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Happy Talk: Mode of Administration Effects on Subjective Well-Being

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Abstract
Research on the measurement of subjective well-being (SWB) has escalated in recent years. This study contributes to the literature by examining how SWB reports differ by mode of survey administration. Using data from the 2011 Annual Population Survey in the UK, we find that individuals consistently report higher SWB over the phone compared to face-to-face interviews. We also show that the determinants of SWB differ significantly by survey mode. We must therefore account for mode of administration effects in research into SWB and its determinants.

JEL Classifications: D60; I3; Z18
Keywords: subjective well-being; happiness; survey mode

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1. Introduction

Wellbeing can be thought of and measured in a number of ways (Parfit, 1984). There is increasing interest in ***subjective*** wellbeing – in reports of happiness – in academic (Dolan and Kahneman, 2008) and policy circles (Stiglitz et al., 2009; Fujiwara and Campbell, 2011). As a result, considerable research efforts are increasingly being directed at the validity and reliability of the measures (Dolan and Peasgood, 2008; Krueger and Schkade, 2008). Some of the effects considered include day of the week effects (Taylor, 2006) and the labelling of response categories during the interview (Conti and Pudney, 2011).

A largely neglected question, however, is the degree to which responses are influenced by the mode of administration – for example, whether respondents are asked how happy they are on the phone or face-to-face. Do individuals report consistently higher/lower levels of happiness in one mode versus another? Additionally, and equally important, do the determinants of happiness differ by mode of administration? If so, there are obvious implications for the interpretation of existing results.

The existing evidence suggests that responses to subjective questions are likely to be affected by the mode of administration (Schwarz et al., 1991; Bowling, 2005; Sakshaug et al., 2010). The majority of studies focus on health-related quality of life (HRQoL) and suggest that telephone surveys generate higher (more healthy) responses than self-completion. For example, Hanmer et al. (2007) find that telephone administration results in higher health-related quality of life (HRQoL) than postal mail surveys and self-administered surveys under the presence of an interviewer.

Similarly, Hays et al. (2009) find that patients entering a heart failure program and cataract surgery report higher HRQoL when the survey is administered over the telephone compared to postal mail. McHorney et al. (1994) find that individuals interviewed over the phone report more health ratings and fewer chronic conditions on average. Similar results are reported in Perkins and Sanson-Fisher (1998), Lyons et al., (1999) and in a more recent study of cancer survivors by Buskirt and Stein (2008).

There are fewer studies of face-to-face (F2F) compared to self-completion but the general finding would suggest that F2F yield higher (more positive) responses. For example, Breunig and McKibbin (2011) find that reports of financial difficulty are about 40% lower in F2F interviews than in self-completion. Conti and Pudney (2011) find higher reports of job satisfaction in F2F interviews. There are even fewer comparisons of telephone and face-to-face (F2F). What evidence there is tends to suggest that F2F yields higher (more positive) responses. For example, Li et al. (2012) find a lower prevalence of depression in personal interviews than in telephone ones, though Evans et al. (2004) find no difference in mental health responses telephone and F2F administration.

The evidence therefore suggests that respondents present themselves in a more positive light (e.g. healthier, etc.) the 'closer' the interviewer. This is what Conti and Pudney (2011) call "put on a good show for the visitor" effect in F2F. The social interaction of the respondent with the interviewer has been documented to lead to more socially desirable responses (Tourangeau and Smith, 1996; Presser and Stinson 1998), though others have found limited effects of a social desirability bias (Fowler et al., 1999; Kaplan et al., 2001). On the other hand, an interviewer can "increase response and item response rates, maintain motivation with longer questionnaires, probe for responses, clarify ambiguous questions, help respondents with enlarged show-cards of response choice options, use memory jogging techniques for aiding recall of events and behaviour, and control the order of the questions" (Bowling, 2005).

Against this background, this study compares F2F and telephone responses given to four SWB questions recently introduced by the Office for National Statistics (ONS) in the

UK. We also examine whether the determinants of SWB differ by mode. Our findings suggest there are large differences in SWB by survey mode, with telephone respondents reporting higher levels of SWB, and differing importance of the determinants of SWB as well, where life circumstances tend to matter more in F2F.

The rest of this paper is organised as follows. Section 2 describes the data and methods used in the analysis. Section 3 presents the results of the analysis. Section 4 discusses the implications of the results for research and policy.

2. Data and Methods

We use data from the UK April-September 2011 Annual Population Survey (APS). The APS is a representative sample of the UK population, where data are collected four times a year using addresses mainly obtained from waves 1 and 5 of different, but overlapping, Labour Force Survey (LFS) cohorts. Following recommendations by Dolan et al. (2011), this survey introduces the following four SWB questions:

i. ***Overall, how satisfied are you with your life nowadays?***
ii. ***Overall, to what extent do you feel that the things you do in your life are worthwhile?***
iii. ***Overall, how happy did you feel yesterday?***
iv. ***Overall, how anxious did you feel yesterday?***

These are measured on a 0-10 scale, where 0 denotes '***not at all***' and 10 denotes '***completely'***.

More than 80,000 respondents completed these in our sample – about 52% via F2F and 48% via telephone interviews. Note that the selection into mode of administration is not entirely random (see 2011 version of the LFS background and methodology user guide). LFS wave 1 interviews are mainly F2F and, upon respondent approval, subsequent waves within the same cohort take place over the phone, otherwise continue to occur via F2F. Hence, there is self-selection into survey mode. Note also that if a telephone number can be identified for a given address in wave 1, then the first mode of contact takes place over the phone in order to minimise costs. We are unable to identify which respondents are LFS wave 1 versus wave 5 in the APS data used here.

We perform simple tests of comparing unconditional average (SWB) measures by survey mode. Subsequently, we run a regression model of the following form to estimate the magnitude of the mode effect:

$$SWB_i = a_0 + a_1 PHONE_i + a_2 DEMO_i + a_3 HEALTH_i + R_S + M_t + e_i \qquad (1)$$

Where ***SWB*** denotes the score given in a SWB question by individual ***i***; ***PHONE*** is a dummy variable denoting whether the survey was conducted over the telephone rather than F2F; ***DEMO*** is a set of socio-demographic characteristics available for the respondent, including age, age squared, gender, marital status, employment status, education level, and ethnicity; ***HEALTH*** denotes the respondent's self-assessed health ranging from 1 (very bad) to 5 (very good); R_s is a set of ***s*** regional dummy variables; and M_t is a set of monthly (time of year) dummy variables. Note that income is excluded from the socio-demographic characteristics, as this is not available for nearly 50% of the respondents in the sample.

Although SWB responses are ordinal, assuming cardinality and estimating equation (1) using OLS instead of an ordered probit or logit model has been shown not to alter results significantly and also adds to their interpretability (Ferrer-i-Carbonell and Frijters, 2004).

3. Results

Figure 1 plots the distribution of the SWB measures by mode of administration. These offer some ***prima facie*** evidence of the effect of mode on SWB responses. The histograms for life satisfaction (LS), worthwhile, and happiness yesterday (henceforth, happiness) corresponding to telephone interviews appear to be right-skewed. That is, there is a larger percentage of respondents scoring 9 and 10 over the phone. This is also the case for anxious yesterday (henceforth, anxious), where a larger percentage of respondents report being 'not at all anxious' (i.e. 0) on the telephone interviews.

Table 1 reports the correlation coefficients between the measures by mode. LS, worthwhile and happiness are positively correlated (Dolan and Metcalfe, 2011), and are all negatively correlated with anxiety. Interestingly, correlation coefficients do not change as a function of survey mode. This is an important finding in its own right, suggesting that the relationship between SWB measures remains consistent irrespective of mode.

Next, we calculate t-tests in order to compare average SWB scores between modes. The results are presented in Table 2. For LS, worthwhile and happiness, average SWB is higher over the phone than F2F interviews by more than 0.34 points on 0-10 scale. Anxiety is also reduced when this question is administered over the phone, by about 0.26 points.

The results in Table 2 highlight the existence of statistically significant differences between modes of administration, but are not very informative of the relative effects of these differences. An investigation of the effects of survey mode via regression analysis is required for this purpose. The regression results, reported in Table 3, suggest that the phone mode increases SWB across all measures, with the maximum increase being observed for LS (0.19) followed by happiness (about 0.15).

On the remaining controls we find that the LS, worthwhile and happiness measures share some similarities. In general, men report being less satisfied, lower in worthwhile activities and less happy. SWB decreases with age, separation, divorce, widowhood, and unemployment, whereas it increases with health, marriage, and employment. Interestingly, education is not statistically significant for LS and happiness. The signs of the estimated coefficients are often reversed when considering anxiety, in the sense that the individual characteristics that generally tend to be related with positive scores of LS and happiness are also related with negative scores of anxiety.

In terms of relative effects, for LS the telephone mode more than alleviates the negative effects associated with gender and divorce. For the worthwhile measure, telephone offsets about half the negative effect associated with being a male, is as large as having an education up to GCE level, is larger than the level of worthwhile gained by being self-employed, and it alleviates about 1/4 of the effect of unemployment.

Similarly, for happiness the estimated coefficient for the telephone mode is sufficient to offset the negative effect associated with being male and about half of the effect of widowhood. It is also offsets about 1/3 of the negative effects of unemployment. Finally, for anxiety, telephone is as large as the effect of marriage, more than offsets the increased anxiety caused by divorce, and reduces anxiety by about half the increase associated with unemployment.

Figure 2 ranks the statistically significant estimates from Table 3 (by SWB measure) to present a more intuitive representation of the results and relative effects.

Table 4 reports separate regression by mode to examine whether determinants of SWB change by mode. We find several differences in the statistical significance of the controls. Of equal importance, the size of the estimated coefficients differs by mode. In most cases this difference is quite small, but there are cases where it is quite substantial. We present a few examples in Table 5.

4. Discussion

Mode of survey administration effects have been the focus of social science research, especially relating to questions of self-reported health. This study examines the impact differing mode effects have on SWB. We use data from the UK Annual Population Survey April-September 2011, which includes the four SWB questions used by the ONS to measure SWB in the UK – life satisfaction, worthwhile, happiness yesterday, and anxiety yesterday. This survey was administered over the phone and by face-to-face interviews. We find that the correlation coefficients do not change as a function of survey mode, implying that the relationship between the measures is consistent irrespective of mode. Importantly, we find that phone interviews are associated with significantly and substantially higher reports of SWB. We also report important differences in the effects of different determinants of SWB by mode, notably in relation to employment and education, where the impact of the characteristics is much less in phone compared to F2F surveys.

Researchers using SWB data for policy evaluation should therefore carefully consider potential mode effects. Policy-makers have recently shown considerable interest in measuring SWB in order to monitor progress (e.g. Stiglitz et al., 2009) – the inclusion of the four SWB questions in the APS reflects David Cameron's (the UK's Prime Minister) pledge to measure SWB in the UK. Treating the entire sample uniformly by disregarding mode effects could result in misleading conclusions about the average levels of SWB – see for example ONS (2012) preliminary analysis on the same data.

Such omission is not only relevant for SWB in the UK. Gallup has long been measuring SWB around the world and has employed both telephone and F2F interviews, with F2F being mostly used in developing nations. If the data in the Gallup World Poll follow the same pattern as in the UK – with higher SWB reported over the phone – then appropriately controlling for survey mode might suggest a different effect of GDP on happiness.

The importance of differing determinants of SWB is also of significant interest, as researchers and policy-makers need to understand the aetiology of SWB in order to target population groups accordingly. The most interesting differences across interview modes found here relate to respondents' employment status and education level. Economic inactivity reduces life satisfaction in F2F interviews, as has been found many times before (Dolan et al., 2008) – but it does not in phone surveys. For education, we confirm previous findings of a positive association between life satisfaction in the F2F surveys (Dolan et al., 2008) – but the association is negative in the phone surveys.

These differences in the determinants of SWB by mode are as strong as research suggesting differences by measure. For example, unemployment seems to matter much more for life satisfaction than for more experience-based measures like happiness and anxiety yesterday – supporting evidence in Knabe et al. (2010) from daily reconstruction method data suggesting that the unemployed compensate losses in life satisfaction by being able to devote more time in enjoyable activities.

Note that we cannot offer any prescriptions on the superiority of phone vs. F2F surveys and we are also not considering differences in the time and cost for gathering data, and response rates across survey modes – these are important aspects of data collection that

are evaluated elsewhere (Dillman, 2000; Shannon and Bradshaw, 2002; Groves, 2004; McMorris et al., 2009). What we highlight here is that the results cannot be generated by social desirability bias alone, since interviewers are 'closer' to respondents in F2F surveys, yet people are happier in phone surveys.

The further distance between interviewer and respondent in phone surveys means that respondents might not be allocating as much attention to the interview as in F2F surveys, which might further bias their responses (Holbrook et al., 2003). In a related way, it is also plausible that higher average SWB over the phone might be the result of gravitation of scores to the top end of the response scale because questions are hard to interpret. This could be especially true for those with lower education (Dolan and Metcalfe, 2011). This is a pattern we also observe here – for example, about 10% of respondents give a life satisfaction score of 'ten out of ten', compared to 23% of those with no educational qualification.

As already mentioned, the somewhat complex survey design of the APS raises some issues of selection into survey mode. Having said that, if individual characteristics determine selection into mode of administration, then controlling for these in a SWB regression model, as we do here, goes some way to resolving this problem (Nandi and Platt, 2011). Given the importance of mode effects, future research should compare SWB scores by additional survey modes (e.g. online survey and text messaging). But as things stand, the most cost-effective way to increase SWB in the UK is to conduct all interviews over the phone.

Figures and Tables

Figure 1: SWB by Survey Mode

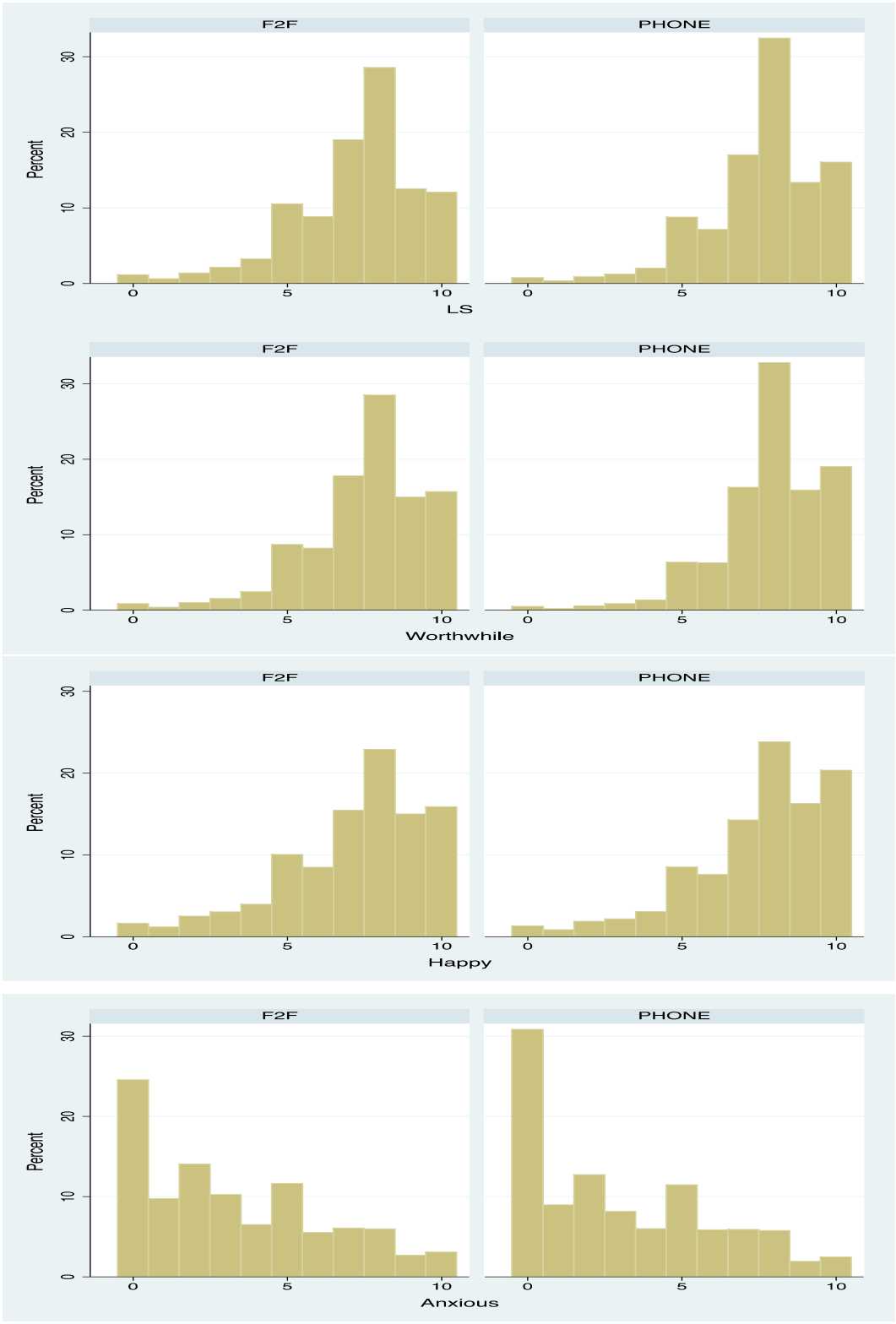
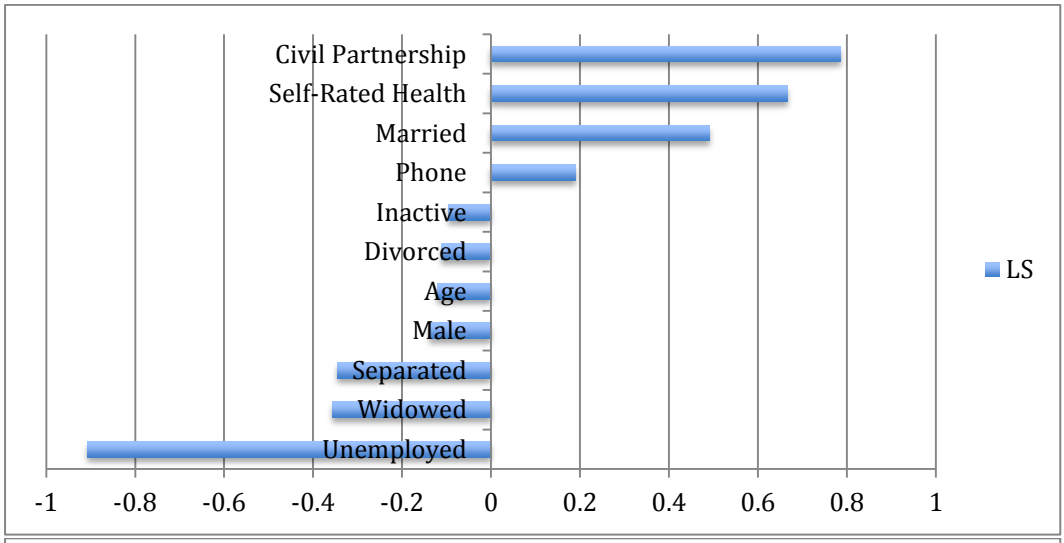
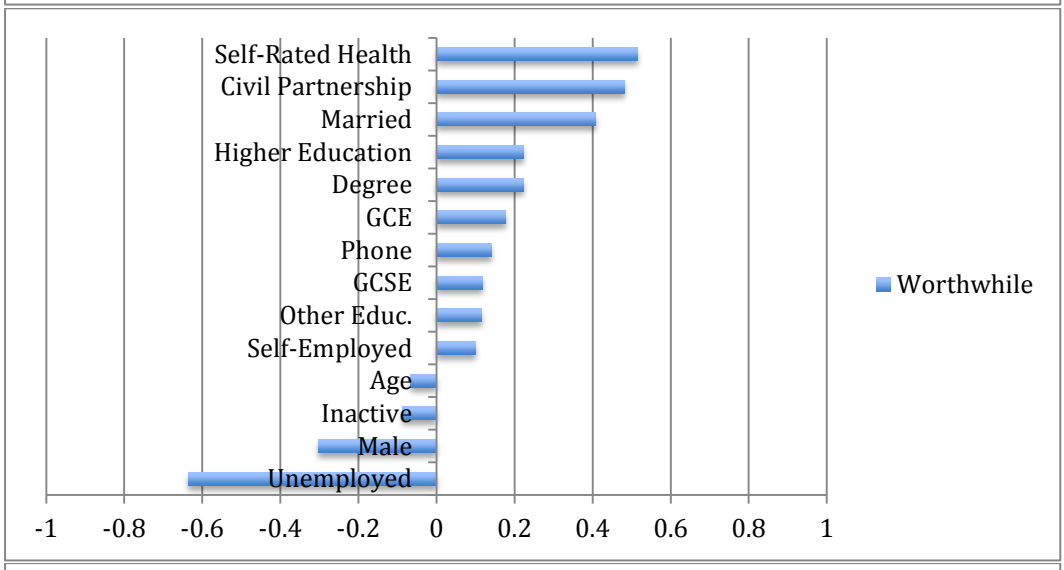
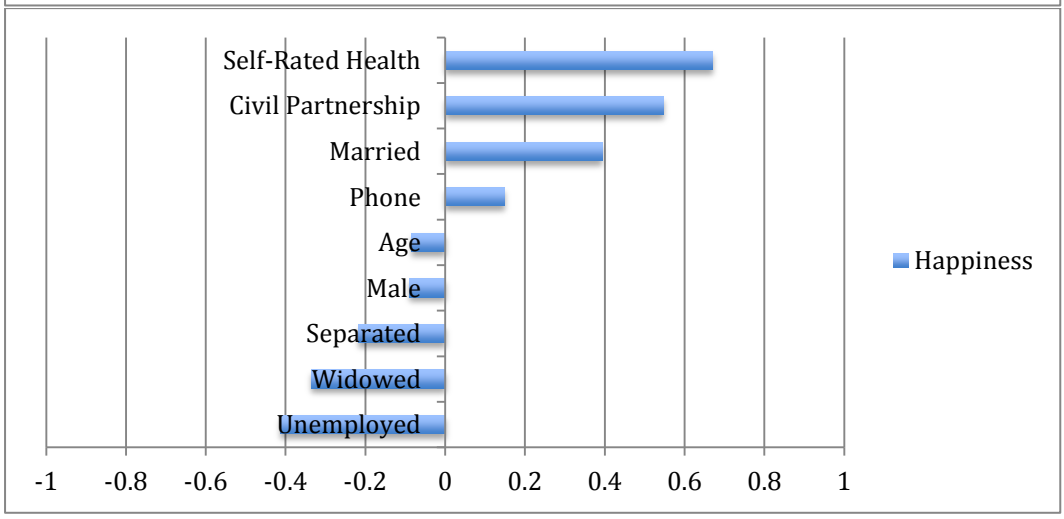


Figure 2: Regression Estimates







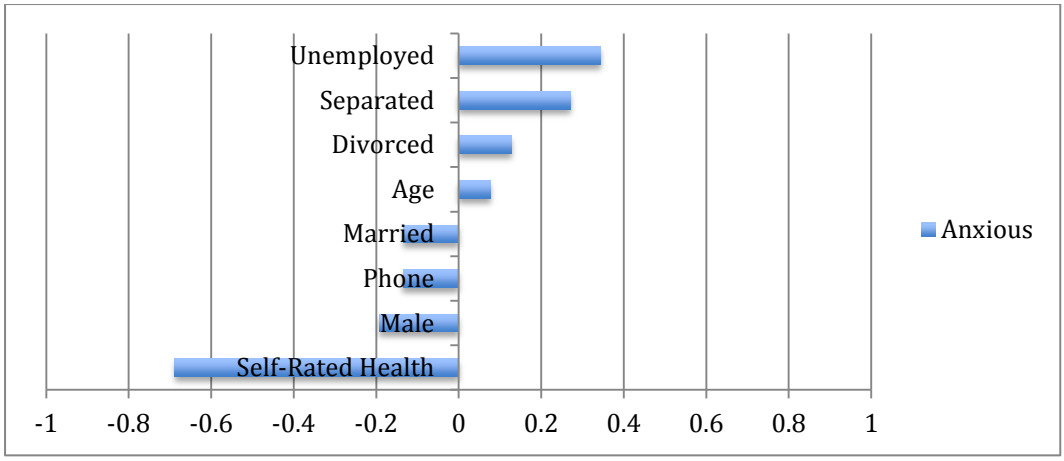

Unemployed
Separated
Divorced
Age
Married
Phone
Male
Self-Rated Health
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
Anxious

Table 1: Correlations between SWB Measures

	Face-to-Face			
	LS	**Worthwhile**	**Happiness**	**Anxious**
LS	1			
Worthwhile	0.64	1		
Happiness	0.59	0.51	1	
Anxious	-0.34	-0.26	-0.46	1
	Telephone			
	LS	**Worthwhile**	**Happiness**	**Anxious**
LS	1			
Worthwhile	0.62	1		
Happiness	0.57	0.50	1	
Anxious	-0.33	-0.25	-0.46	1

Table 2: Average SWB by Survey Mode

	Telephone		F2F		Mean Difference
	N	***Mean (St. deviation)***	***N***	***Mean (St. deviation)***	
LS	38,645	7.599 (1.861)	41,839	7.229 (2.025)	**0.370****
Worthwhile	38,439	7.879 (1.71)	41,698	7.532 (1.926)	**0.347****
Happiness	38,645	7.517 (2.212)	41,827	7.173 (2.322)	**0.345****
Anxious	38,560	3.044 (2.929)	41,773	3.309 (2.933)	**-0.264****

Notes*: *N denotes number of observations. ** ***P<0.01***.

Table 3: Regression Results

	LS	Worthwhile	Happiness	Anxious
Phone	0.19** (0.024)	0.142** (0.018)	0.149** (0.017)	-0.135** (0.033)
Male	-0.139** (0.015)	-0.302** (0.014)	-0.089** (0.015)	-0.191** (0.026)
Age	-0.12** (0.004)	-0.067** (0.004)	-0.084** (0.004)	0.077** (0.007)
Age^2	0.001** (0.0001)	0.001** (0.0001)	0.001** (0.0001)	-0.001** (0.0001)
Self-Rated Health	0.666** (0.012)	0.516** (0.013)	0.67** (0.01)	-0.688** (0.016)
Marital Status				
Married	0.492** (0.014)	0.408** (0.018)	0.393** (0.024)	-0.134** (0.037)
Civil Partnership	0.786** (0.092)	0.482** (0.10)	0.548* (0.194)	-0.254 (0.228)
Separated	-0.345** (0.065)	-0.033 (0.037)	-0.218** (0.064)	0.271** (0.068)
Divorced	-0.112** (0.019)	-0.005 (0.016)	-0.058 (0.027)	0.127** (0.041)
Widowed	-0.357** (0.046)	-0.048 (0.041)	-0.335** (0.049)	0.141 (0.081)
Education				
Degree	0.053 (0.038)	0.223** (0.038)	0.03 (0.023)	0.001 (0.055)
Higher Education	0.028 (0.029)	0.223** (0.038)	0.051 (0.042)	-0.069 (0.07)
GCE	0.013 (0.036)	0.177** (0.041)	0.036 (0.026)	-0.196* (0.041)
GCSE	-0.007 (0.034)	0.117** (0.038)	0.015 (0.024)	-0.12 (0.066)
Other	0.028 (0.042)	0.116** (0.03)	0.096 (0.047)	-0.077 (0.077)
Employment Status				
Self-Employed	-0.042 (0.021)	0.101** (0.018)	-0.002 (0.022)	0.026 (0.033)
Gov. Emp./Training Prog.	-0.294 (0.172)	-0.167 (0.217)	0.343 (0.256)	0.181 (0.311)
Unpaid Family Worker	-0.216 (0.151)	0.124 (0.089)	0.03 (0.156)	0.28 (0.202)
Unemployed	-0.908** (0.045)	-0.635** (0.031)	-0.412** (0.07)	0.344** (0.051)
Inactive	-0.096** (0.028)	-0.088** (0.023)	0.02 (0.033)	0.025 (0.032)
Constant	6.804** (0.118)	6.489** (0.119)	5.741** (0.111)	4.761** (0.164)
Month effects	Yes	Yes	Yes	Yes
Ethnicity dummies	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes
N	64,120	63,921	64,097	64,019
R^2	0.182	0.131	0.107	0.063

Notes: Regressions are OLS. Standard errors, clustered at the regional level, reported in parentheses. ** ***P<0.01***, * ***P<0.05***.

Table 4: Regression Results by Mode

	LS		Worthwhile		Happiness		Anxious	
	Phone	**F2F**	**Phone**	**F2F**	**Phone**	**F2F**	**Phone**	**F2F**
Male	-0.191**	-0.094**	-0.318**	-0.284**	-0.109**	-0.071**	-0.181**	-0.195**
	(0.022)	(0.018)	(0.02)	(0.019)	(0.014)	(0.022)	(0.037)	(0.036)
Age	-0.13**	-0.114**	-0.071**	-0.062**	-0.099**	-0.074**	0.10**	0.064**
	(0.005)	(0.007)	(0.006)	(0.005)	(0.005)	(0.006)	(0.009)	(0.011)
Age^2	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	-0.001**	-0.001**
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Self-Rated Health	0.649**	0.68**	0.481**	0.545**	0.646**	0.692**	-0.676**	-0.698**
	(0.012)	(0.019)	(0.015)	(0.022)	(0.016)	(0.015)	(0.016)	(0.023)
Marital Status								
Married	0.52**	0.472**	0.409**	0.41**	0.393**	0.396**	-0.208**	-0.088
	(0.03)	(0.022)	(0.026)	(0.02)	(0.023)	(0.028)	(0.032)	(0.05)
Civil Partnership	0.649**	0.854**	0.355*	0.541**	0.428	0.601*	-0.102	-0.311
	(0.128)	(0.14)	(0.149)	(0.165)	(0.322)	(0.259)	(0.42)	(0.195)
Separated	-0.383**	-0.326**	-0.059	-0.019	-0.326**	-0.163	0.278**	0.277*
	(0.076)	(0.073)	(0.049)	(0.057)	(0.074)	(0.09)	(0.07)	(0.109)
Divorced	0.003	-0.205**	0.079*	-0.076*	0.024	-0.13*	-0.059	0.273**
	(0.035)	(0.035)	(0.027)	(0.028)	(0.031)	(0.047)	(0.058)	(0.073)
Widowed	-0.372**	-0.337**	-0.032	-0.073	-0.294**	-0.39**	0.033	0.228**
	(0.057)	(0.062)	(0.047)	(0.064)	(0.069)	(0.052)	(0.106)	(0.062)
Education								
Degree	-0.148*	0.175**	0.004	0.342**	-0.18**	0.162**	-0.01	0.016
	(0.061)	(0.035)	(0.051)	(0.05)	(0.049)	(0.038)	(0.064)	(0.081)
Higher Education	-0.111	0.093**	0.031	0.32**	-0.073	0.101	-0.138*	0.004
	(0.059)	(0.029)	(0.058)	(0.041)	(0.053)	(0.068)	(0.062)	(0.09)
GCE	-0.147**	0.102*	-0.04	0.30**	-0.144**	0.14**	-0.13	-0.077
	(0.042)	(0.041)	(0.044)	(0.052)	(0.046)	(0.03)	(0.067)	(0.042)
GCSE	-0.136*	0.055	-0.071	0.211**	-0.112**	0.076*	-0.105	-0.134
	(0.045)	(0.039)	(0.04)	(0.052)	(0.035)	(0.032)	(0.09)	(0.068)

Other	-0.111	0.10*	-0.03	0.177**	-0.087	0.204**	-0.046	-0.105
	(0.061)	(0.037)	(0.038)	(0.038)	(0.057)	(0.055)	(0.085)	(0.094)
Employment Status								
Self-Employed	-0.044	-0.026	0.085**	0.125**	-0.014	0.02	-0.018	0.06
	(0.028)	(0.038)	(0.026)	(0.023)	(0.032)	(0.022)	(0.064)	(0.043)
Gov. Emp./Training Prog.	-0.274	-0.301	-0.055	-0.233	0.182	0.485	0.566	-0.09
	(0.332)	(0.225)	(0.372)	(0.328)	(0.363)	(0.39)	(0.449)	(0.388)
Unpaid Family Worker	-0.292	-0.017	0.063	0.277**	0.035	0.07	0.329	0.108
	(0.18)	(0.125)	(0.11)	(0.079)	(0.162)	(0.191)	(0.302)	(0.242)
Unemployed	-0.859**	-0.93**	-0.567**	-0.667**	-0.352**	-0.438**	0.304**	0.384**
	(0.052)	(0.066)	(0.051)	(0.041)	(0.073)	(0.081)	(0.077)	(0.056)
Inactive	-0.034	-0.135**	-0.038	-0.119**	0.064	-0.002	-0.076	0.102
	(0.035)	(0.028)	(0.034)	(0.029)	(0.043)	(0.039)	(0.035)	(0.055)
Constant	7.586**	6.433**	7.14**	6.113**	6.599**	5.27**	4.101**	5.041**
	(0.121)	(0.162)	(0.137)	(0.142)	(0.141)	(0.122)	(0.224)	(0.254)
Month effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnicity dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	29,511	34,609	29,414	34,507	29,500	34,597	29,466	34,553
R^2	0.172	0.182	0.116	0.134	0.100	0.109	0.059	0.065

Notes: Regressions are OLS. Standard errors, clustered at the regional level, reported in parentheses. ** ***P<0.01***, * ***P<0.05***.

Table 5: Differences in Determinants of SWB by Mode

	Employment	Education
LS:	Negative coefficient of unemployment is about 0.1 points higher in F2F surveys (in absolute terms). Economic inactivity reduces LS in F2F interviews, but not over the phone.	Several education variables are negatively signed on the phone and positively signed in F2F interviews.
Worthwhile:	Negative coefficient of unemployment is about 0.1 points higher in F2F surveys (in absolute terms). Economic inactivity reduces worthwhile in F2F, but not on the phone. Being an unpaid family worker increases worthwhile in F2F, but not on the phone.	Contrary to F2F interviews, none of the education variables are statistically significant over the phone.
Happiness:	Negative coefficient of unemployment is about 0.1 points higher in F2F surveys (in absolute terms).	Similar to the LS findings, several education variables are negatively signed on the phone and positively signed in F2F interviews.
Anxious:	Positive estimate of unemployment is about 0.1 points higher in F2F interviews.	Higher education (below degree level) reduces anxiety on the phone, but has no statistically significant association to F2F interview scores.

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