Money and Mental Wellbeing: A Longitudinal Study of Medium-Sized Lottery Wins

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Abstract

One of the famous questions in social science is whether money makes people happy. We offer new evidence by using longitudinal data on a random sample of Britons who receive medium-sized lottery wins of between £1000 and £120,000 (that is, up to approximately U.S. $200,000). When compared to two control groups -- one with no wins and the other with small wins -- these individuals go on eventually to exhibit significantly better psychological health. Two years after a lottery win, the average measured improvement in mental wellbeing is 1.4 GHQ points.

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1. Introduction

A large social-science literature now exists on the determinants of happiness and mental health. As might be expected, this topic has attracted the attention of medical statisticians, psychologists, economists, and other investigators. However, one of the most fundamental research questions remains imperfectly understood. For the average person, do greater material riches bring about significantly greater mental wellbeing?

For discussions of this question, see, for example, Easterlin (1974), Martin (1995), and Diener and Biswas-Diener (2002). Many surveys of the field such as Myers (1992), Diener et al (1999), Argyle (2001), Nettle (2005a), and Layard (2005) conclude that the connection between money and happiness is slight or non-existent. A variant on this view is the interesting proposition, put forward by Marmot (2004) and others, that people's status and autonomy are what matter, and it is these, rather than wealth or income per se, that truly affect human beings. New work by Kahneman et al (2006) raises further question-marks over the influence of income.

In cross-sections, we now know that, even after correcting for many potentially confounding influences, there is a statistically well-determined link between income and reported wellbeing. There is also some evidence from panels. A large modern literature across many nations includes Blanchflower and Oswald (2004), Di Tella et al (2001, 2003), Easterlin (2003), Frey and Stutzer (2002), Graham (2005), Luttmer (2005), Winkelmann and

Winkelmann (1996), Oswald (1997, 2005), Shields and Wheatley Price (2005), and Van Praag and Ferrer-I-Carbonell (2004). More recently, attention has been paid to the idea that happiness may habituate to influences like greater income. Hedonic adaptation is discussed in modern research by, for example, Rayo and Becker (2004), Clark (1999), Clark et al (2004), Lucas et al (2003, 2004), Di Tella et al (2005), Gilbert et al (1998), Riis et al (2005), Frederick and Loewenstein (1999), Kahneman and Sugden (2005), Oswald and Powdthavee (2005), Smith et al (2005), Stutzer (2004), Ubel et al (2005), Wilson and Gilbert (2005), and Wu (2001).

The existing evidence on the link between income and mental wellbeing remains open to criticism. Perhaps the most effective way to object to the income-wellbeing correlation found in recent econometric work is to argue that it is not causal. This is the idea -- see for example the cogent arguments in Nettle 2005b -- that income movements and wellbeing movements may merely be linked because of omitted variables (such as seniority in the workplace). Such an objection is important. It is also difficult to deal with decisively, because it is not possible to run giant experiments where, in the name of science, different amounts of government-funded research cash are randomly allocated to treatment and control groups. Somehow, naturally occurring equivalent conditions must be studied.

This paper attempts to do so. It uses data on lottery winners to create a setting as close as possible to the idealized laboratory experiment. In a sense, we follow in a different way the same interests and testing strategy as Sacerdote (1997), Imbens et al (2001), Holtz-Eakin et al (1993), Lindahl (2005), and Walker (1998). The paper can be thought of as a longitudinal

equivalent to the oft-quoted cross-sectional work of Brickman et al (1978) on a small sample of lottery winners. It differs from Ettner (1996), for instance, by not using instrumental variables for income. Conceptually, our analysis has elements in common with the work of Meer et al (2003) who use inheritances to try to measure the effect of money on physical health and Frijters et al (2004, 2005) who draw upon the natural experiment of German reunification to assess the effects of income upon life-satisfaction and satisfaction with health.

We assume a reported wellbeing function:

$$r = h(u(y, z, m, t)) + e \quad (1)$$

where r is a measure of psychological health or self-reported wellbeing; u(….) is to be thought of as the person's true wellbeing or utility; h(.) is a non-differentiable function relating actual to reported wellbeing; y is income or wealth, to include lottery winnings; z is a set of demographic characteristics; m is a set of personal characteristics such as marital status; t is the time period; and e an error term. It is assumed that u(….) is a function that is observable only to the individual. This general approach has links to the experienced-utility idea discussed in, for instance, Kahneman et al (1997).

2. Data

The data used in this study come from consecutive waves of the British Household Panel Survey (BHPS). BHPS is a nationally representative sample of more than 5,000 British households, containing over 10,000 adult individuals, conducted between September and Christmas of each year from 1991 (see Taylor et al, 2002). Respondents are interviewed in successive waves; households who move to a new residence are interviewed at their new

location; if an individual splits off from the original household, all adult members of their new household are also interviewed. Children are interviewed once aged 16. The sample has remained broadly representative of the British population since its inception.

The BHPS contains a standard mental wellbeing measure, a General Health Questionnaire (GHQ) score. This is used internationally by medical researchers and others as an indicator of psychological strain or stress. Recent applications of GHQ include Cardozo et al (2000), Boheim and Ermisch (2001), Propper et al (2005), Clark and Oswald (1994, 2002), Ermisch and Francesconi (2000), Gardner and Oswald (2004, 2006), Martikainen et al (2003), McKenzie et al (2004), O'Reilly and Stevenson (2003), Pevalin and Ermisch (2004), Robinson et al (2004), Shields and Wheatley Price (2005), and Weinberg and Creed (2000). A GHQ score is one of the most commonly adopted questionnaire-based methods of measuring psychological health. It amalgamates answers to the following list of twelve questions:

Have you recently:

1. *Been able to concentrate on whatever you are doing?*
2. *Lost much sleep over worry?*
3. *Felt that you are playing a useful part in things?*
4. *Felt capable of making decisions about things?*
5. *Felt constantly under strain?*
6. *Felt you could not overcome your difficulties?*
7. *Been able to enjoy your normal day-to-day activities?*
8. *Been able to face up to your problems?*

9. *Been feeling unhappy and depressed?*
10. *Been losing confidence in yourself?*
11. *Been thinking of yourself as a worthless person?*
12. *Been feeling reasonably happy all things considered?*

Here we use the sum of the responses to these so-called GHQ-12 questions. As a measure of mental strain, the paper takes the simple summation, coded so that people answer with respect to usual and the response with the lowest wellbeing value scores 3 and that with the highest wellbeing value scores 0. This approach has been used many times before and is sometimes called a 36-point Likert scale. In general, medical opinion is that healthy individuals will score typically around 10-13 on the test. Numbers near 36 are rare and indicate depression in a clinical sense.

Although most windfalls are small, many people in the BHPS data have a financial windfall of some kind. The data set records either a win on a lottery or a win on the soccer pools. As half the British population play the national lottery, this form of winning windfalls swamps all other forms, and for simplicity we refer later merely to 'lottery winners'.

We measure people's GHQ score and their lottery winnings in each year between 1996 and 2003. To adjust for inflation, all financial amounts are deflated by the consumer price index and converted into 1998 pounds. At the time of writing, one pound sterling £1 is approximately $1.75 United States dollars.

To allow for lags, the wellbeing data are taken from 1998 to 2001. Hence, we observe whether an individual has won on the lottery within this three-year period, but use the longer time frame of mental stress scores (from

1996 to 2001) to capture changes in well-being from two-years before the win to two-years after. Table 1 reports means and standard deviations. Of the 33,605 person-years in the data, there are more than 26,000 observations with no observed win. Small prizes of between one pound and 999 pounds are common: there are 4,822 observations. Bigger wins, of over £1000, are uncommon. There are 137. It is these on which the paper particularly focuses. The other categories within Table 1 make a natural comparison: they provide control groups of individuals who get no win and only small wins. The latter category is particularly important, because, as in Imbens et al (2001), it is not possible within our data set to know the number of times each person plays the lottery. Hence we need to find a way to allow for a different psychological makeup between people who never gamble and those who do. Like Imbens et al, therefore, we assume the most persuasive control group is the set of people in the data who report small wins.

Table 1 reveals that the mean win among those getting more than zero but less than £999 is £70.5. The median is just £30. Among the group receiving a windfall in excess of £1000, the mean win is approximately £4300, and the median is just below £2000.

The mean value of GHQ mental stress, on its zero to 36 scale, is 11.19 in the entire data set. It is lower, at 10.73, among the medium-size winners.

This levels comparison, however, is perhaps not a natural one to emphasise. To allow person fixed-effects to be differenced out, it is more compelling to look at the changes -- the so-called deltas -- in individuals' GHQ scores. In this way, the issue becomes: does the GHQ mental strain score of

a particular person tend to fall after winning a prize in the lottery? It is the deltas that contain the main information and on which we focus.

3. Results

The empirical approach begins by looking at movements in GHQ scores before and after a lottery win. Later, regression equations are estimated. Pragmatically, with 137 observations on what we describe as medium-sized lottery wins, it is probably not sensible to put a large amount of structure on the statistical testing. It is known, moreover, that there is some natural fluctuation in GHQ scores (Hauck and Rice, 2004). While it would be desirable to have more than 137 significant lottery wins, that is intrinsically difficult in longitudinal random samples of a population.

What we attempt to look for, therefore, are persuasive simple patterns in the data. Figure 1 is divided into three sections. In Figure 1a, the changes in GHQ are plotted for the year before, and of, the lottery win. It can be seen that, on average, mental stress actually increases in the year of winning (the data are collected after a reported win, and most people saying they have won will have done so very recently). The rise in strain is about 0.5 GHQ points more than for the two control groups, who, as can be seen in the first two bars of Figure 1a, are similar to one another. This implies that, in these data, there is no immediate burst of psychological wellbeing from a lottery win. If anything, the reverse is true, although the standard errors on the £1000+ column in Figure 1a are large. As far as we know, this finding is a new one.

The second section, Figure 1b, charts the change in mental stress between T-1 and T+1. These are the years immediately before and

immediately after the one in which the lottery prize is won. Again, encouragingly for the statistical investigator, the columns make clear that individuals who get no win are almost indistinguishable in their responses from those with a small win, which is consistent with common sense. Interestingly, people in the £1000+ category do appear, in Figure 1b, to exhibit a rise in psychological wellbeing (that is, a fall in their GHQ mental stress score). However, the size of this decline is tiny, and, as illustrated, the standard-error bars are wide.

Figure 1c depicts the key finding of the paper. It compares wellbeing 2 years before the lottery win to 2 years afterwards. For those with no win, mental strain rises slightly, by 0.19 GHQ points. This increase -- it might be viewed as the background rise in stress in Great Britain -- is statistically significantly greater than zero. For those with a small win, GHQ goes up almost an identical amount, namely, by 0.18 points. Such a finding seems to make sense: winning a tiny amount does not alter a person's life.

However, the average change in mental stress is different among those in Figure 1c who, at time T=0, get a windfall of £1000 or more. For them, GHQ drops fairly markedly between T-2 and T+2. It does so by -1.22 points. As shown, the standard errors allow the null of zero to be rejected at the 5% level, so the change is statistically significantly different from that for the two comparison groups of individuals. To this 1.22, the figure of 0.18 or 0.19 should be added. People who get a medium-sized win therefore eventually enjoy an improvement in mental health, relative to others, of approximately 1.4 GHQ points. If we separate the sample into men and

women, a similar result is found for each of the sexes (not reported), although men show a larger improvement.

A further way to depict the main finding is illustrated in Figure 2. The figure presents the average levels (as opposed to changes) of GHQ stress scores in the years surrounding a lottery win. Here the GHQ levels of the three groups of individuals diverge, by the time that period T+2 is reached, very noticeably. (These results in Figure 2 are for the unbalanced panel, where an individual may be present in one period but not the next. When we instead restrict attention to the balanced sample -- where each period we observe the same set of individuals -- results are substantially the same.) Again this appears consistent with a causal link between windfalls and wellbeing. Although it might be expected that the size of the medium-size win would be correlated with the size of the alteration in wellbeing within the sub-sample of 137 people themselves, it proved impossible, probably because of the small sample size relative to the noise in GHQ scores, to find a statistically significant relationship.

In sum, these data suggest that winning the lottery is associated with improved mental wellbeing. Intriguingly, the effect apparently takes some time to show through. The observed delay is surprising. One feasible interpretation of the phenomenon is that winning (even medium-sized prizes like these) can have a disruptive effect in time T. A second possibility, and a less attractive one for the ideas in the paper, is that the phenomenon of winning itself eventually makes people cheerier, by increasing their sense of optimism. Nevertheless, a potentially more plausible explanation is that

spending the money is what matters and initially a windfall is saved. Clearly much remains to be understood.

4. Robustness Checks

Is it possible that this pattern is an artefact or fluke of the data set and therefore not one of cause-and-effect? In principle, it is. Figure 2, for instance, reveals some inherent volatility, and the drop in GHQ in T-1 among the winners is a potential concern.

As a check, various inquiries were done.

First, an examination of Figure 2 shows that the GHQ levels of all three groups are similar in the initial year, T-2. This fact seems reassuring. It suggests that the nature of the people under study -- non-winners, small winners, large winners -- is not profoundly different.

Second, some regression-equation checks are given. Table 2 lays out a number of Delta GHQ equations. These equations take as the dependent variable the measured change in the GHQ stress level over the period T-2 to T+2. Column 1 of the table thus re-does the previous chart in a more formal way. Column 2 of Table 2 includes controls for age, gender, and race. The female dummy is negative and statistically significantly different from zero. The others, however, are not. Importantly, the coefficient on the Win £1000+ dummy variable is left unchanged by the addition of these demographic controls, which suggests that the pattern in the paper is not simply because of elementary omitted characteristics. The low R-squared values are a noticeable reminder of the noise in GHQ values.

Column 3 extends the list of independent variables: it incorporates income, health, marital status, job status, education level, and region

dummies. Once again, the effect of winning the lottery is unaltered. The coefficient is now -1.449 with a well-determined t-statistic.

Finally, Column 4 of Table 2 includes an extra variable for the person's mental stress score in T-3. This controls for potential habituation or mean-reversion in wellbeing levels; when individuals initially have high wellbeing (low GHQ stress scores) we might expect them, either substantively or for reasons of measurement error, to report a decline in wellbeing (increase in strain) towards some baseline, and vice versa. In column 4 of Table 2, the estimated improvement in mental wellbeing after a medium-size lottery win is slightly larger at approximately 1.8 GHQ points. If people who initially show greater mental strain are more likely to gamble on the lottery, then mean-reversion could conceivably account for the increase in wellbeing that we observe for lottery winners. However, whilst we do see some evidence of mean-reversion in GHQ mental strain scores, it apparently contributes little to an explanation of the estimated windfall effect. Here in column 4 of Table 2 there is a slight alteration in the size of the coefficient on Win £1000+, but the standard error remains around one third of the coefficient estimate. These explorations suggest that the correlation between winning and change-in-GHQ is robust.

Third, are low-income individuals perhaps more affected by a lottery prize, and are there any important gender differences in response to a win? Table 3 takes up these issues. It estimates four delta-GHQ equations. The first split of the sample is into two income categories. Interestingly, and perhaps surprisingly, the drop in GHQ is more marked, and statistically better determined, in the high-income households. In Table 3 the coefficients on

Win £1000+ are at first, in columns 1 and 2, respectively -0.991 and -1.855. However, it not possible to reject the null of equality of these two numbers. Columns 3 and 4 divide individuals into men and women. In this case, the key coefficients are -1.674 and -1.140. Only the first of these, for the male sub-sample, is significantly different from zero. Nevertheless, the finding seems of value. If the paper's observation of a fall in GHQ after a win were the chance result of a small data set, we would not expect to see it in separate sub-samples for males and females. Perhaps the appropriate message from Table 3 -- when it is borne in mind that the numbers of medium-size lottery winners do not allow detailed disaggregation -- is that the size of the Win £1000+ effect appears to be reasonably robust across sub-samples.

Fourth, data on the life satisfaction levels of individuals were examined, and the above calculations were re-done. The life-satisfaction question was not asked in the survey in the 2001, so as a result we were missing around a quarter of our sample of lottery wins. Most of the paper's patterns, however, carried through (for instance, those winning £1000+ had the largest rise in life satisfaction), although the satisfaction data were too noisy, given the effective sample size, to permit particularly well-defined results.

Lastly, because the data set does not provide a measure of how often people play the lottery, there remains one possibility that should be considered. It is that, for some unobservable reason, individuals who gain psychologically after we observe them winning a medium-sized lottery prize both play the lottery far more than those who gain only small wins (and thus win more money) and would for some unknown independent reason have

improved mentally without the windfall of cash. In other words, there remains the potential that the correlation we observe is not truly causal.

Like most arguments that rest on assumed unobservabilities, this is a difficult possibility to avoid beyond doubt. Nevertheless, on the balance of the evidence, it is arguably unpersuasive and a causal interpretation seems the more appropriate one. Entering within a delta-GHQ regression equation a range of observable controls (which might be expected to be correlated with unobservables) leaves -- see Tables 2 and 3 -- the paper's key coefficient almost unchanged. Moreover, medium-size lottery winners begin with the same T-2 mental-health scores as other people in the data set, and thus do not appear to be fundamentally different from small-winners in some subtle psychological way.

5. Conclusions

A famous research question in social science is whether increases in income make people happier (and if so by how much). The key difficulty in testing is a practical one. It is how to find a quasi-experimental setting where some individuals are randomly assigned substantial sums of money while others in a control group are not.

The paper tackles this by studying longitudinal data on a statistically representative sample of Britons who receive medium-sized lottery wins. In our data, these are wins of between £1,000 and approximately £120,000 in 1998 pounds sterling. We have 137 winners of this type. The effective sample is therefore fairly small, so it is sensible to be cautious in interpretation.

When compared to two control groups -- one with no wins and the other with small wins -- the paper demonstrates that these medium-size winners go on to have significantly better psychological health. After two years, their mental wellbeing compared to before the lottery win has improved by approximately 1.4 GHQ points on a 36-point scale, with a standard error of approximately 0.5. The standard deviation of the GHQ scores in the whole sample is approximately 5, but that is probably not a useful way to think about the within-person variation over time. To provide a better feel for the size of the units, in Clark and Oswald (2002) and Gardner and Oswald (2006) it is argued that the worst thing observable in standard data sets is -- perhaps as might be expected -- the impact effect of being widowed. That rare and traumatic event is associated with a worsening in people's mental wellbeing of, on average, approximately 5 GHQ points. Such a calculation suggests that 1.4 points, the estimated consequence of a medium-sized lottery win for mental health, is economically significant and not merely statistically significant.

Checks on separate sub-samples of men and women, and high-income and low-income people, provide in each case broadly supportive evidence for the existence of a positive effect of windfalls upon mental wellbeing. Such corroboration, even on necessarily small sub-samples, seems encouraging. The explanation for the time delay in the wellbeing effect is unclear. It may be that actual spending is what matters and windfalls are initially saved, but this can be only a conjecture.

The paper's main result -- that a windfall is followed eventually by a significant improvement in mental health -- contrasts with standard

interpretations of the work of Brickman et al (1978). An advantage of the present study is that we follow the same individuals through time and do not have to rely on cross-section comparisons. Our paper is unable to examine adaptation to money over a long period. That possibility remains an important one to be explored by future research.

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This paper replaces the earlier calculations of Gardner and Oswald (2001). It used also data on inheritances and produced broadly similar findings. Because inheritances conflate a windfall with death of a family member, we decided to omit the inheritance calculations.

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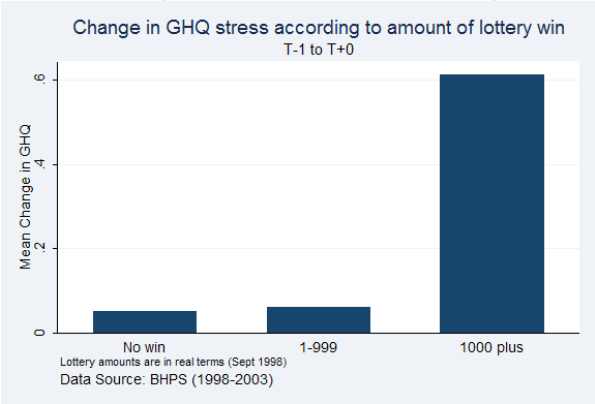
FIGURE 1

The Change in GHQ Mental Strain in the Years Surrounding a Lottery Win

Fig 1a.

The change in GHQ mental strain (from T-1 to T) associated with a lottery win at time T



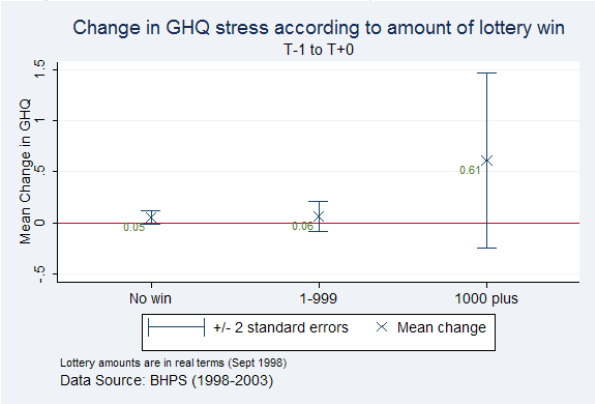
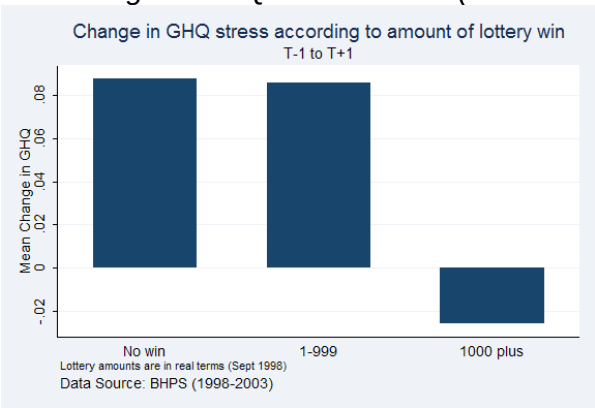


Fig 1b.

The change in GHQ mental strain (from T-1 to T+1) associated with a lottery win at time T



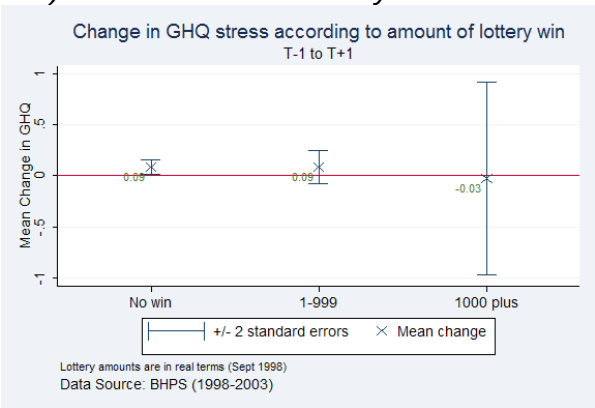
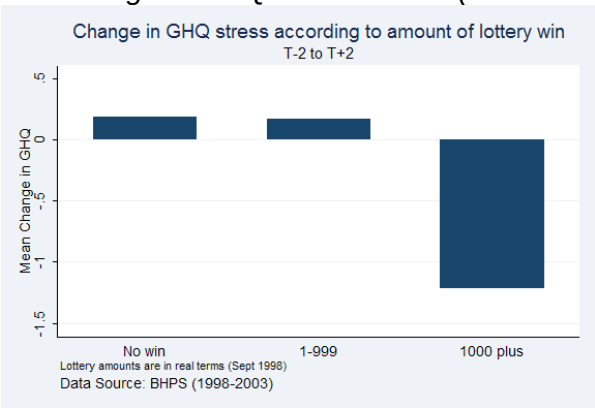
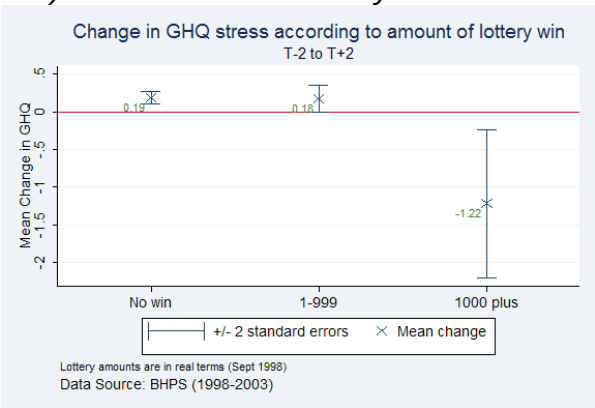


Fig 1c.

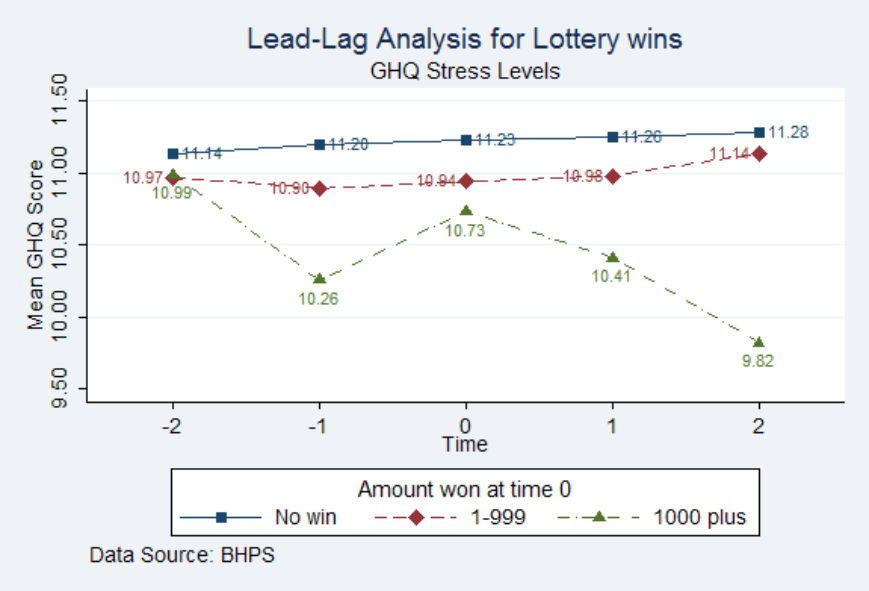
The change in GHQ mental strain (from T-2 to T+2) associated with a lottery win at time T





Notes: Graphs in the left-hand panel display the mean change in GHQ mental strain scores. Graphs in the right-hand panel additionally display confidence intervals. The scales differ across Figures.

FIGURE 2
GHQ Mental Strain Levels Before and After a Win



Notes: The graph displays the mean GHQ scores for the years surrounding a lottery win.

TABLE 1

Sample characteristics – Lottery Wins and GHQ Mental Strain

1998 to 2001

Lottery Win £	*Observations*	*Individuals*	*Mean win*	*Median win*	*Mean GHQ Score*
No win	26,646	9,677			11.23 (5.46)
1-999	4,822	2,943	70.5 (120.6)	30.0	10.94 (5.16)
1000 or more	137	116	4,303.1 (11,944.4)	1,987.8	10.73 (5.50)
Total	33,605	10,365	27.7 (809.3)	0.0	11.19 (5.42)

Notes: Standard deviations are in parentheses. The maximum win in the sample is £117,000. All wins are deflated to real values (1998 deflator).

TABLE 2
The Change in GHQ Mental Strain Surrounding a Lottery Win
(T-2 to T+2)

Regressors	*(1)*	*(2)*	*(3)*	*(4)*
Win 1-999	-0.014	-0.025	-0.018	0.024
	(0.101)	(0.101)	(0.102)	(0.125)
Win 1000 or more	-1.406	-1.435	-1.449	-1.779
	(0.500)	(0.501)	(0.498)	(0.571)
Age		0.001	-0.006	-0.005
		(0.002)	(0.004)	(0.004)
Female		-0.152	-0.044	0.143
		(0.073)	(0.076)	(0.091)
Non-white		0.177	0.211	0.191
		(0.263)	(0.270)	(0.319)
Log family income			0.038	-0.009
			(0.064)	(0.077)
Any health problems			-0.064	0.137
			(0.080)	(0.095)
Married			0.365	0.254
			(0.084)	(0.099)
Unemployed			-0.199	-0.202
			(0.312)	(0.397)
Retired			0.337	0.139
			(0.133)	(0.157)
Out of labour force			-0.439	-0.350
			(0.131)	(0.159)
O-levels			-0.069	-0.100
			(0.103)	(0.123)
A-levels			0.034	0.055
			(0.126)	(0.149)
HND, HNC			0.013	-0.045
			(0.160)	(0.190)
Degree			-0.066	-0.100
			(0.142)	(0.168)
GHQ (t-3)				-0.125
				(0.011)
Region dummies	No	No	Yes	Yes
R-squared	0.000	0.000	0.003	0.015
Observations	26,181	26,181	25,902	18,104

Notes: Standard errors are in parentheses. The omitted variables are: no lottery win, male, white, no health problems, unmarried, in employment, with a lower educational qualification. The variables in the table are people's characteristics measured at time T. The sample period for wins is 1998 to 2001. GHQ is measured between 1996 and 2003 to allow for the two-year lags.

TABLE 3

The Change in GHQ Mental Strain Surrounding a Lottery Win – Sub-samples
(T-2 to T+2)

Regressors	*Low income* (1)	*High income* (2)	*Male* (3)	*Female* (4)
Win 1-999	-0.021	-0.029	-0.105	0.068
	(0.156)	(0.135)	(0.134)	(0.156)
Win 1000 or more	-0.991	-1.855	-1.674	-1.140
	(0.680)	(0.715)	(0.627)	(0.811)
Age	0.004	-0.019	-0.011	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)
Female	-0.106	0.010		
	(0.109)	(0.108)		
Non-white	-0.072	0.420	0.158	0.273
	(0.403)	(0.362)	(0.362)	(0.393)
Log family income	-0.199	-0.051	0.080	0.004
	(0.103)	(0.156)	(0.091)	(0.090)
Any health problems	0.031	-0.120	-0.097	-0.038
	(0.122)	(0.107)	(0.109)	(0.116)
Married	0.451	0.345	0.221	0.521
	(0.115)	(0.127)	(0.117)	(0.120)
Unemployed	0.061	-0.562	-0.156	-0.282
	(0.386)	(0.539)	(0.352)	(0.568)
Retired	0.133	0.465	0.413	0.294
	(0.177)	(0.229)	(0.185)	(0.190)
Out of labour force	-0.347	-0.508	-0.098	-0.527
	(0.179)	(0.195)	(0.276)	(0.153)
O-levels	-0.176	0.143	-0.051	-0.045
	(0.139)	(0.158)	(0.140)	(0.148)
A-levels	0.020	0.111	-0.078	0.175
	(0.188)	(0.177)	(0.161)	(0.194)
HND, HNC	-0.283	0.266	-0.059	0.117
	(0.249)	(0.219)	(0.205)	(0.247)
Degree	-0.107	-0.011	-0.321	0.221
	(0.251)	(0.190)	(0.186)	(0.215)
Region dummies	Yes	Yes	Yes	Yes
R-squared	0.006	0.004	0.003	0.004
Observations	12,867	13,035	11,657	14,245

Notes: Standard errors are in parentheses. The omitted variables are: no lottery win, male (where applicable), white, no health problems, unmarried, in employment, with a lower educational qualification. The variables in the table are people's characteristics measured at time T. The sample period for wins is 1998 to 2001. GHQ is measured between 1996 and 2003 to allow for the two-year lags. High- and low-income are defined respectively as above and below median income (in each year).