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WORKING PAPER

Using capabilities as an alternative indicator for well-being

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September 2010

2010/677

D/2010/7012/48

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September, 2010

Abstract

Direct measurement of capabilities is scarce, mainly because questions arise concerning their observability. This paper lines up with the kind of 'primary data' base research as it is pioneered in Anand & Van Hees (2006) and Anand et al (2009) and shows the potential of information on subjective capabilities as indicator and aggregator for well-being.

We develop a questionnaire which consistently makes the distinction between functionings and capabilities on the one hand, and between the measurement and valuation of these functionings and capabilities on the other hand. We survey a population of 18 year old first year Bachelor students in applied economics and business studies. We show that capabilities can be subjectively measured. The data confirm the theoretical hypothesis that the set of capabilities is larger than the achieved functionings. Information on capabilities can be a suitable "object of valuation" for well-being research. To some extent, the explanatory variables behind the capabilities interpretation of well-being (eg. the role of the parents especially when they are divorced) are more relevant for policy compared to the variables influencing satisfaction with life (eg. not being single), because they are more beyond the control of the individual.

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1. Introduction

Taking stock of a rising amount of theoretical and applied literature on individual well-being[3] (be it approaches going under the heading of quality of life, or of subjective happiness or satisfaction with life, or of objective indicators, or under other headings), we can summarize that individual well-being can be evaluated at three conceptually distinguishable levels: considering the possibilities or opportunities one has in life (capabilities), addressing the actual life situations one faces (functionings) or taking account of the general life satisfaction or happiness (or satisfaction with life domains). It is fairly recognized that 'real individual well-being' is inherently multi-dimensional, being some combination of (several) indicators at those three levels. In the absence of dominance of one dimension over all others, aggregation of dimensions is necessary in order to make well-being inter-individually comparable. This implies that a valuational judgement, and so a normative debate, is unavoidable: the supposedly relevant functionings or capabilities have to be selected and weighted. Procedures and challenges related to such an undertaking are described in more detail, situated in the context of applications of the capabilities approach, in Alkire (2005), Robeyns (2006), Schokkaert (2009) and others. There is unanimous agreement that the listing as well as the indexing (weighting) of the relevant life domains is a crucial, but also complicating, matter in well-being research. In the satisfaction with life literature, one gets round this issue (note that it does not solve the issue) by 'letting the individual decide' on the aggregation. The empirical literature on happiness then reveals the dimensions that are contributing (more) to individual well-being. In this paper, we want to take advantage of this strength of the satisfaction approach to well-being, but then transposed to an exploration of well-being research based on subjective capabilities.

Satisfaction with life is important for the evaluation of a life. Indeed "the study of happiness is a worthy scientific pursuit" (Norrish et al, 2008). Also, our knowledge of the determining forces is growing exponentially (Brockmann et al, 2010). But this does not necessarily or automatically imply that it is the best suited indicator or aggregator for general well-being. The (mostly normative) criticisms on a satisfaction approach to well-being use several arguments. Firstly, people care about other things than their own life satisfaction or own well-being. In general people have "agency goals" including commitments to or care for others or for the environment or even the planet as a whole[4]. This is somehow a plea to go "beyond individualism". Secondly, not only utility or satisfaction is important. There are other things that are also valuable: principles, norms, rights, freedom… The intrinsic value of freedom implies that also the capability set as such could be a measure of advantage or well-being. In summary, the basic claim is that satisfaction or "utility cannot be the only object of value" to evaluate well-being (Sen, 1984, 1985, 1993, 2005).

From an informational point of view, two shortcomings are inherent to subjective data on life satisfaction or happiness: "physical condition neglect" (adaptation, expectations, expensive tastes …) and "valuation neglect" (because only looking at the mental state of a person). It is hard to imagine that the former problem can be overcome by making use of subjective capabilities information, a claim that is also made in Burchardt (2009). But information on capabilities could make a difference concerning the latter problem. A capabilities judgement about life or life domains will be less contaminated by temporarily emotions and affect. Reflecting on possibilities in life will be relying more on cognitive judgements about life chances. Thinking about capabilities also incorporates other principles and important reflections related to freedom, choice,

3 Boarini et al (2006), Constanza et al (2007), Dolan et al (2006), Easterlin R (2005), Higgs (2006), Kahneman et al (2006), Kusago (2007), Layard R. (2005), Sirgy (2006) and many others.

4 In Spillemaeckers at al (2010), we make a link between well-being and sustainable development.

opportunities and responsibility. Those are missing when (only) observable achieved functionings or life satisfaction is considered (Kuklys (2005), Kaufman (2006), Fleurbaey (2008), Deneulin (2009), Alexander (2009)). The hypothesis of the paper is then that subjectively reported information on individual capabilities could be an alternative aggregator for well-being research. Concretely, the question is as follows: given that we fully respect the individual's view on what constitutes a 'good life' (the dimensions and their weighting) and simply ask what the individual thinks about his capabilities (and life satisfaction), does it make a difference (which difference) if we approach general well-being as being satisfaction with life or as reporting to have general capabilities? If we find that other variables are influencing subjective capabilities compared to life satisfaction, this could directly contribute to an ethical debate about the policy relevance of factors driving well-being (Schokkaert, 2007).

Of course, prerequisite to all of this is the availability of data. Data on happiness or life satisfaction are easy to collect and are widely available. This is not the case for data on capabilities which are, by nature, largely unobservable. This challenge encountered with the observation of capabilities and the availability of satisfaction data, is one explanation why well-being research is leaning so heavily on life satisfaction. It also makes that a lot of the so-called applied capabilities research is restricted to the level of the achieved functionings. Mostly, as in Anand et al (2005), use is being made of 'secondary data' which implies a re-interpretation of questionnaires and results that were originally intended for other purposes. An exception to this is the research of Anand & Van Hees (2006) making use of self-reported levels of "satisfaction with capabilities'. Also Anand et al (2009) report on a questionnaire specifically designed for capabilities research making use of the backbone of the list of Nussbaum. This paper wants to add to this kind of 'primary data' base research. Different from Anand et al (2005, 2009) who investigate the co-variation between life satisfaction and capabilities, we explore the use of capabilities as an alternative measure for well-being.

We develop a questionnaire which aims at consistency between the capabilities theory and the measurement. The theoretical hypothesis is that people have more capabilities than they actually achieve functionings, the latter (only) being a sub-set of the former. In line with Anand & Van Hees (2006), we use questions about seven life domains. Different from Anand & Van Hees (2006), we construct different batteries of these questions (self-reporting versus evaluation, functionings versus capabilities) and we use several sub-samples of our population to test for statistical differences. We include questions in order to test the feasibility of survey questions that are related to the concept of "refined functionings" (Fleurbaey, 2006). Questions on 'satisfaction with life as a whole' and 'possibilities in general' are included to compare both alternative well-being interpretations.

The research design has primarily exploratory objectives. The guinea pigs are a population of 18 year old first year Bachelor students in applied economics and business studies. If we want to explore the possibilities for well-being research based on such primary and subjective data on capabilities, our first concern is the real meaning of the data that are collected. Is it really possible to empirically distinguish between capabilities and functionings? Is there a difference between a self – reported level of an achieved functioning or capability on the one hand, and an individual evaluation of the same functioning or capability on the other hand? In the next section, we present the structure of the questionnaire and describe the population sample. Section three presents the results concerning measurement and valuation of functionings and capabilities for seven life domains. It will be confirmed that the data create possibilities for doing primary data base research on well-being using subjective information on capabilities. Section four is then related to the main objective of the research: what is the difference (in terms of determining variables) if we use capabilities information as well-being indicator, making the comparison with information on life satisfaction. Section six concludes.

2. The measurement of functionings and capabilities

First, we digress on the conceptual background of our questionnaire on capabilities and the consequences for the concrete questions and the resulting different versions of the questionnaire. We explain the use of specific life domains and illustrate the rationale of the survey with a concrete example. In a second sub-section, we describe the sample(s) and the socio-economic and personal characteristics that are used for the empirical modelling in sections three and four.

2.1 An operational framework for a questionnaire

The capabilities theory was originally not intended to be a ready made tool for the measurement of well-being as such. Particularly, it aims at providing a consistent framework for a more general discussion and research on individual well-being, including an important normative dimension related to freedom, choice and responsibility (Alkire (2005), Fleurbaey (2008), Schokkaert (2009), Gasper (2007), Kuklys (2005)). If we use the idea of capabilities for the measurement of individual well-being, some considerations are important to ensure consistency between the theory and the measurement in practice. There are different interpretations of the capabilities framework that stem from the different disciplines in which it is used. Welfare economics is particularly interested in the context of scarcity and choice. The transformation of capabilities into a vector of achieved functionings is then the result of a (sometimes preference-based) choice that ultimately reflects the relative valuation of the individual over the alternative options that are possible. So the vector of observed or achieved functioning is revealing what the person is actually "doing and being". The vector of capabilities should provide information about what the person could be "doing and being". The vector of realized functionings is then one subset of the capabilities space. We start off with the construction of an operational framework that supports a questionnaire which consistently makes this distinction between functionings (B) and capabilities (Q). On the other hand, we make a methodological distinction between the subjective measurement (S) and the valuation (V) of these functionings and capabilities.

These different theoretical and conceptual angles result in a questionnaire that has four alternative batteries of questions because of the combination of functioning and capabilities on the one hand with subjective measurement and valuation on the other hand (SQ, SB, VQ, VB). Pre-testing revealed that respondents could absorb only two batteries of questions. Table one shows that the first two versions of the questionnaire refer to this difference between capabilities (Q) or functionings (B) and between subjective measurement (S) or valuation (V). These versions serve to address our basic challenge on the measurement of capabilities: is it possible to differentiate between realized functionings and (the broader set of) capabilities and does it make a difference when asking for a subjective reporting on a situation or asking for the valuation of (satisfaction with) a functioning or a capability?

Next to this fundamental measurement exercise, a special attempt is undertaken for an exploratory measurement of "refined functionings" (RF). Sen, and also Schokkaert (2009) and Fleurbaey (2006) and others, argue in favour of the construction of "refined functionings" as a way to incorporate considerations of freedom (choice) and responsibility in the personal well-being evaluation as such. In the refinement, the different options at an individual's disposal need to be taken into account. Questionnaire version three and four are made to try to measure the concept of refined functionings (RF). The philosophy of the concept is that the individual considers (an evaluation of) his situation (his achieved functionings) taking into account the capabilities and possibilities that are and were available. We operationalize this by means of direct questions that

start with "Given the possibilities I have…" and for the remainder of the questions, we use either the SB-formulations (in V3) or the VB-formulations (in V4) as they appear in V1 (SB) and V2 (VB) respectively[5]. The results showed no significant differences between both versions of the refined functioning questions. Moreover, additional tests reveal that there are not many significant differences between VB and the refined functioning based on VB, or between SB and the refined functioning making use of SB. Because of this, we do not go deeper into the results on the refined functioning questions in the remainder of this paper.

Table 1: An operational framework for a questionnaire on Capabilities and Functionings

Level /Measurement	Subjective S	Valuation V	Subjective S	Valuation V
Capabilities Q	SQ	VQ	SQ	
Achieved Functionings B	SB	VB		VB
Refined Functionings RF			RF(SB)	RF(VB)
Questionnaire-version	**Version 1**	**Version 2**	**Version 3**	**Version 4**

Inspired by Anand & Van Hees (2006), we use seven life domains. Anand & Van Hees (2006) have one question for every life domain, we sometimes use several questions for the same life domain, primarily to be as concrete as possible. Depending on the kind of life domain and on the specific question and also depending on the conceptual nature of the question (S, V, RF, B or Q), the effective realisation in the different versions of the questionnaire can be different. Table two summarizes the (structure of the) questionnaire in relation to the life domains and the concepts that are examined. The consistency in the questionings, applied to the example in the first life domain ("happy life") is illustrated underneath[6]. The series of questions on (satisfaction with) the possibilities (SQ or VQ) is concluded with a question that refers to the (satisfaction with) possibilities in general.

Table 2: Life domains and the structure of the questionnaire

Life domain	**Realisation in the questionnaire**	**SQ**	**SB**	**VQ**	**VB**	**RF/SB**	**RF/VB**
1 happy life	1 lead a happy life	x	x	x	x	x	X
2 achievement of dreams and goals	2 reach dreams and goals in life		x		x	x	X
	2a reach dreams in life	x		x			
	2b reach goals in life	x		x			
3 healthy life	3 have a healthy life					x	
	3a be in good health	x	x	x	x		x
	3b do sports	x	x	x	x		x
	3c eat healthy food	x	x	x	x		x
4 education, information and culture	4 acquire knowledge					x	
	4a have education and training	x	x	x	x		x
	4b keep abreast of current events	x	x	x	x		x

[5] The motivation behind version 3 and 4 is that both ways of questioning refined functionings (either making use of SB or making use of VB) were to similar to include in one version. To ensure comparability with the first two versions, we combined the RF-questions with a second battery of questions (arbitrarily chosen), once with capabilities (SQ) and once with functionings (VB).

[6] The full questionnaire is available from the authors upon request. In appendix 3, we provide the questions collecting data on respectively SQ / SB / VQ / VB.

	4c participate in cultural events	x	x	x	x		x
5 social life	5 have a satisfying social life	x	x	x	x	x	x
6 environment	6 live in pleasant environments	x	x	x	x	x	x
7 personal integrity	7 act according to personal integrity	x	x	x	x	x	x
	8 in general	x		x			

Example for the life domain "happy life":
SQ: How are the possibilities for you … to seek happiness in your life
SB: Generally, I lead a happy life
VQ: I am satisfied with the possibilities…to seek happiness in my life
VB: I am satisfied with … the extent of happiness in my life
RF(SB): Given the possibilities to seek happiness in my life, my life is happy
RF(VB): Given the possibilities to seek happiness in my life, I am satisfied with the amount of happiness in my life

All four versions contain the same questions on socio-economic and personality characteristics and start with the question "How satisfied are you with your life as a whole?" Afterwards some personal and situational characteristics (gender, single or not,…) are asked. Then every version has its two specific batteries of questions as visualised in table one. Except for the SQ-question (ranging from completely unsatisfactory to excellent) all other questions ask for complete disagreement to complete agreement, on a scale from 1 to 7. Each questionnaire version ends with some student specific questions, questions about the parents, personal characteristics and personality traits.

2.2 Description of the samples

As argued before, the goal of the research is primarily of a methodological nature. The population we use for this experiment are first year Bachelor students in business economics at the University College Ghent (Flanders, Belgium). Each version (see supra) is tested with a different sample of about 120 students, in total 483 students participated[7]. We use a systematic sampling procedure. Every fourth students obtains the same version such that we have four stochastic samples. To compare the results of the different versions of the questionnaire, it is needed that each sample is as such representative for the population of first year Bachelor students. We compare the distribution of all socio-economic and personality characteristics for the four samples. The chi-square test (for categorical variables) and one-way-ANOVA (for continuous variables) confirm that each sample is as such representative. This makes that we can compare the answers on the questions for these four groups.

In the questionnaire several socio-economic characteristics are included. We include situational characteristics (eg club membership and family visits), personal characteristics (sex, number of siblings), information about the parents reflecting the social background (educational level mother, situation parents, parental home, strictness parents) and variables related to student life (accommodated in a student's apartment, having a job while being student, pay for studies). By including variables related to secondary education (final score in third stage of secondary education) and a dummy for a previous (non-) successful attempt in higher education we proxy capacity. The answer on the question 'I think I have ….% chance to pass this school year' combines capacity and self-confidence.

To control for subjectivity we opted to include several personality traits and also a question referring to the mood of the day. Including personality traits in cross-sectional satisfaction research was also one of the suggestions of Anand et al (2009). For personality we include five traits related to the "Big Five", a consensus in psychology on a general taxonomy of personality traits. "These

[7] N=122 (V1), 122 (V2), 119 (V3), 120 (V4).

dimensions do not represent a particular theoretical perspective but were derived from analyses of the natural-language terms people use to describe themselves" (John & Srivastava, 1999). Goldberg (1990) demonstrated the generality of this 5-factor model.

Table three gives an overview of the socio-economic characteristics. When the variable is included as a dummy variable in the models we present the fraction of the reference category. For the other (ordinal[8] or continuous) variables we present the mean.

Table 3: Socio-economic characteristics of the population

	proportion	**mean**
Personal en situational characteristics		
Woman	0,43	
number of siblings		1,51
not single (having a relation, whether or not living together)	0,47	
membership in at least one club	0,73	
number conversations with neighbours		2,67
family visits		3,90
Personality and mood		
extraversion (from 1 'introverted, do not like to be prominent' to 7 'extraverted, like to be prominent')		4,11
altruism (from 1 'selfish' to 7' altruistic')		4,27
less punctual (from 1' very punctual and conscientious' to 7 'little punctual and little self-discipline')		3,78
emotionally concerned (from 1' emotionally unconcerned (little worried)' to 7 'emotionally concerned (easily angry or anxious)')		4,39
creativity (from 1 'practical attitude' to 7 'creative attitude')		3,80
mood (smiley's scale from 1 'crying' to 5 'very happy')		3,80
Student specific variables		
living in student's apartment	0,42	
pay (partly) for studies	0,09	
no job while being a student	0,29	
chance to pass		57,26
final score in third stage secondary education (from 1'less then 50%' and 2 '50%-60%' to 6 '90%-100%')		3,35
intensive study behaviour during secondary education (study much and hard or regularly)	0,41	
a previous successful attempt to higher education	0.010	
a previous non-successful attempt to higher education	0.139	
Variables related to the parents		
mother bachelor or master degree	0,57	
parental home rented	0,08	
parents divorced (or newly composed family)	0,17	
strictness parents (from 1 'very loose' to 7 'very strict')		3,86

[8] In order to reduce the number of independent variables, ordinal variables were included as continuous variables in the models.

3. The meaning of measurement

In this section, we unravel the real meaning of our primary data set. We compare between the subjective measurement (S) and the valuation (V) of functionings (B) and capabilities (Q). We compare the average scores and the distributions of the answers[9]. Our results never indicate a significant difference in the distributions when there is not also a significant difference in the averages. Therefore, and for presentational ease, we will only report on the averages. We performed parametric and non-parametric tests, but only present the results of the latter[10]. However, even when the average (as well as the distribution) of answers is the same, this does not mean that the two constructs measure something that cannot be different. To investigate this, we test, in a second sub-section, whether the concepts are similarly (or not) related to some socio-personal variables[11].

3.1 Measurement of functionings and capabilities

From a theoretical point of view, the vector of achieved functionings is the one functioning vector that is chosen from a larger set of possible vectors in the capability space that is normally assumed to be more capacious[12]. The resulting question that presents itself is if this theoretical perspective is also perceived in the way the questionnaire differentiates between functionings and capabilities. First we address the subjective measurement and secondly the valuation of functionings and capabilities.

Comparing (the subjective measurement of) functionings with capabilities, table A in appendix 1 shows that for all but three items the possibilities are considered to be larger than the actual achievements (SQ > SB). These differences are statistically significant except for 'live in pleasant environments'. Students think to have more possibilities to live a 'healthy life', to acquire 'education, information and culture' and to 'have a satisfying social life' than they actually do or achieve. This is consistent with the theoretical perspective that the functionings that are achieved belong to a larger set of capabilities. There are two notable exceptions to this observation. The respondents do not think to have more possibilities to 'lead a happy life' or to 'act according to personal integrity' (for which the difference is only significant at 10% level) than they actually do. The intuitive, but relevant, interpretation is that these (kind of) functionings are not (perceived as) the result of a choice made out of a range of broader possibilities. The result for 'reach dreams and goals in life' points in the same direction (but is not significant). Table A also displays that for all the items for which there is a significant difference, the satisfaction with the capabilities is also

[9] To test whether the distribution of answers differs for two questions, we use chi-square tests. The null-hypothesis is that the distributions are the same, rejecting this hypothesis (p-value<0.05) means that there is a difference.

[10] When comparing questions from two different versions of the questionnaire, we did an independent t-test (parametric) or Mann-Whitney test (non-parametric). When comparing two questions from the same version, we did a paired t-test (parametric) or a Wilcoxon-test (non-parametric). The choice between a parametric or non-parametric test depends on the assumption with respect to the answers. If we assume that answers are only ordinal, we have to use a non-parametric test. If we assume cardinality, parametric testing is allowed. The results for the non-parametric test are presented since these are valid regardless of the assumption. Moreover, the conclusions from the non-parametric tests never deviate form those of the parametric tests.

[11] When we find differences in the averages, this implies that the concepts measured are different. Then, we do not specifically test the association with other variables.

[12] Whether the realised vector is freely chosen or not is obviously very important from a normative perspective, but this is not the issue here. The concept of 'refined functionings" basically asks for taking into account this capability context when reporting on achieved functionings. As explained in section 2.1, our attempt to operationalise this idea with a direct question did not prove to be successful.

higher than the satisfaction with the functionings (VQ > VB). This result is (at first sight) different from the one reported in Anand and Van Hees (2006, table 3) where the valuation of the achieved functionings (happiness, satisfying social relations and integrity) is higher than the valuation of the capabilities. Note that Anand and Van Hees (2006) indeed discuss their results in the context of valuation and not measurement or observation. They talk about "satisfaction with capabilities" (p.269) or "self-evaluations of capabilities" (p.271). This seemingly different results makes that we have to investigate if respondents can make a significant difference between a valuation of a functioning and a subjective observation of the same functioning. This will be the subject of the next sub-section.

In summary, our results show that it is possible to empirically distinguish between functionings and capabilities, simply by asking respondents. Moreover, the results are in line with the theoretical hypothesis that people have more capabilities than actually achieved functionings.

3.2 Subjective measurement or valuation

From a theoretical and conceptual point of view, there is a difference between a (subjective) measurement or observation (S) and the valuation of or satisfaction (V) with a functioning or capability. With the separate versions of the questionnaire, we aim to distinguish subjective measurement (version 1) from valuation (version 2). We compare the average scores for each of the measurement- and the valuation items[13]. The comparison of the average scores (see appendix 1.B) for the measurement and the valuation of the functionings reveals that only for the items 'participate in cultural events' and 'have education and training' there is a significant difference between measurement and valuation. The comparison of the average scores for the measurement and the valuation of the capabilities points to some more significant differences between reporting and valuing. This is the case for the possibilities to 'reach dreams and goals in life' (VQ>SQ), to 'eat healthy food' and to 'have education and training' (SQ>VQ). These specific observations are related to the general characteristics of the population, being young and being students.

The overall conclusion of the comparison (appendix 1.B) is that there are not many differences between the averages of the subjective reporting and of the valuation of the functionings or capabilities. But this does not necessarily mean that both measure the same concept. Therefore we investigate the association of the concepts with some individual characteristics and variables.

Table A in appendix 2 reports the spearman correlations which are significant (at a 5% level). We observe some overlap in the correlations of the subjective measurement and the valuation of functionings with "extraversion", "emotional concern", "mood of the day" and the "chance to pass". At the same time, there are many more significant correlations that differ between the subjective measurement and valuation of the functionings. Subjective measurement of functionings is more often correlated with the personality traits "extraversion" (positive) and "emotional concerns" (negative). Also the "chance to pass" is correlated with many subjective measurements (also with some, but mostly other, items on valuation). The valuation of functionings is more often correlated with the "mood of the day". "Strictness of parents" is not correlated with any of the valued functionings, while it is with two of the measured functionings.

Table B in appendix 2 shows the (significant) correlations of the two capability-concepts with the personal variables. We observe several differences in the correlations of the variables that are

13 When we compare the distribution of the answers for each of the measurement- and the valuation items with a chi-square test, we do not obtain significant differences in the distribution when there is not also a significant difference in the average. Therefore, we only report on the comparison of the averages (see motivation also in section 3.1) using a Mann-Whitney test.

significant with the subjective measurement and with the valuation of capabilities. In fact, there is only one overlapping influence: “extraversion” improves social life. There are not as many correlations as it was the case for the functionings. “Extraversion” is positively correlated with the reported capabilities. “Strictness of the parents” and “creativity” are negatively correlated with the subjectively measured capabilities. They are not at all correlated with the valuation of the capabilities. The latter is most strongly influenced by the “mood of the day” and also by the final score at the end of secondary education.

In summary, the subjective reporting on functionings has more to do with the personality (personal characteristics – extraversion and emotions- and capacity as we interpret the “chance to pass”) while the valuation of functionings is more related to the mood of the day. The latter is also the case for the valuation of capabilities. The subjective reporting on capabilities has to do with personality (extraversion and creativity) and with the role of the parents. Taken together, this implies that there is a real difference between a subjective measurement and a valuation of functionings or capabilities. In both cases, valuation is dominated by the mood of the day. The influencing variables that are more relevant and important for the subjective capabilities of the youngsters are different (some personal characteristics and the role of the parents). This clearly suggests that a capabilities indicator of well-being, although being of a subjective nature, would lead to different (policy) conclusions compared to a satisfaction approach to well-being.

4. Capabilities as alternative indicator of well-being

In the previous section, we focused on the possibilities for a subjective measurement of capabilities (and the interpretation of that measurement). We used the detailed information (on satisfaction, measurement, functionings and capabilities) at the level of seven specific life domains. We prefer to use the data on the subjective measurement of capabilities as valuation of capabilities is more contaminated by valuation neglect. Now, we make the move towards judgements about well-being. For this purpose, we make some important simplifications comparable to those that allow a well-being interpretation of data on life satisfaction. We assume that information on subjective capabilities is comparable between individuals and that a question like “how are the possibilities in life for you in general?” is an acceptable aggregator of the different capabilities in various life dimensions. Using subjective capabilities as an alternative indicator of well-being, we make the comparison with satisfaction with life measurement (section 4.1) and we compute and compare the changes in the probability of having more capabilities or satisfaction for groups (of students) in specific situations (section 4.2).

4.1. General well-being: satisfaction versus capabilities

The survey (all versions) starts with the question ‘how satisfied one is with his life as a whole’. The score ranges from 1 ‘very unsatisfied’ to 10 ‘very satisfied’ and the sample average is 7.94. The subjective measurement of capabilities in general results from the answers to the question (after having been asked about specific sub-capabilities, see the previous section): ‘how are the possibilities for you in general’ (score from 1 ‘completely unsatisfactory to 7 ‘excellent’). Following the results of the previous section, we use the subjective measurement of capabilities (SQ in V1 and V3) and not the satisfaction with capabilities. Here the sample average is 5.76 being 8.23 if we rescale on a scale from one to ten.

Table four compares the determinants (significant at 5%) of individual life satisfaction with those of subjective capabilities. For this explanatory modelling, we started of with all variables as described in table three: personal and situational characteristics, personality and mood, student

specific variables and variables related to the parents. Then we excluded those variables that are never significant, neither on the general level nor on a specific domain level, and those variables that are too highly correlated with other variables included[14]. For the estimation using life satisfaction, we use OLS since respondents sometimes give scores in between two numbers. For the capabilities question, respondents had to tick the appropriate number (out of seven). Scores in between two values are not possible, so we use an ordered logit model. Coefficients of an OLS-regression are not comparable to those of an ordered logit model. Therefore table four (only) presents the direction of the influences. In the next sub-section, we digress on a method to compare the changes in probabilities for some specific situations.

Variables related to the personality (extraversion) and the mood of the respondent, as well as the student specific variable 'previous non-succesful attempt to higher education" provide a double dividend effect: they influence capabilities as well as satisfaction. Emotional concerns (and not thinking to have a good chance to pass) are detrimental for life satisfaction. Some comparable results of satisfaction research on samples of students can be found in Chow (2005) (a positive impact on life satisfaction when 'not being single" and when having 'satisfaction with academic experience"), Moro-Egido (2010) (gender is not significant for student satisfaction) and O'Sullivan (2010) (the importance of personality traits for satisfaction).

Table 4: Satisfaction and Capabilities in general

	OLS regression Satisfaction	**Ordered logit Capabilities**
woman		
not single	+	
conversations with neighbours		
family visits	+	
extraversion	+	+
emotionally concerned	-	
creativity		
mood of the day	+	+
chance to pass	+	
final score at the end of secondary education		
a previous non-succesful attempt to HE	-	-
parental home rented		
parents divorced		-
strictness parents		-

It is remarkable that some personal and situational characteristics (not being single, number of family visits) only matter for the reported life satisfaction. On the other hand, variables related to the parents (their strictness or their being divorced) are only important for the general capabilities. This implies that approaching well-being from the angle of life satisfaction or from the point of view of capabilities does make a difference. Surely in the case of our sample of youngsters, promoting well-being as the development of capabilities requires quite other accents than promoting life satisfaction. It is ethically appealing that the factors behind the capabilities interpretation of well-being are beyond the control of the individual. This facilitates the normative debate on 'responsibility versus compensation' for shortcomings in individual well-being (Schokkaert (2009) and Fleurbaey (2005, 2008)). The hypothesis is that these kind of results could

[14] There are two exceptions to this selection. We include 'gender' and 'final score at the end of secondary education', the latter because of its significance at 10% level, the former because it is generally considered to be relevant. When further excluding from this list the dummy-variables (not single, previous attempt to higher education, parental home rented and parents divorced) we arrive at the list of variables that is used for the correlation analysis in section 3.

also be found in other parts of the population, or in the population as a whole. Policy and thinking on well-being could then benefit from such a capabilities approach to well-being.

4.2. The probability of being well

In an ordered logit model it is common to calculate the probabilities to be in the different classes of the dependent variable (based on the estimation coefficients and the cut points one obtains from estimating an ordered logit model). First, we calculate the probabilities for a reference individual (all independent variables at zero) to have a score from 1 to 7 on the capabilities scale. Then, we do the same for a respondent that is not single, for someone with a high extraversion level (equal to six), etc…(see table five for the other references). We regroup the different scores to a group with 'low' (score 1/2/3), 'midpoint' (score 4) or 'high' (score 5/6/7) capabilities. For the OLS regression we calculate general satisfaction cut points so that the probabilities for the reference individuals are the same as for the general capabilities[15]. This procedure enables to compare the changes in probabilities of being in low or high capabilities of satisfaction groups (in percent points, compared to the reference person) when not being single, when having a rather high level of extraversion etc…

Table 5: Changes in probabilities compared to the reference individual (in percent points) to have 'low, 'middle' or 'high' capabilities versus 'low, 'middle' or 'high' life satisfaction

	Capabilities Low	Capabilities midpoint	Capabilities high	Satisfaction low	Satisfaction midpoint	Satisfaction high
rp not single	-1,82	-1,46	3,28	-8,67	-7,92	16,58
rp extraversion=6	-14,63	-25,88	40,50	-14,77	-21,02	35,78
rp mood=5	-16,13	-31,54	47,67	-16,67	-29,82	46,48
rp chance to pass=95	-4,82	-4,65	9,47	-15,17	-22,12	37,28
rp parents divorced	14,12	3,63	-17,75	6,13	2,18	-8,32
rp parents very strict (7)	39,17	-5,81	-33,36	4,73	1,88	-6,62

The comparison in table five gives a more concrete sense of magnitude to the results as described in the previous sub-section because it enables to compare the impact of changes in socio-economic characteristics or personal life-situations on capabilities and satisfaction. We can compare the impact of three sorts of variables, those influencing capabilities or satisfaction or both. Having parents who are divorced or who are very strict severely reduces the capabilities of youngsters while the impact on satisfaction is much more moderate. On the other hand, not being single or thinking to have a good chance to pass considerably increases the probability of being in the 'high' satisfaction category. Here, the impact on the capabilities is much smaller. Being more extraverted or being in a good mood provides the double dividend of more life satisfaction and more capabilities.

5. Conclusions

In the introduction, we argued that there could be theoretical and ethical reasons to use capabilities as an indicator for individual well-being instead of (or complementary to) information on

[15] Example: the reference individual has a probability of 17.47 % to be in the 'low' capabilities group. We calculate the corresponding cut point for general satisfaction, so that the reference individual also has a probability of 17.47 % to have a 'low' general satisfaction. The probabilities for the reference individual to be in the 'middle' and 'high' category are 37.42% and 45.12% respectively.

happiness or life-satisfaction. The operational or empirical part of such a kind of position is a difficult one. For this reason, we set out on a journey to investigate if a simple and rather straightforward subjective measurement (questionnaire) of capabilities could solve part of this challenge. After all, be it data on happiness or life satisfaction or consumer or business confidence …a lot of information that is generally considered to be relevant or important is collected by comparably unpretentious data-gathering. We develop and present a questionnaire which consistently makes the distinction between functionings and capabilities on the one hand, and between the measurement and valuation of these functionings and capabilities on the other hand. The population used for this experiment are first year Bachelor students in applied economics and business studies. Although the research design has primarily exploratory objectives, the explanatory modelling results are challenging as such.

It turns out that capabilities can be subjectively measured and that it is possible to empirically distinguish between functionings and capabilities. The sample reveals to have more capabilities than functionings which is in line with the theoretical hypothesis. An exploratory measurement of "refined functionings" did not prove to be successful. We do not find many significant differences between the averages of the valuation and the subjective reporting, but we find that some determining variables are different. Valuation is generally more correlated with the mood of the day, while subjective reporting on capabilities is correlated with personality (extraversion and creativity) and with the influence of the parents.

This makes it possible to examine more in depth the potential and consequences of using subjective capabilities – measurement for well-being evaluations. As it is the case for a well-being interpretation of life satisfaction, we take subjective capabilities to be comparable between individuals and accept 'general capabilities' as an aggregator of the different capabilities in various life dimensions. We examine whether information on capabilities can be a more suitable "object of valuation" (as aggregator for well-being research) than life satisfaction. Variables related to the parents (their strictness or their being divorced) are only important for the subjective capabilities, personal and situational characteristics (not being single, number of family visits) only matter for the reported life satisfaction. These explanatory variables behind the capabilities interpretation of well-being are more relevant for policy because they cannot be controlled (and so should be compensated for) by the individual. This allows to "draw the demarcation line between responsibility and compensation, between legitimate and illegitimate causes of inequality in life satisfaction" (Schokkaert, 2007).

The particular findings can be meaningful as such, but more generally we consider it to be promising that it is possible to quantify and compare the impact of the factors that produce well-being as capabilities or as life satisfaction. Comparable exercises for other groups or for a general population could feed a normative debate on the policy relevance of different well-being concepts and their determining variables.

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Appendix 1

Table 1.A: Comparing functionings (B) and capabilities (Q)

(V1 for SB and SQ, V2 for VB and VQ: mean scores and p-values of Wilcoxon test)

Life domain	Realisation in the questionnaire	SB	SQ	p-value SB-SQ	VB	VQ	p-value VB-VQ
1 happy life	1 lead a happy life	5.77	5.62	0.040	5.61	5.82	0.030
2 achievement of dreams / goals	2 reach dreams and goals in life	5.31	5.21	0.195	5.31	5.57	0.004
3 healthy life	3a be in good health	5.63	6.12	0.001	5.41	5.98	0.000
	3b do sports	4.80	6.02	0.000	5.03	5.82	0.000
	3c eat healthy food	4.91	5.79	0.000	4.69	5.46	0.000
4 education, information and culture	4a have education and training	5.33	6.19	0.000	5.58	5.84	0.013
	4b keep abreast of current events	5.03	6.01	0.000	4.93	5.88	0.000
	4c participate in cultural events	3.11	4.98	0.000	4.12	4.83	0.000
5 social life	5 have a satisfying social life	5.72	5.98	0.001	5.83	5.78	0.730
6 environment	6 live in pleasant environments	5.88	5.93	0.610	5.85	5.88	0.588
7 personal integrity	7 act according to personal integrity	5.73	5.56	0.060	5.52	5.50	0.766

Note: for life domain 2, SQ and VQ consist of two items, here the average is used to compare with SB and with VB.

Table 1.B: Comparing Subjective measurement (S) and Valuation (V)

(V1 for SB and SQ, V2 for VB and VQ: mean scores and p-values of Mann-Whitney test; na: not available in this version)[16]

Life domain	Realisation in the questionnaire	SB	VB	p-value SB-VB	SQ	VQ	p-value SQ-VQ
1 happy life	1 lead a happy life	5.78	5.61	0.101	5.62	5.84	0.102
2 achievement of dreams and goals	2 reach dreams and goals in life	5.31	5.31	0.772	na	na	na
	2a reach dreams in life	na	na	na	5.02	5.50	0.002
	2b reach goals in life	na	na	na	5.41	5.65	0.048
3 healthy life	3a be in good health	5.61	5.41	0.106	6.12	5.98	0.258
	3b do sports	4.80	5.03	0.355	6.02	5.83	0.138
	3c eat healthy food	4.90	4.69	0.235	5.79	5.48	0.021
4 education, information and culture	4a have education and training	5.33	5.58	0.031	6.19	5.84	0.002
	4b keep abreast of current events	5.03	4.93	0.704	6.01	5.89	0.489
	4c participate in cultural events	3.11	4.12	0.000	4.98	4.85	0.429
5 social life	5 have a satisfying social life	5.72	5.83	0.361	5.96	5.79	0.166
6 environment	6 live in pleasant environments	5.87	5.84	0.958	5.93	5.89	0.783
7 personal integrity	7 act according to personal integrity	5.73	5.54	0.164	5.56	5.52	0.855
	8 in general	na	na	na	5.76	5.78	0.753

[16] Small differences in the values (of SB/SQ/VB/VQ) between tables are possible due to small differences in the number of individuals included in the comparison.

Appendix 2

Table 2.A: Spearman correlation between some personal characteristics and functionings
(subjective measurement: SB – V1 or valuation: VB – V2)

	SB1	**SB2**	**SB3a**	**SB3b**	**SB3c**	**SB4a**	**SB4b**	**SB4c**	**SB5**	**SB6**	**SB7**
conversations with neighbours						0,20		0,33			
family visits											
extraversion	0,19	0,27					0,24		0,32	0,20	0,24
emotionally concerned			-0,23	-0,27	-0,25		-0,23				-0,26
creativity			-0,21								
mood of the day	0,25	0,20						0,32			
chance to pass	0,22	0,23			0,30	0,33				0,23	0,23
final score at the end of SE											
strictness parents						-0,21		-0,26			
	VB1	**VB2**	**VB3a**	**VB3b**	**VB3c**	**VB4a**	**VB4b**	**VB4c**	**VB5**	**VB6**	**VB7**
conversations with neighbours			0,21								
family visits	0,21									0,20	
extraversion								0,24	0,26		0,22
emotionally concerned				-0,29		0,21	-0,31				
creativity								0,20			
mood of the day	0,29	0,21	0,26		0,26	0,20		0,19		0,27	0,23
chance to pass		0,20				0,20	0,23		0,24		
final score at the end of SE											
strictness parents											

Table 2.B: Spearman correlation between some personal characteristics and capabilities
(subjective measurement: SQ – V1 or valuation: VQ – V2)

	SQ1	**SQ2a**	**SQ2b**	**SQ3a**	**SQ3b**	**SQ3c**	**SQ4a**	**SQ4b**	**SQ4c**	**SQ5**	**SQ6**	**SQ7**
conversations with neighbours												
family visits												
extraversion	0,35	0,34	0,39							0,44	0,34	
emotionally concerned						-0,19						
creativity	-0,24		-0,24					-0,20		-0,23	-0,25	-0,20
mood of the day	0,27		0,19					-0,20				
chance to pass												
final score at the end of SE												
strictness parents									-0,22	-0,19	-0,20	-0,19
	VQ1	**VQ2a**	**VQ2b**	**VQ3a**	**VQ3b**	**VQ3c**	**VQ4a**	**VQ4b**	**VQ4c**	**VQ5**	**VQ6**	**VQ7**
conversations with neighbours												
family visits								-0,21				
extraversion										0,25		
emotionally concerned												
creativity												
mood of the day									0,23	0,20	0,28	0,31
chance to pass												
final score at the end of SE		0,20					0,21		0,23			
strictness parents												

Appendix 3: The questions (and versions of the questionnaire) measuring respectively SQ, SB, VQ and VB.

V1 / SQ. Indicate in the next table, on a scale from 1 to 7, in which 1 indicates completely unsatisfactory and 7 excellent. (Tick the appropriate)
How are the possibilities for you …

	1	2	3	4	5	6	7
	Completely unsatisfactory			Sufficient			Excellent
to seek happiness in your life?							
to reach the dreams you have?							
to reach your goals?							
wrt the medical support you have the advantage of?							
to do sports?							
to eat healthy food?							
wrt to the education and training you have access to?							
to keep abreast of current events using various media (newspaper, TV, internet)?							
wrt the cultural offer out of which you can choose?							
to have a satisfying social life?							
to be in pleasant environments, taking together home, school and leisure time?							
to act according to your personal opinion and ways of thinking, at home as well as at school and in your leisure time?							
in general?							

V1 / SB. The following series of questions is about what you did already achieve in your life. Answer on a scale from 1 to 7, in which 1 indicates complete disagreement and 7 complete agreement (Tick the appropriate).

	1	2	3	4	5	6	7
	Completely disagree			Neutral			Completely agree
Generally, I lead a happy life.							
I am, given my age, satisfied with what I have achieved.							
I consider myself to be in good health.							
I do sports sufficiently.							
I eat healthy.							
I study or do an education in line with my capacity.							
I keep abreast of current events using various media.							
I am present at cultural events regularly.							
I have a satisfying social life.							
I live, study and spent my leisure time in pleasant environments.							
I respect my personal opinion and ways of thinking when taking decisions at home, at school and in my leisure time.							

V2 / VQ. Indicate in the next table, on a scale from 1 to 7, in which 1 indicates complete disagreement and 7 complete agreement (Tick the appropriate).

I am satisfied with the possibilities…

	1	2	3	4	5	6	7
	Completely disagree			Neutral			Completely agree
to seek happiness in my life.							
to reach the dreams I have.							
to reach my goals.							
wrt the medical support I have the advantage of.							
to do sports.							
to eat healthy food.							
wrt to the education and training I have access to.							
to keep abreast of current events, using various media (newspaper, TV, internet).							
wrt the cultural offer out of which I can choose.							
to have a satisfying social life.							
to be in pleasant environments, taking together home school and leisure time.							
to act according to my personal opinion and ways of thinking, at home as well as at school and in my leisure time.							
in general.							

V2/ VB. Indicate in the next table, on a scale from 1 to 7, in which 1 indicates complete disagreement and 7 complete agreement (Tick the appropriate).

I am satisfied with …

	1	2	3	4	5	6	7
	Completely disagree			Neutral			Completely agree
the extent of happiness in my life.							
what I have achieved up to now (given my age).							
my health.							
the sports I am doing.							
my eating habits.							
the education and training I am following and did follow.							
my knowledge of recent events.							
my participation in cultural events.							
my social life.							
the environment in which I live, study and spent my leisure time.							
the extent to which I respect my personal opinion and ways of thinking when taking decisions at home, at school and in my leisure time.							