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Abstract: While much recent research has focused on what happens to individual's well-being following the onset of health conditions, one as yet unaddressed question is what happens to well-being once individuals are no longer suffering from those same health conditions. If treatment has long term adverse effects, or if individuals become more worried about their health even when the health condition no longer represents a significant impediment, then individuals may not return to pre-disability levels of well-being. Using a large nationally representative dataset, I compare the well-being of individuals who report that they were previously diagnosed with one of 13 different health conditions but now no longer have those health conditions, to the well-being of individuals who report that they have never been diagnosed with those same health conditions. For many of the health conditions examined, and using a number of different well-being measures, I observed significant differences in the well-being of both groups. This could suggest that individuals may not return to pre-disability levels of quality of life once they recover from health conditions.

Keywords: life satisfaction; health, adaptation

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Abstract: While much recent research has focused on what happens to individual's well-being following the onset of health conditions, one as yet unaddressed question is what happens to well-being once individuals are no longer suffering from those same health conditions. If treatment has long term adverse effects, or if individuals become more worried about their health even when the health condition no longer represents a significant impediment, then individuals may not return to pre-disability levels of well-being. Using a large nationally representative dataset, I compare the well-being of individuals who report that they were previously diagnosed with one of 13 different health conditions but now no longer have those health conditions, to the well-being of individuals who report that they have never been diagnosed with those same health conditions. For many of the health conditions examined, and using a number of different well-being measures, I observed significant differences in the well-being of both groups. This could suggest that individuals may not return to pre-disability levels of quality of life once they recover from health conditions.

Keywords: health conditions; adaptation; well-being

Introduction

As Helliwell and Putnam (2004) note: "A *prima facie* case can be made that the ultimate 'dependent variable' in social science should be human well-being, and in particular, well-being as defined by the individual herself, or 'subjective well-being'". Economists have, however, generally paid much less attention to the determinants of subjective as opposed to objective indicators of well-being, due to concerns as to whether subjective data can really serve as an adequate proxy measure of utility. Emerging interdisciplinary research has begun to address these concerns and increasingly suggests that self-rated questions about life satisfaction can be a valid approximation for individually experienced welfare or utility (see Dolan and White 2007 for a review of this work). As a result, many economists and psychologists have suggested that national indicators of subjective well-being should be collected and used to guide public policy (Dolan and White, 2007; Lucas 2007; Diener and Seligman, 2004; Diener 2012). One potential problem with using subjective measures of well-being for policymaking is the extent to which subjective constructs of well-being are responsive to changing life circumstances over the long term. In other words, the usefulness of using well-being

measures to guide policy would be limited if individuals completely adapted to changing life events (Lucas, 2007).

Fortunately there is much recent research focused on the extent to which individuals adapt to changing life events. The evidence that is available would suggest that there are a number of experiences in which individuals do not adapt very well too. These include both positive events such as new friendships and negative life events such as unemployment and divorce (Powdthavee, 2012; Clark et al., 2008, Lucas, 2005). When it comes to health, which is the focus of this study, there are conflicting findings relating to the degree to which individuals adapt to health conditions. For instance, Lucas (2007) using two nationally representative studies in Britain and Germany (BHPS and GSOEP) found lasting declines in life satisfaction from the onset of long term disability. On the other hand, Oswald and Powdthavee (2008) found that individual's experience partial hedonic adaptation. They estimate that the degree of adaptation to be in the order of 30-50%. It is perhaps important to note that while their data suggests that individuals do partially adapt to disability, individuals do not appear to return to their old well-being level. This suggests that health care interventions can have long term positive effects on individuals overall well-being.

This study also focuses on the issue of hedonic adaptation and health, but from a new angle. Instead of exploring the extent to which individuals adapt to disability, I ask whether individuals return to pre-illness levels of well-being once they recover from disease. In other words, do individuals experience a similar quality of life as to what they would have experienced even if they never suffered from the health condition? This is an important issue when it comes to the economic evaluation of health care, as if certain health conditions maintain a negative effect on individual's well-being even after individuals report that they have recovered from a health condition, then the benefits ascribed to health interventions aimed at treating those conditions may be overstated.

I hypothesise that some health conditions will have long term adverse effects on well-being even after individuals are successfully treated for at least two reasons: (1) treatment of certain health conditions can be quite intensive and so it seems plausible that they could have a lasting impact, and (2) individuals may be more likely to worry about ill-health in the future, even if they feel that they have fully recovered from a health condition. In order to test if individuals bounce back to baseline levels of well-being after recovering from a health condition, I take advantage of a unique dataset that allows me to break the population into three specific cohorts: those with a current diagnosis of one of 13 specified health conditions, those previously diagnosed but who now state that they no longer suffer from those health conditions and those never diagnosed with these conditions. Using a large nationally representative survey in the UK, I then compare the well-being of all three groups. To the best of my knowledge, no study has directly compared the well-being of respondents who have recovered from a health condition to the well-being of respondents never diagnosed with those health conditions. In terms of well-being I use three separate measures: (a) overall life satisfaction, (b) self-reported happiness, and (c) psychological health. Across all three well-being measures and for many of the health conditions examined, I observed significant differences in the well-being of individuals who report that they were previously diagnosed but no longer have the condition and those who report that they were never diagnosed with those same health conditions. This suggests that individuals may not revert back to pre-illness levels of well-being once free of disability.

2. Data

The dataset used in this analysis is the Understanding Society survey. This is a comprehensive annual longitudinal household panel survey that started in 2009 with a nationally-representative stratified, clustered sample of around 50,000 individuals living in the United Kingdom. It uses an overlapping panel design with data collection for a single wave conducted across 24 months. Interviews are typically carried out face-to-face in respondents' homes by trained interviewers. I use

three separate measures of well-being as the key outcome variables. The first is a measure of life satisfaction. This measure is based on respondents answer to the following question: Please choose the number which you feel best describes how dissatisfied or satisfied you are with your life overall. Respondents are given a 7 point scale ranging from 1 completely dissatisfied to 7 completely satisfied. This can be seen as an evaluation that people make of their lives overall, i.e. a measure of cognitive well-being as opposed to affect. Another related construct that I use as an outcome variable is respondents' happiness. To measure happiness, respondents are given a four point scale ranging from 1 much less than usual to 4 much more than usual. Whereas life satisfaction more closely relates to a long term evaluation of respondents satisfaction with life, happiness can be seen as a closer reflection of current mood and emotion (Gamble and Gärling 2012).

Finally, I use the General Health Questionnaire (GHQ) which is held up as a good proxy measure for mental stress and strain (Jackson, 2007). The GHQ consists of a 12 item scale designed to assess somatic symptoms, anxiety and insomnia, social dysfunction and severe depression. Some examples of the types of statements include: 'Have you found everything getting on top of you?'; 'Have you been getting scared or panicky for no good reason?' and 'Have you been getting edgy and bad tempered?' Each item is accompanied by four possible responses, typically being 'not at all', 'no more than usual', 'rather more than usual' and 'much more than usual', scoring from 0 to 3, respectively. A score for each participant is then computed – the higher the score then the more likely it is that respondents are suffering from some form of psychological distress. The original scale runs from 0 (best mental well-being) to 36 (worst mental well-being). However, for simplicity, I have reversed the original scale so that the value of 0 represents the worst mental well-being and 36 is the best mental well-being. Hereafter I refer to this variable as psychological health. In comparison to life satisfaction, psychological health (GHQ-12) like our happiness measure can be considered as a shorter-term evaluation of well-being as opposed to a global evaluation of overall satisfaction with life.

The key explanatory variables of interest are derived from participant's response to a question about whether they have been diagnosed with certain health conditions, asked in wave 1 of the survey (collected between 2009-2011). Participants were given a card with 17 health conditions and asked 'Has a doctor or other health professional ever told you that you have any of the conditions listed on this card'. One advantage of this survey dataset when it comes to evaluating the relationship between health conditions and well-being is that it allows for a relatively detailed classification, in comparison to many prior studies of health conditions. For example, respondents are asked to report whether they suffer from a number of specific cardiovasicular diseases (e.g. angina, high blood pressure, congestive heart failure, coronary heart disease) as opposed to just a broad classification of heart or cardiovasicular issues. Similarly, respondents are asked to indicate if they have a curent diagnosis of a number of respiratory conditions (e.g. asthma, chronic bronchitis, emphysema). Other conditions examined are cancer or malignancy, liver conditions, epilepsy, diabetes, arthritis, hyperthryoidism and hypothryoidism. Participants who reported that they had been diagnosed with one of these conditions were then asked if they still had that health condition. Using this information, I first derive dummy variables reflecting individuals with a current diagnosis of one of these health conditions. Second, I derive dummy variables reflecting individuals who report that they were previously diagnosed with a health condition but now no longer have that health condition. For 13 of the health conditions examined, I am able to identify significant numbers of these individuals.

Both these groups of dummy variables were included in a micro-econometric analysis of life satisfaction, self-reported happiness and psychological health. The first group of dummy variables compare the well-being of individuals with a current diagnosis of a health condition to the well-being of those never diagnosed. We would expect to observe significant differences between these groups, i.e. health should significantly influence well-being. The second group of dummy variables compares the well-being of individuals previously diagnosed but who now report they no longer

have the health condition to the well-being of those never diagnosed with those same health conditions. If individuals bounce back to pre-disability levels of well-being once they feel that they have recovered from a health condition, then a reasonable assertion is that both these groups should report similar levels of well-being.

To help mitigate the chance that any observed differences could be attributable to socio-economic differences, I include a rich set of commonly observed predictors of well-being based on prior research (see Dolan, 2008 for a review of this literature). These include socio-economic variables such as age, gender, relationship status, number of children, education and labour force status. I include household income in its natural logarithm which reflects the diminishing marginal utility of income (see Layard et al., 2008). I also controlled for the square root of household size to make a real equivalent household income variable, i.e. make household income comparable across different household compositions. I add variables reflecting the extent to which individuals talk with their neighbors and participate in religious activities as overall proxy variables for social capital. Regional dummy variables were included to capture regional differences in access to medical care. The indicators of well-being (life satisfaction, happiness, psychological health) are reported on an ordinal scale. However, assuming cardinality of life satisfaction scores has been shown to have little influence on findings (Ferrer-i-Carbonell and Frijters, 2004) and for ease of reading, I assumed cardinality in life satisfaction. Results reported in the next section were robust to alternative specifications, i.e. using ordered logistic regression but are unreported for parsimony (available upon request)

Results

Table 2 presents the results relating to the analysis of life satisfaction including the full set of controls. The results relating to the control variables are all along expected lines and correspond with the results widely documented in previous literature (see Dolan et al., 2008). For example, we

observe a positive relationship between age and life satisfaction, but a negative relationship between age squared and life satisfaction. This would be in keeping with previous work which suggests a U-shaped relationship with higher levels of life satisfaction for the relatively younger and older groups, with the lowest levels in middle age. As expected, unemployment was negatively related, whereas education and being in a relationship was found to be positively related with life satisfaction. The log of equivalent household income also has the expected positive sign and is statistically significant suggesting that higher household incomes is associated with higher life satisfaction scores. The proxy variables relating to social capital (talk to neighbours and participate in religious activities) were also both positively related with life satisfaction.

The key explanatory variables of interest are the dummy variables indicating whether a respondent has a current diagnosis of one of 13 health conditions and also the dummy variables indicating if individuals have been previously diagnosed with one of these health conditions, but report that they no longer have that health condition. The reference group in both cases can be thought of as a control group and reflect respondents who report that they have never been diagnosed with the health conditions under examination. Looking at the first group of dummy variables indicating if a respondent has a current diagnosis of a health condition, we can see that all the health conditions are statistically significant and negatively related with life satisfaction. In addition to being statistically significant, the relative magnitude of their effects are also along expected lines in that health conditions such as asthma and high blood pressure are associated with a smaller change in life satisfaction than what are generally regarded as more serious health conditions such as congestive heart failure, epilepsy and liver conditions. To examine if individuals return to pre-disability levels of psychological well-being once recovered from disability, we can examine the signs and significance of the second group of dummy variables indicating if individuals have been previously diagnosed but now report that they no longer have the health condition. We can see statistically significant differences for many of the health conditions examined. For instance,

individuals who report that they were previously diagnosed but now no longer suffer from coronary heart failure, diabetes, epilepsy and chronic bronchitis have significantly lower life satisfaction scores than individuals never diagnosed with these health conditions.

Table 3 presents the results relating to the analysis of self-reported happiness. Again, similarly to the analysis of life satisfaction, the results relating to the control variables are all along expected lines. Moving on to the key explanatory variables of interest, the results appear to be qualitatively similar to that reported in our analysis of life satisfaction, albeit some of the health conditions that were statistically significant predictors of life satisfaction are not statistically significant in the analysis of happiness. These differences are likely due to differences in the life experience measures used as dependent variables, i.e. self-reported happiness can be considered as an affective measure (current moods and emotions) whereas life satisfaction can be considered as a cognitive measure (global long-term evaluation). Looking at the dummy variables representing individuals previously diagnosed but who now report that they no longer suffer from a health condition, we can see that similar to the analysis of life satisfaction, many of these are statistically significant. More specifically, respondents who report that they have fully recovered from having high blood pressure, chronic bronchitis, cancer or malignancy or epilepsy have significantly lower happiness scores than individuals who report that they never had those medical conditions.

Finally, the results relating to our third measure of well-being, namely psychological health are reported in table 4. Similarly to life satisfaction and self-reported happiness, we can again see that having a current diagnosis of most of the health conditions examined appear to negatively affect psychological health. For most of the health conditions examined, we can also see significant differences in the psychological health of respondents who report that they are fully recovered from these health conditions, as compared to those who report that they never suffered from these health conditions. The health conditions for which we observe significant differences are asthma,

high blood pressure, chronic bronchitis, cancer or malignancy, epilepsy, hypothyroidism and liver conditions.

Looking across the three separate models of well-being, we can see as expected having a current diagnosis of a health condition is negatively related with well-being. As one would expect, there also appears to be significant differences in the magnitude of these effects, with what can be considered as more serious health conditions having larger effect sizes than what can be regarded as less serious health conditions. It is also interesting to observe the ordinal rankings of the various health conditions across the various measures of well-being (see table 5). The correlation between the internal rankings of health conditions under psychological health and self-reported happiness is positive and substantive (0.83), whereas the correlation between life satisfaction and both these measures is much lower (0.45 and 0.24 respectively). This means that while the internal rankings of health conditions under self-reported happiness and psychological health are quite similar, there are some notable differences between how health conditions are ranked under these two well-being measures as compared to life satisfaction. One likely explanation for these differences is that health conditions may differ in how they affect current short term evaluations of well-being (such as our measure of happiness and psychological health) as opposed to individuals longer term evaluation of their overall satisfaction with life.

The main question of interest in this paper was whether individuals revert back to baseline levels of well-being once they feel that they have recovered from a health condition. Looking across the three separate well-being measures used in this analysis, we can see in tables 2-4 that for many of the health conditions examined there are substantive and significant differences in the well-being of respondents who report that they have recovered from a health condition as compared to those who were never diagnosed. These differences are independent of any differences in individual's

socio-economic characteristics, and suggest that even if individuals are successfully treated, they may not revert back to pre-illness levels of well-being.

3. Conclusion

When it comes to the onset of disability, much recent research suggests that disability leads to a significant drop in well-being followed by little adaptation over time (Lucas et al., 2007) or at best partial hedonic adaptation (Oswald and Powdthavee, 2008). This paper examined what happens to individuals' well-being once free of disability by comparing well-being scores of individuals currently diagnosed with various health conditions with the well-being of individuals who report that they have been previously diagnosed, but now no longer have those same health conditions. Findings suggest that individuals may not return to pre-disability levels of well-being even when they report that they are no longer suffering from a health condition. I posit two potential reasons for these findings. The first is that treatment for certain health conditions can be quite intensive and so it seems plausible they could have a lasting impact. An additional possibility is that individuals may be more likely to worry about ill-health in the future, even if they feel that they have fully recovered from a health condition.

Of course these findings need to be interpreted with some caution as the analysis relies on participant's own judgement as to whether they have recovered from the various specified health conditions rather than any clinical diagnosis. In addition, despite the wide array of control variables as well as the multiple health conditions and well-being measures used, their reliability are limited by their cross sectional nature. Despite this note of caution, and in the absence of any available longitudinal data to examine this issue, this analysis provides an initial examination of what happens to individuals' well-being once they recover from health conditions and supports the hypothesis that individuals may not revert back to pre-illness levels of well-being even when they feel that they have fully recovered from a health condition. Future longitudinal work would be needed, however, to

further explore temporal patterns in the way individual's well-being changes in response to changing disability status.

References

Clark, A. E., Diener, E., Georgellis, Y., and Lucas, R. E. (2008) Lags and leads in life satisfaction: a test of the baseline hypothesis. *The Economic Journal* 118, 222–243.

Diener, E. and Seligman, M.E.P. (2004) Beyond money: Toward an economy of well-being. *Psychological Science in the Public Interest 5,* 1–31.

Diener, E. (2012) New findings and future directions for subjective wellbeing research. *American Psychologist* 67(8), 590–597.

Dolan, P., and White, M.P. (2007) How can Measures of Subjective Well-Being be used to Inform Public Policy? *Perspectives in Psychological Science* 2, 71– 85.

Dolan, P., Peasgood,T. and White, M. (2008) Do we Really Know What Makes us Happy? A Review of the Economic Literature on the Factors Associated with Subjective Well-Being. *Journal of Economic Psychology* 29, 94–122.

Ferrer-i-Carbonell, A. & Frijters, P. (2004) How important is methodology for the estimates of the determinants of happiness? *The Economic Journal* 114, 641–659.

Gamble, A. and Gärling, T. (2012) The relationships between life satisfaction, happiness, and current mood. *Journal of Happiness Studies* 13, 31–45.

Helliwell, J.F., and Putnam, R.D. (2004) The social context of well-being. *Philosophical Transactions of the Royal Society* 1435-1446.

Jackson, C. (2007) The general health questionnaire. *Occupational Medicine*, 57, 79.

Layard, R., Mayraz, G., and Nickell, S. (2008) The marginal utility of income. *Journal of Public Economics* 92(8), 1846–1857

Lucas, R. E. (2005) Time does not heal all wounds: A longitudinal study of reaction and adaptation to divorce. *Psychological Science* 16, 945– 950.

Lucas, R.E. (2007) Long-term disability is associated with lasting changes in subjective well-being: evidence from two nationally representative longitudinal studies. *Personality and Individual Differences* 92, 717-730.

Oswald, A.J. and Powdthavee, N. (2008) Does happiness adapt? A longitudinal study of disability with implications for economists and judges. *Journal of Public Economics*, 92, 1061-1077.

Powdthavee, N. 2012. Jobless, friendless and broke: what happens to different areas of life before and after unemployment? *Economica* 79(315), 557-575.

List of tables

Table 1: Health conditions

Health condition	Number with each health condition
Currently diagnosed with angina	806
Currently diagnosed with arthritis	5,272
Currently diagnosed with asthma	3,999
Currently diagnosed with blood pressure	5,531
Currently diagnosed with chronic bronchitis	407
Currently diagnosed with cancer or a malignancy	372
Currently diagnosed with diabetes	2,099
Currently diagnosed with epilepsy	270
Currently diagnosed with coronary heart disease	569
Currently diagnosed with congestive heart failure	152
Currently diagnosed with hyperthyroidism (over-active thyroid)	207
Currently diagnosed with hypothyroidism (under-active thyroid)*	1,092
Currently diagnosed with liver disease	309
Recovered from angina	225
Recovered from arthritis	144
Recovered from asthma	1,494
Recovered from high blood pressure	1,665
Recovered from chronic bronchitis	369
Recovered from cancer or a malignancy	968
Recovered from diabetes	100
Recovered from epilepsy	158
Recovered from congestive heart disease	107
Recovered from coronary heart failure	48
Recovered from hyperthyroidism (over-active thyroid)	170
Recovered from hypothyroidism (under-active thyroid)	78
Recovered from a liver condition	168

Table 2: Determinants of life satisfaction

	Coef.	Std. Err.	t
Log of equivalent household income ***	0.13	0.01	12.9
Age ***	-0.04	0.00	-13.63
Age squared ***	0.00	0.00	14.73
In a relationship ***	0.31	0.02	18.63
Female ***	0.05	0.01	3.2
Has a degree ***	0.08	0.02	5.23
Self-employed	0.03	0.03	1.07
Unemployed ***	-0.44	0.03	-14.33
Retired ***	0.24	0.03	7.89
Family care ***	-0.12	0.03	-4.19
Training ***	0.32	0.03	9.7
Disabled ***	-1.18	0.04	-28.62
Other	-0.38	0.25	-1.53
Regularly talk with neighbors ***	0.25	0.02	14.1
Regularly attend religious services or meetings ***	0.07	0.02	3.45
Current diagnosis of angina ***	-0.14	0.05	-2.55
Current diagnosis of arthritis ***	-0.16	0.02	-6.95
Current diagnosis of asthma ***	-0.12	0.02	-5.24
Current diagnosis of high blood pressure ***	-0.12	0.02	-5.54
Current diagnosis of current bronchitis ***	-0.45	0.07	-6.37
Current diagnosis of cancer or malignancy ***	-0.27	0.07	-3.77
Current diagnosis of diabetes ***	-0.22	0.03	-6.75
Current diagnosis of epilepsy ***	-0.31	0.09	-3.64
Current diagnosis of coronary heart disease **	-0.14	0.06	-2.16
Current diagnosis of congestive heart failure ***	-0.41	0.12	-3.52
Current diagnosis of hyperthyroidism **	-0.20	0.10	-2.02
Current diagnosis of hypothyroidism **	-0.09	0.04	-2.04
Current diagnosis of a liver condition ***	-0.28	0.08	-3.47
Recovered from angina	0.00	0.10	0.01
Recovered from arthritis	0.01	0.12	0.06
Recovered from asthma	-0.02	0.04	-0.49
Recovered from high blood pressure	-0.02	0.04	-0.56
Recovered from chronic bronchitis ***	-0.21	0.07	-2.93
Recovered from cancer or malignancy	0.02	0.05	0.36
Recovered from diabetes **	-0.30	0.14	-2.17
Recovered from epilepsy **	-0.24	0.11	-2.18
Recovered from coronary heart disease	0.10	0.14	0.74
Recovered from congestive heart failure **	-0.48	0.20	-2.38
Recovered from hyperthyroidism	0.13	0.11	1.18
Recovered from hypothyroidism	0.00	0.16	-0.03
Recovered from a liver condition	-0.14	0.11	-1.34
Regional dummy variables unreported for parsimony			

*** Significant at 1 % level, ** significant at 5% level, * significant at 10% level

Table 3: Determinants of self-reported happiness

	Coef.	Std. Err.	t
Log of equivalent household income ***	0.02	0.00	4.55
Age ***	-0.01	0.00	-12.66
Age squared ***	0.00	0.00	10.96
In a relationship ***	0.05	0.01	8.53
Female ***	-0.05	0.01	-8.5
Has a degree **	0.02	0.01	2.51
Self-employed *	0.02	0.01	1.72
Unemployed ***	-0.14	0.01	-11.57
Retired **	0.03	0.01	2.16
Familycare ***	-0.03	0.01	-2.68
Training *	0.02	0.01	1.91
Disabled ***	-0.34	0.02	-21.2
Other	-0.12	0.10	-1.21
Regularly talk with neighbors ***	0.07	0.01	10.17
Regularly attend religious services or meetings ***	0.04	0.01	5.64
Current diagnosis of angina ***	-0.06	0.02	-2.97
Current diagnosis of arthritis ***	-0.05	0.01	-5.83
Current diagnosis of asthma ***	-0.03	0.01	-3.7
Current diagnosis of high blood pressure ***	-0.02	0.01	-2.64
Current diagnosis of current bronchitis ***	-0.10	0.03	-3.65
Current diagnosis of cancer or malignancy ***	-0.13	0.03	-4.6
Current diagnosis of diabetes **	-0.02	0.01	-1.98
Current diagnosis of epilepsy	-0.04	0.03	-1.31
Current diagnosis of coronary heart disease	-0.04	0.02	-1.5
Current diagnosis of congestive heart failure	-0.01	0.04	-0.22
Current diagnosis of hyperthyroidism	-0.03	0.04	-0.67
Current diagnosis of hypothyroidism **	-0.04	0.02	-2.35
Current diagnosis of a liver condition ***	-0.21	0.03	-6.82
Recovered from angina	-0.03	0.04	-0.93
Recovered from arthritis	-0.02	0.04	-0.46
Recovered from asthma	0.00	0.01	-0.28
Recovered from high blood pressure *	-0.02	0.01	-1.83
Recovered from chronic bronchitis *	-0.05	0.03	-1.95
Recovered from cancer or malignancy **	-0.04	0.02	-2.1
Recovered from diabetes	-0.08	0.05	-1.46
Recovered from epilepsy **	-0.11	0.04	-2.49
Recovered from coronary heart disease	0.05	0.05	0.9
Recovered from congestive heart failure	0.05	0.08	0.68
Recovered from hyperthyroidism	0.02	0.04	0.59
Recovered from hypothyroidism **	-0.14	0.06	-2.34
Recovered from a liver condition	-0.02	0.04	-0.55
Regional dummy variables unreported for parsimony			

*** Significant at 1 % level, ** significant at 5% level, * significant at 10% level

Table 4: Determinants of psychological health (GHQ)

	Coef.	Std. Err.	t
Log of equivalent household income ***	0.29	0.04	7.99
Age ***	-0.12	0.01	-13.12
Age squared ***	0.00	0.00	13.69
In a relationship ***	0.59	0.06	9.74
Female ***	-0.92	0.05	-17.16
Has a degree *	0.10	0.06	1.7
Self-employed	-0.07	0.10	-0.71
Unemployed ***	-1.97	0.11	-17.58
Retired ***	0.31	0.11	2.71
Family care ***	-0.82	0.11	-7.74
Training *	0.22	0.12	1.87
Disabled ***	-5.67	0.15	-37.61
Other	0.74	0.91	-0.81
Regularly talk with neighbours ***	0.74	0.06	11.45
Regularly attend religious services or meetings ***	0.48	0.07	6.49
Current diagnosis of angina ***	-1.17	0.19	-6.09
Current diagnosis of arthritis ***	-1.12	0.08	-13.49
Current diagnosis of asthma ***	-0.59	0.09	-6.8
Current diagnosis of high blood pressure ***	-0.61	0.08	-7.44
Current diagnosis of current bronchitis ***	-1.62	0.26	-6.29
Current diagnosis of cancer or malignancy ***	-1.92	0.27	-7.21
Current diagnosis of diabetes ***	-0.32	0.12	-2.7
Current diagnosis of epilepsy ***	-0.82	0.31	-2.63
Current diagnosis of coronary heart disease ***	-0.69	0.23	-2.99
Current diagnosis of congestive heart failure	-0.65	0.42	-1.55
Current diagnosis of hyperthyroidism	-0.44	0.35	-1.26
Current diagnosis of hypothyroidism ***	-0.47	0.16	-3.01
Current diagnosis of a liver condition ***	-2.45	0.29	-8.44
Recovered from angina	-0.05	0.35	-0.14
Recovered from arthritis	0.29	0.42	0.69
Recovered from asthma *	-0.25	0.14	-1.83
Recovered from high blood pressure **	-0.30	0.13	-2.32
Recovered from chronic bronchitis ***	-1.08	0.27	-4.05
Recovered from cancer or malignancy ***	-0.49	0.17	-2.93
Recovered from diabetes ***	-1.62	0.51	-3.2
Recovered from epilepsy ***	-0.93	0.40	-2.32
Recovered from coronary heart disease	-0.28	0.51	-0.55
Recovered from congestive heart failure	-0.81	0.74	-1.1
Recovered from hyperthyroidism	0.40	0.39	1.01
Recovered from hypothyroidism	-0.54	0.58	-0.93
Recovered from a liver condition *	-0.69	0.39	-1.76
Regional dummy variables unreported for parsimony			

*** Significant at 1 % level, ** significant at 5% level, * significant at 10% level

Table 5: Ordinal ranking of health conditions across well-being measures

Ordinal ranking of health conditions	LS	Happiness	GHQ
Current diagnosis of angina	10	4	4
Current diagnosis of arthritis	8	5	5
Current diagnosis of asthma	12	9	10
Current diagnosis of high blood pressure	11	12	9
Current diagnosis of chronic bronchitis	1	3	3
Current diagnosis of cancer or malignancy	5	2	2
Current diagnosis of diabetes	6	11	13
Current diagnosis of epilepsy	3	6	6
Current diagnosis of heart disease	9	8	7
Current diagnosis of heart failure	2	13	8
Current diagnosis of hyperthyroidism	7	10	12
Current diagnosis of hypothyroidism	13	7	11
Current diagnosis of a liver condition	4	1	1