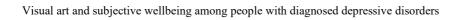# Assessing the relationship between engagement in visual art and subjective wellbeing among people with diagnosed depressive disorders

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Contents

Executive summary

This report explores the relationship between subjective wellbeing (SWB) and engagement in visual art among people with a clinical history of depression. Previous research points out that depressed people normally exhibit enhanced mood during experiences connected with visual art, and that prolonged engagement can eventually lead to improvements in measures of life satisfaction and mental health. This evidence has informed initiatives aimed at helping depressed people to cope with their illness through visual art, as well as the therapeutic use of visual art in mental healthcare. There are considerable pitfalls in the evidence currently available, however, which mainly stands on a few, small-scale studies, hardly comparable with one another in methods and outcome measures, and only covering a narrow range of ways in which engagement in visual art can take place.

This report aims to expand the evidence base by analysing a large sample of people with a history of depression and a wider range of forms of engagement, which includes both producing and viewing visual art. The data are taken from Understanding Society (Wave 2 and Wave 5) and comprise more than 4,000 observations. The sample mirrors the higher prevalence of clinically diagnosed depressive disorders among White middle-aged women in the UK. SWB is measured both through self-reports of life satisfaction and via cumulative scores in the 12-item General Health Questionnaire, a self-completed indicator of mental health. The data contain information on participation in four activities involving the production of visual art: 1) painting, drawing or making sculpture; 2) photography or video-making; 3) digital art or animation; 4) crafts. The data also include information on attendance at events and places that involve viewing visual art: 1) art, photography or crafts exhibitions; 2) electronic or video art shows; 3) street art or public art displays. Half of the sample engages in any of the above at least once a year, and producing is relatively more common than viewing. On the grounds of the available data, it is not possible to single out the extent to which the context and the frequency of engagement matter to SWB.

It is found that, on average, engagement in visual art is positively associated with life satisfaction. A difference of 0.08 points (measured on a 0-10 Likert scale) is estimated between the people who engage and those who do not engage in any of the above activities or attend any of the above events or places. To put this number in context, the estimated difference in life satisfaction between employed and unemployed people in the sample at hand is about 0.90 points. A relatively stronger relationship is observed on average with viewing visual art (+0.18 points) as compared to producing visual art (+0.08 points). There is some variability across specific forms of engagement, however. Photography and video-making display the strongest positive correlation with life satisfaction (+0.25 points), followed by attending exhibitions (+0.15 points) and making crafts (+0.10 points). In contrast, painting, drawing and sculpture are linked to losses in life satisfaction (-0.14 points).

Qualitatively similar associations are found between visual art and mental health, though there are differences in quantitative terms compared to the above. The gap between the people who engage and those who do not engage in visual art is estimated to be +0.07 points on average (using the same 0-10 Likert scale). In parallel, the estimated difference between

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the employed and the unemployed people in the sample is equal to 0.78 points. On average, producing and viewing visual art are comparably correlated with mental health (+0.06 points and +0.05 points, respectively), and little discrepancy is recorded among specific forms of engagement. Photography and video-making confirm themselves as the ones exhibiting the strongest positive correlation (+0.07 points), again followed by attending exhibitions and making crafts (both +0.06 points). Painting, drawing and sculpture shows a mild but positive association in this case (+0.02 points).

Considerable diversity in the associations between visual art and SWB is observed across socio-demographic groups. On the whole, engagement in visual art is more strongly correlated with SWB among women than among men, especially as far as mental health is concerned. Young and middle-aged people who produce visual art report lower SWB, but those who view visual art report higher SWB; the reverse pattern is found for the elderly instead. People with a low socio-economic status (i.e., unemployed and/or with household earning below the median) tend to be better off if they are also engaged in visual art, as compared with people having a high socio-economic status and showing the same tendency to engage, particularly in terms of life satisfaction.

Although these findings are non-causal and need further validation, they help expanding and upgrading the evidence on the benefits of visual art for the SWB of people with depressive disorders. In particular, the findings of this report suggest that: 1) only some forms of engagement in visual art (mainly photography or video-making, crafts, and attending exhibitions) are positively correlated with SWB; 2) the measure of SWB used matters in establishing what works; 3) different socio-demographic groups are likely to respond differently to an intervention based on visual art, whereby interventions should be tailored to specific groups. Future research should continue to explore the benefits of visual art for depressed people on a large scale, with a focus on its long-term effects on life satisfaction and similar global measures of SWB, but also on how depressed people feel in the moments they are engaged in visual art.

Introduction

Mental illness undermines wellbeing and quality of life, and unfortunately it is quite pervasive. Between April 2015 and March 2016, over 1.8 million people used the National Health Service for mental health problems in England. The most common problems involve depression and anxiety disorders, which account for about 2/3 of the diagnoses given to NHS patients in mental healthcare (over 1.1 million people).[1]

Not everyone with mental health issues is referred into psychological therapy, however. Specifically, most people in England who effectively have symptoms of depressive or anxiety disorders do not get diagnosed and treated.[2] Clinical diagnosis and referral into therapy are thus not a good proxy for whether an individual actually has mental health problems. Moreover, there are pronounced gender, age and ethnic inequalities in the likelihood of being diagnosed: for example, the majority of the 2015-2016 referrals into treatment for depression and anxiety disorders are adults in midlife and with White ethnic background, and there are about 7 women referred for every 4 men.[3]

Against this background, there has been increasing interest in visual art as an antidote to mental ill health. Visual art is a broad category of art forms that encompasses painting, drawing, sculpture, photography, animation, crafts, textile, jewellery, and the like. Initiatives targeted at people with mental disorders, which for example involve visual art training courses or events and exhibitions connected with visual art, have been proliferating all over the United Kingdom lately, under the support of the National Alliance for Arts, Health and Wellbeing.[4] Nowadays, visual art is also widely used in mental healthcare as a form of therapy, and the very facilities where care is provided are often enriched with visual art decoration.

The interest in the therapeutic function of visual art is motivated by research suggesting that people with mental health issues can indeed benefit from engagement in it, whether such engagement entails producing artworks or simply viewing those produced by others (for a brief review of the literature, see the appendix A1). Mood and self-esteem usually improve in the moment people with mental health problems take part in activities involving visual art, also thanks to the social aspects in which these normally take place. Prolonged engagement in visual art has also the potential to hasten recovery from mental disorders, or at least to lead into improvements in mental health.

There are however considerable pitfalls in the current evidence base on the benefits of visual art for the wellbeing of people with mental disorders (for a broader discussion on the matter, see appendix A1). The studies that actually focused on

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[1] http://content.digital.nhs.uk/catalogue/PUB22561/mhb-1516-ann-rep.pdf
[2] http://digital.nhs.uk/catalogue/PUB21748
[3] http://content.digital.nhs.uk/catalogue/PUB22110/psyc-ther-ann-rep-2015-16_v2.pdf
[4] http://www.artshealthandwellbeing.org.uk/what-is-arts-in-health/national-alliance-arts-health-and-wellbeing

visual art and mental ill health are rare, small-scaled (rarely exceeding 30 subjects), and have been criticised for their poor design. Certain forms of engagement in visual art (e.g., painting, drawing) have been studied extensively, while others (e.g., photography, crafts) have been underexplored or neglected. Moreover, different forms of engagement have seldom been investigated in the same study, thus preventing any reliable comparison of the benefits of different forms. Last but not least, previous studies have been inconsistent in terms of methods and measures of wellbeing, which makes them hardly comparable.

In light of such problems, this report aims to expand our understanding of the relationship between engagement in visual art and wellbeing among people with mental health problems. In particular, the focus of this report is on people with a history of clinical depression. The reason for this focus mostly lies in the availability of data (as explained in the methods section); however, there is also relatively scarce evidence on the benefits of visual art for depressed individuals as compared to people with more severe mental disorders, despite depression and anxiety disorders being the most common forms of mental illness.

Wellbeing may be conceptualised in various ways. In this report, it is understood as subjective wellbeing (SWB), in the wake of recent developments in academic research and policymaking paying more attention to the subjective experience of the individual rather than to 'objective' appraisals by experts or professionals. SWB conceives human wellbeing in terms of the feelings and sentiments arising from what people do and think, and it is measured by directly asking people how they are doing (see Dolan et al., 2011; Kahneman et al., 1997).

Two types of SWB measures can be distinguished (see Dolan, 2014; Dolan & Kudrna, 2016). Evaluative measures of SWB consist of people's summary assessments of how they feel, of which the most known example is life satisfaction (*Overall, how satisfied are you with your life nowadays?*). In contrast, experiential measures of SWB capture how people feel on a moment-to-moment basis; this type of measure requires a direct assessment of how people spend their time and how they feel meanwhile.

This report contributes to the relevant literature in at least three ways. First and foremost, the evidence presented here comes from the analysis of a large dataset with over 4,000 observations. This is an important contribution, because such large datasets have never been analysed in previous research, and this is therefore an opportunity to check the robustness of the available evidence.

Second, the report studies a variety of forms of engagement in visual art in the same setting, thus allowing for a more reliable comparison of different forms of engagement in their relationship with SWB. Moreover, forms that were sparsely investigated or completely neglected in earlier research are considered here.

Third, alongside estimating average trends in the population of people with depressive disorders, the report also explores the trends specific to certain socio-

demographic groups, such as gender, age and income clusters. The circumstances of different socio-demographic groups can indeed matter to the relationship between visual art and SWB; this notwithstanding, previous research did not study socio-demographic differences in any systematic way.
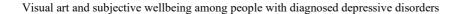
It is important to underscore that the findings of this report do not necessarily imply a causal link between engagement in visual art and SWB. This is because the data used here suffer from 'endogeneity problems' (i.e., the fact that engagement in visual art and SWB are measured at the same time), whereby it is impossible to ascertain 'which caused which' (provided there be any causation between the two at all). Therefore, the findings concerning the relationship between engagement in visual art and SWB presented and discussed below should be only interpreted as a correlation.

Another important limitation lies in the 'rough' measures of engagement in visual art and of depression employed. Engagement in visual art is measured based on whether or not people declared to participate in activities or attend events connected with visual art at least once a year. This measure clearly fails to capture how often and how regularly people engage in visual art. Moreover, it overlooks the context surrounding engagement in visual art (e.g., whether people engage for leisure or as part of a therapeutic programme; whether they engage alone or in group). This means that any correlation between engagement in visual art and SWB cannot be singled out from any correlation between SWB and the context of engagement. Neglecting both the frequency and the context of engagement in visual art is likely to disguise the effective relationship between engagement in visual art and SWB.

Depression is instead measured merely on the grounds of whether people reported that they had received a diagnosis of depression from a doctor in their life. This measure does not take into account how far back in time the diagnosis was made, and whether depressive symptoms were present at the time people engaged in visual art. Importantly, this measure of depression, being only based on clinical history, fails to capture cases of depression that is indeed present but that has never been clinically established (as noted earlier). For this reason, the data used in this report are not representative of the whole population of depressed people, but only of those who are clinically classified as such.

Unfortunately, the existing database does not allow addressing the above limitations. More generally, the data currently available on engagement in visual art among people with depressive disorders is scarce and of poor quality, for which reason it is hard to draw definitive and detailed conclusions. Nevertheless, one should see the findings presented in this report as a few steps forward in the literature, which enhance our understanding on the topic but by no means settle the matter. The present report should be followed by further research, corroborating its findings, addressing its limitations, and getting into deeper levels of detail.

The remainder of this report is organised as follows. The next section (2) describes the data, measures and analytical methods used to produce evidence. The following section (3) outlines the results of the analysis. The last two sections discuss the

results and their policy implications (4) and conclude by providing recommendations for future research (5). The appendix to the report contains: a brief review of the literature on visual art and SWB among people with mental health problems (A1); a more detailed description of the analytical methods (A2); tables with full results from the analysis (A3); the list of references (A4).

2. Methodology

2.1. Data

To match the scope of the present report, the data had to comprise at least the following: 1) some measure of SWB; 2) measures of some kind of engagement in visual art (except for professional engagement, not considered in this report); 3) measures of some mental illness. The following UK datasets were inspected to check the joint presence of these three measures: the British Household Panel Survey; the UK Household Longitudinal Study (Understanding Society); the English Longitudinal Study of Aging; the Taking Part survey; the Adult Psychiatric Morbidity Survey.

Only Understanding Society was found to incorporate all three types of measures. The analysis was then conducted on this dataset only. In particular, the analysis was limited to Wave 2 (2010) and Wave 5 (2013) of Understanding Society, which were the only waves to assess engagement in visual art as of when this report was written, within the module 'Leisure, culture and sport'.

Understanding Society is the largest longitudinal survey in the UK, designed to monitor the life circumstances of Britons over time. The survey has taken place annually since 2009, effectively replacing the British Household Panel Survey. It is funded by the Economic and Social Research Council and designed by the Institute of Social and Economic Research at the University of Essex. The data are accessible online via the UK Data Service.

2.2. Measures

Subjective wellbeing

Understanding Society encompasses a number of measures of SWB, of which two are considered for the analysis, for their wide use in academic research, policy and practice.

The first is **life satisfaction**, measured via the single-item question *How satisfied are you with your life as a whole?* on a Likert scale ranging from 1 (completely dissatisfied) to 7 (completely satisfied). According to the classification of SWB measures briefly outlined in the previous section, this is an evaluative measure of SWB, because it requires respondents to provide a summary assessment of how their life is going.

The second is **mental health**, measured via the 12-item version of the General Health Questionnaire (GHQ) on a Likert scale from 12 (best score) to 48 (worst

score).[5] The GHQ score has already been employed as a measure of SWB in the literature.[6] This is a hybrid between an evaluative and an experiential measure of SWB: responses are derived from global self-assessments of mental states (and not from reports of mental states moment-to-moment), but the questions anyhow draw respondents' attention to their latest experiences (rather than to their life as a whole).

For ease of comparability, both life satisfaction and mental health were converted to the same 0-10 scale, where 0 indicated the lowest value of SWB and 10 indicated the highest value.[7]

Engagement in visual art

The 'Leisure, culture and sport' module of Understanding Society assesses respondents' engagement in leisure, culture and sport, including their engagement in visual art.

Specifically, respondents are asked to report whether or not they have taken part in each of a number of activities at least once in the 12 months preceding the survey. Of these activities, 4 involve producing visual art works:

- Painting, drawing or making sculpture;
- Taking photography or making videos;
- Making digital art or animation;
- Making crafts (e.g., textile, knitting, jewellery, etc.).

Respondents are also asked whether or not they have attended each of a number of events and places at least once in the previous 12 months. Of these events and places, 3 are connected with viewing visual art:

- Art, photography or crafts exhibitions;
- Electronic or video art shows;
- Street art or public art displays or installations.

The data do not include details on respondents' frequency of participation in each of the activities enquired, or on their frequency of attendance at each of the events and places enquired. There is also no information on, for example, why respondents took part in the above activities or attended the above events (e.g., as part of a therapy programme or simply for leisure), or where and whom they were with during those activities or events. As noted in the introduction, this means that it is not possible to isolate the direct effect or correlation between engagement in visual art and SWB, from the indirect one between SWB and the context of engagement in visual art.

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[5] See Goldberg (1978). The GHQ is designed to gauge respondents' recent levels of psychological distress. An example question included in the GHQ is *Have you recently been feeling unhappy or depressed?*. Respondents answer each question on a scale from 1 (best score) to 4 (worst score), and the answers are then combined as to form a summary score ranging from 12 to 48.

[6] See, for example, Clark and Oswald (1994) and Oswald and Powdthavee (2008).

[7] This procedure entailed reverting mental health scores as to match low scores with high SWB values.

Based on responses to the above questions, three measures of engagement in visual art were constructed:

1. **Overall engagement**: this measure captures whether or not respondents have participated in at least one of the above visual art activities *or* whether or not they have attended at least one of the above visual art events or places; that is, no distinction is made between producing and viewing visual art, nor among specific forms of engagement.
2. **Mode of engagement**: this measure captures whether or not respondents have participated in at least one of the above visual art activities *and* whether or not they have attended at least one of the above visual art events or places; that is, a distinction is made between producing and viewing visual art, but no distinction is made among specific forms of engagement.
3. **Form of engagement**: this measure captures whether or not respondents have participated in *each* of the above visual art activities *and* whether or not they have attended *each* of the above visual art events or places; that is, full distinction is made between producing and viewing visual art, as well as among specific forms of engagement.

Mental illness

Understanding Society assesses respondents' general health status and health history, and their mental health in particular, using various questions. One of these questions is: *Has a doctor or other health professional ever told you that you have any of the following conditions?*, which is asked to respondents who enter the survey for the first time. Another questions is: *Since the last interview, has a doctor or health professional newly diagnosed you as having any of the following conditions?*, which tracks changes in the health status of the respondents who have already been interviewed in the past.

When answering both questions, respondents can select among 17 different conditions, as well as the option 'none of these'. Most of the conditions respondents can declare primarily affect physical, rather than mental health. The only exception is the option labelled 'clinical depression' (hence the focus of this report on people with depressive disorders).

If respondents selected 'clinical depression' when answering either of the above questions, they were deemed as suffering from depressive disorders and were thus considered for the analysis. So as to increase the sample size as much as possible, also responses to the above questions given in waves other than those primarily considered were taken into account (i.e., Wave 2 and Wave 5); it was thus possible to capture whether the same people appearing in the waves of interest had declared they had a history of depression in other waves.

As noted in the introduction, this measure of depression is limited in that it dismisses those respondents who are actually depressed but have not been clinically diagnosed

as such. Moreover, this measure does not allow capturing the details of respondents' clinical history (e.g., when they were diagnosed, if they still suffer from depression), which would allow introducing appropriate controls in the analysis.

Socio-demographics

Understanding Society also includes an array of measures of respondents' demographic, social and economic status. Socio-demographics should ideally be controlled for when studying the relationship between SWB and some other variable (in this case, engagement in visual art), because they can be correlated with both SWB and the variable of interest; otherwise, results would reflect the actual relationship studied less accurately.

The following socio-demographic variables have been taken into account in the analysis that follows, based on recommendations from previous SWB research (see Fujiwara & Campbell, 2011).

- **Gender**: male, female.
- **Age** (both actual and squared, to capture nonlinear trends).
- **Ethnicity**: White, Black, Asian, other or mixed.
- **Region**: England, London, Wales, Scotland, Northern Ireland.
- **Marital status**: single or never married, cohabiting with partner, married or in civil partnership, separated or divorced, widowed.
- **Own children aged 16 or less in household**: none, one or more.
- **Employment status**: employed, unemployed, inactive (i.e., outside the labour market).
- **Monthly household income** (in logarithmic scale, to capture nonlinearity).
- **Self-rated general health**: excellent, very good, good, fair, poor.

2.3.   Sample statistics

A sample made of 4,618 observations and 3,271 people with a clinical history of depression was obtained after eliminating missing or invalid observations in measures of SWB, engagement in visual art, depressive status and socio-demographic variables considered. The table in the next page summarises the sample statistics (percentage out of the total number of observations for categorical variables; minimum, maximum, mean, median values and standard deviation for continuous variables).

The sample is well representative of the population of people with clinically diagnosed depression in the UK. The higher prevalence of women, of the middle-aged group and of people of White ethnicity reflects the higher likelihood of finding people with diagnosed depressive disorders within these groups relatively to other groups.

About a half of the sample is engaged in visual art. Producing visual art is relatively

Variable	% obs. (N = 4,618)	Min	Max	Mean	Median	Sd
Subjective wellbeing						
Life satisfaction		1 (0)	7 (10)	4.17 (5.29)	4 (5)	1.71 (2.86)
Mental health		12 (0)	48 (10)	28.9 (5.53)	26 (6.11)	7.60 (2.11)
Engagement in visual art						
Overall engagement	53.59%					
Producing visual art	42.23%					
Painting, drawing or sculpture	19.10%					
Taking photography or making videos	14.94%					
Making digital art or animation	9.59%					
Making crafts	24.97%					
Viewing visual art	32.16%					
Art, photography or crafts exhibitions	27.59%					
Electronic or video art shows	6.17%					
Street art or public art displays	15.50%					
Socio-demographics						
Gender						
Male	29.90%					
Female	70.10%					
Age		16	95	48.08	48	14.69
Ethnicity						
White	91.51%					
Black	1.91%					
Asian	3.92%					
Other or mixed	2.66%					
Region						
England	73.58%					
London	8.94%					
Wales	5.44%					
Scotland	8.03%					
Northern Ireland	4.01%					
Marital status						
Never married	11.93%					
Cohabiting	8.06%					
Married or in civil partnership	51.91%					
Separated or divorced	22.30%					
Widowed	5.80%					
Own children < 16 in household						
None	70.42%					
1 or more	29.58%					
Employment status						
Employed	44.05%					
Unemployed	8.40%					
Inactive	47.55%					
Monthly household income		£0	£20,000	£3,010	£2,430	£2355.48
Self-rated general health		Poor (5)	Excellent (1)	3.29	Good (3)	1.18
Wave						
2	60.24%					
5	39.76%					

more common than viewing it. The most common form of engagement in visual art is attending art, photography or crafts exhibitions, followed by making crafts, and then by painting, drawing or making sculpture.

2.4. Analysis

Because these available measures of engagement in visual art do not refer to any particular experience of engagement, but rather capture respondents' overall tendency to engage therein, the relationship between visual art and SWB can only be studied beyond actual experiences of engagement, and not in the moment and context of any particular experience. In other words, **the analysis will only reveal whether or not, and to what extent on average, the people with a history of depression who have engaged in visual art at least once in the 12 months prior to the interview report higher or lower SWB, as compared to those who have not engaged during the same time period**.

Even though Understanding Society is a longitudinal survey, there is limited room for establishing causality by monitoring changes in SWB upon changes in engagement in visual art over time. This is because the questions related to engagement in visual art only appear in 2010 and 2013 (as of the data in which this report was written), which are too far apart in time to attribute changes in SWB to changes in engagement in visual art.

Three types of analysis were performed (see below). All types were based on linear regression techniques. In all cases, the statistical significance of the estimated correlations between engagement in visual art and SWB was evaluated at the 5% significance level (i.e., there is a probability of error equal to 5% when evaluating whether each correlation is different from zero). For further details on the statistical methods, see the appendix.

The first type of analysis focuses on the relationship between engagement in visual art and life satisfaction. The goal is to determine whether or not, on average, engagement in visual art is associated with any gains or losses in life satisfaction, everything else (e.g., gender, marital status, income) being held constant. Three separate analyses were performed, one for each constructed measure of engagement in visual art (i.e., overall engagement, mode
of engagement, form of engagement). All three used the socio-demographic variables listed above as controls.

The second type of analysis investigates the relationship between engagement in visual art and mental health. The goal is to determine whether or not, on average, engagement in visual art is associated with any gains or losses in mental health, everything else equal. As above, three separate analyses were performed, one for each constructed measure of engagement in visual art (i.e., overall engagement, mode of engagement, form of engagement). All three used the socio-demographic variables listed above as controls.

The third type of analysis explores the relationship between engagement in visual art and SWB (life satisfaction and mental health) for specific socio-demographic groups. The goal is to assess whether or not, on average, any gains or losses in SWB associated with engagement in visual art differ across socio-demographic categories. The socio-demographics that were investigated were the following (in parenthesis the categories each socio-demographic is divided into):

gender (men, women), **age** (30 or less, 31 to 60, 61 or more), **employment status** (employed, unemployed or inactive) and **income** (below or equal to sample median, above sample median). Separate analyses were performed for every socio-demographic group considered (men, women, young, middle-aged, old, etc.), for each measure of SWB (life satisfaction and mental health) and for each of the constructed measures of engagement in visual art (i.e., overall engagement, mode of engagement, form of engagement). All analyses used the socio-demographic variables listed above as controls (except for the variable being investigated: e.g., when the elderly were investigated, the age variable was not included as a control).

3.   Summary of results

This section presents the results from the analysis. None of the correlations between engagement in visual art and SWB reported below are to be considered statistically significant, unless otherwise stated.

3.1.   Visual art and life satisfaction

The results are shown in Table A1 in the appendix.

Overall engagement

On average, engagement in visual art is positively correlated with life satisfaction. **The estimated average gain in life satisfaction associated with engagement in visual art is +0.08 points.**

Mode of engagement

On average, producing visual art is positively correlated with life satisfaction. **The estimated average gain in life satisfaction associated with producing visual art is +0.01 points.**

On average, viewing visual art is positively correlated with life satisfaction. **The estimated average gain in life satisfaction associated with viewing visual art is +0.19 points.** This association is statistically significant.

Form of engagement

On average, painting, drawing or making sculpture is negatively associated with life satisfaction. **The estimated average loss in life satisfaction associated with painting, drawing or making sculptures is -0.14 points.**

On average, taking photography or making videos is positively associated with life satisfaction. **The estimated average gain in life satisfaction associated with taking photography or making videos is +0.26 points.** This association is statistically significant.

On average, producing digital art or animation is negatively associated with life satisfaction. **The estimated average loss in life satisfaction associated with producing digital art or animation is -0.09 points.**

On average, making crafts is positively associated with life satisfaction. **The estimated average gain in life satisfaction associated with making crafts is +0.10 points.**

On average, attending art, photography or crafts exhibitions is positively associated with life satisfaction. **The estimated average gain in life satisfaction associated with attending art, photography or crafts exhibitions is +0.14 points.**

On average, attending electronic or video art shows is negatively associated with life satisfaction. **The estimated average loss in life satisfaction associated with attending electronic or video art shows is -0.01 points.**

On average, attending street art or public art displays is positively associated with life satisfaction. **The estimated average gain in life satisfaction associated with attending street art or public art displays is +0.02 points.**

3.2. Visual art and mental health

The results are shown in Table A2 in the appendix.

Overall engagement

On average, engagement in visual art is positively correlated with mental health. **The estimated average gain in mental health associated with overall engagement in visual art is +0.07 points.**

Mode of engagement

On average, producing visual art is positively correlated with mental health. **The estimated average gain in mental health associated with producing visual art is +0.06 points.**

On average, viewing visual art is positively correlated with mental health. **The estimated average gain in mental health associated with viewing visual art is +0.05 points.**

Form of engagement

On average, painting, drawing or making sculpture is positively associated with mental health. **The estimated average gain in mental health associated with painting, drawing or making sculptures is +0.02 points.**

On average, taking photography or making videos is positively associated with mental health. **The estimated average gain in mental health associated with taking photography or making videos is +0.07 points**.

On average, producing digital art or animation is negatively associated with mental health. **The estimated average loss in mental health associated with producing digital art or animation is -0.03 points.**

On average, making crafts is positively associated with mental health. **The estimated average gain in mental health associated with making crafts is +0.06 points.**

On average, attending art, photography or crafts exhibitions is positively associated with mental health. **The estimated average gain in mental health associated with attending art, photography or crafts exhibitions is +0.06 points.**

On average, attending electronic or video art shows is negatively associated with mental health. **The estimated average loss in mental health associated with attending electronic or video art shows is -0.08 points.**

On average, attending street art or public art displays is positively associated with mental health. **The estimated average gain in mental health associated with attending street art or public art displays is +0.01 points.**

3.3.   Socio-demographic differences

In this sub-section, the results relative to specific forms of engagement in visual art are reported only if statistically significant. The results relative to overall engagement and mode of engagement are reported as in the above sub-sections.

Gender

The results are shown in Tables A3-A6 in the appendix.

On average, engagement in visual art is positively correlated with life satisfaction among both men and women. **The estimated average gains in life satisfaction associated with overall engagement in visual art are +0.07 points for men, and +0.10 points for women**. On average, engagement in visual art is positively correlated with mental health among both men and women, but more so among women. **The estimated average gains in mental health associated with overall engagement in visual art are +0.01 points for men, and +0.11 points for women**.

On average, producing visual art is negatively correlated with life satisfaction among men, but positively correlated among women. **The estimated average loss in life satisfaction associated with producing visual art for men is -0.06 points, while the estimated average gain for women is +0.05 points.** On average, producing visual art is positively correlated with mental health among both men and women. **The estimated average gains in mental health associated with producing visual art are +0.04 points for men, and +0.06 for women.**

On average, viewing visual art is positively correlated with life satisfaction among both men and women. **The estimated average gains in life satisfaction associated with viewing visual art is +0.18 points for men, and +0.21 points for women**. The association is statistically significant for women. On average, viewing visual art is

negatively correlated with mental health among men, but positively correlated among women. **The estimated average loss in mental health associated with viewing visual art for men is -0.08, while the estimated gain in mental health for women is +0.12.**

There is a significant and positive correlation between taking photography or making videos and life satisfaction among women, as well as a significant and positive correlation between attending art, photography or crafts exhibitions and life satisfaction among women. **The estimated average gain in life satisfaction associated with taking photography or making videos for women is +0.29 points, while the estimated average gain in life satisfaction associated with attending art, photography or crafts exhibitions for women is +0.27 points.** There is also a significant and positive correlation between attending art, photography or crafts exhibitions and mental health among women. **The estimated average gain in mental health associated with attending art, photography or crafts exhibitions for women is +0.19 points.**

Age

The results are shown in Tables A7-A12 in the appendix.

On average, engagement in visual art is negatively correlated with life satisfaction among the young, but positively correlated among both the middle-aged and the elderly. **The estimated average loss in life satisfaction associated with overall engagement in visual art is -0.12 points for the young, while the estimated average gains are +0.11 points for the middle-aged and +0.06 points for the elderly**. On average, engagement in visual art is positively correlated with mental health among all age groups. **The estimated average gains in mental health associated with overall engagement in visual art are +0.08 points for the young, +0.05 points for the middle-aged, and +0.04 points for the elderly.**

On average, producing visual art is negatively correlated with life satisfaction among the young and the middle-aged, but positively correlated among the elderly. **The estimated average losses in life satisfaction associated with producing visual art are -0.29 points for the young and -0.02 points for the middle-aged, while the estimated average gain in life satisfaction for the elderly is +0.34 points.** On average, producing visual art is negatively correlated with mental health among the young, but positively correlated among them middle-aged and the elderly. **The estimated average loss in mental health associated with producing visual art for the young is -0.08 points, while the estimated average gains are +0.03 points for the middle-aged and +0.27 points for the elderly.** The association is statistically significant for the elderly.

On average, viewing visual art is positively correlated with life satisfaction among the young and the middle-aged, but negatively correlated among the elderly. **The estimated average gains in life satisfaction associated with viewing visual art are +0.17 points for the young and +0.29 points for the middle-aged, while the**

estimated average loss for the elderly is -0.22 points. The association is statistically significant for the middle-aged. On average, viewing visual art is positively correlated with mental health among the young and the middle-aged, but negatively correlated among the elderly. **The estimated average gains in mental health associated with viewing visual art are +0.17 points for the young and +0.09 points for the middle-aged, while the estimated average loss for the elderly is -0.30 points.** The association is statistically significant for the elderly.

There is a significant and negative association between painting, drawing or making sculpture and life satisfaction among the young. **The estimated average loss in life satisfaction associated with painting, drawing or making sculpture for the young is -0.48 points.** There is a significant and positive correlation between making crafts and mental health among the young. **The estimated average gain in mental health associated with making crafts for the young is +0.39 points.**

Employment status

The results are shown in Tables A13-A16 in the appendix.

On average, engagement in visual art is negatively correlated with life satisfaction among the employed, but positively correlated among the unemployed or inactive. **The estimated average loss in life satisfaction associated with engagement in visual for the employed art is -0.04 points, while the estimated average gain for the unemployed or inactive is +0.15 points.** On average, engagement in visual art is negatively correlated with mental health among the employed, but positively correlated among the unemployed or inactive. **The estimated average loss in mental health associated with engagement in visual for the employed art is less than -0.01 points, while the estimated average gain for the unemployed or inactive is +0.13 points.**

On average, producing visual art is negatively correlated with life satisfaction among the employed, but positively correlated among the unemployed or inactive. **The estimated average loss in life satisfaction associated with producing visual art for the employed is -0.07 points, while the estimated average gain for the unemployed or inactive is +0.04 points.** On average, producing visual art is positively associated with mental health among both the employed and the unemployed or inactive. **The estimated average gains in mental health associated with producing visual art are +0.03 points for the employed and +0.08 for the unemployed or inactive.**

On average, viewing visual art is positively correlated with life satisfaction among both the employed and the unemployed or inactive. **The estimated average gains in life satisfaction associated with viewing visual art are +0.14 points for the employed and +0.29 points for the unemployed or inactive**. The association is statistically significant for the unemployed or inactive. On average, viewing visual art is positively correlated with mental health among both the employed and the unemployed or inactive. **The estimated average gains in mental health associated**

with viewing visual art are **+0.06 points for the employed and +0.07 points for the unemployed or inactive.**

Income

On average, engagement in visual art is positively correlated with life satisfaction both in the bottom half and in the top half of the household income distribution of the sample. **The estimated average gains in life satisfaction associated with engagement in visual art are +0.11 points for people with household income below or equal to the median, and +0.06 points for people with household income above the median.** On average, engagement in visual art is positively correlated with mental health both in the bottom half and in the top half of the household income distribution of the sample. **The estimated average gains in mental health associated with engagement in visual art are +0.04 points for people with household income below or equal to the median, and +0.09 points for people with household income above the median.**

On average, producing visual art is positively correlated with life satisfaction in the bottom half of the household income distribution of the sample, but negatively correlated in the top half. **The estimated average gain in life satisfaction associated with producing visual art for people with household income below or equal to the median is +0.05 points, while the estimated average loss for people with household income above the median is -0.04 points.** On average, producing visual art is positively correlated with mental health both in the bottom half and in the top half of the household income distribution of the sample. **The estimated average gains in mental health associated with producing visual art are +0.01 points for people with household income below or equal to the median, and +0.08 points for people with household income above the median.**

On average, viewing visual art is positively correlated with life satisfaction both in the bottom half and in the top half of the household income distribution of the sample. **The estimated average gains in life satisfaction associated with viewing visual art are +0.25 points for people with household income below or equal to the median, and +0.17 points for people with household income above the median.** On average, viewing visual art is positively correlated with mental health both in the bottom half and in the top half of the household income distribution of the sample. **The estimated average gains in mental health associated with viewing visual art are +0.02 points for people with household income below or equal to the median, and +0.08 points for people with household income above the median.**

4.   Discussion

Most of the results presented above are not statistically significant. This may appear to suggest, at first glance, that there is on average no clear correlation between engagement in visual art and SWB, aside from a few exceptional cases. In fact, however, statistical significance is, to a large extent, a matter of sample size. If there is a clear association between two variables, there being little variability between one individual and another, then a relatively small sample size will suffice to reach statistical significance. Conversely, when the average association is not well defined because of marked differences across individuals, then a much larger sample size is required. In other words, the greater individual heterogeneity, the larger the sample size needed to achieve statistical significance.

Many of the above correlations could become significant under a larger sample size, provided that individual heterogeneity is not found to increase when more data are collected. This event is quite unlikely in the present case, because the sample size used is already so large that further data will hardly add much more information to the one already contained in the sample at hand. The correlations reported in the previous section may therefore be safely taken as fairly good estimates of the 'true' correlations between SWB and the measure of engagement in visual art used.

Another general aspect should be pointed out. Most of the correlations found may not appear strong enough to encourage the implementation of visual art interventions targeting depressed people. Indeed, some of the correlations found are negative. Even when positive, they are comparatively weaker than the associations between SWB and major policy outcomes. Consider, for example, employment: based on Tables A1 and A2, being employed is coupled with a gain of 0.93 life satisfaction points and by one of 0.79 mental health points, compared to being out of work. In contrast, the gain in SWB associated with engagement in visual art rarely exceeds 0.20 points in the scales of life satisfaction and of mental health.

The results should not be as discouraging as they look at first, however. Primarily, the SWB benefits of major policy outcomes are not an apt basis for comparison for the SWB benefits linked to engagement in visual art. Surely, they may serve as benchmarks to get a grasp of how strongly, in relative terms, engagement in visual art is associated with SWB. Yet promoting engagement in visual art is not an alternative course of action to pursuing major outcomes, which most likely will have the priority for their high potential to improve SWB. Therefore, it is to be expected that engagement in visual art be not correlated with SWB as strongly as such outcomes as employment. Instead, one should evaluate engagement in visual art in relation to outcomes that stand on a similar footing, like promoting engagement in other forms of art or in other recreational activities (e.g., sport).

In addition, it is important to bear in mind that the above results do not take account of factors that most likely moderate the relationship between engagement in visual

art and SWB, such as frequency and context of engagement. In other words, the correlations found may not capture the actual relationship, because the correlations between SWB and other variables connected with engagement in visual art are possibly confounded in it. Stronger correlations might have arisen if appropriate controls could be used to single out the direct correlation. Controlling for frequency of engagement, in particular, would have served to filter out instances of sporadic engagement in visual art (few times a year), which are most likely associated with no or very small gains in SWB and which thereby diminish the strength of the correlation found on average. In this way, one could estimate the relationship between SWB and regular engagement in visual art.

Keeping the above points in mind, a number of considerations can be made on the grounds of the findings presented in the previous section.

1. **There is some variability in the valence (positive or negative) and strength of the relationship between engagement in visual art and SWB across forms of engagement.**

When considering the 'overall' measure of engagement in visual art, a positive association with SWB emerges, irrespective of whether life satisfaction or mental health is used as a measure thereof. At first glance, this result indicates that engaging in visual art is in the main positively related to SWB. A simple distinction between producing and viewing visual art validates this conclusion. Nonetheless, an enquiry into specific ways in which engagement can take place reveals that this conclusion is not quite accurate.

Specifically, full distinction among specific forms of engagement discloses that only some of these are on average positively correlated with SWB, whereas others are negatively related to SWB. In addition, irrespective of the valence of each correlation, some forms of engagement are more correlated with SWB than others. On average, taking photography or making videos seems to be the form of engagement most strongly related, in a positive sense, to both life satisfaction and mental health, followed by attending art, photography or crafts exhibitions, and then by making crafts. These three are also the forms of engagement most common in the sample at hand (see Section 2). Painting, drawing or making sculpture is instead the form that is most negatively related to life satisfaction, on average.

It follows from the above that the average positive correlation recorded with 'overall engagement' in visual art, as well as the one with the 'mode of engagement' measure, do not arise because engagement in visual art is *always* positively associated with SWB; to the contrary, it can be negatively correlated as well, depending on the specific form of engagement. In fact, the positive correlations emerging overall arise because the specific forms of engagement that are more strongly and positively correlated with both measures of SWB are also the most common in the sample considered. It should be remarked, however, that the context surrounding engagement in visual art (e.g., engaging for leisure or as part of a therapeutic programme; engaging alone or in group) might be lurking behind all

these correlations, in which case they would not entirely reflect the direct association between visual art and SWB. As noted above, frequency of engagement is also likely to be a moderating factor.

What are the policy implications? The variability across forms of engagement in their relationships with SWB should warn that not all activities involving visual art could benefit people with depressive disorders, or at least not all could benefit them to the same extent. The mere 'visual art' character of an intervention by no means implies that the intervention will improve SWB, or that it will do so to the extent desired. The message to policymakers is straightforward: only a subset of activities connected with visual art is likely to deliver improvements, in terms of SWB, to depressed individuals. If the estimated associations entirely reflected causality (which is probably not the case), activities involving photography, video-making, crafting or attending exhibitions would be the most promising ones. But again, care should be taken when appraising these correlations, and regard should be paid to possible effects on SWB due to the context in which engagement in visual art takes place.

2. **There is some variability in the extent to which engagement in visual art is related to different measures of SWB.**

Two measures of SWB were examined in this report: the single-item measure of life satisfaction, and a measure of mental health as derived by the aggregate responses to the GHQ-12. *Qualitatively* speaking, these two measures imply comparable correlations between engagement in visual art and SWB on average, irrespective of which of the three measures of engagement in visual art constructed is used. (The case of painting, drawing or making sculpture, which is negatively related to life satisfaction but positively related to mental health, constitutes the only exception to this trend).

From a *quantitative* standpoint, however, the two measures give rise to quite different figures. Most of the forms of engagement in visual art considered are more strongly linked to life satisfaction than they are to mental health, with the sole exception of attending electronic or video art shows, which is however only slightly more correlated with reduced mental health than with reduced life satisfaction. (Even painting, drawing or making sculpture, which exhibits qualitatively different trends across the two measures, is negatively associated with life satisfaction more strongly than it is positively associated with mental health.) In sum, hence, it seems that, among people with a history of clinical depression, engagement in visual art is a more important predictor of life satisfaction than it is of the GHQ measure of mental health.

It may be that such discrepancy has to do with the different types of SWB measures the two measures in question represent. Earlier in this report, life satisfaction was defined as an *evaluative* measure of SWB, because it requires people to provide a summary assessment of their feelings; whereas the GHQ measure of mental health was said to be relatively closer to *experiential* measures of SWB, because it is

derived from responses to questions that draw respondents' attention to how they have felt recently. Thus, it may well be that visual art matters relatively more to how people with a history of depression think their life is going overall, and a little less to how they actually experience their life moment to moment. It cannot be excluded, however, that also other features inherent to the two measures (e.g., the feelings they assess, the wording of the questions) play a role in explaining the discrepancy.

What are the policy implications? The different results found for life satisfaction and mental health demonstrate that the measure of SWB matters in establishing what works for people with depressive disorders. Depending on which measure is considered, the conclusions about whether or not an intervention based on visual art will effectively enhance their SWB can change. In particular, the interventions should be implemented only insofar as it brings about improvements in the chosen measure of SWB. Should the estimated correlations with life satisfaction and mental health be interpreted as revealing causality, visual art interventions would be more likely to succeed in improving the former than the latter, whereby they should only be pursued if the objective of the intervention is to boost life satisfaction among people with depression, and not the alternative measure of mental health (and vice versa).

3. **There is considerable variability in the valence and strength of the correlation between engagement in visual art and SWB across socio-demographic categories.**

The analysis at the level of specific socio-demographic groups served to disclose a great deal of diversity in the way visual art is linked to SWB across different groups. In the first place, this relationship is more positive for women than for men, particularly when examining such activities as taking photography or attending exhibitions. In fact, the correlations can have opposite signs across genders, yet always a positive one for women, as is recorded in the case of viewing visual art and mental health and in the case of producing visual art and life satisfaction. This may good news for the effectiveness of visual art in promoting SWB among people at risk of depression, given how likely women (seemingly) are to suffer from it compared to men.

Quite discordant patterns can be observed over the life course. On the one hand, the SWB of the young (here, those aged 30 or less) displays a positive association with viewing visual art on average, but a generally negative association with producing visual art, particularly as far as painting, drawing or making sculpture is concerned. (Making crafts is though an interesting counter-example, because it shows a highly positive correlation with mental health.) The elderly (here, those aged 61 or more), on the other hand, report considerably higher SWB if they produce visual artworks, yet considerably lower SWB if instead they view visual art. Middle-aged individuals stand somewhere in between, but are more similar to the young in reporting a gain in SWB when attending exhibitions or engaging in similar activities involving viewing.

Interesting results also emerge when examining the relationship between visual art and SWB as a function of socio-economic status. Engagement in visual art does not predict much higher SWB among individuals with higher status, as measured by being in employment and/or falling within the top half of the household income distribution; life satisfaction actually drops among the employed and relatively richer depressed individuals who produce visual art. In contrast, their peers who do not work and/or are relatively poorer report gains in life satisfaction whether they produce or view visual art. The rich who engage in visual art are only better off as far as mental health is concerned.

What are the policy implications? The diverse results observable across genders, age, and socio-economic statuses hint at the importance of the particular circumstances of specific groups in moderating the nexus between visual art and SWB among people with a history of depression. The most obvious recommendation for policymakers is not to address interventions based on visual art indiscriminately, yet to pay due regard whom to target. Different interventions can be more or less effective (and more or less detrimental) to different groups. Painting, for example, seems to yield improvements for the elderly, but not necessarily for the young. Similarly, promoting attendance at exhibitions can work very well for the mental health of depressed women, but not for that of depressed men.

5. Future research

This report sought to improve upon our current understanding of the relationship between visual art and SWB among people with a history of (diagnosed) depressive disorders. The findings presented above provide new insight into the matter, and contribute to consolidate, update and expand the evidence base. Nonetheless, much research remains to be done.

The primary recommendation for future research is to expand and enhance the quality of the database currently available on the present topic. The main difficulty with writing this report was finding data sources that contained all three types of measures needed to conduct the analysis (i.e., measures of SWB, of engagement in visual art and of depression). In order to improve upon the current availability of data, designers of large-scale surveys may want to consider adding further questions assessing engagement in visual art and depressive status in as much detail as possible.

Future research should clearly identify which forms of engagement in visual art have indeed the potential to improve the quality of life of people with depression, as well as to what degree they can be beneficial. This report investigated forms of engagement that were neglected or sparsely explored in previous research, but more work is needed to validate the new findings and gain further insights. For instance, due to the way they were available in the data at hand, many forms of engagement in visual art were here considered jointly (e.g., painting, drawing or sculpture; textile, jewellery, or knitting; art, photography or crafts exhibitions), whereas it would be desirable to investigate them individually so as to shed light on any difference among them.

Future research should also aim to overcome the problems with the measure of depression used in this report. As discussed throughout it, measures of depression based on clinical diagnoses or on referral into psychotherapy fail to encompass the whole population of people with depressive disorders. A reliable measure of depression would therefore assess the presence of symptoms of depression via an appropriate questionnaire, in addition to and independently of enquiring into people's clinical history.

Other crucial aspects to explore include frequency and context of engagement in visual art. In this report, people were considered engaged in visual art if they engaged at least once a year. This could have underestimated the extent to which SWB and visual art are associated, because engaging once or few times a year is unlikely to have any durable impact on SWB. Controlling for frequency of engagement can therefore help to shed light on the impact of regular engagement in visual art.

As for the context of engagement, it is fundamental that future research be able to disentangle the direct effect on SWB of engaging in visual art and the indirect one

due to the contextual factors connected with engaging therein, such as whether engagement takes place in one's leisure time or as part of a therapeutic programme, or whether it is undertaken individually or as part of a group. This will not only serve to shed light on the actual impact of visual art, but also to identify contextual factors that undermine or boost that impact.

Future research should also seek to study the relationship between visual art and SWB using measures of SWB that have not been sufficiently probed in previous research. For example, the eudemonic aspects (i.e., feelings of purpose and worthwhileness) of visual art remain largely unexplored to date. Evaluative measures of SWB have been investigated more extensively than purely experiential measures in the past, but evidence is required in order to ascertain whether and to what extent visual art is related to how depressed people *experience* their life moment to moment as compared to how it is related to how they *think* their life is going. More research is also needed to attest how people with a history of depression feel in the moment they are producing or viewing visual art: there is some qualitative and low-scale research in regard, but quantitative and large-scale studies are needed to complete the picture and provide new results.

Exploring socio-demographic differences should be another concern for future research. This report was the first attempt in the literature to investigate any differences in a systematic manner, but it only accounted for basic socio-demographic groups. Other groups could be explored, such as different ethnic background or different marital statuses. The groups being enquired do not have to be necessarily related to socio-demographic dynamics, but also to other variables, such as personality.

Last but not least, future research should try to establish causality. Causal evidence already exists, but it is mainly based on small-scale trials. Large-scale trials might not always be a viable option due to high costs and, given that there are people with mental health problems involved, also for ethical reasons. One possibility to get around this is to exploit longitudinal datasets and look at whether or not changes in engagement in visual art over time predict changes in SWB.

A1. Literature review

There are considerable pitfalls in the current evidence base on how engagement in visual art is related to SWB among people with mental health disorders. It is worth pointing them out before reviewing the relevant literature.

The main limitation is that the studies that actually focused on visual art as opposed to other art forms (e.g., music, drama) and, at the same time, on people with mental health problems are in fact relatively rare. Moreover, the few studies that did actually explore the benefits of visual art for mentally ill individuals usually relied on very small sample sizes, which seldom exceeded 30-40 observations. In previous reviews of the literature, studies were often described as non-rigorous, non-systematic, non-representative and vaguely informative of methods and measures used (see Beard, 2012; Uttley et al., 2015). All these limitations certainly undermine the external validity of previous research.

Secondly, certain types of engagement in visual art were probed more frequently than others. Most studies investigated active modes of engagement (such as producing visual artworks), while more passive modes of engagement (such as simply viewing visual artworks) were relatively less explored. Even within the same mode of engagement, certain forms of visual art (like painting) were more studied than others (like doing photography). Not least, different types of engagement in visual art were seldom considered in the same study, preventing any reliable comparison of the benefits of different types of engagement. The relatively narrow scope of previous research inevitably constrains the evidence base to a subset of the whole realm of visual art.

Thirdly, previous studies have not been entirely consistent in terms of methods and outcome measures, which makes them hardly relatable to one another. Some studies were qualitative in character, while others involved quantitative elements or randomised controlled trials. Qualitative studies tended to explore how people felt while engaged in visual art, hence enquiring into their experienced SWB; whereas quantitative and trial research mainly investigated the benefits of visual art beyond the actual experience, studying people's evaluations of SWB. Furthermore, the dimension of SWB being investigated often varied across studies: some assessed trait anxiety, others mood, and yet others depression or mental health more generally. In some cases, SWB was not even the outcome measure, and 'objective' appraisals of people's wellbeing made by a medical professional were preferred instead.

Bearing in mind the above limitations, previous research does hint at potential SWB benefits from engagement in visual art for people affected by some mental health condition.

Much of the evidence comes from studies concerned with programmes targeted to people with mental health problems, in which they spend time learning a visual art

and making artworks, most of the time together with other people (ill or not). The goal of such 'programmes, which can last between a few weeks to several months, and which were often designed as an RCT, is to improve participants' SWB, provide them with a means to cope with their illness, and possibly promote their recovery. Their effectiveness is therefore determined according to how much. Most programmes studied in the literature involved painting and drawing, but in a few cases the effect of enrolling in crafting and textile courses was also examined.

In an early systematic review of quantitative studies and RCTs based on the above programmes, Reynolds et al. (2000) concluded that most programmes successfully led to improvements in SWB and mental health at completion, although the extent of the improvement varied from programme to programme (though, this review also embraced studies involving art forms other than visual, and which were also directed to physically ill individuals).[8] In more recent reviews of RCTs (not all of which involved visual art and/or mentally ill people), Edwards et al. (2015) and Uttley et al. (2015) found that most programmes led to improvements in various outcomes measures related to SWB, relatively to control groups of people who received other sorts of therapy or not treatment at all.

In a quantitative study of existing programmes (again, participants had some mental health condition, but the programmes involved various art forms), Spandler et al. (2007a) recorded enhancements in mood, depressive symptoms, mental health and especially empowerment and self-esteem, both at the end of the programmes and in the following six months. No remarkable differences across genders and mental health conditions were observed; however, the people who were in more advanced stages of their condition benefitted the most from the programmes. In similar studies, Secker et al. (2007) and Hacking et al. (2008) also observed improvements in measures of empowerment and mental health six months after completion of a programme. None of these studies involved a control group to ascertain the counterfactual, however.

Several qualitative studies focused on what participants experienced during visual art programmes generally confirm that such programmes can indeed have therapeutic effects and be beneficial for SWB. Argyle and Bolton (2005), for example, considered the case of an English programme (involving various art forms) that was deemed effective at improving mental health based on prior quantitative analysis, finding evidence for its effectiveness also based on qualitative evaluations. Heenan (2006) instead interviewed participants to a programme based in Northern Ireland, finding that the programme was perceived as cathartic, stimulating and reinforcing self-esteem, as well as promoting social interaction. Secker et al. (2007) and Ruckli (2016) found similar results in their qualitative studies.

Spandler et al. (2007b) reviewed a number of case studies, showing that participation provided relaxation, distraction, reduced distress, social connectedness, motivation,

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[8] Gilroy (2006), Slayton et al. (2010) and Staricoff (2004) conducted other reviews of this kind demonstrating similar results.

and even purpose and meaning. Chancellor et al. (2014) focused on case studies of people with Alzheimer's disease or with other dementias, finding that visual art brings pleasure, enjoyment and self-esteem in the moment. Smith (2016) reviewed qualitative studies on the benefits on knitting and textile arts, which were identified with reduced anxiety and social connectedness.

As noted above, there has been much less research on other modes of engagement in visual art, such as viewing, especially with a focus on people with mental health problems. Daykin et al. (2008) conducted a review of quantitative and qualitative studies on the benefits of viewing art for patients in mental healthcare. Their findings indicated that exposure to visual art reduced anxiety and depression, as well as contributed towards fastening recovery. They also pinpointed a positive impact of decorating healthcare environments with visual art.

An important line of research has been concerned with the therapeutic effect of attending exhibitions and handling museum objects. [9] Typical findings include improvements in quantitative and qualitative assessments of life satisfaction, mental health and mood during and after attending and handling objects at exhibitions and museums. These results informed policy initiatives in the UK aimed at providing alternative treatments to people in healthcare and improve their quality of life, such as the Heritage in Hospitals programme in (see Chatterjee et al., 2009). It is important to note, however, that such interventions are not only addressed to mentally ill individuals, but to the broader population of people in healthcare; and such interventions do not necessarily involve visual art.

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[9] See, for example, Ander et al. (2013); Chancellor et al. (2015); Chatterjee et al. (2009). See Chatterjee and Noble (2016) for a review.

A2. Statistical analysis

The entire analysis conducted in this report is based on linear regression modelling, which is regular practice in SWB research (see Ferrer-i-Carbonell & Frijters, 2004). Specifically, linear regression models with normally distributed random effects by respondent were used (i.e., an extra term specific to each respondent drawn at random from a normal distribution, with mean 0 and variance to be estimated from the data).

The reason for using random effects is to control for correlations within the data due to repeated observations for the same respondent (observations should be independent from one another in order to meet the assumptions underlying linear regression). The function of random effects is also to control for unobserved differences among respondents so as to obtain better estimates for the regression coefficients, while also accounting for the random nature of the samples of respondents at hand.

One could also employ fixed effects for the same purposes (and this is normally the standard practice), but fixed effects do not account for the random nature of the samples; they only account for unobserved differences within the particular samples at hand. In general, random effects are more appropriate for statistical inference at the population level than fixed effects, provided that the assumptions for using them are met (see Ferrer-i-Carbonell & Frijters, 2004). [10] Anyhow, using fixed effects would not change the results presented in this report in any substantive way.

The following equation describes the model for all the analyses conducted in this report. Each observation refers to respondent i at time t (time is to be accounted for because the dataset is longitudinal).

$$SWB_{i,t} = \alpha_0 + \boldsymbol{\alpha}_1 \boldsymbol{S}_{i,t} + \boldsymbol{\alpha}_2 \boldsymbol{X}_{i,t} + \boldsymbol{\alpha}_3 \boldsymbol{W}_t + \pi_i + \epsilon_{i,t},$$

where $SWB_{i,t}$ is SWB for respondent i at time t (either life satisfaction or mental health); α_0 is the grand intercept (measuring the average level of SWB across all respondents and periods); $\boldsymbol{S}_{i,t}$ is a vector of 0-1 indicators of engagement in visual art, or in specific modes or forms thereof; $\boldsymbol{\alpha}_1$ are the corresponding regression coefficients; $\boldsymbol{X}_{i,t}$ is the set of socio-demographic controls; $\boldsymbol{\alpha}_2$ is the vector of their coefficients; $\boldsymbol{W}_t$ is the vector of indicators of survey waves; $\boldsymbol{\alpha}_3$ is the vector of corresponding coefficients; π_i is a random intercept specific to respondent i (capturing unobserved factors related to the SWB of respondent i); and $\epsilon_{i,t}$ is the error term.

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[10] Unless the focus of the analysis is on the sample, and not on the population the sample comes from, random effects allow better inference at the population level than fixed effects when the number of clusters among which there might be unobserved differences is large enough (in this case, the clusters are respondents).

A.3. Full results

Table A1. Whole sample

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0797 (0.0778)		
Producing visual art		0.0081 (0.0803)	
Viewing visual art		0.1899* (0.0878)	
Painting, drawing or sculpture			-0.135 (0.1078)
Taking photography or making videos			0.2568* (0.1173)
Making digital art or animation			-0.0893 (0.1367)
Making crafts			0.1034 (0.0954)
Attending art, photography or crafts exhibitions			0.1492 (0.1)
Attending electronic or video art shows			-0.014 (0.1678)
Attending street art or public art displays			0.0217 (0.1182)
Gender (ref: male)			
Female	0.0609 (0.0909)	0.0639 (0.091)	0.0544 (0.0938)
Age	-0.0952*** (0.0173)	-0.096*** (0.0173)	-0.0992*** (0.0174)
Age squared	0.0012*** (2e-04)	0.0012*** (2e-04)	0.0012*** (2e-04)
Ethnicity (ref: White)			
Black	0.1277 (0.3067)	0.1267 (0.3065)	0.1519 (0.3068)
Asian	-0.1019 (0.2145)	-0.098 (0.2144)	-0.0779 (0.2145)
Other or mixed	-0.0767 (0.2586)	-0.0833 (0.2585)	-0.0833 (0.2585)
Region (ref: England)			
London	-0.2474 (0.1555)	-0.2602 (0.1555)	-0.2613 (0.1558)
Wales	-0.0429 (0.177)	-0.0305 (0.1769)	-0.0206 (0.177)
Scotland	0.0953 (0.1495)	0.0965 (0.1494)	0.104 (0.1495)
Northern Ireland	0.5452** (0.2089)	0.5484** (0.2088)	0.5626** (0.2088)
Marital status (ref: single or never married)			
Cohabiting	0.4636** (0.1755)	0.4621** (0.1754)	0.4721** (0.1754)
Married or in civil partnership	0.5287*** (0.146)	0.5323*** (0.1459)	0.5272*** (0.1459)
Separated or divorced	0.1123 (0.1651)	0.1167 (0.165)	0.122 (0.165)
Widowed	0.4017 (0.2317)	0.4044 (0.2315)	0.4112 (0.2315)
Own children < 16 in household	0.0021 (0.098)	0.0147 (0.0982)	0.0292 (0.0984)
Labour force status (ref: employed)			
Unemployed	-0.9307*** (0.1477)	-0.9078*** (0.1482)	-0.9081*** (0.1483)
Inactive	-0.281** (0.0977)	-0.2683** (0.0979)	-0.273** (0.098)
Log monthly household income	0.1867*** (0.0531)	0.1809*** (0.0531)	0.1803*** (0.0531)
Self-rated health (ref: Excellent)			
Very good	-0.3871* (0.1656)	-0.3855* (0.1656)	-0.3736* (0.1658)
Good	-1.1973*** (0.1638)	-1.1876*** (0.1638)	-1.1717*** (0.1641)
Fair	-2.2868*** (0.1684)	-2.267*** (0.1686)	-2.2503*** (0.1688)
Poor	-3.4407*** (0.1684)	-3.4131*** 	-3.3913***

	(0.1814)	(0.1817)	(0.182)
Wave (ref: 2)			
5	-0.1882**	-0.1886**	-0.1869**
	(0.067)	(0.067)	(0.0672)
Intercept	6.8286***	6.8437***	6.9137***
	(0.5993)	(0.5994)	(0.6028)

*: p-value < .05	Obs: 4,618	Obs: 4,618	Obs: 4,618
**: p-value < .01	Resp: 3,271	Resp: 3,271	Resp: 3,271
***: p-value < .001			

Table A2. Whole sample

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0746 (0.0566)		
Producing visual art		0.0575 (0.0584)	
Viewing visual art		0.054 (0.0639)	
Painting, drawing or sculpture			0.0179 (0.0785)
Taking photography or making videos			0.0709 (0.0853)
Making digital art or animation			-0.0274 (0.0995)
Making crafts			0.0649 (0.0694)
Attending art, photography or crafts exhibitions			0.0636 (0.0728)
Attending electronic or video art shows			-0.076 (0.1221)
Attending street art or public art displays			0.0058 (0.086)
Gender (ref: male)			
Female	-0.3436*** (0.066)	-0.3447*** (0.0661)	-0.3531*** (0.0682)
Age	-0.0279* (0.0125)	-0.0279* (0.0125)	-0.0289* (0.0126)
Age squared	4e-04*** (1e-04)	4e-04*** (1e-04)	4e-04*** (1e-04)
Ethnicity (ref: White)			
Black	0.0941 (0.2227)	0.0954 (0.2227)	0.0997 (0.2231)
Asian	-0.07 (0.1558)	-0.0682 (0.1558)	-0.0647 (0.156)
Other or mixed	0.0134 (0.1878)	0.0112 (0.1878)	0.0101 (0.188)
Region (ref: England)			
London	-0.1835 (0.1129)	-0.1853 (0.113)	-0.1833 (0.1133)
Wales	-0.1655 (0.1285)	-0.1645 (0.1286)	-0.1625 (0.1287)
Scotland	-0.0153 (0.1085)	-0.0141 (0.1086)	-0.0102 (0.1087)
Northern Ireland	-0.2016 (0.1517)	-0.2005 (0.1517)	-0.197 (0.1518)
Marital status (ref: single or never married)			
Cohabiting	-0.1088 (0.1275)	-0.1089 (0.1275)	-0.1075 (0.1276)
Married or in civil partnership	0.1429 (0.1061)	0.1446 (0.1061)	0.1437 (0.1062)
Separated or divorced	0.0038 (0.1199)	0.0057 (0.1199)	0.0084 (0.12)
Widowed	0.0791 (0.1683)	0.0797 (0.1683)	0.0801 (0.1684)
Own children < 16 in household	0.0182 (0.0712)	0.0217 (0.0714)	0.0229 (0.0716)
Labour force status (ref: employed)			
Unemployed	-0.7871*** (0.1074)	-0.7834*** (0.1078)	-0.7845*** (0.1079)
Inactive	-0.4815*** (0.071)	-0.4808*** (0.0712)	-0.4835*** (0.0713)
Log monthly household income	-0.0041 (0.0386)	-0.0046 (0.0386)	-0.0045 (0.0386)
Self-rated health (ref: Excellent)			
Very good	-0.3312** (0.1204)	-0.3311** (0.1204)	-0.3326** (0.1206)
Good	-0.7834*** (0.1191)	-0.782*** (0.1191)	-0.7827*** (0.1194)
Fair	-1.681*** (0.1225)	-1.6779*** (0.1226)	-1.6775*** (0.1229)
Poor	-2.7827***	-2.7783***	-2.7763***

	(0.1318)	(0.1321)	(0.1324)
Wave (ref: 2)			
5	0.1369**	0.1371**	0.1363**
	(0.0488)	(0.0488)	(0.0489)
Intercept	7.4294***	7.4283***	7.4622***
	(0.4355)	(0.4358)	(0.4386)
*: p-value < .05			
**: p-value < .01	Obs: 4,618	Obs: 4,618	Obs: 4,618
***: p-value < .001	Resp: 3,271	Resp: 3,271	Resp: 3,271

Table A3. Gender: male

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0694 (0.1397)		
Producing visual art		-0.063 (0.1462)	
Viewing visual art		0.1826 (0.1588)	
Painting, drawing or sculpture			-0.2154 (0.2008)
Taking photography or making videos			0.2605 (0.1841)
Making digital art or animation			-0.0156 (0.2209)
Making crafts			0.1126 (0.2279)
Attending art, photography or crafts exhibitions			-0.1116 (0.18)
Attending electronic or video art shows			0.2937 (0.2861)
Attending street art or public art displays			0.1391 (0.2166)
Age	-0.1306*** (0.0317)	-0.1324*** (0.0318)	-0.1305*** (0.032)
Age squared	0.0017*** (3e-04)	0.0017*** (3e-04)	0.0017*** (3e-04)
Ethnicity (ref: White)			
Black	0.002 (0.5378)	-0.0203 (0.5382)	0.0365 (0.5392)
Asian	0.3989 (0.3728)	0.4054 (0.3729)	0.4435 (0.3732)
Other or mixed	0.1953 (0.4536)	0.2075 (0.4536)	0.1916 (0.4538)
Region (ref: England)			
London	-0.148 (0.2705)	-0.1678 (0.2711)	-0.1545 (0.2716)
Wales	0.1202 (0.331)	0.1107 (0.3308)	0.1251 (0.3307)
Scotland	0.1497 (0.2667)	0.1456 (0.2668)	0.1557 (0.2671)
Northern Ireland	0.692 (0.3636)	0.6949 (0.3636)	0.7174* (0.3637)
Marital status (ref: single or never married)			
Cohabiting	0.7627* (0.3648)	0.7653* (0.3647)	0.7472* (0.3658)
Married or in civil partnership	0.4838 (0.3162)	0.4876 (0.3159)	0.4576 (0.3167)
Separated or divorced	0.4323 (0.3586)	0.4328 (0.3584)	0.4083 (0.3592)
Widowed	-0.2182 (0.5033)	-0.2228 (0.5032)	-0.2536 (0.5038)
Own children < 16 in household	-0.0134 (0.2009)	-0.0028 (0.201)	-0.002 (0.2019)
Labour force status (ref: employed)			
Unemployed	-0.7255** (0.2524)	-0.7016** (0.2532)	-0.7049** (0.2542)
Inactive	-0.3312 (0.1884)	-0.3231 (0.1885)	-0.3419 (0.189)
Log monthly household income	0.2651** (0.0952)	0.2548** (0.0957)	0.2544** (0.096)
Self-rated health (ref: Excellent)			
Very good	-0.1743 (0.3291)	-0.1621 (0.3294)	-0.1688 (0.3304)
Good	-0.815* (0.3281)	-0.7957* (0.3287)	-0.7889* (0.3302)
Fair	-1.9364*** (0.3326)	-1.9083*** (0.334)	-1.924*** (0.335)
Poor	-3.2343*** (0.3492)	-3.1978*** (0.3514)	-3.218*** (0.3526)
Wave (ref: 2)			
5	-0.2166	-0.2163	-0.2223

	(0.1199)	(0.1201)	(0.1206)
Intercept	6.3189***	6.415***	6.3896***
	(1.0817)	(1.0851)	(1.0911)
	Obs: 1,381	Obs: 1,381	Obs: 1,381
	Resp: 981	Resp: 981	Resp: 981

*: p-value < .05
**: p-value < .01
***: p-value < .001

Visual art and subjective wellbeing among people with diagnosed depressive disorders

Table A4. Gender: male

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0153 (0.0995)		
Producing visual art		0.0421 (0.1041)	
Viewing visual art		-0.0828 (0.1131)	
Painting, drawing or sculpture			0.0432 (0.1432)
Taking photography or making videos			0.1149 (0.131)
Making digital art or animation			0.0047 (0.157)
Making crafts			-0.0027 (0.162)
Attending art, photography or crafts exhibitions			-0.1986 (0.128)
Attending electronic or video art shows			-0.1049 (0.2032)
Attending street art or public art displays			0.1124 (0.154)
Age	-0.0654** (0.0227)	-0.0647** (0.0228)	-0.064** (0.023)
Age squared	8e-04*** (2e-04)	8e-04*** (2e-04)	8e-04*** (2e-04)
Ethnicity (ref: White)			
Black	-0.3109 (0.3854)	-0.2974 (0.386)	-0.2976 (0.3875)
Asian	-0.1786 (0.2674)	-0.1874 (0.2678)	-0.1834 (0.2686)
Other or mixed	-0.3534 (0.3249)	-0.3604 (0.3253)	-0.3577 (0.326)
Region (ref: England)			
London	-0.2772 (0.1941)	-0.2659 (0.1947)	-0.2537 (0.1955)
Wales	-0.5359* (0.2374)	-0.5371* (0.2375)	-0.5289* (0.238)
Scotland	0.0792 (0.1914)	0.0814 (0.1917)	0.0827 (0.1924)
Northern Ireland	-0.3024 (0.2611)	-0.3061 (0.2615)	-0.3047 (0.2622)
Marital status (ref: single or never married)			
Cohabiting	0.0041 (0.2606)	0.0064 (0.2607)	-0.0112 (0.2618)
Married or in civil partnership	0.2871 (0.226)	0.2906 (0.226)	0.2853 (0.2268)
Separated or divorced	0.2839 (0.2564)	0.2883 (0.2565)	0.2883 (0.2575)
Widowed	-0.3544 (0.3604)	-0.3519 (0.3606)	-0.3661 (0.3617)
Own children < 16 in household	0.1615 (0.1435)	0.1513 (0.1437)	0.1426 (0.1444)
Labour force status (ref: employed)			
Unemployed	-0.6973*** (0.1799)	-0.7087*** (0.1806)	-0.7136*** (0.1813)
Inactive	-0.5831*** (0.1345)	-0.589*** (0.1347)	-0.5904*** (0.1351)
Log monthly household income	-0.0139 (0.0678)	-0.0068*** (0.0682)	-8e-04 (0.0685)
Self-rated health (ref: Excellent)			
Very good	-0.3037 (0.2335)	-0.3115 (0.2337)	-0.3279 (0.2342)
Good	-0.4254 (0.2332)	-0.4384 (0.2336)	-0.4534 (0.2346)
Fair	-1.4442*** (0.2365)	-1.4654*** (0.2375)	-1.4781*** (0.2382)
Poor	-2.5529*** (0.2485)	-2.5787*** (0.25)	-2.6008*** (0.2509)
Wave (ref: 2)			
5	0.1475	0.1453	0.1496

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	(0.0844)	(0.0844)	(0.0846)
Intercept	8.02380***	7.9928***	7.9439***
	(0.7722)	(0.775)	(0.78)
*: p-value < .05	Obs: 1,381	Obs: 1,381	Obs: 1,381
**: p-value < .01	Resp: 981	Resp: 981	Resp: 981
***: p-value < .001			

Table A5. Gender: female

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0993		
	(0.0939)		
Producing visual art		0.0465	
		(0.0964)	
Viewing visual art		0.2076*	
		(0.1058)	
Painting, drawing or sculpture			-0.1064
			(0.1285)
Taking photography or making videos			0.2919*
			(0.1523)
Making digital art or animation			-0.1307
			(0.1745)
Making crafts			0.1002
			(0.1062)
Attending art, photography or crafts exhibitions			0.2673*
			(0.1208)
Attending electronic or video art shows			-0.1528
			(0.2081)
Attending street art or public art displays			-0.0118
			(0.142)
Age	-0.0764***	-0.0767***	-0.08***
	(0.0208)	(0.0208)	(0.0209)
Age squared	9e-04***	9e-04***	0.001***
	(2e-04)	(2e-04)	(2e-04)
Ethnicity (ref: White)			
Black	0.2168	0.2296	0.2477
	(0.3758)	(0.3755)	(0.3756)
Asian	-0.3839	-0.3816	-0.367
	(0.2628)	(0.2626)	(0.2624)
Other or mixed	-0.1374	-0.1516	-0.154
	(0.3158)	(0.3156)	(0.3153)
Region (ref: England)			
London	-0.2907	-0.3026	-0.3059
	(0.1914)	(0.1914)	(0.1916)
Wales	-0.0881	-0.0703	-0.0466
	(0.2096)	(0.2097)	(0.2098)
Scotland	0.0687	0.072	0.087
	(0.1806)	(0.1804)	(0.1804)
Northern Ireland	0.476	0.4804	0.4952
	(0.2547)	(0.2543)	(0.2541)
Marital status (ref: single or never married)			
Cohabiting	0.3858	0.3828	0.3945
	(0.2039)	(0.2037)	(0.2037)
Married or in civil partnership	0.6089***	0.6135***	0.6108***
	(0.1683)	(0.1682)	(0.1682)
Separated or divorced	0.0625	0.0709	0.0812
	(0.1884)	(0.1883)	(0.1881)
Widowed	0.6891**	0.6983**	0.7111**
	(0.2662)	(0.266)	(0.2658)
Own children < 16 in household	-0.0285	-0.0142	0.0028
	(0.1154)	(0.1155)	(0.1158)
Labour force status (ref: employed)			
Unemployed	-1.0366***	-1.0121***	-1.0157***
	(0.1829)	(0.1834)	(0.1834)
Inactive	-0.262*	-0.2469*	-0.248*
	(0.1153)	(0.1157)	(0.1157)
Log monthly household income	0.1439*	0.1391*	0.1375*
	(0.0647)	(0.0647)	(0.0646)
Self-rated health (ref: Excellent)			
Very good	-0.4375*	-0.4395*	-0.4288*
	(0.1924)	(0.1923)	(0.1926)
Good	-1.3021***	-1.295***	-1.276***
	(0.1898)	(0.1898)	(0.1901)
Fair	-2.3756***	-2.3574***	-2.3326***
	(0.1967)	(0.1967)	(0.1971)
Poor	-3.4364***	-3.4097***	-3.3759***
	(0.2148)	(0.2149)	(0.2154)
Wave (ref: 2)			
5	-0.1873*	-0.1893*	-0.1872*

	(0.0811)	(0.0811)	(0.0814)
Intercept	7.0395***	7.0259***	7.0911***
	(0.72)	(0.7198)	(0.7228)
*: p-value < .05	Obs: 3,237	Obs: 3,237	Obs: 3,237
**: p-value < .01	Resp: 2,291	Resp: 2,291	Resp: 2,291
***: p-value < .001			

Table A6. Gender: female

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.1054 (0.0688)		
Producing visual art		0.0614 (0.0707)	
Viewing visual art		0.1192 (0.0775)	
Painting, drawing or sculpture			-4e-04 (0.0942)
Taking photography or making videos			0.0632 (0.1117)
Making digital art or animation			-0.0368 (0.128)
Making crafts			0.07 (0.0779)
Attending art, photography or crafts exhibitions			0.1858* (0.0886)
Attending electronic or video art shows			-0.0617 (0.1527)
Attending street art or public art displays			-0.0316 (0.1042)
Age	-0.0124 (0.0152)	-0.0125 (0.0152)	-0.0137 (0.0153)
Age squared	3e-04 (2e-04)	3e-04 (2e-04)	3e-04 (2e-04)
Ethnicity (ref: White)			
Black	0.2603 (0.2743)	0.2676 (0.2744)	0.2722 (0.2749)
Asian	-0.0115 (0.1918)	-0.0109 (0.1918)	-0.0067 (0.1921)
Other or mixed	0.1829 (0.2304)	0.1754 (0.2305)	0.1684 (0.2307)
Region (ref: England)			
London	-0.1534 (0.1398)	-0.1591 (0.1398)	-0.16 (0.1402)
Wales	-0.0139 (0.153)	-0.0066 (0.1532)	0.0027 (0.1535)
Scotland	-0.0518 (0.1318)	-0.0514 (0.1318)	-0.0449 (0.132)
Northern Ireland	-0.1603 (0.1859)	-0.1608 (0.1858)	-0.1571 (0.1859)
Marital status (ref: single or never married)			
Cohabiting	-0.1306 (0.1492)	-0.1309 (0.1492)	-0.1249 (0.1493)
Married or in civil partnership	0.1264 (0.1231)	0.1302 (0.123)	0.1292 (0.1232)
Separated or divorced	-0.0519 (0.1376)	-0.0466 (0.1377)	-0.0418 (0.1378)
Widowed	0.2336 (0.1945)	0.2375 (0.1945)	0.2417 (0.1946)
Own children < 16 in household	-0.0501 (0.0843)	-0.0422 (0.0845)	-0.0388 (0.0848)
Labour force status (ref: employed)			
Unemployed	-0.8582*** (0.1341)	-0.8468*** (0.1345)	-0.846*** (0.1345)
Inactive	-0.4446*** (0.0844)	-0.4383*** (0.0847)	-0.4372*** (0.0848)
Log monthly household income	-0.0056 (0.0474)	-0.0076 (0.0474)	-0.008 (0.0474)
Self-rated health (ref: Excellent)			
Very good	-0.3452* (0.141)	-0.3468* (0.1409)	-0.3476* (0.1412)
Good	-0.9134*** (0.139)	-0.9103*** (0.139)	-0.9068*** (0.1394)
Fair	-1.7697*** (0.144)	-1.7624*** (0.1441)	-1.7561*** (0.1445)
Poor	-2.8604*** (0.1572)	-2.8493*** (0.1574)	-2.8392*** (0.1579)
Wave (ref: 2)			
5	0.1264*	0.1256*	0.1233*

	(0.0597)	0.0597)	(0.0598)
Intercept	6.8839***	6.8829***	6.9143***
	(0.5267)	(0.5269)	(0.5297)

	Obs: 3,237	Obs: 3,237	Obs: 3,237
*: p-value < .05	Resp: 2,291	Resp: 2,291	Resp: 2,291
**: p-value < .01			
***: p-value < .001			

Table A7. Age: 30 or less

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	-0.1176 (0.2186)		
Producing visual art		-0.2937 (0.2174)	
Viewing visual art		0.1659 (0.2341)	
Painting, drawing or sculpture			-0.4835* (0.2403)
Taking photography or making videos			-0.0317 (0.3122)
Making digital art or animation			-0.2367 (0.3154)
Making crafts			0.4968 (0.2773)
Attending art, photography or crafts exhibitions			0.0906 (0.2794)
Attending electronic or video art shows			0.3257 (0.3795)
Attending street art or public art displays			-0.0925 (0.3109)
Gender (ref: male)			
Female	0.2107 (0.2654)	0.199 (0.2643)	0.1253 (0.2747)
Ethnicity (ref: White)			
Black	-1.0936 (0.5931)	-1.3487* (0.5596)	-1.1255 (0.5942)
Asian	-0.0793 (0.5425)	-0.2561 (0.5293)	-0.0664 (0.5442)
Other or mixed	0.064 (0.557)	-0.1617 (0.5359)	0.0262 (0.5597)
Region (ref: England)			
London	-0.4976 (0.4134)	0.3939 (0.2662)	-0.4837 (0.4143)
Wales	-0.1937 (0.4588)	0.253 (0.2614)	-0.1535 (0.4582)
Scotland	-0.0754 (0.4144)	0.4258 (0.6032)	-0.0439 (0.4153)
Northern Ireland	1.1244 (0.6306)	0.597 (2.6171)	1.0206 (0.6327)
Marital status (ref: single or never married)			
Cohabiting	0.3824 (0.2678)	-0.089 (0.2457)	0.3469 (0.2697)
Married or in civil partnership	0.2252 (0.262)	-0.3803 (0.3259)	0.2262 (0.2619)
Separated or divorced	0.47 (0.6051)	0.0633 (0.2435)	0.4571 (0.6101)
Widowed	0.7219 (2.6267)	0.1839 (0.1368)	0.5976 (2.6418)
Own children < 16 in household	-0.1198 (0.2452)	-0.9557* (0.3696)	-0.0615 (0.2472)
Labour force status (ref: employed)			
Unemployed	-0.4723 (0.3244)	-2.1447*** (0.3681)	-0.4282 (0.3303)
Inactive	-0.0165 (0.2429)	-2.5985*** (0.3919)	0.0429 (0.248)
Log monthly household income	0.1618 (0.1374)	-3.8953*** (0.5239)	0.1497 (0.1387)
Self-rated health (ref: Excellent)			
Very good	-0.9482* (0.3695)	-0.296 (0.2082)	-0.8744* (0.3704)
Good	-2.1435*** (0.3677)	5.9216*** (1.1911)	-2.0736*** (0.3696)
Fair	-2.6133*** (0.3919)	-2.267*** (0.1686)	-2.532*** (0.3938)
Poor	-3.8589*** (0.5264)	-3.4131*** (0.1817)	-3.8834*** (0.5291)
Wave (ref: 2)			
5	-0.2914 (0.2077)	-0.1886** (0.067)	-0.3305 (0.2092)

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Visual art and subjective wellbeing among people with diagnosed depressive disorders

Intercept	6.1294*** (1.2043)	6.8437*** (0.5994)	6.1836*** (1.2025)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 618 Resp: 533	Obs: 618 Resp: 533	Obs: 618 Resp: 533

Table A8. Age: 30 or less

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0765 (0.1564)		
Producing visual art		-0.0828 (0.1555)	
Viewing visual art		0.1651 (0.168)	
Painting, drawing or sculpture			-0.2519 (0.172)
Taking photography or making videos			-0.1356 (0.2234)
Making digital art or animation			-0.1328 (0.2258)
Making crafts			0.3903* (0.1984)
Attending art, photography or crafts exhibitions			0.1124 (0.2)
Attending electronic or video art shows			0.0947 (0.2716)
Attending street art or public art displays			0.042 (0.2226)
Gender (ref: male)			
Female	-0.2109 (0.19)	-0.2018 (0.1903)	-0.2866 (0.1967)
Ethnicity (ref: White)			
Black	-0.4471 (0.4249)	-0.462 (0.4249)	-0.4748 (0.4258)
Asian	0.2805 (0.3885)	0.2628 (0.3887)	0.288 (0.3899)
Other or mixed	0.5548 (0.3989)	0.5237 (0.3992)	0.5005 (0.401)
Region (ref: England)			
London	-0.1178 (0.296)	-0.115 (0.296)	-0.1158 (0.2968)
Wales	-0.1125 (0.3283)	-0.1162 (0.328)	-0.0983 (0.3281)
Scotland	-0.1083 (0.2967)	-0.1154 (0.2965)	-0.0581 (0.2975)
Northern Ireland	0.2253 (0.4515)	0.2037 (0.4518)	0.1513 (0.4532)
Marital status (ref: single or never married)			
Cohabiting	-0.203 (0.1916)	-0.1971 (0.1917)	-0.2345 (0.1931)
Married or in civil partnership	-0.0744 (0.1875)	-0.0707 (0.1875)	-0.075 (0.1875)
Separated or divorced	0.0438 (0.433)	0.0484 (0.4331)	0.0119 (0.4369)
Widowed	-0.9439 (1.8796)	-0.8278 (1.8797)	-0.7664 (1.8917)
Own children < 16 in household	-0.0452 (0.1755)	-0.0435 (0.1768)	-0.0306 (0.1771)
Labour force status (ref: employed)			
Unemployed	-0.8019*** (0.232)	-0.7677** (0.2347)	-0.7764** (0.2364)
Inactive	-0.4242* (0.1737)	-0.405* (0.175)	-0.3723* (0.1775)
Log monthly household income	-0.0544 (0.0982)	-0.0561 (0.0984)	-0.061 (0.0992)
Self-rated health (ref: Excellent)			
Very good	-0.5828* (0.2643)	-0.5788* (0.2645)	-0.5515* (0.2652)
Good	-1.2685*** (0.263)	-1.2551*** (0.2636)	-1.238*** (0.2646)
Fair	-1.5033*** (0.2803)	-1.4966*** (0.2805)	-1.4653*** (0.2819)
Poor	-3.3103*** (0.3767)	-3.297*** (0.3771)	-3.321*** (0.3789)
Wave (ref: 2)			
5	0.0476 (0.1483)	0.0458 (0.1484)	0.0239 (0.1496)

Visual art and subjective wellbeing among people with diagnosed depressive disorders

Intercept	7.6385***	7.6578***	7.7517***
	(0.8612)	(0.858)	(0.8607)

*: p-value < .05
**: p-value < .01
***: p-value < .001

	Obs: 618	Obs: 618	Obs: 618
	Resp: 533	Resp: 533	Resp: 533

Table A9. Age: 31 to 60

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.1106 (0.095)		
Producing visual art		-0.0182 (0.0979)	
Viewing visual art		0.2895** (0.1076)	
Painting, drawing or sculpture			-0.0843 (0.1338)
Taking photography or making videos			0.3417 (0.1429)
Making digital art or animation			-0.0863 (0.1678)
Making crafts			0.0768 (0.1164)
Attending art, photography or crafts exhibitions			0.2117 (0.1235)
Attending electronic or video art shows			-0.1156 (0.2027)
Attending street art or public art displays			0.1012 (0.1413)
Gender (ref: male)			
Female	0.1534 (0.1108)	0.158 (0.1108)	0.1604 (0.1141)
Ethnicity (ref: White)			
Black	0.6007 (0.3861)	0.6015 (0.3858)	0.659 (0.3865)
Asian	-0.2222 (0.2427)	-0.2134 (0.2425)	-0.185 (0.2426)
Other or mixed	-0.1525 (0.3058)	-0.1468 (0.3055)	-0.128 (0.3056)
Region (ref: England)			
London	-0.1818 (0.1833)	-0.2113 (0.1835)	-0.2205 (0.184)
Wales	0.0585 (0.2269)	0.0749 (0.2267)	0.0982 (0.2269)
Scotland	0.1818 (0.1802)	0.1854 (0.1801)	0.2058 (0.1802)
Northern Ireland	0.5368* (0.2462)	0.5395* (0.246)	0.5668 (0.246)
Marital status (ref: single or never married)			
Cohabiting	0.5053* (0.2375)	0.4968* (0.2372)	0.5088 (0.2373)
Married or in civil partnership	0.7544*** (0.1779)	0.7527*** (0.1776)	0.7455 (0.1778)
Separated or divorced	0.1956 (0.1903)	0.1974 (0.1901)	0.1945 (0.1902)
Widowed	1.0911** (0.3554)	1.0901** (0.3552)	1.1025 (0.355)
Own children < 16 in household	-0.0502 (0.1045)	-0.0354 (0.1046)	-0.0181 (0.105)
Labour force status (ref: employed)			
Unemployed	-1.0788*** (0.1699)	-1.0442*** (0.1704)	-1.0406 (0.1704)
Inactive	-0.4644*** (0.1188)	-0.4404*** (0.1191)	-0.4396 (0.1192)
Log monthly household income	0.1915** (0.0634)	0.1828** (0.0634)	0.186 (0.0635)
Self-rated health (ref: Excellent)			
Very good	-0.1009 (0.2091)	-0.0945 (0.209)	-0.0855 (0.2092)
Good	-0.8737*** (0.2062)	-0.8585*** (0.2061)	-0.8415 (0.2064)
Fair	-2.1409*** (0.2125)	-2.1104*** (0.2126)	-2.092 (0.213)
Poor	-3.0621*** (0.2281)	-3.0223*** (0.2284)	-2.9981 (0.229)
Wave (ref: 2)			
5	-0.0546 (0.083)	-0.0561 (0.0829)	-0.0482 (0.0831)

Visual art and subjective wellbeing among people with diagnosed depressive disorders

Intercept	4.5083*** (0.5733)	4.5109*** (0.5733)	4.427*** (0.5743)

*: p-value < .05
**: p-value < .01
***: p-value < .001

Obs: 2,996
Resp: 2,166

Obs: 2,996
Resp: 2,166

Obs: 2,996
Resp: 2,166

Table A10. Age: 31 to 60

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0545 (0.0719)		
Producing visual art		0.0315 (0.0742)	
Viewing visual art		0.0905 (0.0815)	
Painting, drawing or sculpture			0.0864 (0.1013)
Taking photography or making videos			0.0948 (0.1083)
Making digital art or animation			0.0432 (0.1269)
Making crafts			-0.0154 (0.0882)
Attending art, photography or crafts exhibitions			0.1019 (0.0935)
Attending electronic or video art shows			-0.1462 (0.1532)
Attending street art or public art displays			0.0235 (0.1069)
Gender (ref: male)			
Female	-0.3185*** (0.0843)	-0.3182*** (0.0843)	-0.306*** (0.0869)
Ethnicity (ref: White)			
Black	0.4341 (0.2935)	0.4367 (0.2934)	0.4399 (0.2944)
Asian	-0.1149 (0.1844)	-0.1105 (0.1844)	-0.1079 (0.1848)
Other or mixed	0.0486 (0.2324)	0.049 (0.2323)	0.0515 (0.2328)
Region (ref: England)			
London	-0.2256 (0.1393)	-0.2339 (0.1395)	-0.2358 (0.1401)
Wales	0.0821 (0.1724)	0.0873 (0.1724)	0.0869 (0.1728)
Scotland	0.0968 (0.137)	0.0998 (0.137)	0.1119 (0.1373)
Northern Ireland	-0.1316 (0.1872)	-0.1286 (0.1872)	-0.1188 (0.1875)
Marital status (ref: single or never married)			
Cohabiting	0.0205 (0.18)	0.0177 (0.18)	0.016 (0.1802)
Married or in civil partnership	0.321* (0.135)	0.3206* (0.1348)	0.3238* (0.1352)
Separated or divorced	0.1367 (0.1445)	0.1381 (0.1444)	0.1438 (0.1446)
Widowed	0.7206** (0.2698)	0.7236** (0.2698)	0.7277** (0.27)
Own children < 16 in household	-0.0291 (0.0793)	-0.0244 (0.0794)	-0.0262 (0.0798)
Labour force status (ref: employed)			
Unemployed	-0.8199*** (0.1285)	-0.8096*** (0.1289)	-0.8073*** (0.129)
Inactive	-0.5974*** (0.09)	-0.5908*** (0.0903)	-0.5872*** (0.0904)
Log monthly household income	7e-04 (0.048)	-0.0015 (0.0481)	5e-04 (0.0481)
Self-rated health (ref: Excellent)			
Very good	-0.2112 (0.1581)	-0.2092 (0.1581)	-0.2094 (0.1583)
Good	-0.6382*** (0.1559)	-0.6334*** (0.156)	-0.6319*** (0.1563)
Fair	-1.6609*** (0.1609)	-1.6504*** (0.1611)	-1.6484*** (0.1614)
Poor	-2.5954*** (0.1727)	-2.5827*** (0.1731)	-2.5812*** (0.1736)
Wave (ref: 2)			
5	0.0986 (0.0623)	0.0985 (0.0624)	0.104 (0.0624)

Intercept	6.8056***	6.7974***	6.7539***
	(0.4341)	(0.4344)	(0.4355)
*: p-value < .05	Obs: 2,996	Obs: 2,996	Obs: 2,996
**: p-value < .01	Resp: 2,166	Resp: 2,166	Resp: 2,166
***: p-value < .001			

Table A11. Age: 61 or more

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0603 (0.1772)		
Producing visual art		0.34 (0.1842)	
Viewing visual art		-0.222 (0.2004)	
Painting, drawing or sculpture			0.1266 (0.2773)
Taking photography or making videos			0.1807 (0.2796)
Making digital art or animation			0.102 (0.3629)
Making crafts			0.0265 (0.2122)
Attending art, photography or crafts exhibitions			-0.1281 (0.224)
Attending electronic or video art shows			0.4056 (0.5068)
Attending street art or public art displays			-0.3844 (0.3064)
Gender (ref: male)			
Female	-0.2138 (0.1938)	-0.2569 (0.1941)	-0.188 (0.2022)
Ethnicity (ref: White)			
Black	0.9908 (1.0163)	0.9744 (1.0136)	0.9534 (1.0191)
Asian	0.4914 (0.6601)	0.5327 (0.659)	0.4734 (0.6626)
Other or mixed	0.7731 (0.9629)	0.8479 (0.9605)	0.7584 (0.9683)
Region (ref: England)			
London	-0.5283 (0.3945)	-0.518 (0.3938)	-0.5111 (0.3977)
Wales	-0.304 (0.339)	-0.347 (0.3393)	-0.3321 (0.341)
Scotland	0.0035 (0.33)	-0.0074 (0.3291)	-0.0167 (0.3312)
Northern Ireland	0.3643 (0.4608)	0.3878 (0.4595)	0.3508 (0.4622)
Marital status (ref: single or never married)			
Cohabiting	1.2329 (1.6252)	1.2296 (1.6216)	1.0927 (1.6322)
Married or in civil partnership	0.0924 (1.182)	0.0952 (1.1798)	0.0225 (1.1881)
Separated or divorced	0.1232 (1.1894)	0.1504 (1.1873)	0.0624 (1.195)
Widowed	0.1817 (1.1907)	0.2097 (1.1886)	0.1175 (1.1968)
Own children < 16 in household	0.0397 (1.1737)	0.2654 (1.1763)	0.3238 (1.1833)
Labour force status (ref: employed)			
Unemployed	0.0634 (0.9639)	0.0388 (0.963)	0.0466 (0.9675)
Inactive	0.0554 (0.2682)	0.0384 (0.2682)	0.0346 (0.2707)
Log monthly household income	0.1958 (0.1439)	0.2063 (0.144)	0.2119 (0.1448)
Self-rated health (ref: Excellent)			
Very good	-0.6428 (0.4121)	-0.5961 (0.4124)	-0.6032 (0.4177)
Good	-1.1831** (0.4013)	-1.1699** (0.4006)	-1.1463** (0.4069)
Fair	-2.091*** (0.4027)	-2.0797*** (0.402)	-2.0957*** (0.4068)
Poor	-3.5657*** (0.4194)	-3.5526*** (0.4185)	-3.5875*** (0.4231)
Wave (ref: 2)			
5	-0.4863** (0.148)	-0.4813** (0.148)	-0.4659** (0.1488)

Intercept	6.4988***	6.3947***	6.4744***
	(1.7311)	(1.7286)	(1.7408)

*: p-value < .05	Obs: 1,004	Obs: 1,004	Obs: 1,004
**: p-value < .01	Resp: 726	Resp: 726	Resp: 726
***: p-value < .001			

Table A12. Age: 61 or more

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0429 (0.1139)		
Producing visual art		0.2745* (0.1182)	
Viewing visual art		-0.3025* (0.1285)	
Painting, drawing or sculpture			0.0714 (0.1778)
Taking photography or making videos			0.1625 (0.1795)
Making digital art or animation			-0.0861 (0.233)
Making crafts			0.1552 (0.136)
Attending art, photography or crafts exhibitions			-0.2351 (0.1439)
Attending electronic or video art shows			0.3366 (0.3255)
Attending street art or public art displays			-0.2443 (0.1967)
Gender (ref: male)			
Female	-0.4323*** (0.1241)	-0.4623*** (0.1239)	-0.4474*** (0.129)
Ethnicity (ref: White)			
Black	0.2662 (0.6519)	0.224 (0.648)	0.1958 (0.6511)
Asian	-0.155 (0.4231)	-0.1381 (0.4209)	-0.1593 (0.4228)
Other or mixed	-1.2333* (0.6163)	-1.1739 (0.6122)	-1.2215* (0.6164)
Region (ref: England)			
London	-0.265 (0.2529)	-0.2482 (0.2515)	-0.2549 (0.2538)
Wales	-0.7203*** (0.2174)	-0.7703*** (0.2168)	-0.7616*** (0.2177)
Scotland	-0.3001 (0.2114)	-0.312 (0.21)	-0.3181 (0.2111)
Northern Ireland	-0.6243* (0.2952)	-0.6191* (0.2932)	-0.6389* (0.2946)
Marital status (ref: single or never married)			
Cohabiting	-1.8369 (1.0429)	-1.8321 (1.0373)	-1.8859 (1.0435)
Married or in civil partnership	-0.585 (0.759)	-0.579 (0.7553)	-0.6425 (0.7604)
Separated or divorced	-0.5384 (0.7638)	-0.5106 (0.7602)	-0.5776 (0.7648)
Widowed	-0.6778 (0.7646)	-0.6541 (0.761)	-0.7239 (0.766)
Own children < 16 in household	0.8178 (0.7547)	1.0736 (0.7545)	1.0977 (0.7591)
Labour force status (ref: employed)			
Unemployed	-0.1566 (0.6199)	-0.1945 (0.6177)	-0.1756 (0.6208)
Inactive	-0.2704 (0.1723)	-0.2969 (0.1718)	-0.279 (0.1734)
Log monthly household income	0.0546 (0.0924)	0.0707 (0.0922)	0.0802 (0.0927)
Self-rated health (ref: Excellent)			
Very good	-0.2921 (0.265)	-0.2434 (0.2644)	-0.2194 (0.268)
Good	-0.5835* (0.258)	-0.5772* (0.2568)	-0.5402* (0.2609)
Fair	-1.4645*** (0.2588)	-1.4746*** (0.2577)	-1.4616*** (0.2609)
Poor	-2.7149*** (0.2695)	-2.7351*** (0.2682)	-2.7239*** (0.2712)
Wave (ref: 2)			
5	0.3369*** (0.0957)	0.3425*** (0.0956)	0.3441*** (0.0963)

Intercept	7.6905***	7.5997***	7.5847***
	(1.112)	(1.1071)	(1.1147)
*: p-value < .05	Obs: 1,004	Obs: 1,004	Obs: 1,004
**: p-value < .01	Resp: 726	Resp: 726	Resp: 726
***: p-value < .001			

Table A13. Labour force status: employed

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	-0.0378 (0.1126)		
Producing visual art		-0.0732 (0.1136)	
Viewing visual art		0.1377 (0.1157)	
Painting, drawing or sculpture			0.0068 (0.1516)
Taking photography or making videos			0.1476 (0.1579)
Making digital art or animation			-0.1049 (0.182)
Making crafts			0.0812 (0.135)
Attending art, photography or crafts exhibitions			0.0993 (0.1296)
Attending electronic or video art shows			0.1304 (0.2005)
Attending street art or public art displays			-0.0307 (0.1469)
Gender (ref: male)			
Female	0.1997 (0.1279)	0.2066 (0.1282)	0.1859 (0.1332)
Age	-0.1059** (0.0369)	-0.1069** (0.0369)	-0.1076** (0.0371)
Age squared	0.0013** (4e-04)	0.0013** (4e-04)	0.0013** (4e-04)
Ethnicity (ref: White)			
Black	-0.4422 (0.4699)	-0.4502 (0.47)	-0.3935 (0.4707)
Asian	-0.5199 (0.3353)	-0.5107 (0.3354)	-0.4762 (0.3364)
Other or mixed	0.3043 (0.3688)	0.2926 (0.3688)	0.2841 (0.369)
Region (ref: England)			
London	-0.3495 (0.2089)	-0.3693 (0.2095)	-0.3826 (0.2102)
Wales	-0.2341 (0.2653)	-0.2215 (0.2654)	-0.2072 (0.2659)
Scotland	-0.0051 (0.2105)	-0.0103 (0.2107)	0.0037 (0.2111)
Northern Ireland	0.4114 (0.3659)	0.4086 (0.3659)	0.4336 (0.3665)
Marital status (ref: single or never married)			
Cohabiting	0.5617* (0.2414)	0.5568* (0.2412)	0.5479* (0.2414)
Married or in civil partnership	0.7145*** (0.2029)	0.7156*** (0.2029)	0.7033*** (0.2032)
Separated or divorced	0.2064 (0.2296)	0.2021 (0.2296)	0.1942 (0.2301)
Widowed	0.4327 (0.5156)	0.4311 (0.5157)	0.4417 (0.5163)
Own children < 16 in household	0.0414 (0.1279)	0.0516 (0.1281)	0.0663 (0.1284)
Log monthly household income	0.3826*** (0.0891)	0.3665*** (0.0893)	0.3709*** (0.0893)
Self-rated health (ref: Excellent)			
Very good	-0.2667 (0.1955)	-0.2618 (0.1954)	-0.2403 (0.1964)
Good	-0.9112*** (0.1963)	-0.8993*** (0.1964)	-0.8809*** (0.1975)
Fair	-2.0386*** (0.2118)	-2.0186*** (0.212)	-1.9947*** (0.213)
Poor	-2.3942*** (0.2953)	-2.3644*** (0.2959)	-2.3395*** (0.2975)
Wave (ref: 2)			
5	-0.1501 (0.0974)	-0.1479 (0.0973)	-0.1512 (0.0979)
Intercept	5.2239***	5.3141***	5.2367***

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	(1.0256)	(1.0289)	(1.0332)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 2,043 Resp: 1,517	Obs: 2,043 Resp: 1,517	Obs: 2,043 Resp: 1,517

Table A14. Labour force status: employed

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	-0.0012 (0.0812)		
Producing visual art		0.0279 (0.0819)	
Viewing visual art		0.0608 (0.0835)	
Painting, drawing or sculpture			0.187 (0.1093)
Taking photography or making videos			-0.0141 (0.1138)
Making digital art or animation			-0.1147 (0.1311)
Making crafts			0.0627 (0.0973)
Attending art, photography or crafts exhibitions			0.1154 (0.0934)
Attending electronic or video art shows			-0.0416 (0.1444)
Attending street art or public art displays			-0.0088 (0.1058)
Gender (ref: male)			
Female	-0.3191*** (0.0923)	-0.3205*** (0.0926)	-0.3461*** (0.0962)
Age	-0.0382 (0.0266)	-0.0383 (0.0266)	-0.0363 (0.0268)
Age squared	5e-04 (3e-04)	5e-04 (3e-04)	5e-04 (3e-04)
Ethnicity (ref: White)			
Black	0.0591 (0.3392)	0.062 (0.3392)	0.0738 (0.3398)
Asian	-0.0254 (0.242)	-0.0161 (0.2421)	-0.0176 (0.2429)
Other or mixed	0.4234 (0.2663)	0.4161 (0.2662)	0.4151 (0.2664)
Region (ref: England)			
London	-0.2785 (0.1508)	-0.2869 (0.1512)	-0.2895 (0.1518)
Wales	-0.1342 (0.1915)	-0.1274 (0.1916)	-0.1328 (0.1921)
Scotland	-0.0228 (0.152)	-0.0212 (0.1521)	-0.0077 (0.1524)
Northern Ireland	-0.0618 (0.2642)	-0.0604 (0.2642)	-0.0695 (0.2647)
Marital status (ref: single or never married)			
Cohabiting	-0.1052 (0.1741)	-0.1124 (0.174)	-0.1103 (0.174)
Married or in civil partnership	0.1053 (0.1464)	0.1036 (0.1464)	0.1055 (0.1466)
Separated or divorced	-0.0872 (0.1657)	-0.0899 (0.1657)	-0.0808 (0.166)
Widowed	0.5825 (0.3723)	0.5871 (0.3723)	0.6146 (0.3728)
Own children < 16 in household	0.039 (0.0923)	0.0465 (0.0924)	0.0484 (0.0926)
Log monthly household income	0.0016 (0.0643)	-0.0047 (0.0645)	-0.0047 (0.0644)
Self-rated health (ref: Excellent)			
Very good	-0.3407* (0.1409)	-0.3375* (0.141)	-0.3424* (0.1415)
Good	-0.7855*** (0.1416)	-0.7809*** (0.1417)	-0.7848*** (0.1423)
Fair	-1.5811*** (0.1527)	-1.5704*** (0.153)	-1.5663*** (0.1535)
Poor	-2.7549*** (0.213)	-2.743*** (0.2134)	-2.7474*** (0.2144)
Wave (ref: 2)			
5	0.1282 (0.0701)	0.1291 (0.0701)	0.1219 (0.0704)
Intercept	7.6694***	7.6781***	7.6154***

	(0.7401)	(0.7425)	(0.7454)
*: p-value < .05	Obs: 2,043	Obs: 2,043	Obs: 2,043
**: p-value < .01	Resp: 1,517	Resp: 1,517	Resp: 1,517
***: p-value < .001			

Table A15. Labour force status: unemployed or inactive

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.1467 (0.1078)		
Producing visual art		0.0407 (0.113)	
Viewing visual art		0.2904* (0.1322)	
Painting, drawing or sculpture			-0.2919 (0.1526)
Taking photography or making videos			0.326 (0.1738)
Making digital art or animation			-0.1049 (0.182)
Making crafts			0.0812 (0.135)
Attending art, photography or crafts exhibitions			0.0993 (0.1296)
Attending electronic or video art shows			0.1304 (0.2005)
Attending street art or public art displays			-0.0307 (0.1469)
Gender (ref: male)			
Female	0.0428 (0.126)	0.0426 (0.1259)	0.1859 (0.1332)
Age	-0.0896*** (0.0216)	-0.0904*** (0.0216)	-0.1076** (0.0371)
Age squared	0.0012*** (2e-04)	0.0012*** (2e-04)	0.0013** (4e-04)
Ethnicity (ref: White)			
Black	0.3094 (0.3983)	0.3124 (0.3978)	-0.3935 (0.4707)
Asian	0.1464 (0.2794)	0.142 (0.279)	-0.4762 (0.3364)
Other or mixed	-0.3865 (0.3548)	-0.3944 (0.3543)	0.2841 (0.369)
Region (ref: England)			
London	-0.174 (0.2247)	-0.1788 (0.2244)	-0.3826 (0.2102)
Wales	0.1237 (0.235)	0.1401 (0.2348)	-0.2072 (0.2659)
Scotland	0.2049 (0.2074)	0.215 (0.2072)	0.0037 (0.2111)
Northern Ireland	0.6436* (0.2571)	0.6528* (0.2568)	0.4336 (0.3665)
Marital status (ref: single or never married)			
Cohabiting	0.3239 (0.2526)	0.3169 (0.2524)	0.5479* (0.2414)
Married or in civil partnership	0.3893 (0.206)	0.3957 (0.2057)	0.7033*** (0.2032)
Separated or divorced	0.0493 (0.2313)	0.062 (0.2311)	0.1942 (0.2301)
Widowed	0.2674 (0.2874)	0.2754 (0.2871)	0.4417 (0.5163)
Own children < 16 in household	0.0306 (0.151)	0.0543 (0.1513)	0.0663 (0.1284)
Log monthly household income	0.149* (0.0674)	0.1432* (0.0674)	0.3709*** (0.0893)
Self-rated health (ref: Excellent)			
Very good	-0.5307 (0.2968)	-0.5367 (0.2966)	-0.2403 (0.1964)
Good	-1.5949*** (0.2846)	-1.5867*** (0.2844)	-0.8809*** (0.1975)
Fair	-2.5915*** (0.2824)	-2.5682*** (0.2823)	-1.9947*** (0.213)
Poor	-3.8255*** (0.2856)	-3.7929*** (0.2857)	-2.3395*** (0.2975)
Wave (ref: 2)			
5	-0.2068* (0.0945)	-0.2074* (0.0946)	-0.1512 (0.0979)
Intercept	6.7724***	6.7924***	5.2367***

	(0.7543)	(0.7527)	(1.0332)
*: p-value < .05	Obs: 2,584	Obs: 2,584	Obs: 2,584
**: p-value < .01	Resp: 1,958	Resp: 1,958	Resp: 1,958
***: p-value < .001			

Table A16. Labour force status: unemployed or inactive

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.1285 (0.079)		
Producing visual art		0.0752 (0.0828)	
Viewing visual art		0.0738 (0.0969)	
Painting, drawing or sculpture			-0.1261 (0.1119)
Taking photography or making videos			0.12 (0.1275)
Making digital art or animation			0.0668 (0.1493)
Making crafts			0.0706 (0.0981)
Attending art, photography or crafts exhibitions			-0.0022 (0.1131)
Attending electronic or video art shows			-0.0689 (0.2164)
Attending street art or public art displays			0.0467 (0.1427)
Gender (ref: male)			
Female	-0.3237*** (0.0923)	-0.3237*** (0.0924)	-0.3218*** (0.0951)
Age	-0.0302 (0.0158)	-0.0305 (0.0158)	-0.033* (0.016)
Age squared	5e-04** (2e-04)	5e-04** (2e-04)	5e-04** (2e-04)
Ethnicity (ref: White)			
Black	0.0321 (0.2917)	0.0341 (0.2918)	0.0227 (0.2928)
Asian	-0.1427 (0.2046)	-0.1471 (0.2047)	-0.1506 (0.205)
Other or mixed	-0.3157 (0.2598)	-0.3218 (0.2598)	-0.3246 (0.2603)
Region (ref: England)			
London	-0.066 (0.1645)	-0.0642 (0.1646)	-0.053 (0.165)
Wales	-0.184 (0.1721)	-0.1856 (0.1722)	-0.1944 (0.1726)
Scotland	-0.0336 (0.1519)	-0.0326 (0.152)	-0.0389 (0.1524)
Northern Ireland	-0.2214 (0.1883)	-0.2243 (0.1884)	-0.2329 (0.1887)
Marital status (ref: single or never married)			
Cohabiting	-0.1509 (0.185)	-0.1542 (0.185)	-0.1507 (0.1855)
Married or in civil partnership	0.1951 (0.1509)	0.2007 (0.1508)	0.2017 (0.1511)
Separated or divorced	0.0935 (0.1694)	0.0977 (0.1695)	0.103 (0.1699)
Widowed	0.0482 (0.2105)	0.048 (0.2105)	0.0527 (0.211)
Own children < 16 in household	0.0285 (0.1106)	0.0328 (0.111)	0.0322 (0.1115)
Log monthly household income	0.0067 (0.0493)	0.0053 (0.0494)	0.0066 (0.0495)
Self-rated health (ref: Excellent)			
Very good	-0.2558 (0.2174)	-0.259 (0.2174)	-0.2606 (0.2178)
Good	-0.7347*** (0.2084)	-0.7358*** (0.2085)	-0.7378*** (0.2087)
Fair	-1.6703*** (0.2068)	-1.6745*** (0.2069)	-1.6881*** (0.207)
Poor	-2.7179*** (0.2092)	-2.721*** (0.2095)	-2.7351*** (0.2096)
Wave (ref: 2)			
5	0.1398* (0.0692)	0.1415* (0.0693)	0.1422* (0.0694)
Intercept	6.6915***	6.7233***	6.8237***

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Table A17. Income: median or below

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.1082 (0.1127)		
Producing visual art		0.0482 (0.119)	
Viewing visual art		0.2453 (0.1388)	
Painting, drawing or sculpture			-0.009 (0.1564)
Taking photography or making videos			0.2442 (0.1865)
Making digital art or animation			-0.2055 (0.2106)
Making crafts			0.061 (0.1414)
Attending art, photography or crafts exhibitions			0.336* (0.165)
Attending electronic or video art shows			0.0153 (0.2906)
Attending street art or public art displays			-0.2483 (0.2018)
Gender (ref: male)			
Female	-0.0061 (0.1322)	-0.0049 (0.1322)	-0.0167 (0.1361)
Age	-0.0575* (0.0232)	-0.0585* (0.0232)	-0.061** (0.0234)
Age squared	9e-04*** (2e-04)	9e-04*** (2e-04)	0.001*** (2e-04)
Ethnicity (ref: White)			
Black	0.3968 (0.3808)	0.3813 (0.3806)	0.4319 (0.3819)
Asian	-0.0946 (0.3105)	-0.095 (0.3102)	-0.0858 (0.3108)
Other or mixed	-0.2361 (0.3396)	-0.2452 (0.3394)	-0.2435 (0.3399)
Region (ref: England)			
London	-0.1975 (0.2303)	-0.2033 (0.2301)	-0.2108 (0.2309)
Wales	0.1333 (0.2337)	0.1506 (0.2338)	0.146 (0.2342)
Scotland	0.2782 (0.2212)	0.2841 (0.2211)	0.2988 (0.2216)
Northern Ireland	0.6227* (0.2712)	0.6449* (0.2712)	0.6537* (0.2715)
Marital status (ref: single or never married)			
Cohabiting	0.6224* (0.2718)	0.6112* (0.2719)	0.6107* (0.2724)
Married or in civil partnership	0.3555 (0.2048)	0.3563 (0.2046)	0.355 (0.2052)
Separated or divorced	0.0942 (0.2179)	0.0954 (0.2177)	0.1147 (0.2181)
Widowed	0.2634 (0.2873)	0.2608 (0.2871)	0.2807 (0.2877)
Own children < 16 in household	0.2022 (0.1618)	0.2202 (0.162)	0.2197 (0.1626)
Labour force status (ref: employed)			
Unemployed	-0.7805*** (0.1882)	-0.7454*** (0.1894)	-0.751*** (0.1899)
Inactive	-0.1555 (0.1456)	-0.1405 (0.1458)	-0.1377 (0.1462)
Self-rated health (ref: Excellent)			
Very good	-0.6156* (0.2873)	-0.627* (0.2872)	-0.6256* (0.2876)
Good	-1.4415*** (0.2784)	-1.4439*** (0.2783)	-1.42*** (0.2788)
Fair	-2.4753*** (0.28)	-2.4644*** (0.2797)	-2.4541*** (0.2802)
Poor	-3.7228*** (0.2891)	-3.7007*** (0.2889)	-3.6858*** (0.2894)
Wave (ref: 2)			

5	-0.1285 (0.1003)	-0.1277 (0.1003)	-0.1236 (0.1006)
Intercept	7.1507*** (0.6197)	7.1184*** (0.6179)	7.2032*** (0.6232)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 2,309 Resp: 1,799	Obs: 2,309 Resp: 1,799	Obs: 2,309 Resp: 1,799

Table A18. Income: median or below

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0405 (0.0814)		
Producing visual art		0.0139 (0.086)	
Viewing visual art		0.0172 (0.1003)	
Painting, drawing or sculpture			-0.1122 (0.1131)
Taking photography or making videos			0.1083 (0.135)
Making digital art or animation			0.0229 (0.1524)
Making crafts			-0.0017 (0.1023)
Attending art, photography or crafts exhibitions			-0.0071 (0.1194)
Attending electronic or video art shows			-0.032 (0.2103)
Attending street art or public art displays			-0.0057 (0.1461)
Gender (ref: male)			
Female	-0.3816*** (0.0952)	-0.3813*** (0.0953)	-0.3725*** (0.0982)
Age	-0.0185 (0.0167)	-0.0187 (0.0167)	-0.0201 (0.0169)
Age squared	4e-04* (2e-04)	4e-04* (2e-04)	4e-04* (2e-04)
Ethnicity (ref: White)			
Black	0.1247 (0.2743)	0.1252 (0.2744)	0.1301 (0.2755)
Asian	-0.2154 (0.2236)	-0.2185 (0.2237)	-0.2205 (0.2241)
Other or mixed	-0.0999 (0.2446)	-0.1 (0.2447)	-0.1028 (0.2451)
Region (ref: England)			
London	-0.1554 (0.1659)	-0.1547 (0.1659)	-0.1497 (0.1665)
Wales	-0.083 (0.1684)	-0.0838 (0.1686)	-0.085 (0.169)
Scotland	0.0937 (0.1593)	0.0923 (0.1594)	0.0846 (0.1598)
Northern Ireland	-0.3018 (0.1953)	-0.3043 (0.1955)	-0.3116 (0.1958)
Marital status (ref: single or never married)			
Cohabiting	-0.1338 (0.1962)	-0.1325 (0.1964)	-0.126 (0.1969)
Married or in civil partnership	0.1527 (0.1477)	0.1552 (0.1477)	0.1545 (0.1482)
Separated or divorced	0.0693 (0.1571)	0.0713 (0.1571)	0.074 (0.1575)
Widowed	0.0433 (0.2071)	0.0433 (0.2071)	0.0481 (0.2077)
Own children < 16 in household	0.0833 (0.1167)	0.0831 (0.117)	0.0846 (0.1174)
Labour force status (ref: employed)			
Unemployed	-0.7646*** (0.136)	-0.7637*** (0.137)	-0.7651*** (0.1374)
Inactive	-0.4987*** (0.1051)	-0.4984*** (0.1053)	-0.4968*** (0.1057)
Self-rated health (ref: Excellent)			
Very good	-0.4451* (0.2076)	-0.4465* (0.2077)	-0.4386* (0.2081)
Good	-0.8338*** (0.2012)	-0.8353*** (0.2013)	-0.8236*** (0.2018)
Fair	-1.8153*** (0.2023)	-1.8191*** (0.2022)	-1.8117*** (0.2027)
Poor	-2.9458*** (0.2088)	-2.9497*** (0.2088)	-2.9441*** (0.2093)
Wave (ref: 2)			

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5	0.188* (0.0728)	0.1883* (0.0729)	0.1927** (0.0732)
Intercept	7.2429*** (0.4469)	7.2589*** (0.4461)	7.3089*** (0.45)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 2,309 Resp: 1,799	Obs: 2,309 Resp: 1,799	Obs: 2,309 Resp: 1,799

Table A19. Income: above median

Dependent variable: life satisfaction	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0607 (0.1077)		
Producing visual art		-0.0441 (0.1093)	
Viewing visual art		0.1668 (0.1134)	
Painting, drawing or sculpture			-0.221 (0.1505)
Taking photography or making videos			0.227 (0.1505)
Making digital art or animation			-0.0656 (0.1812)
Making crafts			0.1216 (0.1287)
Attending art, photography or crafts exhibitions			0.0459 (0.1267)
Attending electronic or video art shows			0.0154 (0.2066)
Attending street art or public art displays			0.1968 (0.147)
Gender (ref: male)			
Female	0.1028 (0.1211)	0.1107 (0.1214)	0.0913 (0.126)
Age	-0.1409*** (0.0273)	-0.1416*** (0.0273)	-0.146*** (0.0275)
Age squared	0.0016*** (3e-04)	0.0016*** (3e-04)	0.0016*** (3e-04)
Ethnicity (ref: White)			
Black	-0.4887 (0.5209)	-0.4831 (0.5209)	-0.4547 (0.5212)
Asian	-0.071 (0.2856)	-0.0681 (0.2856)	-0.0383 (0.2858)
Other or mixed	0.1396 (0.3867)	0.1328 (0.3865)	0.125 (0.3866)
Region (ref: England)			
London	-0.294 (0.2033)	-0.3141 (0.2037)	-0.3142 (0.2042)
Wales	-0.2366 (0.258)	-0.2261 (0.258)	-0.2082 (0.2581)
Scotland	-0.0273 (0.1953)	-0.0286 (0.1953)	-0.023 (0.1954)
Northern Ireland	0.4926 (0.3123)	0.4762 (0.3123)	0.4991 (0.3125)
Marital status (ref: single or never married)			
Cohabiting	0.3746 (0.2415)	0.3766 (0.2414)	0.3958 (0.2417)
Married or in civil partnership	0.7319** (0.2244)	0.7413*** (0.2243)	0.7476*** (0.2249)
Separated or divorced	0.0441 (0.2577)	0.0538 (0.2577)	0.0562 (0.258)
Widowed	0.6492 (0.4402)	0.66 (0.4401)	0.6614 (0.4406)
Own children < 16 in household	-0.0898 (0.1281)	-0.0851 (0.1282)	-0.0569 (0.1287)
Labour force status (ref: employed)			
Unemployed	-1.2164*** (0.2563)	-1.2011*** (0.2564)	-1.1884*** (0.2564)
Inactive	-0.4179** (0.1312)	-0.403** (0.1316)	-0.413** (0.1318)
Self-rated health (ref: Excellent)			
Very good	-0.2627 (0.2007)	-0.2592 (0.2007)	-0.2436 (0.2012)
Good	-1.0584*** (0.2003)	-1.0461*** (0.2005)	-1.021*** (0.2012)
Fair	-2.2131*** (0.2109)	-2.1934*** (0.2116)	-2.1732*** (0.2119)
Poor	-3.1798*** (0.2449)	-3.1519*** (0.2458)	-3.12*** (0.2462)
Wave (ref: 2)			

5	-0.2402* (0.0955)	-0.2421* (0.0955)	-0.2387* (0.0957)
Intercept	9.5384*** (0.592)	9.5235*** (0.5914)	9.5736*** (0.5953)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 2,309 Resp: 1,775	Obs: 2,309 Resp: 1,775	Obs: 2,309 Resp: 1,775

Table A20. Income: above median

Dependent variable: mental health	Overall engagement	Mode of engagement	Form of engagement
Engagement in visual art	0.0942 (0.0791)		
Producing visual art		0.0811 (0.0803)	
Viewing visual art		0.0846 (0.0832)	
Painting, drawing or sculpture			0.172 (0.1105)
Taking photography or making videos			-0.0089 (0.1104)
Making digital art or animation			-0.0975 (0.1327)
Making crafts			0.1144 (0.0945)
Attending art, photography or crafts exhibitions			0.1124 (0.0929)
Attending electronic or video art shows			-0.0819 (0.1509)
Attending street art or public art displays			0.0239 (0.1075)
Gender (ref: male)			
Female	-0.3136*** (0.0898)	-0.3162*** (0.09)	-0.349*** (0.0934)
Age	-0.0327 (0.0202)	-0.0326 (0.0202)	-0.0324 (0.0203)
Age squared	5e-04* (2e-04)	5e-04* (2e-04)	5e-04* (2e-04)
Ethnicity (ref: White)			
Black	0.0773 (0.3849)	0.0915 (0.385)	0.1165 (0.3854)
Asian	0.061 (0.2114)	0.068 (0.2114)	0.0623 (0.2116)
Other or mixed	0.1923 (0.2857)	0.1884 (0.2856)	0.1762 (0.2859)
Region (ref: England)			
London	-0.2104 (0.1505)	-0.216 (0.1508)	-0.2149 (0.1512)
Wales	-0.2343 (0.1909)	-0.231 (0.1909)	-0.2324 (0.1911)
Scotland	-0.072 (0.1447)	-0.0689 (0.1447)	-0.0628 (0.1449)
Northern Ireland	-0.0677 (0.2312)	-0.0706 (0.2313)	-0.0784 (0.2316)
Marital status (ref: single or never married)			
Cohabiting	-0.1226 (0.1777)	-0.1195 (0.1777)	-0.1152 (0.178)
Married or in civil partnership	0.1153 (0.1656)	0.1193 (0.1656)	0.125 (0.1661)
Separated or divorced	-0.1311 (0.1903)	-0.1263 (0.1903)	-0.1206 (0.1907)
Widowed	0.3812 (0.3249)	0.3875 (0.3249)	0.402 (0.3255)
Own children < 16 in household	3e-04 (0.0943)	0.0065 (0.0945)	0.0064 (0.0949)
Labour force status (ref: employed)			
Unemployed	-0.9431*** (0.1881)	-0.9392*** (0.1882)	-0.9432*** (0.1882)
Inactive	-0.4916*** (0.0965)	-0.4895*** (0.0968)	-0.4892*** (0.097)
Self-rated health (ref: Excellent)			
Very good	-0.2694 (0.1469)	-0.2656 (0.1469)	-0.2711 (0.1472)
Good	-0.7658*** (0.1469)	-0.7589*** (0.1471)	-0.7639*** (0.1475)
Fair	-1.5911*** (0.1548)	-1.5785*** (0.1553)	-1.5731*** (0.1556)
Poor	-2.6277*** (0.1799)	-2.6136*** (0.1806)	-2.6084*** (0.1809)
Wave (ref: 2)			

5	0.0966	0.0964	0.0897
	(0.069)	(0.069)	(0.0691)
Intercept	7.5126***	7.483***	7.4877***
	(0.4367)	(0.4363)	(0.4394)
*: p-value < .05 **: p-value < .01 ***: p-value < .001	Obs: 2,309 Resp: 1,775	Obs: 2,309 Resp: 1,775	Obs: 2,309 Resp: 1,775

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A4.   References

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