Community, Comparisons and Subjective Well-being in a Divided Society

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Abstract

Using a South African data set, the paper poses six questions about the determinants of subjective well-being. Much of the paper is concerned with the role of relative concepts. We find that comparator income – measured as average income of others in the local residential cluster - enters the household's utility function positively but that income of more distant others (others in the district or province) enters negatively. The ordered probit equations indicate that, as well as comparator groups based on spatial proximity, race-based comparator groups are important in the racially divided South African society. It is also found that relative income is more important to happiness at higher levels of absolute income. Potential explanations of these results, and their implications, are considered.

Keywords: Subjective well-being; happiness; comparator groups; altruism; envy; relative deprivation; standard-setting; race; South Africa.

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1. Introduction

In this paper we pose six questions. *First,* to what extent is it absolute income and to what extent relative income that determines happiness? *Second,* insofar as relative concepts matter, is it only relative income that counts or are comparisons made in other dimensions as well? *Third,* if relative income matters, who are the relevant others with whom people compare themselves? *Fourth,* does low income relative to others decrease or increase happiness, i.e. given own income, does the income of relevant others affect happiness negatively or positively? *Fifth,* does the strength of this relationship weaken as the reference group is broadened to include socially more distant people? *Sixth,* does the importance of relative income vary with the level of absolute income? We attempt to answer these questions by means of a household survey which, in addition to much socioeconomic information on the individual, the household and the community, contains a question on subjective well-being.

In Section 2 we provide a framework of literature, concepts and hypotheses. Section 3 explains the South African context: a society still divided by great racial differences. Section 4 describes the data and method. The empirical section 5 presents the results, question by question. Section 6 concludes and draws out the implications of the analysis.

2. Concepts and hypotheses

The idea that relative position matters to individual utility has substantial support and acceptance in the social science literature, particularly in sociology (for instance, Runciman 1966) and psychology (for instance, Diener and Biswas-Diener 2000). By contrast, mainstream microeconomic theory generally treats utility as a function of own absolute income. However, some economists have advocated models in which the income of others enters the individual's utility function (prominent among them being Duesenberry, 1949; Easterlin, 1974, 1995; Scitovsky,1976). Frank (1985), Akerlof and Yellen (1990), Frank and Sunstein (2001) and Layard (1980, 2003a) have argued that some well-established ideas about economic policy would be overturned if relative income were to matter.

There is now also a good deal of empirical support for the notion that subjective well-being depends on relative income (Clark and Oswald, 1996; Watson et. al., 1996; Tsou and Liu, 2001). In some of the studies, utility depends more importantly - or even only (Groot and van den Brink, 1999) - on relative than on absolute income. One study finds that pay satisfaction depends not only on relative income but also on ranked position within a comparison set (Brown

et. al., 2003). A study on Nepal finds that perceived consumption adequacy falls as ward (village) mean consumption expenditure rises (Fafchamps and Shilpi, 2003).

Analysis of this sort requires that the comparison set - the group with whom individuals compare themselves when judging their relative position – be specified. Candidates for an individual's reference group are: the individual's own past; her aspiration or desired future; others in her family; her spouse; others with similar characteristics; and others in her residential vicinity or workplace. Since individuals have multiple identities, they may also have multiple comparators. Various definitions of comparator group are found in the literature. Many studies have used 'others with similar characteristics'. For instance, an individual may match with others on the basis of educational level, occupation, region, gender, social background and parental characteristics. If people take many characteristics into account when making comparisons, the multiple dimensions involved present a matching problem for researchers. One solution that has been attempted is to use predicted income, derived from an income function, as the comparator income (Clark and Oswald, 1996; Watson et. al., 1996).

What is the expected sign of the relationship between relative income (or other relative measures) and individual happiness? In general it is posited that subjective well-being varies inversely with the incomes of relevant others (for instance, Easterlin, 1995; Falk and Knell, 2000). In much of the applied literature that tests it, comparator income is indeed found to have a negative effect on the subject's happiness level. The negative relationship is likely to arise from feelings of relative deprivation, which Runciman (1966, p.11) defined as follows:

A is relatively deprived of *X* if (i) he does not have *X*, (ii) he sees some person or persons, which may include himself at some previous or expected time, as having *X*, (iii) he wants *X*, and (iv) he sees it as feasible that he should have *X*.

Karl Marx (1849, p.163) had developed a similar idea:

Our desires and pleasures spring from society; we measure them, therefore, by society and not by the objects which serve for their satisfaction. Because they are of a social nature, they are of a relative nature.

One reason for feelings of relative deprivation could be a sense of unfairness, or of envy, or of rivalry with others in the reference group Marx (1849, p. 163) went on to give an example consistent with this view:

A house may be large or small; as long as the surrounding houses are equally small it satisfies all social demands for a dwelling. But let a palace arise beside the little house, and it shrinks from a little house to a hut … the

occupant of the relatively small house will feel more and more uncomfortable, dissatisfied and cramped within its four walls.

A more benign interpretation is also possible, for instance that the reference group provides standards or goals to which the individual aspires. Yet another motive was suggested by Adam Smith (1776, p. 466) in the *Wealth of Nations*:

By necessaries I understand not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without.

In his view such customary goods were necessary for the avoidance of shame. Whatever the motive for feelings of relative deprivation – envy, aspirations or shame – we expect a negative effect of reference group income on own happiness.

There are also reasons why the effect of comparator income can be positive. One such reason is altruism or fellow-feeling. In his *Theory of Moral Sentiments*, Adam Smith (1759 , pp. 255-79) argued that it is in human nature to be altruistic towards other people, although there is an order in the exercise of human benevolence, from those we know well to those we know little. The view that people are altruistic is supported by the findings of an experimental game study by Charness and Grosskopf (2001). Given that the subjects' own payoffs are fixed, the authors find:

… a surprisingly low propensity to prefer lower payoffs [for others]: people generally choose to maximize the material payoffs to others, even when they are greater than their own.[1]

Risk-sharing within a community can provide another reason why own happiness is raised by other peoples' income. Members of a community may provide each other with mutual social insurance (Ligon, Thomas and Worrall, 2002). In developing countries, there is commonly an absence of formal insurance mechanisms. This lack of formal instruments is particularly important in high unemployment economies and economies with high dependence on risky agriculture. The literature on risk-sharing in developing country contexts attempts to identify the household's insurance or risk-pooling group. Since the cost of enforcement and monitoring of contracts increases with the size of and distance between members of the group, an obvious unit in which to observe insurance is the village or neighbourhood. Townsend (1994) finds for rural India that the village is indeed the relevant insurance group. However, Grimard (1997) uses anthropological literature on Cote d'Ivoire to suggest that the insurance group is not the village but a spatially diversified network of members of the same ethnic group. Bowles and

[1] Charness and Grosskopf (2001, p.302) . Participants were undergraduate students. Subjects were not told the identity of their partners in the game.

Gintis (2003) develop a model in which ethnic, or 'parochial', networks cooperate not through altruism but through reciprocal benefits derived from the promotion of trust within the network.

It is also possible that there is a positive relationship between own happiness and community social capital or education. Helliwell (2001), citing the psychological literature, has argued that social capital (defined as 'networks, norms and understandings that facilitate cooperative activities') can have a positive effect on subjective well-being. For instance, it is possible that social capital or education in a community creates positive externalities for its members - if well-being is raised by networking with people who have higher levels of community involvement or education.

The composition of the reference group and 'social distance' may be closely related. Akerlof (1997), in modelling social distance, argued that social interaction can influence individual decisions and aspirations, and that social interaction is inversely related to social distance. In *The Theory of Moral Sentiments*, Adam Smith (1759, p. 157) asked whether a person would be more disturbed by the loss of a hundred million lives in China or by the loss of his own little finger. He argued that sympathetic feelings would be aroused by the great loss of life in a faraway country but that those feelings would be attenuated by the physical and social distance. He suggested (1759, p. 270) that it is natural to care most about the 'order and society' to which one belongs.

> That wisdom which contrived the system of human affections … seems to have judged that the interest of the great society of mankind would be best promoted by directing the principal attention of each individual to that particular portion of it which was most within the sphere both of his abilities and of his understanding.

Social distance can also have an attenuating effect on a positive relationship arising from social insurance. People are more likely to share risks within a small community – where they can know and trust each other – than within a large community. The same is true of the argument made in terms of social capital: own happiness is likely to be based on the extent of social interaction as well as on its quality. If the attenuation of a positive relationship with social distance is stronger than that of a countering negative relationship, it is possible for a net positive effect in a small community to give way to a net negative effect in a large community.

Social distance can also diminish feelings of relative deprivation. Robert Roberts' (1971) account of life in a Salford slum in Edwardian England illustrates how this can happen. The

slum-dwellers, he claimed, did not make comparisons between themselves and people outside the slum: the strata of society were recognized without question and respect for their 'betters' and 'superiors' was firmly established. But within the working class, comparisons were constantly made and social rating was of great importance. Despite desperate poverty, 'Envy was the besetting sin', but only inside the slum.[2]

An obvious measure of social distance is physical distance. This suggests the need to investigate the role of relativities according to the size of locality, e.g. neighbourhood, village, town, city, and region. The hypothesis is that the effect of locality income – whether positive or negative – diminishes as the size of the locality, and thus of the community, increases.

Akerlof and Kranton (2000) have argued that 'identity', i.e. a person's sense of self, affects individual behaviour and aspirations. Race and ethnicity can provide a strong basis for identity, possibly because of their innateness and immutability. In a society with sharp racial divisions, aspirations may be related to what can be achieved by persons of one's own race. If race identifies the reference group, race-based relativities may be important. However, that in itself does not indicate whether the income of the race group has a positive or negative effect on own happiness. It is possible that space and race interact, i.e. the reference group is best defined by the race group within a small locality.

To the extent that happiness depends on the gratification of certain biological and physiological needs, it is not relative (Veenhoven, 1991). By contrast, Pigou (1920) reasoned that since the rich derive much of their satisfaction from relative rather than absolute income, satisfaction would not be reduced if the incomes of all rich people were diminished at the same time. In a similar vein, others have posited that, in affluent societies, spending increasingly becomes a means to achieve social status rather than to meet economic needs (Veblen, 1949), or that perceived needs change with the general level of affluence of others (Schor, 1998). Easterlin (1995) argues that absolute income matters up to a certain level, after which relative income increasingly matters.

Much of the economic literature on the importance of relative concepts treats people's reference groups as given, yet they could be endogenously chosen by individuals in the pursuit of certain

[2] Roberts (1971, pp. 23-25).

goals (Falk and Knell, 2000). Nesse (2003) similarly rejects the notion that our 'salient others' are shaped by our culture and genes, and suggests that attention be paid to how individuals, in trying to satisfy particular psychological desires, create their own social groups. Feelings of relative deprivation can be reduced if people narrowly confine comparisons to others with whom they identify, perceived by race or class. There may be a conscious or unconscious tendency to do this when it is perceived that the disadvantage cannot be remedied. If a person is strongly motivated for self-improvement, she may make comparisons upwards, with others superior to herself. On the other hand, where self-enhancement is important, she may select for comparison people who are inferior if that makes her feel better. Such choices can induce acts of self-selection into particular reference groups, for instance via migration or residential relocation (Stark and Taylor, 1991). The endogeneity of comparator groups can be investigated only with information on individuals' goals, either from attitude surveys or from revealed preferences such as migration to richer or poorer neighbourhoods.

This discussion leads to the following hypotheses in relation to the six questions posed at the start. *First*, the income of relevant others, as well as own income, influences own happiness. *Second*, other characteristics of the reference group, such as the level of education or the unemployment rate, also influence own happiness. *Third*, in a racially divided society, the reference group is defined in terms not only of space but also of race. *Fourth*, the income of the reference group may either raise or lower own happiness. *Fifth*, the strength of this relationship is weakened as the reference group is broadened to include socially more distant people. *Sixth*, the relationship between relative income and happiness is stronger at higher levels of absolute income.

3. The South African context

Our data come from the SALDRU national household survey of 1993 in South Africa carried out by the South African Labour and Development Research Unit (SALDRU) of the University of Cape Town. Patterned on the World Bank's Living Standards Measurement Studies, the dataset contains information on about 8800 households, with modules on household demographics, employment, health, income and expenditure, etc., as well as community information.

In South Africa race was the defining feature of society until the end of apartheid, with most aspects of life being governed by racial segregation. For instance, different education

departments catered for the education of the four races – African, coloured, Indian, and white – and there was a marked racial hierarchy in resource allocations to schools. There were restrictions on the movement and migration of non-whites and they had been debarred from entering certain higher positions of employment. In such a racially divided society, race may be an even greater source of identity than it is elsewhere, and it is very likely that people's aspirations are, or at the time of the 1993 survey (just before the formal end of apartheid) were, linked to what they believed to be the range of states attainable for persons of their own race.

We shall test for race-relative effects in two ways: firstly, income relative to that of others of the same race within the locality and, secondly, the same concept applied at the national level. In other words, we shall combine space-based and race-based criteria in defining the reference group of a household.

4. Data and method

Section 9 of the SALDRU survey is on perceived quality of life. It contains, *inter alia*, the question: "Taking everything into account, how satisfied is this household with the way it lives these days?" The five options available in the pre-coded response are: 'very satisfied', 'satisfied', 'neither satisfied nor dissatisfied', 'dissatisfied', and 'very dissatisfied'. The proportion of households reporting these answers were 7.5, 26.4, 9.4, 33.4 and 23.4 percent respectively. This question forms the basis of our empirical analysis. Whereas much of the economic literature on comparison income is concerned with job or pay satisfaction, our focus is on overall satisfaction with life.

Whereas an individual member of the household responded to the survey question, the question itself related to the satisfaction of the household as a whole rather than to that individual's personal well-being. This raises the possibility that the individual answered mostly with his own personal satisfaction level in mind rather than that of the household as a whole. In order to address this concern, we check the robustness of the findings to the inclusion of the individual respondent's own personal characteristics as explanatory variables. Appendix Table 1 shows that, controlling for household characteristics, individual characteristics are generally unimportant in our subjective well-being equations. This is unsurprising not only because of the question posed but also because there are likely to be interdependencies in well-being among members of the household.

The reference groups that we investigate are defined by race (four races are identified in the survey: African, coloured, Indian and white) and space (enumeration cluster, district and province). Unfortunately we do not have the information (on personal goals or on migration) to investigate the possible endogeneity of reference groups. The four races are distributed in the survey in the proportions 75% African, 7% coloured, 3% Indian, and 15% white. 360 clusters, 187 districts, and 9 provinces are included in the survey. The average size of their populations is 2,900 **,** 125,400 and 4.46 million respectively, and the average number of observations 25, 47, and 983 households respectively. Whereas it is possible to conduct an analysis of race within districts, there are too few observations in each cell to analyse race at the cluster level; most clusters are racially homogenous.

We begin with the subjective well-being function:

$$W_i = \alpha + \beta X_i + \gamma Z_i + \varepsilon_i \qquad (1)$$

where W_i represents reported well-being of the ith individual or household and X is a vector of socio-economic variables and Z a vector of various relative concepts (such as relative income, employment and education). Our measure of W_i is available as a multiple choice variable (effectively, "is your household 1. very dissatisfied; 2. dissatisfied; 3. so-so; 4. satisfied; 5. very satisfied?"). Since there is an inherent ordering, the appropriate estimation procedure is by means of an ordered probit model.

5. Empirical results

Table 1 sets out the notation, definitions, means and standard deviations of the variables used in the analysis. The first column of Table 2 presents a general specification of the ordered probit equation of subjective well-being. Column (2) provides our preferred, parsimonious specification, together with the marginal effects of the variables on the probability of being 'satisfied' or 'very satisfied' with life.

Province dummies are included but not reported. In this table, and subsequent tables, the explanatory variables are divided up into 'control variables' and 'hypothesis variables', i.e. the variables required to test our six hypotheses. In several respects, the equation is similar to that found in other studies (Helliwell, 2002; Graham and Pettinato, 2002; Di Tella, MacCulloch, and

Oswald, 2001; Winkelmann and Winkelmann, 1998): subjective well-being falls with age and then rises; is increasing in health, education and income; and falls with unemployment.

Consider the size of these effects. An increase in absolute household income (log of household per capita income, *ln_hhpci*) from one standard deviation below to one standard deviation above the mean raises the probability of being satisfied or very satisfied with life by 11 percentage points. Considering that overall probability of being satisfied or very satisfied is 33 per cent, this is not a dramatic increase for the large implied increase in income. The *African* probability of being satisfied or very satisfied is 21.5 percentage points lower than that of *whites*, even after controlling for observed income, education, employment, etc. Those who live in metropolitan cities (*metropol*) are 10 percentage points less likely to be in the highest two subjective well-being categories than are rural-dwellers (omitted category). The household's own unemployment rate (*hhurate*) has a smaller effect on the probability of being in the top two happiness categories than does the cluster unemployment rate (*c_urateb*). Going from one standard deviation below to one standard deviation above the household unemployment rate reduces that probability by 4.1 percentage points, but doing the same for the cluster unemployment rate reduces it by 9.8 percentage points. The effects of higher education (*higher*), health (*hhdaysic*), crime (*n_victim*), household assets (*assetval*), and debt (*debt*) are all as expected and significant but small.

5.1. Space-based comparator groups

Table 3 explores the role of space-based relative concepts in determining happiness. This is done by including, in the happiness equation, the average income, unemployment rate and years of education of households in the cluster, and in the district, calculated by averaging household characteristics within the cluster, and the district, but net of each household's contribution to the average. The full set of control variables, corresponding to the parsimonious specification of Table 2 is included in all cases[3] but only relevant control variables and the hypothesis variables are presented in the table.

The household's absolute income (*ln_hhpci*) raises, and the household unemployment rate (*hhurateb*) depresses, happiness very significantly. The first relative concept we consider is

[3] The only exception is the cluster unemployment rate, *c_urateb*), which is dropped because it is very collinear with the cluster mean of the household unemployment rate of all households within the cluster (*chhurate*) that we include in columns (a), (b) and (g) of Table 3.

relative unemployment, defined as the unemployment rate of others in the cluster and then in the district. The cluster mean household unemployment rate (*c_hhurate*) reduces happiness significantly. *Column (b)* adds the district average of household unemployment rate (*d_hhurate*). This has no relationship with household happiness but the cluster unemployment variable continues to reduce household happiness significantly. The second relative concept considered is others' education. *Columns (c)* and *(d)* respectively add cluster and district averages of years of education. Cluster education (*c_hhedyrs*) enters positively and significantly and district education (*d_hhedyrs*) negatively but insignificantly. The final relative concept considered is others' income. *Column (e)* adds the log of average household per capita income of the community (*lnc_hhpci*). This enters positively and significantly. *Column (f)* adds district average income (*lnd_hhpci*), and this enters negatively but insignificantly.

An interesting and consistent pattern thus emerges: within the cluster, households are altruistic or receive mutual support but within a wider area, the district, they compete with others. When all three dimensions – unemployment, education and income - are added together in *column (g)*, the spatial education and unemployment rates no longer matter, conditional on income. Only the income dimension is significant: the income of others within the cluster increases happiness, but income within the district weakly decreases happiness.

These are fascinating results: Within the local cluster, other people's income produces positive externalities on the household's utility. Only when the comparator group is widened to include more distant others - those in the district as a whole - does other people's income create negative spill-overs.

The results have four possible explanations. One is that households within a cluster share risks with each other, i.e. provide mutual insurance and support. The expectation of reciprocity causes people who live in a risky environment to value the income of their reference group. This is plausible when there is high unemployment and widespread lack of unemployment insurance, as in South Africa. To test this explanation we estimated the well-being equations separately for Africans and for whites, since Africans have a higher unemployment rate (39% compared with 5%) and much poorer access to formal insurance mechanisms. The estimates show that the positive effect of mean cluster income on household well-being is the same for both races. The coefficient for Africans is 0.271 (t = 4.28) and for whites 0.272 (t = 4.56). This result is inconsistent with the insurance explanation.

A second interpretation is that cluster income serves as a proxy for the 'social wage', i.e. in better-off clusters, the level of public and other amenities such as education, health, sanitation, etc. is higher. We conducted the following test of this hypothesis. We first removed all cluster-level variables and introduced cluster dummy variables instead. The estimated cluster coefficients were then regressed on community amenities: the results are shown in Table 4. The explanatory variables are divided into cluster-level, district-level, broader spatial, and community amenity determinants. Whereas the coefficient on cluster average income is significantly positive, the other cluster and district variables are jointly insignificant. Similarly, the ten community amenity variables that are excluded in the second column are jointly insignificant in the first column[4]. We could find no support for the social wage explanation[5].

There is a third, econometric, explanation: either that cluster income and household income are positively collinear and cluster income is picking up some of the effect that is attributable to household income, or that household income is measured with error and cluster income is serving as a proxy for household income. We explored these possibilities by regressing household income (*ln_hhpci*) on a full set of household-level explanatory variables, first without and then with the inclusion of cluster income – which had a coefficient of 0.564 (t = 48.5) – the (adjusted R-squared rose from 0.558 to 0.656. This rather small increase when cluster income was added suggests that conditional collinearity is not a serious problem. The high value of R-squared without cluster income suggests that household income is not subject to serious measurement error. Even if it were, the fact that the same set of explanatory variables can explain 55.8 % of the variation in household mean income but only 40.1% of the variation in cluster mean income suggests that cluster income cannot serve as a good proxy for household income.

The fourth possible explanation is that people are altruistic towards others in their own clusters, i.e. clusters are treated like extended families, but people feel relatively deprived when the spatial orbit is widened to the district. It is pertinent to note that the cluster is a geographically small unit within which households are likely to know each other.[6] Pursuing this idea, whereas

[4] F(10,299) = 0.90; p-value of F test = 0.534.
[5] Ideally, panel data are required to provide a more powerful control to take out all cluster fixed effects but we have only a cross-section.
[6] The documentation for the SALDRU survey (SALDRU, 1994) states: "The sampling frame was drawn up on the basis of small, clearly demarcated area units [clusters], each with a population estimate… For most of the country

the average cluster contained 580 households, we divided households into two groups, those living in smaller clusters (containing no more than 200 households) and those in larger clusters (with more than 200 households). Compared to the coefficient on the cluster mean income variable for the sample as a whole (0.199, robust t = 4.0)[7], the coefficient increases to 0.308 (robust t = 4.6) for households in small clusters and falls to 0.058 (robust t = 0.69) for those in large clusters. Thus, the relationship is powerful in small clusters and weak or absent in large clusters. These results provide support for the explanation in terms of altruism or fellow-feeling in a close community.

5.2. Race-based comparator groups

We turn to the role of racial concepts in determining happiness, i.e. the hypothesis that the relevant comparator group for the household is other households of the same race (Table 5). Systematic racial segregation in apartheid South African society made it plausible that people's aspirations were linked to what they believed to be the highest states attainable for persons of their own race. We tested for race-relative effects in two ways: firstly, income relative to that of others of the same race within the district and, secondly, the same concept applied at the national level.

The high correlation between household income and the relative position of the household in the national income distribution rules out the inclusion of both together in a subjective well-being function. However, this is not the case for race-based income distributions. For instance, a household with the average per capita income of the sample as a whole (Rand 671) would be in the fifth quintile of its race-specific income distribution if it were African, the fourth quintile if it were coloured, the third quintile if it were Indian, and the first quintile if it were white.

Column (a) of Table 5 repeats the best specification from Table 3, i.e. includes space-based relative income measures. *Column (b)* includes the natural log of race-specific district mean income (*lrdm_inc*). This enters negatively and has a large coefficient, although it is only weakly significant. It suggests that relative deprivation does play a part in the determination of happiness. Controlling for household income, the higher the income of others of the same race

census ESDs [Enumeration Sub-Districts] were used. Where some ESDs comprised relatively large populations as for instance in some black townships such as Soweto, aerial photographs were used to divide the area into blocks of approximately equal population size. In other instances, particularly in some of the former homelands, the area units were not ESDs but villages or village groups."

[7] Column (c) of Table 3.

in the district, the lower is subjective well-being. It is notable that the coefficient on the race-specific mean income in the district, in *column (b)*, has a bigger negative value than that on (overall) mean income in the district, in *column (a)*. In *column (b)*, where both of these variables are included, only the race-specific variable is significant[8]. The marginal effect (not reported) of *lrdm_inc* on the probability of being satisfied or very satisfied is -0.2145. Thus, if race-specific district mean income increases by one standard deviation (0.9889) from its mean (5.946), the probability of being satisfied or very satisfied with life falls by a large 21.2 percentage points.

Column (c) includes the household's quintile position in the race-specific national distribution of income (*r_pciq2* to *r_pciq5*), households in the poorest race-specific income quintile (*r_pciq1*) being the base category. *Column (d)* adds log of race-specific district mean income, again with a significant negative coefficient, but the coefficients on the quintiles are hardly altered. In both cases, there is a near monotonic increase in happiness as the household's relative quintile position in the national race-specific income distribution increases. Moreover, the household's absolute income (*ln_hhpci*) falls to complete insignificance for the first time[9]. The implication is that, for instance, a white household and an African household with the same income can differ in their subjective well-being because they belong to different race-specific income quintiles.

It cannot be argued that the household's income quintile position simply proxies its absolute income because the same income places households of different races in very different race-specific income quintiles. For instance, a regression of *ln_hhpci* on the *r_pciq2*, *r_pciq3*, *r_pciq4*, and *r_pciq5* dummy variables yields an adjusted R-squared of only 0.547; and in Table 3, *columns (c)* and *(d)*, the continuous household income variable fails to do any work despite its greater variation than the dummy variables.

[8] If district mean income (*lddhhpci*) is dropped from the equation, the coefficient on *lrdm_inc* barely changes to -0.1684 (t=2.12).

[9] Recall that an African household with the average household per capita income (R 671 per month) would be in the top quintile of its own race's national income distribution but a white household with the same per capita income (671 R pm) would be in the bottom quintile of its race's national distribution of income. Thus, the relationship between household per capita income (*ln_hhpci*) and race-specific income quintiles (*r_pciq1* to *r_pciq5*) should not be too high. The correlation coefficient between *ln_hhpci* and *r_pciq5* is 0.5337, which is not so high as to induce hopelessly high multicollinearity. A regression of *ln_hhpci* on the *r_pciq2, r_pciq3, r_pciq4* and *r_pciq5* dummy variables yields an adjusted R-square of 0.547. Even if the correlation is judged to be high, we would expect the continuous variable (*ln_hhpci*) rather than the dummy variables *r_pciq2* to *r_pciq5* to 'pick up' the effect of income simply because there is far more variation in the former than in the latter. The fact that it doesn't, suggests that multicollinearity is not a big problem. However, we do not wish to conclude that only race-relative income position matters to subjective well-being and not absolute income. This is because in all of our other specifications, absolute income (*ln_hhpci*) does matter very significantly.

We conduct a counterfactual simulation on the basis of the results in *column (c).* Consider an African and a white household possessing identical characteristics and income – both with the average characteristics and income of the sample as a whole. First, introduce the fact that the African household is in the highest race-specific income quintile and the white household is in the lowest. This creates a difference in the probability of being satisfied or very satisfied with life in favour of African household of 12.5 percentage points. Second, take into account the fact that the African dummy variable (the white dummy being the default category) has a large negative coefficient. This reduces the probability of the African household being satisfied or very satisfied by 23.4 percentage points. Thus, the disadvantage of being African greatly outweighs the advantage of being a relatively rich African.

Locational relativities are examined further in *column (e)* which includes the household's quintile position in the district distribution of income (*d_pciq2* to *d_pciq5*, the base category being households in the lowest district income quintile, *d_pciq1*). These dummy variables have small coefficients and are not at all significant. This contrasts with the results in *columns (c)* and *(d)* and suggests that in South Africa in 1993, the relevant others are not others in the district but others of the same race.

5.3. Other comparator groups

In Table 6 we explore the importance of two other comparator groups: (1) oneself in the past, and (2) those seen on television. The SALDRU survey asked the respondent "when you compare your situation with that of your parents, do you think you are richer, about the same, or poorer than they were?". The answer yields the variable *parents_* , which is coded as follows: richer than parents = 1; the same = 2; poorer than parents = 3. The sample households were distributed across these categories as follows: 24% were richer, 23% were the same, and 52% were poorer than their parents[10]. We assume that households in which respondents claim to be poorer than their parents consist of adults who are poorer now than they themselves were when young, i.e. poorer than their own past. Poverty relative to parents substantially and significantly reduces subjective well-being.: the coefficient on *parents_* is –0.256.

[10] The fact that 52% of respondents felt poorer than their parents was surprising to the authors but reasonable to the director of the SALDRU survey (personal correspondence).

It is also possible that the others seen on television provide people with the standards they then aspire to. If this is the case, and if the existence of an opulent reference group can be proxied by the presence of a television set in the household, we would expect to find a negative sign on the dummy variable indicating that the household possesses a television set (*TV*). Table 6 reveals no relationship between *TV* and happiness, *ceteris paribus.* This suggests that television images do not create ambitious aspirations. However, other interpretations are possible. Because television programmes may have been culture-specific, we estimated the subjective well-being equations separately for Africans and whites. In the equation for blacks, the *TV* variable had a positive but insignificant coefficient, hinting that ownership of a television set was proxying wealth. For whites there was a negative coefficient on the *TV* dummy variable, though the effect of the variable was not well determined: only 6% of sample white households did not own a set.

5.4. Interaction between absolute and relative income

We ask whether the importance of relative income varies with absolute income. We do so by examining whether relative income affects subjective well-being differently among poor and non-poor households. Households whose per capita income falls below the 'household supplementary level' poverty-line of Rand 251 per month in 1993 – a measure of what is required for basic subsistence - are defined as 'poor' households and the rest as 'non-poor'. We use the split-sample approach, which is equivalent to the conventional approach of interacting the poverty dummy variable with the regressors. Table 7 presents ordered probit models of subjective well-being.

Table 7 compares the determinants of happiness for the poor and non-poor. A number of control variables are presented because they show some interesting contrasts.[11] Poverty is more detrimental to the perceived well-being of the elderly than of the young: elderly persons (aged 66 or over) are significantly happier than 36-45 year-olds only if they are above the poverty line, whereas poverty status does not matter much to the young (aged 16-25), who are happier than the 36-45 year-olds irrespective of whether their households are below or above the poverty line. Vicissitudes such as sickness (*hhdaysic*), crime (*n_victim*), and indebtedness (*debt*) matter more to the poor than they do to the non-poor. However, unemployment (*hhurate*) matters significantly more to the non-poor than to the poor. This apparently counter-intuitive result may

[11] The apparent difference in the effect of race is spurious since there are virtually no whites (only 0.6% of the poor) below the poverty line, i.e. in the base race category in the first column.

be due to the fact that the poor mostly live in high unemployment areas where one's own unemployment appears less blameworthy or more acceptable because a high proportion of acquaintances are also unemployed. This explanation was tested by fitting happiness equations separately for low and high unemployment areas. It showed that unemployment depressed perceived well-being significantly only in lower than mean unemployment rate areas (the coefficient and robust t-value of *hhurate1* in high and low unemployment areas were -0.097 (t = -1.5) and -0.399 (t = -4.0) respectively.[12]

Our hypothesis is that absolute and relative income have different effects in the two sub-samples. This is tested using two specifications, one using race-specific district mean income as the relative income variable and the other using race-specific income quintile position. In the former case, log of household per capita income (*lnhhpci*) is significantly positive for both poor and non-poor but, whereas the coefficient on log of race-specific mean district income (*lrdm_inc*) is not significant for the poor, it is negative, significant and large for the non-poor. In the latter case, *lnhhpci* is positive and significant for the poor and negative but not significantly so for the non-poor; and the coefficients on the race-specific income quintiles rise monotonically with the quintile, and are significant at the upper quintiles, but there is no pattern for the poor. For households in income-poverty, absolute income matters in both specifications, but for those above the income-poverty line, it matters in only one of them. The variables representing relative deprivation do not reduce the well-being of the poor in either specification, but they do so for the non-poor in both specifications.

We conducted various checks on the robustness of this set of results. Experimentation with another poverty line (the 'supplementary living level', equal to Rand 220 per month in 1993) makes no difference to any of the patterns[13]. We also divided the sample into terciles and compared the lowest and the highest tercile. Again, in both specifications, absolute income mattered to the poorest third and relative income to the richest.[14]

[12] Other studies also find that the unemployed suffer less in high unemployment areas (Clark, 2003;Kingdon and Knight, 2003; Powdthavee, 2003).
[13] The poverty lines are obtained from May (1998).
[14] We also tried adding product terms in the equation that uses the race-specific district mean income *lrdm_inc* (interacting this variable with household mean income per capita and its square) - the hypothesis being that the relative income effect becomes stronger at higher levels of absolute income- but the coefficients on the interaction terms were not significant.

5. Conclusion

We can now attempt to answer the questions posed at the start. *First*, there is a good deal of evidence that both the income of the household and the income of other households influence subjective well-being. Some of our estimates suggest that the latter relative to the former is more important than the former on its own. *Second*, the relative concepts that count are unemployment, education and income. However, unemployment and education are to some extent collinear with income. When all three are included, only income remains important. *Third*, we were able to identify three types of reference group. Comparisons are made with the income of other households, the relevant others being based on space, on race, and on previous income.

Fourth, we found that higher income of other households in a small community raises subjective well-being. This is a powerful and, to our knowledge, a new result. We considered four explanations: altruism, mutual insurance, a social wage, and non-causal association. The results of our various tests were consistent with altruism and fellow-feeling, but inconsistent with the alternative explanations. By contrast, higher income of households of the same race lowers subjective well-being. This is consistent with perceptions of relative deprivation – aspirations ahead of achievements – possibly arising from standard setting, notions of unfairness, or envy. It appears that, whereas close spatial proximity (the same cluster) creates a community, close social proximity (the same race) creates comparisons or sets goals and aspirations.

Fifth, our evidence suggests that positive spill-overs on subjective well-being at the local (cluster) level are diluted as orbits of comparison are expanded to include strangers. At the broader (district) level we found that spill-overs are negative. Similarly, perceptions of relative deprivation in relation to persons of the same race are evident not at the local level but at higher levels of geographical aggregation.

Sixth, the influence of relative income varies with absolute income: its effect on happiness is strengthened as income rises. Absolute income is an important determinant of the happiness of people who are below the poverty-line, whereas their relative income is not. For those who are not poor, within-race relative income is important – generating relative deprivation. The effect of absolute income is ambiguous for this group, depending on the specification of relative

income. In one specification, conditioning on household race-specific income quintile, the absolute income of the household appears to be irrelevant.

The finding that South Africans confined themselves to comparisons with others of their own race corresponds to the claim that English slum-dwellers a century ago confined themselves to comparisons within the slum (Roberts,1971). It suggests that peoples' reference groups are endogenously chosen. South Africa in 1993 inherited a legacy of white privilege and black disadvantage. Africans would want to reduce hurt by avoiding comparisons with others whose achieved states were infeasible for them. Similarly, whites would want to assess themselves in relation to other whites, the community of which they felt part; comparisons with blacks would involve loss of face.

Policy-making requires an understanding of reality, including the reality of people's perceptions. Nevertheless, we are hesitant to draw policy conclusions from our results. One reason is the argument of Sen (1983, 1999, and elsewhere) eschewing the 'metric of utilities' in favour of the 'capabilities' approach to addressing poverty; similarly, others regard the fulfilment of 'basic needs' as the appropriate conclusion. The underlying case against the utilities approach is that, by adjusting their aspirations to reality, people are conditioned to bear hardship. In the words of Sen (1999, p.358):

Utilities can sometimes be very malleable in response to deprivation.

The fact that people adjust themselves as well as possible to their condition does not diminish the case for redressing their condition. Nevertheless, Kingdon and Knight (2003) examine these issues and attempt to justify subjective well-being as a criterion for policy-making. Ultimately, a value judgement is needed.

A second reason can be illustrated by the following case. Consider two households of equal income but of different race. One, being a poor member of a rich race, feels relatively deprived, whereas the other, being a rich member of a poor race, does not. Should policy favour the former? In the South African case we would disagree. We know from the estimates that a white household has a lower probability of being satisfied or very satisfied with life than an African household with equal income, on account of their different race-specific relative positions. However, the difference is more than offset by the negative coefficient on the dummy variable representing African race. This coefficient is likely to reflect the legacy of disadvantages, not all observable in the dataset, that black people suffered under apartheid. It may also represent

African relative deprivation in response to the huge between-race income inequalities, which we were unable to capture in our estimates. The negative effect on subjective well-being of being African is best addressed by pro-African policies.

The apartheid policy of divide and rule had accentuated racial differences. Our findings suggest that people did not feel themselves to be part of a common society. Such perceptions may have delayed political change in South Africa. Over the last decade, however, a culture of equal rights in a single society has blossomed, a black middle class has burgeoned, and some residential mixing has occurred. If this has widened orbits of comparison, it may have increased feelings of relative deprivation among Africans. It would be interesting to examine the determinants of subjective well-being in South Africa today, to discover whether and how reference groups have changed.

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Table 1
Variable Definitions

		Mean	s.d.
Dependent variable			
qualife	Perceived satisfaction with life: values from 1 (lowest) to 5 (highest)	2.611	1.30
Control variables			
age16-25	proportion of persons within the household aged 16-25	0.198	0.24
age26-35	proportion of persons within the household aged 26-35	0.186	0.28
age36-45	proportion of persons within the household aged 36-45 (omitted category)	0.129	0.23
age46-55	proportion of persons within the household aged 46-55	0.083	0.19
age56-65	proportion of persons within the household aged 56-65	0.059	0.17
age>=66	proportion of persons within the household aged 66 and older	0.051	0.16
hhsizem	household size	4.569	2.98
hhnchild	number of children below age 16 within the household	1.853	1.96
male	proportion of males in household	0.485	0.27
migrate	household migrated to its current area within the past 5 years=1; 0 otherwise	0.115	0.31
noedu	proportion of household members with less than primary education (omitted category)	0.156	0.25
primary	proportion of household members with primary level education	0.305	0.35
junior	proportion of household members with junior level education	0.288	0.32
secondary	proportion of household members with secondary level education	0.176	0.28
higher	proportion of household members with higher level education	0.075	0.22
hhdaysic	total number of person days that household members were sick in the past 14 days	3.008	6.38
ironroof	house has an iron roof=1; 0 otherwise	0.562	0.50
pipeint	house has piped water internally=1; 0 otherwise	0.365	0.48
wdist	distance to nearest source of water in meters	182.697	551.23
personpr	persons per room in the house	1.415	1.14
connecte	house has an electricity connection=1; 0 otherwise	0.510	0.50
nolfpb	*hhurate* – see below - is undefined (missing) for households with no labour force participants (lfp), so for these households, the included variable *hhurate* takes value 0 and the indicator variable *nolfpb* takes the value 1. *nolfpb*=0 for households with >=1 lfp	0.155	0.36
impass	community roads become impassable at certain times of the year=1 ; 0 otherwise	0.388	0.49
pubtran	community has public transport=1; 0 otherwise	0.731	0.44
racialm	household is a racial minority in its cluster=1; 0 otherwise	0.103	0.30
metropol	household lives in metropolitan city=1; 0 otherwise	0.283	0.45
urban1	household in urban non-metropolitan area=1; 0 otherwise	0.219	0.41
rural	household lives in rural area=1; 0 otherwise (omitted category)	0.498	0.50
homeland	household lives in a former 'homeland'/Bantustan=1; 0 otherwise	0.434	0.50
n_victim	number of times in the past 12 months that household members have been victims of crime (robbery, assault, rape, murder, and abduction and 'other')	0.115	0.36
ownship_	household lives in owned home=1; 0 otherwise	0.651	0.48
debt	household owes any debt=1; 0 otherwise	0.447	0.50
c_urateb	cluster unemployment rate	0.325	0.24
Wcape	Western cape province=1 ; 0 otherwise	0.084	0.28
Ncape	Northern cape province=1; 0 otherwise	0.013	0.11
Ecape	Eastern cape province=1; 0 otherwise	0.136	0.34
Natal	Kwazulu Natal province=1; 0 otherwise	0.181	0.39
Ofs	Orange Free State province=1; 0 otherwise	0.082	0.27
Etvl	Eastern Transvaal province=1; 0 otherwise	0.088	0.28
Ntvl	Northern Transvaal province=1; 0 otherwise	0.113	0.32
Nw	North West province=1; 0 otherwise	0.099	0.30
pwv	Gauteng province=1; 0 otherwise (omitted category)	0.204	0.40
Hypothesis variables			
african	race dummy=1 if household is of African race, 0 otherwise	0.746	0.44
coloured	race dummy=1 if household is of coloured race, 0 otherwise	0.077	0.27
indian	race dummy=1 if household is of Indian race, 0 otherwise	0.029	0.17
white	race dummy=1 if household is of white race, 0 otherwise (omitted category)	0.148	0.35
hhurate	household unemployment rate, i.e. proportion of household labour force participant members that are unemployed.	0.219	0.36
ln_hhcpi	natural log of household per capita income	5.575	1.41
assetval	value of assets owned by the household, calculated as follows: assetval=(ncar*8)+(nphone*3)+(nkettle*0.5)+(nradio*0.2)+(nfridge*5)+(nbike*1) +(nestove*0.5)+(ngstove*1)+(ntv*3) +(ngeyser*2), where the preface 'n' before each variable means 'number of'. Thus, ncar is number of cars, ntv means number of TVs, nestove is number of electric stoves and ngstove is number of gas stoves, etc.	9.561	13.22

Table 1, continued

c_hhurate	cluster average of household unemployment rate, excluding index household's contribution to the average	0.219	0.16
d_hhurate	district average of household unemployment rate, excluding index household's contribution to the average	0.219	0.14
c_hhedyrs	cluster average of household mean years of education, excluding index household's contribution to the average	7.302	2.19
d_hhedyrs	cluster average of household mean years of education, excluding index household's contribution to the average	7.303	1.91
lnc_hhpci	log of cluster average of household per capita income, excluding index household's contribution to the average	5.963	1.01
lnd_hhpci	log of district average of household per capita income, excluding index household's contribution to the average	6.059	0.97
lrdm_inc	natural log of the race-specific district mean income (mean of household per capita income of all households of own race within the household's district of residence)	5.945	0.99
r_pciq1	household is in the first quintile of its own race's national distribution of income =1; 0 otherwise (omitted category)	0.200	0.40
r_pciq2	household is in the second quintile of its own race's national distribution of income =1; 0 otherwise	0.200	0.40
r_pciq3	household is in the third quintile of its own race's national distribution of income =1; 0 otherwise	0.200	0.40
r_pciq4	household is in the fourth quintile of its own race's national distribution of income=1; 0 otherwise	0.200	0.40
r_pciq5	household is in the fifth quintile of its own race's national distribution of income=1; 0 otherwise	0.199	0.40
d_pciq1	household is in the first quintile of its district's distribution of income=1; 0 otherwise (omitted category)	0.182	0.39
d_pciq2	household is in the second quintile of its district's distribution of income=1; 0 otherwise	0.209	0.41
d_pciq3	household is in the third quintile of its district's distribution of income=1; 0 otherwise	0.205	0.40
d_pciq4	household is in the fourth quintile of its district's distribution of income=1; 0 otherwise	0.208	0.41
d_pciq5	household is in the fifth quintile of its district's distribution of income=1; 0 otherwise	0.195	0.40
tv	Household owns a television set=1; 0 otherwise	0.453	0.50
parents_	Whether respondents think they are richer=1; the same=2 or poorer=3 than their own parents	2.282	0.83

Table 2
Ordered Probit Model of Perceived Life Satisfaction

	Column a		*Column b* (parsimonious specification)		
	Coeff.	Robust-t	Coeff.	Robust-t	Marginal effect
Control variables					
age16-25	0.322	3.7 ***	0.339	3.9 ***	0.121
age26-35	0.060	1.1	0.067	1.1	0.023
age46-55	0.031	0.4	0.036	0.5	0.012
age56-65	0.117	1.2	0.128	1.2	0.046
age>=66	0.253	2.3 **	0.266	2.4 ***	0.094
hhsizem	-0.014	-1.2	-0.018	-1.6	-0.007
hhnchild	0.051	2.9 ***	0.052	3.1 ***	0.019
male	0.000	0.0			
migrate	0.213	2.1 **	0.213	1.9 *	0.076
primary	-0.031	-0.4			
junior	-0.036	-0.6			
secondary	0.018	0.3			
higher	0.199	2.2 **	0.218	2.8 ***	0.078
hhdaysic	-0.005	-2.3 **	-0.005	-2.2 **	-0.001
ironroof	-0.123	-2.0 **	-0.120	-1.9 *	-0.042
pipeint	-0.047	-0.4			
wdist	0.000	0.8			
personpr	-0.023	-1.1			
connecte	0.041	0.6			
nolfpb	-0.010	-0.2	0.001	0.0	0.000
impass	-0.072	-1.2	-0.057	-0.9	-0.020
pubtran	0.103	1.7 *	0.107	1.7 *	0.038
racialm	0.246	2.7 ***	0.249	2.6 ***	0.092
metropol	-0.244	-1.9 *	-0.291	-2.8 ***	-0.100
urban1	-0.212	-2.2 **	-0.251	-3.0 ***	-0.086
homeland	0.103	1.0			
n_victim	-0.091	-2.3 **	-0.089	-2.3 **	-0.031
ownship_	0.079	1.8 *	0.097	2.2 **	0.034
debt	-0.065	-1.6 *	-0.062	-1.5	-0.022
c_urateb	-0.581	-3.2 ***	-0.529	-2.7 ***	-0.188
Hypothesis variables					
african	-0.597	-5.3 ***	-0.576	-5.0 ***	-0.215
coloured	-0.225	-2.0 **	-0.228	-1.9 *	-0.077
indian	-0.193	-1.8 *	-0.209	-2.0 **	-0.071
hhurate	-0.152	-3.2 ***	-0.145	-3.0 ***	-0.052
ln_hhcpi	0.105	5.2 ***	0.110	5.0 ***	0.039
assetval	0.014	5.4 ***	0.014	5.9 ***	0.005
Province	yes		yes		
LogL	-11111.19		-11117.50		
Restr. LogL	-12199.69		-12199.69		
Pseudo-R^2	0.0892		0.0887		
N	8279		8279		

Notes: the column 'Marginal effect' shows the marginal effect of a variable on the probability of being 'satisfied' or 'very satisfied'. In this, and other, tables, ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively.

Table 3
The Effects of Space-based Comparator Groups on Subjective Well-being

	(a)		(b)		(c)		(d)		(e)		(f)		(g)	
	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t
Hypothesis variables														
african	-0.596	***	-0.595	***	-0.582	***	-0.580	***	-0.473	***	-0.467	***	-0.454	***
	(-5.2)		(-5.2)		(-5.2)		(-5.2)		(-4.2)		(-4.1)		(-3.8)	
coloured	-0.227	*	-0.227	*	-0.199	*	-0.199	*	-0.087		-0.082		-0.072	
	(-1.9)		(-1.9)		(-1.7)		(-1.7)		(-0.8)		(-0.7)		(-0.6)	
indian	-0.208	**	-0.204	**	-0.199	*	-0.195	*	-0.142		-0.132		-0.141	
	(-2.0)		(-2.0)		(-1.9)		(-1.9)		(-1.4)		(-1.3)		(-1.4)	
hhurate	-0.189	***	-0.192	***	-0.224	***	-0.224	***	-0.199	***	-0.200	***	-0.199	***
	(-4.0)		(-4.0)		(-4.4)		(-4.4)		(-3.9)		(-3.9)		(-4.1)	
ln_hhpci	0.113	***	0.113	***	0.105	***	0.105	***	0.090	***	0.091	***	0.090	***
	(5.1)		(5.0)		(4.7)		(4.7)		(4.2)		(4.2)		(4.1)	
assetval	0.015	***	0.015	***	0.014	***	0.014	***	0.014	***	0.014	***	0.013	***
	(6.1)		(6.1)		(6.0)		(6.0)		(5.7)		(5.6)		(5.6)	
c_hhurate	-0.499	**	-0.602	**									0.094	
	(-2.0)		(-2.1)										(0.3)	
d_hhurate			0.168										-0.246	
			(0.4)										(-0.5)	
c_hhedyrs					0.052	***	0.056	***					0.005	
					(3.0)		(2.4)						(0.2)	
d_hhedyrs							-0.007						0.021	
							(-0.3)						(0.6)	
ln_chhpci									0.221	***	0.265	***	0.273	***
									(5.1)		(4.7)		(3.3)	
ln_dhhpci											-0.070		-0.123	
											(-1.2)		(-1.4)	
Log L	-11125.93		-11125.52		-11117.44		-11117.33		-11093.273		-11091.02		-11086.54	
Pseudo-R^2	0.0880		0.0880		0.0885		0.0885		0.0907		0.0909		0.0910	

Notes: The variable definitions are provided in Table 1. All the control variables included in the parsimonious specification of Table 2 are included in each estimate. The addition of the hypothesis variables makes little difference to their coefficients. Therefore only the hypothesis variables are reported. The number of observations in each case is 8,279, and the restricted log L = -12,199.69.

Table 4
OLS Regression of Cluster Coefficients on Cluster and District Variables

	Coefficient	t- value	Coefficient	t -value
Location/spatial variables				
wcape	0.535	3.8 ***	0.640	4.9 ***
ncape	1.047	4.1 ***	1.076	4.4 ***
ecape	0.330	2.1 **	0.403	2.8 ***
natal	0.493	3.4 ***	0.595	4.4 ***
ofs	0.383	2.2 **	0.303	1.8 *
etvl	0.551	3.1 ***	0.524	3.1 ***
ntvl	0.425	2.5 ***	0.459	2.8 ***
nw	0.118	0.7	0.090	0.6
homeland	0.065	0.5	0.111	1.0
metropol	-0.349	-2.2 **	-0.268	-2.0 **
urban1	-0.251	-2.2 **	-0.171	-1.8 *
Community amenities				
pub_tran	-0.021	-0.2	-0.002	0.0
distrans	-0.004	-1.2		
numfaci	0.001	0.3	0.001	0.2
disfaci	0.000	1.5		
impass	-0.085	-1.0	-0.080	-1.0
tarroad	0.021	0.2		
Community means of household variables				
c_wdist	0.000	0.9		
c_ironroof	-0.135	-1.1		
c_electri	0.015	0.1		
c_personp	-0.126	-1.6	-0.158	-2.2 **
c_hhedyrs	0.006	0.1		
c_hhurate	0.218	0.6		
lnc_hhpci	0.311	2.7 ***	0.293	3.9 ***
District means of household variables				
d_hhedyrs	0.060	1.2		
d_hhurate	-0.472	-1.0		
lnd_hhpci	-0.162	-1.3	-0.013	-0.2
_cons	-0.399	-0.7	-0.876	-1.7 *
N	327		332	
Adjusted R^2	0.2614		0.2654	
Mean of dependent variable	0.8235		0.8235	

Note: The dependent variable is the coefficient on cluster dummies in the ordered probit equation of subjective well-being, using parsimonious specification of Table 2. The cluster variables *c_wdist*, *c_ironroof* and *c_electri* are jointly insignificant. Similarly, all the ten variables excluded in the second column are jointly insignificant in the first [F(10,299)=0.90; p-value of F test=0.534]. The prefix *c_* stands for cluster. Thus, *c_wdist* is the cluster average of distance to water, *c_ironroof* is cluster average of the 0/1 variable whether the family home has an iron roof, *c_electri* is cluster average of the 0/1 variable whether the household has electricity, and so on.

Table 5
The Effects of Race-based Comparator Groups on Subjective Well-being

	(a)		(b)		(c)		(d)		(e)	
	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t
african	-0.467	-4.1 ***	-0.617	-4.0 ***	-0.710	-5.8 ***	-0.891	-5.6 ***	-0.469	-4.1 ***
coloured	-0.082	-0.7	-0.203	-1.5	-0.250	-2.0 **	-0.292	-2.7 ***	-0.083	-0.7
indian	-0.132	-1.3	-0.198	-1.7 *	-0.236	-2.2 **	-0.315	-2.6 ***	-0.133	-1.3
hhurate	-0.200	-3.9 ***	-0.189	-3.7 ***	-0.188	-3.7 ***	-0.176	-3.5 ***	-0.201	-3.9 ***
ln_hhpci	0.091	4.2 ***	0.104	5.3 ***	0.010	0.3	0.019	0.6	0.093	2.1 **
assetval	0.014	5.6 ***	0.014	5.7 ***	0.013	5.2 ***	0.013	5.3 ***	0.013	5.7 ***
lnc_hhpci	0.265	4.7 ***	0.296	5.2 ***	0.260	4.6 ***	0.292	5.2 ***	0.266	4.7 ***
lnd_hhpci	-0.070	-1.2	0.003	0.0	-0.069	-1.2	0.009	0.1	-0.071	-1.1
lrdm_inc			-0.170	-1.9 *			-0.183	-2.1 **		
r_pciq2					0.105	2.2 **	0.102	2.2 **		
r_pciq3					0.105	1.8 *	0.106	1.8 *		
r_pciq4					0.276	3.6 ***	0.284	3.7 ***		
r_pciq5					0.319	2.8 ***	0.342	3.0 ***		
d_pciq2									-0.049	-1.0
d_pciq3									-0.006	-0.1
d_pciq4									-0.062	-0.7
d_pciq5									-0.001	0.0
Log L	-11091.02		-11083.29		-11080.53		-11071.66		-11088.52	
Pseudo R^2	0.0909		0.0915		0.0917		0.0925		0.0911	

Notes: as for Table 3. Column (a) repeats column (f) of Table 3.

Table 6
The Effects of Proxied Past Income and of Television on Subjective Well-being

	With Dummy variable *TV*		**With variable *parents_***	
	Coeff.	Robust t	Coeff.	Robust t
ln_hhpci	0.109	4.8 ***	0.079	3.5 ***
assetval	0.013	5.5 ***	0.012	5.2 ***
TV	0.040	0.8		
Parents_			-0.256	-11.6 ***
N	8279		8244	
LogL	-11116.82		-10926.59	
Restricted LogL	-12199.69		-12148.93	
Pseudo- R^2	0.0888		0.1006	

Notes: All the control variables included in the parsimonious specification of Table 2 are included in each estimate, but only the relevant hypothesis variables and relevant control variables are reported. Recall from Table 1 that *TV* = 1 if the household owns a television set, and *TV* = 0 otherwise. The variable *parents_* has the values 0, 1, or 2 according to whether respondent households report that they are richer, the same, or poorer than their parents' households, respectively.

Table 7
Subjective well-being, by poverty status

	Below poverty line				Above poverty line			
	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t	Coeff.	Robust-t
Control variables								
age1625	0.267	2.2 **	0.272	2.3 **	0.357	3.3 ***	0.348	3.3 ***
age2635	0.140	1.1	0.141	1.1	0.039	0.6	0.022	0.4
age4655	-0.070	-0.4	-0.070	-0.4	0.057	0.7	0.060	0.7
age5665	0.172	1.0	0.178	1.0	0.106	0.8	0.088	0.7
age_66	0.125	0.6	0.128	0.6	0.357	2.5 ***	0.362	2.5 ***
hhdaysic	-0.008	-2.9 ***	-0.008	-2.9 ***	-0.001	-0.2	-0.001	-0.4
hhurate1	-0.121	-2.2 **	-0.117	-2.1 **	-0.309	-3.1 ***	-0.345	-3.5 ***
nolfpb	0.030	0.5	0.031	0.5	-0.045	-0.4	-0.052	-0.5
assetval	0.018	4.6 ***	0.018	4.5 ***	0.012	4.4 ***	0.011	4.1 ***
african	-0.012	0.0	-0.089	-0.3	-0.802	-4.8 ***	-0.920	-5.7 ***
colored	0.011	0.0	-0.042	-0.1	-0.280	-1.8 *	-0.328	-2.1 **
indian	-0.038	-0.1	-0.048	-0.1	-0.229	-1.8 *	-0.262	-2.1 **
n_victim	-0.188	-3.1 ***	-0.188	-3.1 ***	-0.042	-0.9	-0.039	-0.8
ownship_	0.126	2.0 **	0.127	2.0 **	0.072	1.5	0.048	1.0
debt	-0.081	-2.0 **	-0.080	-2.0 **	-0.068	-1.3	-0.054	-1.0
Hypothesis variables								
lnhhpci	0.091	3.6 ***	0.071	2.2 ***	0.132	3.3 ***	-0.087	-1.0
lddhhpci	0.014	0.2	0.029	0.4	0.092	1.2	-0.030	-0.4
lrdm_inc	0.026	0.3			-0.385	-3.7 ***		
r_pciq2			0.072	1.3			0.071	0.8
r_pciq3			0.038	0.6			0.149	1.3
r_pciq4			0.103	1.0			0.449	3.3 ***
r_pciq5			--	--			0.536	2.7 ***
N	4142		4142		4137		4137	
Log L	-5302.997		-5301.9212		-5636.746		-5641.9665	
Restr. LogL	-5540.3536		-5540.3536		-6238.7515		-6238.7515	
Psuedo- R^2	0.0428		0.0430		0.0965		0.0957	

Note: The poverty line used is the Household Supplementary Level, which was Rand 251 per month in 1993. The estimated equations are the parsimonious specification of Table 2 plus the measures of relative income. Only these measures plus the noteworthy control variables are reported.

Appendix Table 1
The Determinants of the Household's Subjective Well-being Including the Individual Respondent's Personal Characteristics

	Parsimonious equation from Table 2 (a)		Plus personal characteristics of the household respondent (b)	
	Coefficient	Robust-t	Coefficient	Robust-t
Control variables				
age16-25	0.339	3.9 ***	0.267	2.9 ***
age26-35	0.067	1.1	0.020	0.3
age46-55	0.036	0.5	0.084	1.1
age56-65	0.128	1.2	0.200	1.8 *
Age>=66	0.266	2.4 ***	0.331	2.7 ***
hhsizem	-0.018	-1.6	-0.012	-1.0
hhnchild	0.052	3.1 ***	0.044	2.5 ***
migrate	0.213	1.9 *	0.218	2.0 **
higher	0.218	2.8 ***	0.250	2.8 ***
hhdaysic	-0.005	-2.2 **	-0.005	-2.2 **
ironroof	-0.120	-1.9 *	-0.114	-1.8 *
hhurate	-0.145	-3.0 ***	-0.140	-2.7 ***
nolfpb	0.001	0.0	0.013	0.2
impass	-0.057	-0.9	-0.062	-1.0
pubtran	0.107	1.7 *	0.111	1.8 *
ln_hhcpi	0.110	5.0 ***	0.115	5.1 ***
assetval	0.014	5.9 ***	0.015	6.2 ***
african	-0.576	-5.0 ***	-0.566	-5.0 ***
coloured	-0.228	-1.9 *	-0.210	-1.8 *
indian	-0.209	-2.0 **	-0.197	-1.9 *
racialm	0.249	2.6 ***	0.247	2.6 ***
metropol	-0.291	-2.8 ***	-0.300	-2.8 ***
urban1	-0.251	-3.0 ***	-0.255	-3.2 ***
n_victim	-0.089	-2.3 **	-0.092	-2.3 **
ownship_	0.097	2.2 **	0.099	2.3 **
debt	-0.062	-1.5	-0.061	-1.5
c_urateb	-0.529	-2.7 ***	-0.542	-2.8 ***
Personal characteristics of respondent				
r_age			-0.010	-1.9 *
r_agesq			0.000	1.3
r_edyrs			-0.006	-0.5
r_edyrsq			0.000	0.1
r_male			-0.021	-0.6
r_empld			0.003	0.1
LogL	-11117.50		-10984.71	
Restr LogL	-12199.69		-12063.84	
Psuedo- R^2	0.0887		0.0895	
N	8279		8190	

Note: Recall from Table 1 that *r_age* and *r_agesq* are respondent's age and its square; *r_edyrs* and *r_edyrsq* are respondent's years of education and its square; *r_male* is gender and *r_empld* whether the respondent is employed or not. Province dummy variables are included but not reported.