings (Sacchetto et al. 2018; Botes et al. 2018). These



instruments were not included in the current study, since the objective of our study is to analyse how researchers operationalise the measurement of capability. Furthermore, the review by Helter et al. (2020) included capability instruments which were adaptations of existing capability instruments, such as the proxy-report version of the ASCOT (Rand et al. 2017). These were also excluded from the current review. A further difference is that our review identified three additional instruments compared to earlier reviews (Engström et al. 2016; Rijke et al. 2019; Kibel and Vanstone 2017).

One limitation of this review relates to the nature of the “comprehensive pearl growing” method used in the search strategy. It is possible that other capability instruments that are otherwise eligible for inclusion have not been identified if they were not referred by the publications found in any wave of the selection process. Another limitation is related to the terminology used to identify initial pearls. Initial pearls were identified with the search string “capability approach”. Some scholars use alternative terminology, such as “capabilities approach”. It is possible that instruments of developers that use these alternative types of terminology are not included in this review. Nevertheless, the risk should be minimal since the instruments are normally mentioned in more than one article.

## Conclusion

In an effort to operationalise the capability approach in the context of measuring wellbeing, capability instruments have been developed. Our analysis shows that generally, capability was understood by the developers of these instruments as a freedom according to Sen’s definition (Nussbaum and Sen 1993). The ambiguity of Sen’s definition (Robeyns 2017) has led to two problems in the operationalisation of the capability approach. First, some instruments are relatively insensitive to the burdens that people might experience while achieving their capabilities. Second, a selection of the instruments claim to measure capability; however, the content seems to reflect aspects unrelated to the assessment of freedom, such as functionings. A potential solution for these issues is to develop capability instruments based on a less ambiguous definition of capability, such as the concept of option freedom by Pettit (2003). Instruments that are developed with this concept can potentially provide a more comprehensive assessment of wellbeing. Furthermore, this could result in new instruments with unambiguous content that clearly differentiate between measuring capability and measuring other concepts that might be important for the assessment of wellbeing.

## Declaration of Interest

The authors do not have relevant affiliation or financial involvement with any entity that might have a financial interest in the content of this manuscript.



## Disclosure Statement

No potential conflict of interest was reported by the author(s).

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*Jasper Ubels* is a doctoral student, who for his dissertation focuses on the challenges and issues of applying the capability approach for empirical research. He completed his master of science in public health and health economics at Umeå University, Sweden. Besides his dissertation, he is also involved in other projects, such as research concerning the financial impact of cancer from the perspective of patients.

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