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The distributional effects of adaption and anticipation to ill health on subjective wellbeing

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HIGHLIGHTS

- Adaption to illness differs markedly across the wellbeing distribution.
- Negative illness effects are moderated over time at higher distributional points.
- Illness persists in negatively affecting wellbeing at lower distributional points.
- There is little evidence of anticipatory effects across the wellbeing distribution.

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ABSTRACT

Adaption and anticipation to reported illness upon subjective wellbeing is analysed across the wellbeing distribution. Anticipation effects are muted, but substantial adaption effects are apparent that differ markedly over the range of wellbeing, being most evident at the upper quartile.

1. Introduction

There is a rapidly expanding area of research that looks at the determinants and consequences of reported happiness or life satisfaction, commonly referred to as subjective wellbeing (hereafter SWB). Within this literature, an important question raised is how and whether individuals adapt to changing conditions. If not, this leads to the phenomenon that is commonly referred to as the hedonic treadmill (Brickman and Campbell, 1971), where circumstances (and how these change) do not matter in the long run for wellbeing. Such a proposal was investigated by Clark et al. (2008) over six aspects of employment status, marriage and child birth using longitudinal German data. Adopting a framework that allowed anticipation and adaption to life events, they assessed the proposition that individuals return to some baseline level of satisfaction. Using a similar methodology, Clark and Georgellis (2013) have more recently analysed comparable factors using British data and Bauer et al. (2015) have used Russian data across four aspects of unemployment and marital status. However, an important

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dimension not investigated in these studies is the impact of ill health. Indeed, it is well-known that being in good health increases SWB, just as illness or bad health decreases it (Graham et al., 2011) and studies consistently reveal a strong relationship between health and happiness (see Dolan et al., 2008, for a review).

This current work sheds light on the temporal impact of illness on SWB but also within the context of its impact across the SWB distribution. The literature already cited has exclusively dealt with 'average' effects (by focusing on the mean of the SWB distribution) but the work of Binder and Coad (2011) has motivated a new stream of research which emphasises the whole of the SWB distribution so that the true effects of SWB and its determinants can be ascertained. Indeed, the usefulness of pan-distributional regression techniques can be gauged from theoretical insights in the economic-psychological literature that suggest that life events germinate a kind of brain activity that motivate individuals to score high or low in satisfaction measures to choice behaviour (Kahneman et al., 1993), which often results in skewed or multimodal distributions of well-being (Diener et al., 2006). In this way, regression methodologies that focus upon means might seriously misrepresent wellbeing responses to illness and a clear result that emerges in our analysis is that adaption and anticipation effects of illness differ measurably across the SWB distribution.

2. Data

The data used are of individuals taken from 18 waves of the British Household Panel Survey (BHPS), a nationally-representative survey of households running from 1991 to 2008. The question used to measure SWB is taken from the General Health Questionnaire (GHQ), which was developed as a screening instrument to identify psychological distress in primary care settings. Coded over a 0–36 point Likert scale derived from responses to twelve individual questions relating to differing aspects of mental and psychological wellbeing, we reorder it such that higher values correspond to higher reported wellbeing. While other indicators of SWB are available within the BHPS, the GHQ measure was chosen as it is continuously available in all waves.[1] Meanwhile, we identify an incidence of illness as any affirmative response to a series of questions asking respondents to identify whether they have been affected by specific health concerns over the course of the previous year. With prompting from a showcard, respondents are able to identify fifteen possible complaints, examples including heart problems, difficulties in hearing or cancer, through to a catch-all of some other unlisted condition. In all instances, respondents are advised that they should exclude temporary complaints. Our denotation of illness, though, makes no distinction between different aspects of illness, intensity nor frequency.

The sample is restricted in a specific way to create an illness history. This involves an initial incidence of reported ill health which is preceded by four waves in which no illness is reported. This lead-in period creates a clear measure of anticipation. After the first reported incidence of illness, individuals are retained within the sample for the next five waves regardless of whether they return to good health or not. The only proviso is that once individuals report good health after the initial illness incidence they are excluded if they subsequently re-report an illness. This again provides a clean measure of illness and any identified adaption effects will not be conflated with multiple illness spells and anticipation of them. This sample is restricted to those men and women aged 16 and over.

Table 1
Subjective wellbeing and illness duration: BHPS (1991–2008).

	Count	%	Average SWB
Initial illness incidence only	1620	34.7	25.7
Illness duration 1 extra year only	2060	44.1	25.7
Illness duration 2 extra years only	420	9.0	26.2
Illness duration 3 extra years only	240	5.1	26.3
Illness duration 4 extra years only	140	3.0	26.1
Illness duration 5 or more years	190	4.1	25.9
All illness durations	4670	100.0	25.9

3. Methodology

Following Clark and Georgellis (2013), adaption and anticipation are captured by a set of time-specific dummy variables included within a fixed effect regression framework. Extending this framework across the SWB distribution within a quantile regression setting as suggested by Koenker (2004), illness effects for individual i at time t and percentile θ of the SWB distribution are captured by:

$$SWB_{it}^{\theta} = \delta_i^{\theta} + \boldsymbol{\gamma}^{\boldsymbol{\theta}}\boldsymbol{X_{it}} + \rho_{-4}^{\theta} I_{-4,it} + \rho_{-3}^{\theta} I_{-3,it} + \rho_{-2}^{\theta} I_{-2,it} + \rho_{-1}^{\theta} I_{-1,it} + \rho_0^{\theta} I_{0,it} + \rho_1^{\theta} I_{1,it} + \rho_2^{\theta} I_{2,it} + \rho_3^{\theta} I_{3,it} + \rho_4^{\theta} I_{4,it} + \rho_5^{\theta} I_{5,it} + \varepsilon_{it}^{\theta} \quad (1)$$

where $\boldsymbol{X}$ is a vector of characteristics known to influence SWB (age, marital status, employment status, number of children, education and household income), δ an individual fixed effect, ε a disturbance term and the I are dummy variables reflecting illness duration: for anticipation ($I_{-4,it}$ to $I_{-1,it}$), these denote 4 years to 1 year *before* the initial illness incidence (I_0); for adaption ($I_{1,it}$ to $I_{5,it}$), these denote that the illness has persisted for an additional number of years ranging from 1 to 5 or more. Adaption and anticipation effects are subsequently measured by the estimated coefficients in ρ.[2]

4. Results

Over the entire sample average SWB is 25.9 (from a maximum of 36), confirming the commonly-found observation that wellbeing responses are positively skewed (see Table 1). Comparing across duration of illness categories shows little variation in wellbeing, with less than 1 point separating maximum and minimum averages. Nearly three-quarters of the sample have an illness that does not extend beyond the initial incidence or one extra year thereafter, with only 4.1% of individuals reporting an illness 5 or more years after the first.

Fixed effect adaption and anticipation estimates for five percentile points are shown in Table 2, with associated graphs in Fig. 1. For each of the chosen percentiles with the exception of the 90th, the initial incidence of illness has a significantly negative effect upon reported SWB. These effects appear stronger at the 10th and 25th percentiles than at either the 50th or 75th. Dealing with *adaption* effects first, these differ markedly across the SWB distribution. While the over-riding impression at the 10th percentile is of little discernible movement as illness duration increases, it should be noted that the standard errors around the point estimates are considerably greater than at higher percentile points with a number

[1] While three components of the GHQ (worry-induced sleep loss; constantly under strain; depressed) might potentially be highly correlated with illness, pairwise correlations between them and illness are comparable with the other GHQ components. Alternatively, life satisfaction could be used as the dependent variable but this is not viable due to sample size concerns with the estimator described below which is run on a balanced panel. However, the use of a fixed effect OLS estimator on an unbalanced panel using life satisfaction (see O'Leary et al., 2015) produces results comparable to those at the median presented later. We therefore feel confident in an analysis based around GHQ, with the caveat that potential correlation between illness and our chosen measure of SWB may still exist away from the central parts of the distribution.

[2] The baseline is those who do not report illness more than four years before the initial incidence.