PART III

POVERTY, CAPABILITIES AND MEASUREMENT

CHAPTER 16

THE MEASUREMENT OF CAPABILITIES

PAUL ANAND
CRISTINA SANTOS
RON SMITH

I. Introduction

From the variety of conceptions of what constitutes a good life that policy might promote, we focus on two. One emphasizes the freedoms and rights that people have, what Amartya Sen calls their capabilities. The other emphasizes individual well-being derived from what individuals do. The capabilities approach to welfare has focused on issues of freedom but both freedom and well-being appear in his formal account of the approach (Sen 1985 and Sen and Nussbaum 1993), in which he suggests that a person's happiness depends on what the person does, whilst

We particularly wish to thank a number of colleagues who have collaborated on papers that form part of the project here reported as well as contributors to two related design workshops held at Wolfson College, Oxford in 2004 and 2005 where the OCAP survey instrument was developed. In addition, the first author acknowledges funding from the Arts and Humanities Research Board, Grant no. 17685, and thanks Caterina Laderchi for discussions which helped initiate the research programme.

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 284 of 310 July 30, 2008 17:21

assessment of a person's advantage should depend, in addition, on the other things that person could do.[1]

These two approaches to quality of life potentially conflict. According to the first view, the right to vote, for example, is a good thing; it makes people capable of doing something, probably something they have reason to value, and it may remain a good thing not only if people do not vote but if people would prefer not to have the right to vote and would feel better if somebody else made decisions for them. According to the second view, what counts is just well-being and if that is greater under a regime in which no one has the right to vote and everyone can avoid the need to make decisions, then policy should not grant the right to vote.

In deciding between these two views, there are many normative questions, but there is an informational issue also. It is far easier to find out whether a particular group of people do or do not have the right to vote than it is to find out whether they would prefer having the vote or not. In principle, these are quite distinct and non-comparable philosophical issues.[2]

In practice, for policy purposes, they might not be so different. If capabilities and well-being were, in fact, highly correlated, then, contrary to the voting example, extending people's capabilities would (on average) increase their well-being. If an expansion of capabilities increased, or at least did not reduce, well-being, it could be argued that policy should be aimed at capabilities development even if well-being maximization is the ultimate objective. These are variants of the information argument above, that it is easier to determine capabilities than well-being; the freedom argument is that since people's tastes differ, policy should extend the range of things that people can do rather than prescribe what they should do. Indeed one could argue that freedom and autonomy have been central to economic thinking and that the emphasis on optimal goods bundles as the source of happiness is inadequate for some policy purposes.

In any case, whether capabilities and well-being are correlated is an interesting and important empirical question and raises a number of issues. How do we measure capabilities? How do we measure well-being? Since we are considering average relations over a sample, what statistical methods can be used to estimate the association between capabilities and well-being over the sample and infer any causal relationship between them? Having measured capabilities and well-being

[1] Further theoretical development of this approach can be found in Gaertner and Xu (2005), Nehring and Puppe (2005), Pattanaik and Xu (1998) and van Hees (2004), and a number of key philosophical issues are examined by Carter (1999, 2003). The origins of the capabilities approach in problems of conventional social choice and welfare economics are particularly evident in Sen (1979).

[2] Initially, researchers were pessimistic about the prospects of broadening capability indicators beyond those available through the Human Development Index (see, for example, Brandolini and D'Alessio 1999). However, there are now a number of attempts to do quantitative empirical work in ways that engage with the approach—see for instance Brower *et al.* (2004), Burchardt and Le Grand (2002), Chiappero-Martinetti (2000), Clark (2003), Klasen (2000), Kuklys (2005), Laderchi (2001) and Schokkaert and Ootegem (1990).

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 285 of 310 July 30, 2008 17:21

and estimated the relationship between them, can we begin to derive policy implications from these results?

In this chapter, we provide an overview of a research project that tries to address some of these issues. In particular, we focus on the questions of whether and how capabilities can be measured and then go on to consider some of the ways in which capability data can be analysed. We then focus on three topics that are of particular interest from a capabilities perspective: health and poverty, forms of violence and the correlates of life satisfaction. In each case, there is good theoretical or a priori reason to suppose that the capabilities approach can contribute to our understanding. In the first case, we use latent class analysis to explore capabilities from a multidimensional angle and determine whether there exists, for our national sample, a group of people who are impoverished with respect to their capabilities across the board. Next, we focus on the existence of different types of violence and their impact on well-being and capabilities. We identify a group who are more vulnerable to each type of violence and we identify the causal impact of violence on well-being. Finally, we consider the role of capabilities in life satisfaction (happiness), which many conventional economists have recently shown interest in, and ask whether there is evidence of any detectable relationship between capabilities and life satisfaction across a range of life domains.

Although the project was initially motivated by a desire to determine whether capability indicators can be constructed, a number of related methodological issues have emerged and these will be considered in section IV. One particularly interesting issue that arises as we move from theory to empirical work concerns causality. For instance, it may be that some unobserved variable, e.g. personality, influences both an individual's perceived capabilities and their expressed well-being, so the association between capabilities and well-being is non-causal. However, appropriate data design and data merging allows us to make some headway in addressing questions of causality, as our work on the relationship between expectations of violence and life satisfaction indicates.

II. Capabilities and Well-being: Motivation and Operationalization

Sen's (1985) formalization of the capabilities approach defines two key relations. To begin, Sen suggests that happiness or utility, u_i, of the ith individual is a function of the things a person is or does, i.e.

$$u_i = f_i(\mathbf{f}_i),$$

where $\mathbf{f}$ is a vector of j dimensional functionings (doings or beings) and f_i is a utility function that relates functionings to happiness and varies between individuals,

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 286 of 310 July 30, 2008 17:21

thereby recognizing that preferences are not homogeneous. Sen then goes on to argue that what people can choose is also important for welfare and policy purposes, and proposes that the set of functioning vectors a person could choose given their endowments broadly defined, Q, be taken as a measure of a person's advantage in welfare evaluations. Many researchers have argued that the capabilities approach is difficult to implement in practice because the set Q cannot be enumerated. Our project recognizes that many, if not most, of the welfare statistics available are more accurately conceived as indicators and that the proper economic statistics question is not whether capabilities can be enumerated, but rather whether it is possible to construct statistics that indicate the size of Q in a manner consistent with theory and the accepted methodologies of survey design and social statistics. For what follows, we assume that the empirical measurement challenge is one of developing appropriate indicators.

II.1 Measurement of Capabilities

As a first pass at measuring aspects of Q in practice, a collection of questions, based on a primary data set, that distinguishes between achievements and scope in people's lives was devised (Anand and van Hees 2006). The distinction between scope and achievement offers only one way of measuring capabilities (as distinct from functionings) and it led us to reconsider whether, in fact, there might not be some secondary data that relate more directly to the freedom aspects of capabilities. Using data and questions that exist in secondary data sets, like the BHPS and GSOEP, which are routinely used by economists and social scientists, Anand (2005) and Anand, Hunter and Smith (2005) argued that social and household surveys do already contain data that measure capabilities. At least five kinds of indicators can be identified:

Type 1: Externally oriented questions about opportunity
Type 2: Explicit questions about personal ability aspects of capability
Type 3: Explicit constraint questions
Type 4: Functioning probes combined with questions about reasons
Type 5: Functioning probes combined with a universality assumption

Questions about access to facilities, like the use of a car or van when needed, and questions about the existence of factors preventing people from moving house, illustrate questions capable of generating type 1 and 2 indicators. In some cases, it is possible to use questions about functionings, when combined with reasons, to determine whether a particular behavior or state reflects a person's preference or rather an inability to make certain choices. And in a smaller number of situations, functioning questions, for example about the experience of violent assault, can be assumed to indicate evidence of a reduced capability set.

Whilst such indicators are used frequently in social science and official statistics, economists often question the validity of such data because of their apparent subjectivity. In an ideal world, data based on objective observation would be preferable, but in reality many data sources, including many of the secondary data sources regularly used by economists (e.g. income data from household surveys), are based on self-report. This is almost inevitable if one wants to analyse individual-level data covering a wide range of life domains (given the way social and administrative statistics are collected) and we suggest that two related questions are particularly important when doing so. First, are there any *particular* incentives for data to be biased or noisy, and second, if such problems exist, what is their likely impact on analysis? In many cases, once a person has agreed to take part in a survey, the incentives to misrepresent may not be strong, though of course accurate recall is difficult, with the result that data on relations between variables may underestimate true underlying relations. Furthermore, in regression analyses, there are endogeneity risks associated with using subjective variables from the same respondent on both sides of an equation; our project has considered how this might be tested for and suitable instruments devised (not discussed in this chapter, but see Anand, Hunter and Smith 2005). Finally, and beyond this, many capabilities are inherently subjective. The question "How safe do you feel?" does not have an objective answer, since it depends on probabilities of harm, a person's risk aversion, and a person's behavior: for example, whether they go out at night will also reflect a variety of other factors that influence the costs and benefits of action.

II.2 Measurement of Happiness (Well-Being)

To measure happiness, we note that a growing number of economists have moved beyond the use of income as a utility indicator and examine data on self-reported happiness as a more accurate measure of what Kahneman *et al.* (1997) call "experienced utility" (see, for instance, Frey and Stutzer 2000; Kahneman *et al.* 2004; Layard 2005; Oswald 1997; Winkelmann and Winkelmann 1998).[3] This move is consistent both with utilitarian theory (if not the methods of revealed preference) and the emphasis of the capabilities approach on non-financial aspects of quality of life, though there are normative issues which suggest asymmetries in use. Many utilitarians claim that we should give priority only to those sources of disadvantage to which individuals do not adapt,[4] whilst proponents of the capabilities viewpoint

[3] In his *Econometrica* survey, Manksi (2004) concludes that subjective measures fare better in terms of statistical accuracy than might have been supposed. (Recognizing this point about accuracy does not commit one to accepting that evidence of affective adaptation should be used to discount policies aimed at eradicating social and economic problems to which people adapt.)

[4] Where we model life satisfaction as a function of capabilities, the justification is that adaptation to capability changes in circumstances is likely to be neither perfect nor instantaneous. Recent work by Di Tella *et al.* (2007) substantiates this and helps to quantify the rate of adaptation where it takes

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 288 of 310 July 30, 2008 17:21

out that many women have adapted to inequities in labor markets but that this is not a reason against promoting equality of opportunity. However, there are some adaptations that many would recognize as healthy and desirable from a welfare perspective and yet there is no account of what role adaptation should play. We take the view, therefore, that the role of adaptive preferences in theories of equity and justice has become confounded with the somewhat different methodological issues surrounding subjective data, particularly those to do with noise and bias in estimation, and with endogeneity within regression models. In this project, where a summary measure of well-being is useful, we therefore argue that happiness can play a helpful role, particularly if we account properly for the implications it may have for estimation and model building.

III. Data

The data used in our analysis consist of a quota sample of approximately 1,000 individuals selected at random from a panel constructed to be roughly representative of the adult population in mainland Britain. The survey process was implemented by an opinion polling and market research company, YOUGOV, in the early part of 2005. In keeping with emerging practice, driven largely by data protection constraints and the spread of Internet access and use, the panel consists of people who have previously agreed to be contacted by the company for market research purposes and so cannot be treated as random. That said, we were able to use some replicated substantive and socio-demographic questions from the BHPS, and found that statistically our results were identical, or very close, to those found there, so there is some reason to believe that our results have some representative value in addition to demonstrating the methods developed.

IV. Results

IV.1 Capabilities, Poverty and Health

In the first of our three results sections, we use multivariate non-dependency techniques to understand capability indicators on their own. Such techniques have been used by statisticians and social scientists in a wide range of applications (see Everitt

place, though they find that people tend to adapt more readily to income changes than to changes in status.

Table 16.1a. Fit Diagnostics for Five Latent Class Models

Number of latent classes	LL	Bayesian Information Criteria	Number of parameters	L2	df	*p* value
5	−42,505.08	87,706.27	397	72,921.78	493	2.7e-15197
6	−42,274.42	87,598.09	449	72,460.46	441	8.7e-15155
7	−42,130.72	87,663.84	501	72,173.06	389	4.9e-15151
8	−42,130.72	87,786.53	553	71,942.61	337	5.0e-15161
9	−41,813.26	87,853.59	605	71,656.52	285	1.1e-15160

and Dunn 2001). In this case, we use latent class analysis to categorize respondents on the basis of all their capability indicators. This allows us to assess whether there is a group who are poor in capabilities across the board and to examine the covariates of category membership. The results of this exercise appear in Tables 16.1a and 16.1b. To determine the appropriate number of latent classes, we compute models without a covariate matrix, **x**, and select the model that minimizes the value of the Bayesian Information Criterion. This statistic is generally used, as it provides a measure of fit adjusted for the number of parameters involved. According to this criterion, a model in which there are six latent classes provides the optimal balance between fit and parsimony.

When a variety of six class models as a function of health status is estimated, we observe that variations in health status are always statistically significant predictors of class membership. (Table 16.1b summarizes findings for a series of such models.)

Table 16.1b. Wald Statistics for Health Status and Other Predictors of Latent Class Membership in a Six-Class Model

Covariate	Model diagnostic statistics					
Health status	51.97, 5.50e-10		31.5533, 7.30e-06	42.5177, 4.60e-08	25.6563, 0.0001	30.7661, 1.00e-05
Household income		31.0012, 9.30e-06	21.9757, 0.00053	26.8417, 6.10e-05	12.0814, 0.034	20.9303, 0.00083
Controls for Age		No			Yes	
Personality						
PAGREE					29.036, 2.3e-05	29.3056, 2.00e-05
PCONSC					24.1576, 0.0002	21.8305, 0.00056
POPEN					55.0846, 1.3e-10	60.14, 1.10e-11
PSTABLE					49.8809, 1.50e-09	50.2556, 1.20e-09
PXTRAVT					19.8605, 0.0013	24.708, 0.00016
Controls for regions				No		Yes

Notes: Cell entries indicate respectively the value of the Wald statistic and its associated *p* value.
Controls for age comprise age and its square.

The same is true of household income, though the test statistics tend to be even more significant for health. The status of health as a class predictor appears robust to the introduction of controls, though in the final model summarized, the controls for age and its square are not significant, whereas three of the four regional controls are. This is in marked contrast to equations where capabilities are covariates of life satisfaction (e.g. Anand *et al.* 2005) and in which age is always significant but regional controls rarely are. It is noticeable that all five dimensions of personality are statistically significant, a finding in keeping with work reported by Helliwell recently in his work on quality of life based on models of life satisfaction (Helliwell 2006). Clearly, personality is a source of heterogeneity (see also Clark *et al.* 2005) but we are unable to identify further the reasons for this variation. It may be, for example, that people with different personality traits have different opportunities open to them, either as a result of the way in which they themselves cope with adversity or because of the supportive behavior their traits induce in others. Alternatively, it could be that different personalities are associated with different levels of adaptive coping and/or reporting behaviors.

By examining the average capability scores for each group across all the indicators we can begin to assess whether there is a particularly poor group within our sample. In fact, class 6, which accounts for just over 8% of our sample, does indeed appear to be such a group. Generally the average capability indicator scores of class 6 are either the most extreme of all groups or close to being so, with only a small number of modest exceptions. From Table 16.1c, it is possible to compare some of the characteristics (covariate averages) of class 6 with those of other groups. Just over half this group (52.99%) have limited health and this is a notably higher proportion than for any other group. This is also the youngest group on average—perhaps

Table 16.1c. Average Covariate Characteristics by Class

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Class size (% of sample)	23.7%	20.79%	19.05%	18.30%	10.13%	8.02%
Health Status	78.49%	82.96%	85.74%	61.45%	67.95%	47.01%
MGHI	3.19	3.31	3.33	2.93	2.86	2.32
PAGREEABLE	4.73	4.88	5.50	4.93	5.23	4.41
PCONSCIENTIOUS	5.12	5.53	5.87	4.9	5.42	4.7
POPEN	4.86	4.58	5.36	4.60	5.55	5.22
PSTABLE	4.47	4.87	5.32	3.61	4.70	3.41
PEXTRAVERT	4.09	4.07	4.84	3.53	4.14	3.51
MAGE	42.19	46.17	50.63	39.65	47.14	38.14
MMALE	59.73%	54.22%	45.55%	40.73%	10.64%	38.41%
MRMIDWLS	25.05%	29.76%	20.58%	18.30%	18.99%	13.47%
MRNORTH	25.15%	28.93%	28.50%	24.78%	32.82%	38.71%
MRSCOT	10.25%	8.05%	10.64%	12.77%	7.02%	3.45%
MRSOUTH	16.61%	21.57%	27.10%	24.48%	13.09%	29.58%

the opposite of what one might expect, until we recall that the question about health status asks respondents to make a comparative judgement allowing for age norms. Class 6 is also lowest on the income category indicator and just over 60% of class 6 members are female. The group has low scores on four of the personality dimensions with the exception of openness, which is also relatively high in class 5, who, in turn, are only marginally better off than class 6. However, the highest average score for openness is found in class 3, which is possibly the most affluent group, so we cannot infer a simple relation between openness and deprivation. It is also noticeable that capability deprivation displays a geographical bias towards England (especially the south), which may reflect higher levels of health and social care in Wales and Scotland, though there could be a comparison effect in play. Reference class effects have been found to be empirically significant in the literature on income and life satisfaction (see Clark, Frijters and Shields 2006 for example) and it could also be that capability deprivation is felt more keenly in the south of England because ambient capability levels are higher on average.

IV.2 Violence, Vulnerability and Life Satisfaction

In this second results section, we draw on an analysis of capability indicators concerning data relating to the experience and subjective risk of violence (Anand and Santos 2007), an issue that Nussbaum (2000) and Sen (2006) have both done much to highlight. This section shows how our capabilities measurements can generate data which can be used to understand very specific topics, and that future risks which might constrain what a person can do can be measured and used in analysis. In what follows, we concentrate on the different experiences that men and women have of different forms of violence, and the covariates of these experiences and their consequences for quality of life. With this focus we are able to identify a causal impact, through the pathway of expectations, between violence and well-being.

Within our set of capabilities indicators, we have a total of eight variables: two measures of fear of walking around one's locality—during the day and at night—and a further six variables that measure both experienced and perceived risk of violence in three categories (sexual assault, domestic violence and the residual category). Our extensions to the original formal capabilities framework (in Sen 1985) derives from the recognition that there may be significant probabilistic aspects of capabilities between people,[5] and as can be seen from Tables 16.2a and 16.2b, there are significant differences both in the proportions of female and male respondents reporting experience of violence in each category, and in their perceived risks of sexual and domestic violence. To understand the causes, or at least covariates, of

[5] The ability to walk about safely at night, much discussed in the literature, provides a good example. Usually the question is not binary but rather turns on the degree of risk that one takes.

Table 16.2a. Self-Reported Experience of Violence by Gender
***t*-test on the equality of means, where data are not assumed to be paired.**

	Proportion females	Proportion males	*p* value
Sexual assault (SA)	0.151	0.048	0.000
Domestic violence (DV)	0.226	0.099	0.000
Both sexual assault and domestic violence	0.062	0.015	0.000
Some other form of violent assault or attack (VA)	0.123	0.339	0.000

experienced violence we present six probit models (see Table 16.2c) in which we use covariate data on age, marital status, income, both individual and household, ethnicity, family size, education, personality, local crime rates and a set of regional dummies.

Being separated is associated with other forms of assault reported by women and domestic violence reported by men, and it is possible that the primary causal link is different between the sexes—separated women are most at risk of other forms of assault, whilst experience of domestic violence by men is more likely to be related to a subsequent separation. However, perhaps the most significant results are those concerning income for women. There is some evidence that domestic violence significantly decreases as household income increases but controlling for this, there is some evidence (not significant) that women with higher personal incomes are more at risk of experiencing domestic violence. We should be particularly cautious about this, as the result is not significant, but it suggests that there may be a resentment effect which causes women with higher incomes than their partners to be at a higher risk. If that is indeed the case, it would suggest that social policy programs designed to reduce domestic violence could not automatically assume that increasing women's income and human capital will reduce their risk, a policy that might otherwise help women escape from violent relations, as Agarwal (2006)

Table 16.2b. Self-Reported Violence-Related Capabilities by Gender
Wilcoxon rank-sum test on the equality of the distributions.

	Females		Males		*p* value
	Mean	Median	Mean	Median	
Fear during day (D)	2.155	2	1.925	2	0.000
Fear at night (N)	3.670	3	2.785	3	0.000
Vulnerability to sexual assault (VSA)	3.439	3	1.535	1	0.000
Vulnerability to domestic violence (VDV)	1.585	1	1.328	1	0.000
Likelihood of assault in future (LVA)	3.159	3	3.198	3	0.990

Table 16.2c. Identifying the Relatively Vulnerable: Probit Models of Reported Experiences of Violence by Gender

	Females			Males		
	SA	DV	VA	SA	DV	VA
35–55 Years Old	0.059	0.185	0.221	−0.161	0.302	0.105
	(0.212)	(0.192)	(0.225)	(0.396)	(0.299)	(0.209)
≥ 55 Years Old	0.123	0.304	−0.094	−0.319	0.094	−0.249
	(0.232)	(0.216)	(0.257)	(0.456)	(0.390)	(0.254)
Separated	0.003	0.503	0.694*	0.278	0.895*	0.087
	(0.288)	(0.259)	(0.277)	(0.408)	(0.360)	(0.318)
No Partner	−0.007	−0.070	0.300	−0.898	0.135	0.218
	(0.218)	(0.202)	(0.232)	(0.484)	(0.364)	(0.221)
£10,000–20,000 Household Income	0.118	−0.440	−0.043	−0.867	0.231	0.031
	(0.291)	(0.263)	(0.287)	(0.533)	(0.435)	(0.371)
£20,000–30,000 Household Income	−0.290	−0.809**	0.153	−0.816	−0.125	−0.090
	(0.325)	(0.275)	(0.311)	(0.661)	(0.524)	(0.405)
≥ £30,000 Household Income	−0.287	−0.663*	0.023	−1.716**	0.025	0.174
	(0.333)	(0.299)	(0.330)	(0.605)	(0.566)	(0.420)
£10,000–20,000 Individual Income	−0.095	0.297	−0.196	0.609	−0.400	0.124
	(0.226)	(0.214)	(0.253)	(0.497)	(0.362)	(0.309)
£20,000–30,000 Individual Income	−0.452	0.462	−0.175	0.006	−0.454	−0.129
	(0.330)	(0.278)	(0.296)	(0.642)	(0.451)	(0.364)
≥ 30,000 Individual Income	0.352	−0.001	−0.362	0.728	−0.691	−0.353
	(0.347)	(0.376)	(0.430)	(0.654)	(0.548)	(0.406)
Non-White British	−0.265	0.379	−0.075	(dropped)	0.439	0.343
	(0.329)	(0.264)	(0.300)		(0.316)	(0.275)
At least 1 Child	−0.174	0.068	−0.389	−0.208	0.304	0.257
	(0.221)	(0.191)	(0.216)	(0.352)	(0.288)	(0.192)
Vocational Diploma	0.362	0.101	0.529	−0.166	−0.217	−0.055
	(0.310)	(0.284)	(0.394)	(0.354)	(0.355)	(0.270)
CSE A Level	0.081	0.148	0.152	(dropped)	−0.411	−0.245
	(0.308)	(0.267)	(0.376)		(0.350)	(0.269)
Graduate	0.231	−0.231	0.355	−0.077	−0.152	−0.103
	(0.309)	(0.288)	(0.389)	(0.394)	(0.352)	(0.285)
Not Employed (At Home)	0.288	−0.012	0.002	−0.045	−0.200	−0.177
	(0.199)	(0.181)	(0.217)	(0.344)	(0.296)	(0.226)
Extraversion	−0.063	−0.165	−0.212	−0.081	−0.258	−0.179
	(0.124)	(0.104)	(0.128)	(0.152)	(0.136)	(0.097)
Agreeableness	0.180*	0.235**	0.257**	0.082	0.248*	0.068
	(0.090)	(0.087)	(0.099)	(0.134)	(0.121)	(0.082)
Conscientiousness	−0.028	0.013	0.150	−0.023	0.183	0.279**
	(0.096)	(0.090)	(0.100)	(0.153)	(0.120)	(0.091)
Emotional Stability	−0.181	−0.025	−0.064	−0.065	−0.112	−0.031
	(0.095)	(0.095)	(0.112)	(0.156)	(0.121)	(0.093)
Openness	−0.075	0.007	−0.020	−0.209	−0.085	−0.048
	(0.095)	(0.085)	(0.097)	(0.150)	(0.115)	(0.090)

(*cont.*)

Table 16.2c. (*Continued*)

	Females			Males		
	SA	DV	VA	SA	DV	VA
Local Crime Rates	0.009	−0.008	−0.001	0.006	−0.005	0.004
	(0.007)	(0.007)	(0.008)	(0.004)	(0.007)	(0.005)
South of England excluding London	−0.024	−0.053	−0.363	0.528	0.050	−0.314
	(0.278)	(0.255)	(0.264)	(0.431)	(0.285)	(0.236)
Midlands and Wales	0.109	0.389	0.853**	0.190	−1.224**	−0.415
	(0.260)	(0.244)	(0.274)	(0.524)	(0.399)	(0.231)
North of England	0.043	0.253	−0.388	−0.259	−0.111	−0.190
	(0.247)	(0.236)	(0.245)	(0.503)	(0.270)	(0.219)
Constant	−1.472**	−0.801	−1.253*	−0.647	−0.856	−0.300
	(0.485)	(0.440)	(0.516)	(0.703)	(0.638)	(0.484)
Pseudo-R^2	0.077	0.107	0.106	0.202	0.195	0.094
N	382	389	390	214	330	329

Notes: Significance levels: *5%; **1%.

Marginal effects reported. Standard errors in parentheses.

Reference categories are: <35 Years Old, Married, Other Schooling, [0,10000] Gross Household Income, [0,10000] Gross Individual Income, White British, No Dependent Children, Other Schooling, Working at least 8hrs/Week, and London.

has proposed. It is also worth noting that of all the personality traits, being agreeable is a significant risk for women especially, and this in turn may mean that behavioral therapies could play a significant role alongside economic issues in violence reduction programs.

Ultimately, we were interested in assessing the impact of experienced violence and the threat of violence on well-being. Table 16.2d shows the results. We find that the measures of experience of violence, with the exception of domestic violence for women, are not significant.

However, it is particularly noteworthy that the risk of violence *is* significant. In the case of all three forms of violence, the coefficients are significant, though the pattern is not the same for men, a fact that might suggest either that the impact on quality of life of fear of violence is more severe for women or that the average severities of experiences of violence are particularly different for men and women. There is not much evidence that income has an impact on life satisfaction here, though there is some evidence that household income does have an impact for men. Being without a partner, being non-white British and introversion all have a negative effect that is statistically significant. Crime rates are also significant but in the wrong direction, suggesting, perhaps, that crime rates are correlated with the existence of other local resources that make an area more attractive to live

Table 16.2d. Ordered Probit Models of Well-Being Deprivation by Gender

	Females		Males	
	Experience only	Both	Experience only	Both
Victim of Sexual Assault	−0.133	−0.264	0.044	0.002
	(0.170)	(0.176)	(0.312)	(0.318)
Victim of Domestic Violence	0.366*	0.275	0.240	0.260
	(0.152)	(0.160)	(0.235)	(0.250)
Victim of Any Other Form of Violence	0.056	−0.062	−0.011	−0.039
	(0.189)	(0.193)	(0.149)	(0.153)
Vulnerability to Sexual Assault		0.290**		0.106
		(0.096)		(0.123)
Vulnerability to Domestic Violence		0.302**		−0.023
		(0.116)		(0.156)
Likelihood of Future Violence of Any Other		0.290**		0.092
		(0.103)		(0.092)
35–55 years old	0.061	0.294	−0.041	−0.013
	(0.156)	(0.164)	(0.186)	(0.188)
≥ 55 years old	−0.379*	−0.053	−0.314	−0.250
	(0.174)	(0.186)	(0.219)	(0.223)
Separated	0.092	0.077	0.471	0.441
	(0.227)	(0.231)	(0.275)	(0.277)
No Partner	0.402*	0.404*	0.426*	0.429*
	(0.165)	(0.167)	(0.194)	(0.195)
£10,000–20,000 Household Income	−0.105	−0.130	−0.356	−0.344
	(0.225)	(0.229)	(0.317)	(0.319)
£20,000–30,000 Household Income	0.088	0.061	−0.702*	−0.667
	(0.235)	(0.238)	(0.347)	(0.349)
≥ £30,000 Household Income	−0.348	−0.362	−0.714	−0.668
	(0.253)	(0.258)	(0.368)	(0.370)
£10,000–20,000 Individual Income	0.050	0.096	−0.066	−0.064
	(0.173)	(0.176)	(0.263)	(0.264)
£20,000–30,000 Individual Income	−0.303	−0.276	−0.227	−0.254
	(0.225)	(0.229)	(0.305)	(0.305)
≥ £30,000 Individual Income	−0.102	0.008	−0.344	−0.386
	(0.281)	(0.287)	(0.341)	(0.342)
Non-White British	0.211	0.329	0.625*	0.593*
	(0.226)	(0.232)	(0.268)	(0.270)
At least 1 Child	−0.161	−0.138	0.115	0.129
	(0.158)	(0.161)	(0.168)	(0.170)
Vocational Diploma	−0.083	−0.195	0.065	0.068
	(0.238)	(0.244)	(0.243)	(0.243)
CSE A Level	−0.152	−0.250	−0.095	−0.082
	(0.229)	(0.234)	(0.247)	(0.249)
Graduate	−0.236	−0.252	−0.168	−0.135
	(0.237)	(0.241)	(0.253)	(0.255)
Not Employed (At Home)	0.094	0.123	−0.334	−0.332
	(0.152)	(0.155)	(0.189)	(0.190)

(*cont.*)

Table 16.2d. (*Continued*)

	Females		Males	
	Experience only	Both	Experience only	Both
Extraversion	−0.314***	−0.324***	−0.321***	−0.320***
	(0.082)	(0.084)	(0.087)	(0.087)
Agreeableness	0.119	0.089	0.061	0.052
	(0.072)	(0.073)	(0.072)	(0.072)
Conscientiousness	−0.078	−0.042	0.065	0.062
	(0.076)	(0.077)	(0.077)	(0.077)
Emotional Stability	0.060	0.052	−0.023	−0.021
	(0.074)	(0.076)	(0.080)	(0.081)
Openness	−0.082	−0.100	−0.006	0.001
	(0.070)	(0.071)	(0.077)	(0.078)
Local Crime Rates	−0.005	−0.008	−0.010	−0.011*
	(0.006)	(0.006)	(0.006)	(0.006)
South of England excluding London	0.244	0.376	0.059	0.065
	(0.205)	(0.211)	(0.210)	(0.210)
Midlands and Wales	−0.407*	−0.403*	0.259	0.243
	(0.201)	(0.205)	(0.200)	(0.202)
North of England	−0.111	−0.063	0.206	0.197
	(0.194)	(0.198)	(0.193)	(0.194)
Pseudo-R^2	0.093	0.135	0.110	0.113
N	379	379	327	327

Notes: Significance levels: *5%; **1%; ***0.1%.

Standard errors in parentheses. All variables are described in the Appendix.

Reference categories are: <35 Years Old, Married, Other Schooling, £0–£10,000 Gross Household Income, £0–£10,000 Gross Individual Income, White British, No Dependent Children, Other Schooling, Working at least 8hrs/Week, and London.

in—shops, pubs and local services encourage people to reside in an area but they also provide opportunities for criminal activity to take place.

IV.3 Capabilities, Life Satisfaction and Gender Differences

In this third and final analysis we employ all 60-plus capability indicators to model life satisfaction. As we noted, if happiness depends on what people do or are, then it should also depend on what it is they are free to do or to be. Alternatively, one could argue that our analysis amounts to testing which capabilities matter most to the population from which our sample respondents are drawn—and that the significant capabilities are those to which utilitarians would give priority, because they affect people's welfare. Such capabilities would certainly be interesting, because they

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 297 of 310 July 30, 2008 17:21

are of importance both to advocates of the capabilities approach and to defenders of traditional utilitarian approaches to welfare.

In column (1) of Table 16.3a, we present the results of a regression model that was derived by backwards elimination, starting with all 60-plus indicators to arrive at a model with 17 in which all are significant covariates of happiness.[6] Self-assessed life expectancy is not a significant correlate of life satisfaction (mirroring results elsewhere—see for instance Deaton 2007) but the results show, nevertheless, that a wide range of capability dimensions are significant correlates of happiness. GHOLIDAY and BSHELTER, the ability to afford a week's annual holiday or live in adequate accommodation, could arguably both be taken as indicators of income, but this is less true of the remaining 15 indicators, which cover issues that might broadly be described as abilities to socialize, live autonomously, be respected, and use skills and talents. There has been much debate within economics about whether income brings happiness and if so under what circumstances; our findings seem rather clearly to support those who, like Sen, have argued that material status is only one factor amongst many that determines human welfare.

To explore the robustness of this finding, we add in a variety of controls (see the rest of Table 16.3a). Similar results are obtained for the ordered logit and ordered probit models but we follow the practice of presenting the OLS versions to facilitate interpretation of results. We do not have panel data, which would allow for person-specific controls, but we do have data on what psychologists call the "big five" dimensions of personality and it is apparent that the patterns of coefficient significance do not change much when these controls are added in. The same can be said for the fits obtained for the more general models. Happiness according to this picture is a function of a variety of dimensions of what people are able to do, and income seems to play only a limited role.

One further analysis worth remarking on concerns model estimation for subpopulations. Table 16.3b presents the results for the data partitioned by gender, and could be seen either as contributing to our assessment of robustness, or more substantively, as contributing to the exploration of gender differences in the capabilities–happiness relationship. In general the signs of the coefficients are the same for men and women, though the pattern of significant coefficients has notable differences. Particularly obvious is the fact that BSHELTER is significant for women but not men, which could reflect a biologically oriented difference. However, when we examine a similar depooled exercise the coefficient is only significant for young people, which in turn suggests that it is younger women who are particularly sensitive to quality of accommodation, possibly because of their concerns about the implications it has for child-rearing. Almost equally striking is the fact that

[6] A variety of other controls are used, including two which control for labour-force work status.

978–0–19–923911–5 17-Basu-1-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 298 of 310 July 30, 2008 17:21

Table 16.3a. Regression of Subjective Well-being on Capabilities, with Demographics and Personality Controls

Variable	(1) Capabilities				(2) Capabilities and demographics				(3) Capabilities and personality				(4) Capabilities, demographics and personality			
	Coefficient	Standard error	*t* stat	*p* value	Coefficient	Standard error	*t* stat	*p* value	Coefficient	Standard error	*t* stat	*p* value	Coeffficient	Standard error	*t* stat	*p* value
BSHELTER	0.27	0.09	2.93	**0.00**	0.29	0.10	2.99	**0.00**	0.22	0.09	2.37	**0.02**	0.23	0.09	2.43	**0.02**
CDASALTP	−0.17	0.08	−2.01	**0.04**	−0.13	0.09	−1.53	0.13	−0.17	0.08	−2.03	**0.04**	−0.14	0.09	−1.69	0.09
CSEXSAT	0.25	0.07	3.33	**0.00**	0.21	0.08	2.86	**0.00**	0.25	0.07	3.47	**0.00**	0.22	0.07	2.91	**0.00**
ELOVE	0.08	0.03	3.03	**0.00**	0.08	0.03	2.94	**0.00**	0.08	0.03	3.16	**0.00**	0.08	0.03	2.99	**0.00**
EFEELING	0.11	0.03	4.14	**0.00**	0.11	0.03	4.14	**0.00**	0.10	0.03	3.68	**0.00**	0.10	0.03	3.62	**0.00**
ESTRAIN	−0.13	0.04	−3.24	**0.00**	−0.10	0.04	−2.48	**0.01**	−0.11	0.04	−2.72	**0.01**	−0.08	0.04	−2.09	**0.04**
FGOOD	0.09	0.03	3.17	**0.00**	0.10	0.03	3.56	**0.00**	0.08	0.03	3.01	**0.00**	0.09	0.03	3.37	**0.00**
FPLAN	0.12	0.02	5.10	**0.00**	0.13	0.02	5.26	**0.00**	0.10	0.02	4.17	**0.00**	0.11	0.02	4.25	**0.00**
FEVALUATE	−0.06	0.03	−2.15	**0.03**	−0.06	0.03	−2.16	**0.03**	−0.03	0.03	−1.23	0.22	−0.03	0.03	−1.22	0.22
FROLE	0.36	0.05	6.89	**0.00**	0.38	0.05	7.35	**0.00**	0.35	0.05	6.72	**0.00**	0.37	0.05	7.15	**0.00**
GCONCERN	0.09	0.03	2.69	**0.01**	0.12	0.04	3.26	**0.00**	0.11	0.04	3.01	**0.00**	0.13	0.04	3.38	**0.00**
GHOLIDAY	0.27	0.08	3.28	**0.00**	0.21	0.09	2.49	**0.01**	0.25	0.08	3.08	**0.00**	0.20	0.08	2.35	**0.02**
GWORTH	0.35	0.04	7.86	**0.00**	0.37	0.05	8.00	**0.00**	0.29	0.05	6.36	**0.00**	0.31	0.05	6.65	**0.00**
JRACEWP	−0.54	0.17	−3.18	**0.00**	−0.55	0.17	−3.24	**0.00**	−0.58	0.17	−3.46	**0.00**	−0.59	0.17	−3.49	**0.00**
JRACEWF	0.08	0.03	2.26	**0.02**	0.07	0.03	2.18	**0.03**	0.07	0.03	2.23	**0.03**	0.07	0.03	2.16	**0.03**
MDSWORKF	−0.23	0.09	−2.41	**0.02**	−0.25	0.10	−2.43	**0.02**	−0.24	0.09	−2.61	**0.01**	−0.28	0.10	−2.74	**0.01**

JSEARCH	−0.05	0.02	−2.20	**0.03**	−0.04	0.02	−1.70	0.09	−0.06	0.02	−2.38	**0.02**	−0.04	0.02	−1.75	0.08
JSKILLSW	0.08	0.03	2.61	**0.01**	0.07	0.03	2.33	**0.02**	0.07	0.03	2.60	**0.01**	0.07	0.03	2.30	**0.02**
MWORK	−0.32	0.16	−2.01	**0.05**	−0.36	0.17	−2.17	**0.03**	−0.35	0.16	−2.19	**0.03**	−0.37	0.16	−2.28	**0.02**
MMALE					−0.04	0.07	−0.61	0.54					−0.08	0.07	−1.06	0.29
MAGE					−0.02	0.01	−1.64	0.10					−0.02	0.01	−1.41	0.16
MAGE2					0.00	0.00	1.38	0.17					0.00	0.00	1.12	0.26
MGHI					0.07	0.03	2.40	**0.02**					0.06	0.03	2.09	**0.04**
MRSOUTH					−0.20	0.10	−1.96	**0.05**					−0.18	0.10	−1.75	0.08
MRMIDWLS					0.00	0.10	−0.04	0.97					0.04	0.10	0.36	0.72
MRNORTH					−0.17	0.10	−1.71	0.09					−0.14	0.10	−1.43	0.15
MRSCOT					−0.04	0.13	−0.30	0.77					0.00	0.13	0.00	1.00
PXTRAVRT									0.08	0.03	3.04	0.00	0.07	0.03	2.74	**0.01**
PAGREEBL									−0.04	0.03	−1.41	0.16	−0.04	0.03	−1.17	0.24
PCONSCS									−0.04	0.03	−1.54	0.13	−0.03	0.03	−1.22	0.22
PSTABLE									0.11	0.03	4.19	0.00	0.12	0.03	4.42	**0.00**
POPEN									−0.04	0.03	−1.16	0.25	−0.03	0.03	−1.02	0.31
R^2	0.54				0.55				0.56				0.57			
Adjusted R^2	0.53				0.54				0.55				0.55			
Log likelihood	−999.89				−990.71				−983.08				−974.19			
Observations	778				778				778				778			

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 299 of 310 July 30, 2008 17:21

Table 16.3b. Model estimates for sub-samples by gender

Variable	Female					Male				
	OLS coefficient	Standard error	*t* stat	*p* value	Ordered logit *p* value	OLS Coefficient	Standard error	*t* stat	*p* value	Ordered logit *p* value
BSHELTER	0.39	0.13	3.05	0.00	0.01	0.02	0.15	0.14	0.89	0.96
CDASALTP	−0.18	0.10	−1.75	0.08	0.19	−0.18	0.17	−1.10	0.27	0.36
CSEXSAT	0.14	0.11	1.29	0.20	0.09	0.29	0.11	2.70	0.01	0.00
ELOVE	0.12	0.03	3.54	0.00	0.00	0.02	0.04	0.62	0.54	0.20
EFEELING	0.04	0.04	1.00	0.32	0.38	0.16	0.04	3.91	0.00	0.00
ESTRAIN	−0.04	0.05	−0.69	0.49	0.07	−0.16	0.06	−2.44	0.02	0.01
FGOOD	0.16	0.04	3.93	0.00	0.00	0.05	0.04	1.37	0.17	0.44
FPLAN	0.11	0.04	3.17	0.00	0.00	0.09	0.04	2.52	0.01	0.03
FEVALUATE	−0.03	0.04	−0.90	0.37	0.48	−0.02	0.04	−0.62	0.54	0.70
FROLE	0.41	0.07	5.91	0.00	0.00	0.30	0.08	3.64	0.00	0.00
GCONCERN	0.13	0.05	2.60	0.01	0.03	0.08	0.06	1.32	0.19	0.30
GHOLIDAY	0.12	0.11	1.09	0.28	0.37	0.27	0.14	2.00	0.05	0.02
GWORTH	0.32	0.06	5.09	0.00	0.00	0.28	0.07	3.92	0.00	0.01
JRACEWP	−0.23	0.26	−0.88	0.38	0.54	−0.73	0.23	−3.24	0.00	0.00
JRACEWF	0.04	0.05	0.87	0.39	0.34	0.07	0.05	1.56	0.12	0.04
MDSWORKF	−0.40	0.14	−2.89	0.00	0.00	−0.11	0.15	−0.73	0.47	0.23
JSEARCH	−0.03	0.04	−0.87	0.38	0.11	−0.05	0.03	−1.37	0.17	0.02
JSKILLSW	0.02	0.04	0.44	0.66	0.37	0.11	0.04	2.63	0.01	0.00
MWORK	−0.03	0.23	−0.13	0.90	0.57	−0.75	0.25	−3.02	0.00	0.00

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 300 of 310 July 30, 2008 17:21

MAGE	−0.03	0.02	−1.92	0.06	0.06	0.01	0.02	0.80	0.42	0.55
MAGE2	0.00	0.00	1.19	0.24	0.16	0.00	0.00	−0.58	0.56	0.41
MGHI	0.03	0.04	0.89	0.37	0.36	0.10	0.04	2.30	0.02	0.04
MRSOUTH	−0.16	0.14	−1.14	0.25	0.20	−0.17	0.15	−1.14	0.26	0.17
MRMIDWLS	0.14	0.14	0.99	0.32	0.34	−0.11	0.15	−0.71	0.48	0.30
MRNORTH	−0.13	0.13	−1.00	0.32	0.45	−0.12	0.14	−0.82	0.41	0.23
MRSCOT	0.13	0.18	0.73	0.47	0.74	−0.12	0.18	−0.63	0.53	0.47
PXTRAVRT	0.08	0.03	2.39	0.02	0.02	0.03	0.04	0.78	0.44	0.53
PAGREEBL	−0.06	0.04	−1.34	0.18	0.24	0.00	0.05	−0.08	0.93	0.80
PCONSCS	−0.07	0.04	−1.80	0.07	0.03	0.00	0.04	0.01	0.99	0.80
PSTABLE	0.13	0.04	3.52	0.00	0.00	0.14	0.04	3.32	0.00	0.00
POPEN	−0.01	0.04	−0.32	0.75	0.90	−0.05	0.05	−1.13	0.26	0.30
R^2	0.61					0.58				
Adjusted R^2	0.58					0.54				
Log likelihood	−505.9					−445.0				
Observations	418					360				

experiencing racial discrimination at work in the past is significant for men but not for women, a result that is consistent with a number of possibilities we cannot separate out. For example, it could be that discrimination is more severe for men than for women, but equally it could be that it is merely more salient for men, perhaps because they are less likely to suffer from other forms of discrimination, like gender discrimination, at work. Alternatively, it could be that racial discrimination at work is something men experience for longer, as their workforce participation rates are higher. Clearly there are differences between men and women but combined with the fact that some variables which are significant covariates of happiness for both men and women—like FROLE, which measures abilities to play a useful role in life—suggest that where there are differences they are determined by environmental factors, and that there are levels of abstraction at which concepts are equally significant between the sexes. Clearly these practical issues are rather important for designing and interpreting empirical work, and indicate the need for additional inputs when one is trying to operationalize a theory such as that developed in Sen (1985).

V. Concluding Remarks

This chapter has reported on a research project in which economists, philosophers and psychologists have sought to address the purported dearth of information about people's capabilities and to use the data developed to assess welfare. The capabilities approach has already been highly influential in shaping the evolution of the Human Development Index, and in our program of work, we have focused on developing and analysing instruments that could, in principle, be used to broaden its scope significantly. The research reported here illustrates the feasibility, though non-triviality, of the tasks involved and has highlighted a number of statistical issues, though a number remain. We summarize below the more significant points.

First, it is important to recognize that both capabilities and subjective well-being may be multi-dimensional. We have shown how many of the more significant dimensions of capability can be measured, but it is worth acknowledging that these capability indicators may be particularly closely related to satisfaction with particular areas of life. Our work on violence is related: capabilities are inherently multi-dimensional but in looking at experiences of violence, we were able to isolate one set of capabilities and infer its impact on overall well-being, and how it spreads to other dimensions and culminates in a relative deprivation of well-being. This

highlights the fact that capabilities can be operationalized in different ways: a *global* perspective sees how dimensions are intertwined whilst a *partial* perspective analyses the total effect in a single area only. Beyond the research discussed here, such analyses remain largely unexplored at this point, though it is worth highlighting the existence of work by Kuklys (2005) in which she demonstrates how satisfaction with financial income can be used to generate econometric estimates of the cost of disability.

Secondly, we have highlighted the importance, and practical measurability, of personality. If there is heterogeneity between people in terms of the rate at which they convert resources into welfare, then personality is likely to be a significant contributor to variations in these conversion factors, and we have shown how these can be partially treated in the absence of panel data. Thirdly, we have begun to explore the causes of capabilities, though clearly there is further work to be done. Fourthly, we have shown that latent variable methods, traditionally used in statistics but increasingly employed in economics, can play a valuable role in helping to understand patterns in observations that would otherwise be hard to detect by virtue of the high number of dimensions on which human capabilities can vary. Fifthly and finally, we have presented linear additive models of subjective well-being, although some philosophical characterizations suggest that a lexicographic approach would be more appropriate. However, our additive models, used widely in empirical work, appear to serve quite well and this in turn suggests that a piecemeal approach to policy could be feasible—even if one cannot address all of the sources of impoverishment and misery, addressing some will help.

There remain areas of application where further questions could be devised, but the questions developed and analysed to date nonetheless illustrate which economic statistics the capabilities approach requires for its operationalization within quantitative empirical work. In many cases, the empirical associations are not what one would immediately expect, and while we have suggested possible explanations, they must be speculative. However, these surprising quantitative associations are useful in that they suggest ways of developing theory and pursuing related psychological investigations, quantitative or otherwise.

978–0–19–923911–5 17-Basu-I-c16 OUP327-Basu-and-Kanbur-Vol-I (Typeset by SPi, Delhi) 304 of 310 July 30, 2008 17:21

APPENDIX: CAPABILITIES, QUESTIONS AND VARIABLES

I. Main capabilities indicators from OCAP (2005 version)

Main corresponding question(s)	Variable name and response code
1. Given your family history, dietary habits, lifestyle and health status, until what age do you expect to live?	ALIFEXP years
2. Does your health in any way limit your daily activities compared to most people of your age?	BHEALTH 1 if N, 0 otherwise
3. Are you able to have children?	BPEPRODT 1 if Y or N*, 0
4. Do you eat fresh meat, chicken or fish at least twice a week?	BNOURISH 1 if Y or N*, 0
5. Is your current accommodation adequate or inadequate for your current needs?	BSHELTER if 1 A, 0
6. Are you prevented from moving home for any reason?	BCANMOVE 0 if Pa, 1
7. Please indicate how safe you feel walking alone in the area near your home during the daytime.	CSAFEDAY 1–7(Cs)
8. Please indicate how safe you feel walking alone in the area near your home after dark.	CSAFENYT 1–7(Cs)
9. Have you ever been the victim of some other form of violent assault or attack [i.e. not domestic violence or sexual assault]?	CVASALPT 1 if Y, 0
10. How likely do you think it is that you will be a victim of violent assault or attack in the future?	CVASALTF 1–7(El)
11. Have you ever been a victim of sexual assault?	CSASALTP 1 if Y, 0
12. Please indicate how vulnerable you feel to sexual assault or attack.	CSASALTF 1–7(El)
13. Have you ever been a victim of domestic violence?	CDASALPT 1 if Y, 0
14. Please indicate how vulnerable you feel to domestic violence in the future.	CDASALPF 1–7(Vv)
15. Do you have sufficient opportunities to satisfy your sexual needs?	CSEXSAT 1 if Y, 0
16. Even if you don't need or have never needed any of the following [contraception, abortion or infertility treatment], are you prohibited from using any of the following for any reason (e.g. religious beliefs, family pressure)?	CCHOICE 1 if Y, 0
17. What is the highest educational or work-related qualification you have?	DQUAL 1 if A+, 0
18. How often do you use your imagination and/or reasoning in your day-to-day life?	DIMAGINE 1–7(At)

Main corresponding question(s)	Variable name and response code
19. I am free to express my political views.	DXPRSPOL 1–7(As)
20. I am free to practice my religion as I want to.	DXPRSRLG 1–7(As)
21. Have you recently been able to enjoy your normal day-to-day activities?	DENDJOY2 1–4(Mm)
22. How difficult do you find it to make friendships which last with people outside work?	EFRIENDS 1–7(Ee)
23. At present, how easy or difficult do you find it to enjoy the love, care and support of your immediate family?	ELOVE 1–7(Ee)
24. Do you find it easy or difficult to express feelings of love, grief, longing, gratitude and anger compared to most people of your age?	EFEELING 1–7(Ee)
25. Have you recently lost much sleep over worry?	ENOSLEEP 1–4(Mm)
26. Have you recently felt constantly under strain?	ESTRAIN 1–4(Mm)
27. My idea of a good life is based on my own judgement.	FGOOD 1–7(As)
28. I have a clear plan of how I would like my life to be.	FPLAN 1–7(As)
29. How often, if at all, do you evaluate how you lead your life and where you are going in life?	FEVALUATE 1–7(At)
30. Outside of work, have you recently felt that you were playing a useful part in things?	FROLE 1–4(Mm)
31. I respect, value and appreciate other people.	GCONCERN 1–7(As)
32. Do you normally have at least one week's (seven days') annual holiday away from home?	GHOLIDAY 1 if Y, 0
33. Do you normally meet up with friends or family for a drink or a meal at least once a month?	GMEAL 1 if Y, 0
34. Do you tend to find it easy or difficult to imagine the situation of other people (i.e. to put yourself in others shoes)?	GIMAGINE 1–7(Ee)
35. Have you recently been thinking of yourself as a worthless person?	GWORTH 1–4(Ml)
36–41. Outside of any employment or work situation, have you ever experienced discrimination because of your race, sexual orientation, gender, religion, age?	GRACEP 0 if N, 1 GSEXOP 0 if N, 1 GGENP 0 if N, 1 GRELIGNP 0 if N, 1 GAGEP 0 if N, 1

Main corresponding question(s)	Variable name and response code
42–46. Outside of any employment or work situation, how likely do you think is it that in the future you will be discriminated against because of your race, sexual orientation, gender, religion, age?	GRACEF 1–7(Eu) GSEXOF 1–7(Eu) GGENF 1–7(Eu) GRELIGNF 1–7(Eu) GAGEF 1–7(Eu)
47. I appreciate and value plants, animals and the world of nature.	HSPECIES 1–7(As)
48. Have you recently been enjoying your recreational activities?	IPLAY 1–4(Mm)
49. I am able to participate in the political activities that affect my life if I want to.	JPARTPOL (As)
50. For which of the following reasons, if any, have you not bought your home? [U = forced not to for reasons of affordability or difficulty obtaining mortgage, 1 = home owner or chose not to buy for other reasons.]	JOWN 0 if U, 1
51–55. When seeking work in the past, have you ever experienced discrimination because of your race, sexual orientation, gender, religion, age?	JRACEWP 1 if Y, 0 JSEXOWP 1 if Y, 0 JGENDWP 1 if Y, 0 JRLIGNWP 1 if Y, 0 JAGEWP 1 if Y, 0
56–60. When seeking work in the future, how likely do think it is that you will experience discrimination because of your race, sexual orientation, gender, religion, age?	JRACEWF 1–7(Eu) or 0[a] JSEXOWF 1–7(Eu) or 0[a] JGENDWF 1–7(Eu) or 0[a] JRLIGNWF 1–7(Eu) or 0[a] JAGEWF 1–7(Eu) or 0[a]
61. How likely do you think it is that within the next 12 months you will be stopped and search by the police when it is not warranted?	JSEARCH 1–7(Eu) or 0[a]

Main corresponding question(s)	Variable name and response code
62. To what extent does your work make use of your skills and talents?	JSKILLSW 1–7(At) or 0[b]
63. At work, have you recently felt that you were playing a useful part in things?	JROLEW 1–4(Mm) or 0[b]
64. Do you tend to find it easy or difficult to relate to your colleagues at work?	JREALTEW 1–7(Ee) or 0[b]
65. At work, are you treated with respect?	JRESPECTW 1–7(At) or 0[b]

Note: the terms 1–4, 1–7 indicate 4- and 7-point scales; following each maximum is an abbreviation denoting the semantic anchor used for that point.

Key

A	Adequate	Eu	Extremely unlikely
As	Agree strongly	Ml	Much less than usual
At	All the time	Mu	Much more than usual
A+	A level or above	N	No
Cs	Completely satisfied	N*	No for reasons of choice
Ee	Extremely easy	Pa	Prevented for reasons of affordability
El	Extremely likely	Vv	Very vulnerable
		Y	Yes

[a] Variable = 0 if there is an intention to work in future (MDSWORKF = 1, 0 if there is no such intention).
[b] Variable = 0 if the respondent is in work (MWORK = 1, 0 if out of work).

I. Key to controls

Socio-Demographic

MMALE	Gender (1 if female, 0 if male)
MAGE	Age (in years)
MAGE2	Age squared
MGHI	What is your gross household income?
MRSOUTH	South of England excluding London
MRMIDWLS	Midlands and Wales
MRNORTH	North of England
MRSCOT	Scotland

"Big Five" personality dimensions[c]

PXTRAVRT	I see myself as extraverted, enthusiastic.
	I see myself as reserved quiet.
PAGREEBL	I see myself as critical, quarrelsome.
	I see myself as sympathetic, warm.
PCONSCS	I see myself as dependable, self-disciplined.
	I see myself as disorganized, careless.

PSTABLE	I see myself as anxious, easily upset.
	I see myself as calm, emotionally stable.
POPEN	I see myself as open to new experience, complex.
	I see myself as conventional, uncreative.

[c] Measured by scores on the "big five" dimensions of personality. In each case, subjects are asked to say whether they agree with two statements relating to a dimension of personality; responses one then combined to generate an overall score for each of the five dimensions.

References

Alkire, S. (2002), "Dimensions of Human Development", *World Development*, 30: 119–205.

Anand, P., and Dolan, P. (2005), "Equity Capabilities and Health: Special Issue Introduction", *Social Science and Medicine*, 60: 219–22.

——and van Hees, M. (2006), "Capabilities and Achievements", *Journal of Socio-Economics*, 35: 268–84.

——Hunter, G., Dowding, K., Guala, F., and van Hees, M. (2005), *The Measurement of Human Capabilities*, Open University Discussion Paper (Milton Keynes: Open Univeristy).

————and Smith, R. (2005), "Capabilities and Wellbeing: Evidence Based on the Sen–Nussbaum Approach to Welfare, *Social Indicators Research*, 79: 9–55.

——and Santos, C. (2007), "Violence, Gender Inequalities and Life Satisfaction", *Révue d'Economie Politique*, 117: 135–60.

——and Wailoo, A. (2000), "Utilities vs. Rights to Publicly Provided Goods: Arguments and Evidence from Health Care Rationing", *Economica*, 67: 543–78.

Brandolini, A., and D'Alessio, G. (1998), "Measuring Wellbeing in the Functioning Space", plenary paper given to the 13th International Economics Association Congress, Buenos Aires.

Brower, W. B. F., va Exel, N., Job, A., and Stolk, E. A. (2004), "Acceptability of Less than Perfect Health States", *Social Science and Medicine*, 60: 237–46.

Burchardt, T., and Le Grand, J. (2002), *Constraint and Opportunity: Assessing Employment Capability* (London: ESRC Research Centre for the Analysis of Social Exclusion, London School of Economics).

Carter, I. (1999), *A Measure of Freedom* (Oxford: Oxford University Press).

——(2003), "Functionings Capabilities and the Non-Specific Value of Freedom", unpubl. paper, Nuffield College, Oxford.

Chiappero-Martinetti, E. (2000), "A Multi-Dimensional Assessment of Wellbeing Based on Sen's Functioning Approach", *Rivista Internazionale di Scienze Sociali*, 107: 208–39.

Clark, A., Etile, F., Postel-Vinay, F., Senik, C., and van der Straeten, K. (2005), "Heterogeneity in Reported Wellbeing", *Economic Journal,* 115: 118–32.

Clark, A. E., Frijters, P., and Shields, M. A. (2006), *Income and Happiness: Evidence, Explanations and Economic Implications*, Paris-Jourdan Sciences Economiques Working Paper 2006-24 (Paris: Paris-Jourdain Sciences Economiques).

Clark, D. A. (2003), "Concepts and Perceptions of Human Wellbeing: Some Evidence from South Africa", *Oxford Development Studies,* 31: 173–96.

Di Tella, R., Haisken-De New, J. P., and MacCulloch, R. (2007), *Happiness Adaptation to Income and to Status in an Individual Panel*, NBER, Working Paper 13159 (Cambridge, Mass.: NBER).

Everitt, B. S., and Dunn, G. (2001), *Applied Multivariate Data Analysis* (London: Hodder Arnold).

Frey, B., and Stutzer, A. (2000), "Happiness, Economy and Institutions", *Economic Journal*, 110: 918–38.

Gaertner, W., and Xu, Y. (2005), "Alternative Proposals to Measure the Standard of Living When its Development Over Time is Uncertain", paper presented at the Annual American Economic Association Conference, Philadelphia.

Gosling, S. D., and Rentfrow, W. B. S. (2003), "A very brief measure of the Big-Five personality domains", *Journal of Research in Personality,* 37: 504–28.

Helliwell, J.-F. (2006), "Wellbeing, Social Capital and Public Policy", *Economic Journal,* 116: 35–45.

Kahneman, D., Kruger, A. B., Schkade, D., Schwarz, N., and Stone, A. (2004), "Toward National Wellbeing Accounts", *American Economic Review,* 94: 429–34.

—— Wakker P. P., and Sarin, R. (1997), "Back to Bentham? Explorations of Experienced Utility", *Quarterly Journal of Economics,* 112: 375–406.

Kuklys, W. (2005), *Amartya Sen's Capability Approach: Theoretical Insights and Empirical Applications,* Studies in Choice and Welfare (Berlin, Springer-Verlag).

—— and Robeyns, I. (2005), "Sen's Capability Approach to Welfare Economics", paper presented at the Annual American Economic Association Conference, Philadelphia.

Laderchi, C. R. (2001), *Do Concepts Matter? An Empirical Investigation of the Differences between a Capability Approach and a Monetary Assessment of Poverty* Discussion Paper, Queen Elizabeth House (Oxford: Queen Elizabeth House).

Layard, R. (2005), *Happiness: Lessons from a New Science* (London: Allen Lane).

Layte, R., Nolan, B., and Whelan, C. T. (2000), "Targeting Poverty: Lessons from Monitoring Ireland's National Anti-Poverty Strategy", *Journal of Social Policy,* 29: 553–75.

Manski, C. F. (2004), "Measuring Expectations", *Econometrica,* 72: 1329–76.

Nehring, K., and Puppe, C. (2002), "A Theory of Diversity", *Econometrica,* 70: 1155–98.

Nussbaum, M. C. (2000), *Women and Human Development: The Capabilities Approach* (Cambridge: Cambridge University Press).

—— and Sen, A. K. (1993), *The Quality of Life* (Oxford: Clarendon Press).

Oswald, A. J. (1997), "Happiness and Economic Performance", *Economic Journal,* 107: 1815–31.

Pattanaik, P., and Xu, Y. (1998), "On Preference and Freedom", *Theory and Decision,* 44: 173–98.

Qizilbash, M. (2004), *On the Arbitrariness and Robustness of Multi-Dimensional Poverty Rankings*, UNU-WIDER Research Paper 2004/37 (Tokyo: United Nations University).

Robeyns, I. (forthcoming), "Selecting Capabilities for Quality of Life Measurement", *Social Indicators Research.*

Schokkaert, E., and van Ootegem, L. (1990), "Sen's Concept of the Living Standard Applied to the Belgium Unemployed", *Recherches Economiques de Louvain*, 56: 429–50.

SEN, A. K. (1979), "Personal Utilities and Public Judgements: Or What's Wrong with Welfare Economics", *Economic Journal,* 89: 537–58.

—— (1985), *Commodities and Capabilities* (Amsterdam: North-Holland).

—— (2006), *Identity and Violence: The Illusion of Destiny* (London: Allen Lane).

VAN HEES, M. (2004), "Freedom of Choice and Diversity of Options: Some Difficulties", *Social Choice and Welfare*, 22: 253–66.

WINKELMANN, L. and WINKELMANN, R. (1998), "Why are the Unemployed so Unhappy?", *Economica,* 65: 1–15.