The effect of the consumption of fruit and vegetables on psychological well-being

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Abstract

This study analysis the partial effect of fruit and vegetable consumption on psychological well-being using data on 2,805 different individuals from the The National Health and Nutrition Examination Survey in the United States. The regression is performed on eleven different variables for psychological well-being and includes regressors for fruit, salads, beans, other vegetables and the combination of these variables. The results show that there is a positive relation between the consumption of fruit and vegetables on four out of eleven variables; number of days feeling anxious, tense or worried, feeling bad about oneself, feeling down, depressed or hopeless and having little interest in doing things. The results for the other seven variables are not significant. The variable for salad is significant in four out of eleven dependent variables where beans are only significant for one out of eleven and other vegetables are not significant for any of the dependent variables. The results for the fruit variable are significant for three out of eleven variables while total vegetable consumption is not significant for any of the variables. The conclusion is that future research is needed to analyse the effect of fruit and vegetable consumption on psychological well-being, also focusing on the different aspects of fruits and vegetables. Further research recommendations are to conduct a controlled trial research.

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1. Introduction

During the last decade the number of people with depressive complaints has risen. Not only is this a burden on a personal level and affects a person's happiness it also results in great costs for the society in anti-depressant medicine. Diener and Chan (2011) provide evidence that people who are happier live longer. It is therefore of importance to identify all factors that influence one's well-being to form appropriate advice to improve mental health.

While psychological well-being is important on a personal level it is also relevant for the economy. The importance of psychological well-being for job performance has been researched by Wright and Cropranzano (2000) and (2004) and show that psychological well-being and not job satisfaction are predictive of job performance.

Research has been done on the factors that influence psychological well-being such as social-economic variables like gender and race. The influence of diet on psychological well-being is on the contrary a little researched field. A start has been made my Blanchflower, Brown and Oswald (2012) and I will extend their research by performing it on a new sample and extending it by included more dependent and independent variables. Blanchflower, Brown and Oswald (2012) were the first to estimate this relationship and to create a more developed insight into this relationship it is important verify their finding. The results of this paper could further also contribute to a holistic treatment approach for people who have complaints about their psychological well-being.

The aim of this research is to identify if there is a relation between fruit and vegetable consumption and psychological well-being. Specifically if there are different components to this relationship in the difference between fruit and vegetables and different vegetables.

The results show a positive relation between fruit and vegetable consumption on four out of eleven psychological well-being variables. This indicates that future research into this subject in necessary to form a clear picture of the relation.

2. Previous Literature

2.1. Fruit and vegetable consumption

There is extensive literature on the relation between physical health and fruit and vegetable consumption. The research done by Boeing et al (2012) shows the preventive potential of an increase in fruit and vegetable consumption on chronic diseases. They find for hypertension, CHD and stroke convincing evidence for the preventive measures of a fruit and vegetable diet. For rheumatoid arthritis, chronic obstructive pulmonary disease, asthma, osteoporosis, eye disease, diabetic retinopathy and dementia they find a possible risk reduction and for cancer a probable reduction. The relation between fruit and vegetable diet and cancer has been researched further by other authors however the results are not conclusive. For example research done by Howe et al (1992) and Trock et al (1990) show a relation between fiber rich food and the risk of colon cancer. However the research done by Michels et al (2000) and Lin et al (2004) on colon cancer shows that there is no proven protection from frequent consumption of fruit and vegetable.

Mikkelsen et al show in their 2006 article the relation between the consumption of fruit and vegetables and birth weight. The growth rate of the fetus is an important predictor of a baby's health and survival in both long and short term. Their prospective study among 43,585 Danish women shows that there are significant associations between the exposures to fruit intake and birth weight. The relation with green leafy vegetables was smaller but still significant.

In fact, Pomerleau research for the WHO (2013) found among 32 studies none that showed a negative effect of fruit and vegetable consumption on health.

Because of the proven positive effects of fruit and vegetables consumption, the WHO recommends that adults consume a minimum of 400 grams of fruit and vegetables per day, excluding potatoes and other starchy tubers (Agudo, 2005).

The research above shows that there is a relation between the consumption of fruit and vegetables and multiple physical qualities however little scientific research has been done on the relation between the consumption of fruit and vegetables and psychological well-being. Blanchflower, Brown and Oswald (2012) made the first step towards estimating the effect of vegetable and fruit consumption on well-being. They used data from three different data sets of 80,000 randomly selected individuals from the United Kingdom containing seven measures for well-being (life satisfaction, mental well-being, mental disorders, self-reported health,

happiness, nervousness and feeling low). All along availability they use different control variables for the different regressions including unemployment, marital status, having children, disability, major illness, being sexually active, physical exercise, smoking, BMI, religion, income, social class and education. The results are unaffected by the inclusion of consumption of fish. Their conclusion is that there is suggestive evidence for a positive relationship between the consumption of fruit and vegetables and well-being. The results do not give a suggestion on the optimal amount of fruit and vegetables consumed in a day, as more research is needed.

2.2. Psychological well-being

Psychological well-being is important because it influences many aspects of life. Diener, Sapyta and Suh (1998) argue that for many subjects subjective well-being is the highest value and if not, then it is likely a value that they hold dear. Subjective well-being is defined by the presence of positive emotions and moods and the absence of unpleasant affect. This importance might be increasing because basic physical needs are met and there is a higher focus on the individual.

Larson (1978) performed a thirty year research on Americans to identify variables that influence psychological well-being. He finds that health, socio-economic factors, social interaction, marital status and living situation relate to well-being. Age, marital status and household income as determinants of well-being are also supported by Khumalo, Termane and Wissing (2012) and the relation with marital status in particular is supported by research done by Wood, Rhodes and Welan (1989). Woody and Green's (2001) research shows support of the relation between gender and race and well-being. Although the gender relation is supported by research by Diener and Sandvik (1991) and Momtaz, Ibrahim, Hamod and Yahaya (2011) there is also research by Khumalo, Termane and Wissing (2012) that finds no significant relation for gender on psychological well-being. However they do find relations with urban living, employment, education and marital status. Education, employment status and place of residence in turn are contradicted by the research by Momtaz, Ibrahim, Hamod and Yahaya (2011).

More remarkable are some other variables that have been identified as factors influencing psychological well-being. Beale, Leather and Pyrgas research in their 1998 paper the relation

between sunlight in the workplace and occupational stress, they find here a significant direct effect on general well-being.

But also the influence from dieting on psychological well-being has been researched. Bryan and Tiggemann (2001) researched the effect of dieting on cognitive performance and psychological well-being in overweight woman. They find that there was a positive effect on feelings of depression. They explain this by a sense of control over weight and eating behaviour. During a 12 week weight loss program Rippe et al (1998) find also an increase in psychological well-being and losing weight.

Physical activity and psychological well-being has been researched. Hassmén, Koivula and Uutela find a decrease in depression, anger, cynical distrust and stress for individuals who exercise two to three times a week. However Norris, Carroll and Cochrane (1992) find that in the beginning of a training period stress decreased and well-being increased, but these findings became less significant at the end of a trainings period. A literature study by Scully et al (1998) provides the insight that different forms of physical exercise might be palliative in relation to particular conditions.

My purpose is to continue the research done by Blachflower, Brown and Oswald (2012). By testing on a dataset from the United States if there is a significant effect of the consumption of fruit and vegetables on psychological well-being and expanding the research by using different criteria for psychological well-being and additional control variables. For psychological well-being I will make use of eleven variables: feeling little interest or pleasure in doing things over the last two weeks, feeling down, depressed or hopeless, having trouble falling asleep or staying asleep or sleeping too much, feeling tired or having little energy, having a poor appetite or overeating, feeling bad about yourself or that you are a failure or have let yourself or your family down, having trouble concentrating on things, moving or speaking so slowly that other people could have noticed or the opposite, having thoughts about being better off dead or hurting themselves in some way (National Health and Nutrition Examination Survey, 2013). I will use the same control variables as Blachflower, Brown and Oswald (2012) however due to lack of data religion, being sexually active, disability, social class and amount of exercise will be excluded and I will include hours spent in the sunlight and dieting. Also the variable for illness will be replaced by general health and the variable income will be replace by household income and number of people in the household. Together with the previous research this will create a more specific picture of the relation

between fruit and vegetable consumption and psychological well-being. This paper could provide governments and other organizations with more information to build a mental-health policy or advice.

3. Hypotheses

This thesis aims at estimating the relationship between fruit and vegetable consumption and psychological well-being. Drawing on Blanchflower, Brown and Oswald (2012) I have developed the following research question.

Does the consumption of fruit and vegetables have an influence on psychological well-being?

To answer this question I will use the following hypotheses:

H_1: Psychological well-being is not influenced by higher fruit and vegetable consumption

H_2: There is no difference in the effect of the different types of vegetables on psychological well-being

H_3: There is no difference in the effect of fruit and vegetables on psychological well-being

4. Data analysis

For the purpose of this research I will make use of the The National Health and Nutrition Examination Survey (NHANES), which is conducted among 10,537 adults and children in the United States. This data contains certain qualities that make it interesting to perform this research on. Firstly it contains eleven measurements for psychological well-being. Secondly it distinguishes between three different categories of vegetables. Thirdly it is conducted among Americans which have a different diet or habits then the citizens of the United Kingdom, which allows determining whether conclusions of the previous research also hold outside of the United Kingdom. Lastly it allows for an extension of the control variables.

The National Health and Nutrition Examination Survey (NHANES), is a study done to assess the health and nutritional status of adults and children in the United States. The NHANES has continuously been conducted surveys since 1999 regarding health topics in different population groups. The sample for the survey is selected to represent the U.S. population. To create reliable statistics people over 60, African Americans and Hispanics are over-sampled.

Each year the survey consists of interviews and physical examinations. The interviews include demographic, socioeconomic, dietary and other health-related questions. The examinations consist of medical, dental and physiological measurements as well as laboratory tests by highly trained medical personnel. The interviews are conducted at the respondents' homes. The study team consists of a physician, medical and health technicians and dietary and health interviewers. Many of the study staff are bilingual in English and Spanish. (Centers for disease control and prevention, 2013)

For the purpose of this research I will make use of the results of the 2009 – 2010 survey performed by the NHANES as the consumption of fruit and vegetables was not recorded before that time and more recent data is not available yet. The sample for the 2009-2010 survey consisted of 10,537 individuals of which 5,225 males (49.59%) and 5,312 females (50.41%). However, since some missing data exists for certain individuals and in order to make the sample comparable between the different models I will make use only of the data that have a value for fruit and vegetable consumption and the dependent variables for psychological well-being. This leaves the sample used for this research to 2,805 individuals. Comparison tests show that the sample's averages are not significantly different from the complete data. When including all the control variables 437 observations remain. Comparison tests show that when running the regression without control variables, in the results performed on 2,805 observations, on the sample with 437 observations it shows that the coefficients for the variable *other vegetables* are different for four out of eleven dependent variables; number of days feeling anxious, feeling down, depressed or hopeless, feeling tired or having little energy, number of days that mental health was not good. The *salad* variable also has a smaller significance for five out of eleven variables: feeling bad about oneself, feeling down, depressed or hopeless, having poor appetite or overeating, thought about being better off dead and trouble concentrating. These combine in the *total vegetable* variable which also differs in significance level for the variables: feeling bad about oneself, feeling down, depressed or hopeless, number of days that mental health was not good, having poor appetite or overeating, thought about being better off dead. The variable *total fruit and vegetable consumption* for the regression on feeling tired has a lower significance level in the smaller sample. It is important to keep these biases in mind when interpreting the results for these variables.

A possible bias in this data is that the information about medical conditions, diet and mental well-being are self-reported and not based on a direct diagnosis by a medical professional.

Important variables for this research are psychological distress and usual daily intake of vegetables and fruits. In the research done by by Blachflower, Brown and Oswald (2012) the variables life-satisfaction, well-being, GHQ psychological morbidity, self-reported health, happiness, nervousness and downhearted and low were used as a measure for psychological wellbeing. In this paper I will extend these findings by making use of the variables: feeling little interest in doing things, feeling down, depressed or hopeless, trouble sleeping or sleeping too much, feeling tired or having little energy, poor appetite or overeating, feeling bad about yourself, trouble concentrating on things, moving or speaking slowly or too fast, thoughts you would be better off dead, number of days of mental health was not good and amount of days feeling anxious.

The intake of fruit and vegetables is measured by the times a day the individual eats fruit and vegetables (fried and non-fried potatoes not included). The data also allows for a distinction between different vegetables consumed like green leafy or lettuce salad, beans and other vegetables. All variable considered and used in the research will be discussed in the following chapter.

5. Methods

In this chapter I will present the econometric model used to test the hypothesis and the dependent and independent variables.

5.1. Dependent variables

In this research I will make use of 11 indicators for psychological well-being.

The first two variables are part of the current health status section in the questionnaire data. Number of days that mental health was not good was registered with the following question. "Now thinking about mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" The answer is recorded in values ranging from 0 to 30 days. The second variable for psychological well-being in the current health status section is how many days the subject felt anxious. This includes feeling worried, tense and anxious. Again the data is recorded in number of days ranging from 0 to 30.

The remaining 9 variables for psychological well-being are recorded in the depression screener section of the survey. The response to all these variables are recorded in the same manner as a discrete variable in which 0 represents –not at all-, 1 –several days-, 2 –more than half of the days- and 3 – nearly every day.

Feeling little interest reflects how many days the subject was bothered by problem of having little interest or pleasure in doing things over the last two weeks. The amount of times that the subject felt down, depressed or hopeless in the last two weeks. How often the subject has been bothered by trouble falling asleep or staying asleep or sleeping too much. Feeling tired or having little energy. Bothered by problems with a poor appetite or overeating. Feeling bad about yourself or that you are a failure or have let yourself or your family down. Having trouble concentrating on things such as reading the newspaper or watching TV. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual. How often the subject has been bothered by thoughts that they would be better off dead or hurting themselves in some way (National Health and Nutrition Examination Survey, 2013). To get an idea of the size and influence of fruit and vegetables I will test this relation in six different models using an OLS regression.

5.2. Independent variables

Every dependent variable will be tested against the consumption of fruit and vegetables.

Table 1. Description of regressors

	Mean	Std. Dev.	Min	Max
Fruit and vegetable consumption	2.28	1.43	0.14	15.17
Fruit consumption	0.83	0.79	0.03	10
Total vegetable consumption	1.46	0.91	0.10	7.17
Beans consumption	0.28	0.33	0.03	4
Leefy/lettuce salad consumption	0.45	0.42	0.03	3
Other vegetables consumption	0.72	0.60	0.3	5

The variable *fruit* is a continuous variable that measures how often the individual on average eats fruit per day. The question asked to the subject was; *"During the past day, week or month, how often did you eat fruit? Include fresh, frozen or canned fruit. Do not include juices."* The answer was then recorded in times per day, weeks or months. This data has been

converted to times per day by diving the week answers by 7 and the month answers by the average days a month, 29.6041667.

The variable *salad* is also a continuous variable that measures how often the subject ate green leafy or lettuce salad, with or without other vegetables on average a day, week or month. This variable was then converted in average times consumed per day in the same manner as the fruit variable.

The variable *beans* is the continuous variable that measures the how often the individual ate refried beans, baked beans, beans in soup, pork and beans or any other type of cooked dried beans on average a day. Green beans are not included. This variable is also converted to average times consumed per day.

The third vegetable variable is *other vegetables* this is a continuous variable that measures how often the individuals on average ate other vegetables a day, week and month, excluding lettuce salads, potatoes and beans. This is also converted into average times a day in the same matter as the previous variables.

The *Total Vegetables* variable is the sum of the variables; *salad*, *beans* and *other* and therefore measures how often the individual eats any type of vegetables a day, excluding potatoes.

The variable *fruit and vegetables* is the sum of the variables *fruit* and *total vegetables*, and measures how often the individual consumed fruit and vegetables on an average day.

5.2.1 Control variables

In order to reduce the omitted variables bias I will also test the models with selected control variables. From existing literature we can find support for the influence of social-economics factors like: age, income, race, gender, household income, education, marital status, employment, total number of people in the household, general health condition, smoker and BMI. In addition to these variables I will use hours spend in the sun light and dieting as a control variable. To make sure that these variables would cause omitted variable bias when not included, I have conducted a correlation test on all control variables with the dependent variables and regressors, the results of this test are shown in the Appendix in Table 1.

The age variable is a discrete variable that represents the age of the subject in years. Subjects below the age of 18 were omitted from this dataset since data on their psychological well-being is confidential.

Race has been divided in the data between Mexican American, Other Hispanic, Non-Hispanic White, Non-Hispanic Black and Other Race – including Multi-Racial. To prevent multicollinearity in the regression Other Race has been omitted and a binary variable has been included for all other categories, with 1 being of the category and 0 for not belonging to this category.

For the gender variable, female has been omitted to prevent multicollinearity. Male is the included variable and this is a binary variable with 1 for being a male and 0 for being a female.

Marital status data is divided between Married, Widowed, Divorced, Separated, Never married and Living with a partner. All variables have been included as binary with 1 being for subject belonging in the category and 0 for those who do not, except for Never married to prevent multicollinearity.

Employment status is a binary variable that is 1 when the subject is working at a job or business and 0 when the subject is looking for work or not working at a job or business.

Level of education is a discrete variable that ranges from 1 to 5. Subjects who are reported with 1 have less then 9th grade of education. When the variable is 2 this indicates that the subject completed education until the 9-11th grade, including 12th grade with no diploma. If the variable is 3 then this indicates that the subject finished high school or an equivalent education. Subjects who receive a 4 completed some college or AA degree. The number 5 indicates a college graduate or above.

The variable income of the household measures the total household income in ranges valued in dollars. The variable ranges from 1 till 13 starting with $0 to $4,999 and continuing up with steps of $5000 dollars until the 6th category where the ranges start increasing with $10,000 and then again change at the 12th range which is over $75,000 till $99,000 and finally the last category which includes $100,000 and over.

Number of people living in the household is a discrete variable that ranges between 1 and 6, if the variable is equal to 7 then this indicates that the total number of people in the household is equal to 7 or larger.

General health condition is reported as a discrete variable between 1 and 5. Here 1 represents a subject in excellent general health, 2 very good general health, 3 good general health, 4 fair and 5 being poor general health.

The variable for smoking is a binary variable that equals 1 is the subject smokes at the moment of interview and 0 if the subject does not smoke at all at this moment.

Body Mass Index (BMI) is an index measure for the weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. Underweight is classified with a BMI below 18.5. Normal range is defined as a BMI between 18.50 and 24.99. Subjects are considered overweight when their BMI is between 25.00 and 29.99 and obese when it reaches over 30.00 (WHO Global Database on Body Mass Index, 2013). In the data this is composed of the subject's self-reported weight, in pounds, and height, in inches and computed via the formula: $BMI = \frac{weight}{height^2} * 703$. This resulted in a continuous variable between 15.3 and 71.8 with an average of 28.5.

The literature study indicates that sunlight, diet and physical exercise might influence psychological well-being. The data includes two variables that measure the time spend by the subject outside in the sunlight both on working days and non-working day. Analysis of the data shows a correlation with fruit, beans, salad, other vegetables and the combination of fruit and vegetables that is different from zero. I will add sun hours to the control variables for model 4-6. Following this conclusion I included the following variables in the control variables.

Firstly the times spent outdoors on workdays, which is defined as the minutes spent outside, not under any shade, between 9 in the morning and 5 in the afternoon on the days that the subject worked or went to school.

Secondly the times spent outdoors on non-workdays, which is defined as the minutes spent outdoors between 9 in the morning and 5 in the afternoon on the days when the subject was not working or going to school.

The literature also suggests a positive relation between dieting and psychological well-being. As the literature suggests the correlation in the data between diet and fruit and vegetables consumption (0.1644) and diet and psychological well-being (-0.0230 – 0.1444) show that there is relation and the variable should therefore be included. The diet variable is a binary variable that is equal to 1 if the subject tried to lose weight during the last 12 months and equal to 0 if that was not the case.

5.3. Econometric model

The following section will explain the model used to estimate the effect of the consumption of fruit and vegetables on psychological well-being. Since I am working with cross sectional data I will perform an OLS regression of the consumption of fruit and vegetables on psychological well-being. This leads to the following equation:

$Psychological\ well-being$
$= f(daily\ portions\ of\ fruit\ and\ vegetables\ consumed, age, race, marital\ status, gender, employment,$

$\ education, income\ of\ the\ household, number\ of\ people\ in\ the\ household, general\ health, smoker,$

$BMI, hours\ of\ sunlight\ on\ a\ workday, hours\ of\ sunlight\ on\ a\ non-working\ day, dieting)$

This follows into the model:

$$Y_i = \beta_0 + \beta_1 Fruit\ and\ vegetables_i + \cdots + \varepsilon_i$$

To estimate this relation, and gain a better understanding of the different effect of fruit and vegetable consumption, I will make use of the following three models:

(1) $Y_i = \beta_0 + \beta_1 Fruit_i + \beta_2 Salad_i + \beta_3 Beans_i + \beta_4 Other_i + \varepsilon_i$

(2) $Y_i = \beta_0 + \beta_1 Fruit_i + \beta_2 Total\ Vegetables_i + \varepsilon_i$

(3) $Y_i = \beta_0 + \beta_1 Fruit\ and\ vegetable_i + \varepsilon_i$

These models will then also be tested with the control variables: Age, Mexican, Hispanic, White, Black, Male, Married, Widowed, Divorced, Separated, Living with partner, Employment, Education, Income of the household, Number of people living in the household, General health, Smoker, BMI, Sun hours on a workday, Sun hours on a non-working day and Dieting included. The size and statistical relevance of the fruit and all vegetable variables are of interest here.

6. Results

		Mental Health	Feeling anxious	Feeling little interest	Feeling down, depressed or hope-less	Trouble sleeping	Feeling tired
1)	Fruit	-1.482***	-1.472**	-0.0482	-0.0323	0.0178	-0.0897
	Salad	-0.546	-3.995***	-0.193***	-0.0736	-0.0160	-0.122
	Beans	1.997	3.919*	-0.0132	0.00872	0.0838	-0.0307
	Other vegetables	0.740	0.728	0.0331	-0.0391	0.0535	0.0489
2)	Fruit	-1.528***	-1.601**	-0.0489	-0.0339	0.0163	-0.0889
	Total Vegetables	0.606	-0.00843	-0.0359	-0.0403	0.0398	-0.0108
3)	Fruit and vegetables	-0.298	-0.683*	-0.0414**	-0.0376*	0.0299	-0.0439

		Poor appetite	Feeling bad about yourself	Trouble concentrating	Moving slowly	Thoughts about death
1)	Fruit	-0.0374	-0.0697*	-0.0140	0.00192	-0.00925
	Salad	-0.0193**	-0.137	-0.111	0.199**	-0.0198
	Beans	0.134	0.0999	0.101	-0.0210	0.0373
	Other vegetables	0.0675	0.0235	0.0182	-0.00271	-0.0244
2)	Fruit	-0.0415	-0.0732*	-0.0174	0.00415	-0.0109
	Total Vegetables	0.00846	-0.00693	-0.00270	0.0487	-0.0127
3)	Fruit and vegetables	-0.0127	-0.0350*	-0.00893	0.0298	-0.0119

Table 2: results summary

Table 2 is a summary table of the results for the models 1-3, the full result tables for the eleven different variables for psychological well-being can be found in the Appendix, table 5-15. The results are given in 12 columns in order of the models presented in the previous chapter. Below the table general information is given on the regressions like number of observations and adjusted R^2. Within the table significant results are marked by a star (*) in which one start represents a significance level of 10%, two stars of 5% and three stars 1%.

The first results as shown in Table 5 consist of the effect of fruit and vegetable consumption on the number of days that the subject's mental health was not good in the last 30 days. The first column shows the results when looking independently at fruit and the different groups of

vegetables; beans, green leafy and lettuce salad and other vegetables. The coefficients are negative for *salad*, *beans* and *fruit*, however only *fruit* is significant at a 1% level. This indicates that eating fruit more often decreases the number of days that mental health was not good. The coefficient for *other vegetables* is positive and significant at a 5% level. The results of the regression of only fruit consumption and total vegetable consumption are presented in the second column. Here the results show again a significance level of 1% for the fruit consumption and the total vegetable consumption is not significant. In the third column the effect is shown of the combination of fruit and vegetable consumption which is negative and significant at a 10% level. The columns ten to twelve are the same regressions as columns one till three only with all the control variables included. It is noticeable that when the control variables are added to the regression all the coefficients of fruit and vegetables consumption are not significant anymore in all models, except for the *fruit* variable which is still significant at a 1% level. This indicates that there is no proven effect of fruit and vegetable consumption on the amount of days that mental health was not good.

Table 6 shows the results of the regressions of fruit and vegetable consumption on how many days the subject felt anxious, worried or tense in the past 30 days. When regressing without control variables there are significant coefficients for *salad*, *other vegetables* and *fruit* at a 5% level. *Total vegetable consumption* and *fruit and vegetable consumption* are not significant. In the columns ten to twelve when the control variables are included *salad* has a negative coefficient and is significant at a 1% level. More noticeable is that the consumption of beans is also significant, at a 10% level, but has a positive coefficient which means that the subjects who consumed beans show an increase in the amount of days that they felt anxious. Consumption of fruit is also significant at a 5% level and has a negative coefficient. The combination of fruit and vegetable consumption has a negative coefficient of -0.683 that is significant at a 10% level. This is in support of the hypothesis that fruit and vegetable consumption has a positive effect on psychological well-being.

The results in table 7 show the outcome of fruit and vegetable consumption on the amount of days in the last two weeks that the individual has felt like having little interest or pleasure in doing things. The regression results without the control variables show that all variables for fruit and vegetable consumption are significant except for *beans* and *other vegetables*. The significant variables: *fruit*, *salad*, *total vegetables consumption* and f*ruit and vegetable consumption* have negative coefficients. When introducing the control variables the results for *salad* and *fruit and vegetable consumption* are significant. They both have negative

coefficients indicating that when the salad and the fruit and vegetable consumption increases the number of days that the subject felt like having little interest or pleasure in doing things decreases. This is in support of the first hypothesis.

The results in table 8 show the relation between fruit and vegetable consumption and how many times the subject felt down, depressed or hopeless in the last two weeks. In the first three columns we see that, when not controlling for control variables, all fruit and vegetables variables except for *beans* have a significant effect. However when including the control variables only the *fruit and vegetable consumption* coefficient is significant at a 10% level. The coefficient is negative and this is in support of the first hypothesis.

Table 9 represents the results for the psychological well-being variable how often the subject has been bothered by trouble falling asleep or staying asleep or sleeping too much. The results show that with and without control variables there is no significant effect of fruit and vegetable consumption. Therefore all hypotheses cannot be rejected for this variable.

The results in table 10 are for the relation between fruit and vegetable consumption and the amount of days that the subject felt tired or had little energy. In the first three columns the *fruit* variable and the *fruit and vegetable consumption* variable are negative at a 1% level. However, when controlling for the control variables none of the variables is significant anymore. This indicates that all three hypotheses cannot be rejected for this variable.

The relation between being bothered by problems with a poor appetite or overeating and fruit and vegetable consumption is shown in table 11. The first three regressions, without the control variables show a significant negative coefficient for *fruit*, *salad*, *total vegetable* and the combination of *fruit and vegetable consumption*. When adding the control variables only the *salad* variable is significant at a 5% level and therefore the first null-hypotheses cannot be rejected for this variable.

Table 12 shows the results of the regression for the variable feeling bad about yourself or that you are a failure or have let yourself or your family down. It shows that the variables *fruit*, *salad* and *fruit and vegetable consumption* are significant on a 1% level and *total vegetable consumption* on a 10% level without the control variables. When including the control variables *fruit* consumption and *fruit and vegetable consumption* are still significant but now at a 10% level. The other variables have no significant coefficient. It is therefore possible to accept the first hypothesis with a 10% significance level.

The results for having trouble concentrating on things such as reading the newspaper or watching TV are represented in table 13. This shows that in the regression without the control variables only the *salad* variable is significant at a 5% level. When including the control variables none of the fruit or vegetable variables has a significance influence anymore. The three hypotheses cannot be rejected for these variables.

Table 14 show the results of the regression of fruit and vegetable consumption of the amount of days that the subject reported moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that the subject has been moving around a lot more than usual. It shows that only the *salad* variable is significant with and without the control variable both at a 5% level. However in column 10 the results show a positive coefficient for salad of 0.199 at a significance level of 5%. This indicates that eating more salad increases the amount of days that the subject reported as moving or speaking slowly or too fast.

The last table 15 shows the result for the variable how often the subject has been bothered by thoughts that they would be better off dead or hurting themselves in some way. In the first three columns, when the control variables are not included the *salad*, *other vegetables, total vegetable* and *fruit and vegetable variables* are significant. In the last three columns when the control variables are included none of the variables is significant anymore. Therefore none of the hypotheses can be rejected for this variable.

In summary the results show that for four out of eleven psychological well-being variables there is a significant influence from the fruit and vegetable consumption. When comparing the different vegetables it is noticeable that the salad variable is more often significant then the variables for beans and other vegetables. In comparison with fruit, vegetables seem to have a significant effect less often.

7. Conclusion

This research aims at complementing the research done by Blachflower, Brown and Oswald in 2012 on the relation between psychological well-being and fruit and vegetable consumption.

When drawing a conclusion from the results of the data it is important to realise that the results are created from cross-sectional data. Because of this it is not possible to say anything regarding causality. It is also important to mention that there might still be omitted variables like psychical activity. Also the effect on the results when including control variables might not only be due to the included variables but also because the size of the sample was decreased, this is especially a concern for the variables salad, other vegetables and total vegetables.

The first hypothesis that psychological well-being is not influenced by higher fruit and vegetable consumption can be rejected for four out of eleven psychological well-being variables; feeling anxious, feeling bad about oneself, feeling down, depressed or hopeless and having little interest in doing things. For the other variables the first hypothesis cannot be rejected.

The second hypothesis that there is no difference in the effect between the different types of vegetables can be rejected for four variables. For the variable of feeling anxious *salad* and *beans* have a significant effect where *other vegetables* do not. The variable of having little interest in doing things *salad* is of a 1% significance level while *beans* and *other vegetables* are not significant. For the variable of moving slowly or too fast *salad* is again more significant than *beans* and *other vegetables*. The variable for having a poor appetite or overeating is significantly influenced by the *salad* variable. However for all other variables coefficients of different types of vegetables are not significant. Therefore there seems to be an indication that salads have a different effect than other vegetables but further research is needed.

The third hypothesis that there is no difference in the effect of fruit consumption and vegetable consumption can be rejected for three out of eleven variables: feeling anxious, feeling bad about oneself and number of days that mental health was not good. For these three variables *fruit* does have a significant effect where *total vegetables* do not. However since this is only the case for three out of eleven variables further research is needed to make a clear distinction.

To answer the main research question if fruit and vegetable consumption has an influence on psychological well-being the results remain inconclusive. Because the results show a significant positive relation for four out of elevens variables but not for the other seven it is not possible to create an overall conclusion. This is different from the previous research done

by Blachflower, Brown and Oswald (2012) who find a positive relation. However this does not have to be in contradiction as both researches focus on different aspects of psychological well-being.

Given the conclusion that the research result do not support the earlier finding by Blachflower, Brown and Oswald it is important that further research into this relationship is done. Optimally this relationship is tested by creating a long term controlled trial. This is especially important because it will provide evidence for a possible causal relationship and data could then be collected on now omitted variables such as physical activity. This also provides an opportunity to formulate a clear definition of psychological well-being and then focus the questions.

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9. Appendix

Table 3: the correlation between the control variables and the regressors

	Fruit	total vegetables	fruit & veg
General Health	-0.1925	-0.1656	-0.2060
Age	0.0763	0.0002	0.0404
Education	0.1467	0.1209	0.1560
Number of people in the household	-0.0535	0.0113	-0.0208
Income of the household	0.1170	0.0463	0.0919
Male	-0.1958	-0.1967	-0.2312
Mexican	-0.0140	0.0379	0.0173
Hispanic	0.0325	-0.0143	0.0078
White	0.0153	0.0307	0.0281
Black	-0.0736	-0.1317	-0.1244
Other Race	0.0641	0.0815	0.0868
Married	0.0604	0.0165	0.0426
Widowed	-0.0214	-0.0294	-0.0304
Divorced	0.1163	-0.0080	0.0562
Separated	-0.0714	-0.0586	-0.0758
Never Married	-0.0655	0.0029	-0.0327
Living with partner	-0.0786	0.0154	-0.0315
BMI	-0.0137	-0.0857	-0.0629
Diet	0.1629	0.1207	0.1644
Smoker	-0.1476	-0.1070	-0.1475
Employment	0.0507	0.0700	0.0722
sun hours workday	-0.0356	-0.0103	-0.0255
sun hours weekday	0.0444	0.1252	0.1048

	salad	bean	other
General Health	-0.1673	0.0518	-0.1656
Age	-0.0104	-0.0235	0.0187
Education	0.1849	-0.1927	0.1665
Number of people in the household	-0.0479	0.1463	-0.0278
Income of the household	0.1641	-0.1141	0.0264
Male	-0.2144	0.0476	-0.1888
Mexican	-0.0519	0.3697	-0.0992
Hispanic	0.0318	0.0940	-0.0895
White	0.0507	-0.2585	0.1470
Black	-0.0556	-0.1027	-0.1124
Other Race	0.0181	0.0085	0.1078
Married	-0.0234	-0.0152	0.0473

Widowed	-0.0474	0.0084	-0.0193
Divorced	0.0154	0.0152	-0.0294
Separated	-0.0159	-0.0470	-0.0549
Never Married	0.0220	0.0357	-0.0276
Living with partner	0.0268	-0.0140	0.0138
BMI	-0.0867	0.0634	-0.1082
Diet	0.2127	0.0298	0.0352
Smoker	-0.0691	-0.0299	-0.1038
Employment	-0.0730	0.1389	-0.0412
sun hours workday	0.0596	0.0940	0.1044
sun hours weekday	0.0660	0.0108	0.0594

Table 4: the correlation between the control variables and the dependent variables

	Little interest	feeling down	trouble sleeping	feeling tired
General Health	0.1735	0.1411	0.1350	0.1800
Age	-0.0201	-0.0591	0.0063	-0.0837
Education	-0.0706	-0.1066	-0.0028	0.0225
Number of people in the household	-0.0344	-0.0364	-0.0797	-0.0399
Income of the household	-0.1691	-0.1773	-0.0890	-0.1018
Male	-0.1099	-0.1194	-0.2032	-0.2420
Mexican	0.0231	0.0412	-0.0082	-0.0437
Hispanic	-0.0625	-0.0580	-0.0563	-0.0741
White	-0.0121	-0.0130	0.0795	0.1476
Black	0.0194	0.0046	-0.0295	-0.1261
Other Race	0.0347	0.0216	-0.0645	0.0075
Married	-0.0958	-0.0284	-0.0790	-0.0314
Widowed	0.0407	-0.0368	-0.0503	-0.0656
Divorced	0.0585	-0.0064	-0.0190	-0.0088
Separated	-0.0052	0.0725	-0.0090	-0.0287
Never Married	0.0118	-0.0380	0.0256	0.0300
Living with partner	0.0564	0.0747	0.1338	0.0611
BMI	-0.0038	-0.0302	-0.0355	0.0209
Diet	0.0009	0.0143	0.0795	0.0779
Smoker	0.1844	0.2008	0.1087	0.1417
Employment	-0.1632	-0.1222	-0.1471	-0.1484
sun hours workday	-0.1028	-0.0562	-0.0681	-0.0986
sun hours weekday	-0.1179	-0.0191	-0.0854	-0.0841

	poor appetite	feeling bad	trouble concentrating	moving and speaking slowely
General Health	0.2394	0.1434	0.1203	0.1503
Age	-0.0784	-0.0544	-0.0698	-0.0943

Education	-0.0766	-0.0853	-0.0382	-0.1046
Number of people in the household	0.0190	-0.0243	-0.0466	0.1099
Income of the household	-0.1017	-0.1334	-0.1109	-0.1205
Male	-0.1523	-0.0918	-0.1559	-0.0658
Mexican	0.0113	-0.0171	-0.0184	0.0692
Hispanic	0.0112	-0.0617	-0.0422	-0.0001
White	0.0461	0.0614	0.0628	-0.0121
Black	-0.0516	-0.0247	-0.0668	-0.0328
Other Race	-0.0664	-0.0045	0.0370	-0.0443
Married	-0.0930	-0.0578	-0.0688	-0.0659
Widowed	-0.0373	-0.0317	-0.0532	-0.0094
Divorced	-0.0076	0.0099	-0.0208	-0.0079
Separated	0.0350	0.1009	0.0712	0.0048
Never Married	-0.0055	-0.0343	0.0537	-0.0361
Living with partner	0.1482	0.0812	0.0337	0.1595
BMI	0.0855	-0.0347	-0.0379	-0.0242
Diet	0.1444	0.0589	0.0629	-0.0230
Smoker	0.2048	0.2032	0.1517	0.2091
Employment	-0.1830	-0.1579	-0.1891	-0.1801
sun hours workday	-0.1027	-0.0637	-0.0708	0.0204
sun hours weekday	-0.1417	-0.0563	-0.0757	-0.0676

	troughts about dead	mental health	anxious
General Health	0.1649	0.1812	0.1667
Age	0.0491	0.0011	-0.0009
Education	-0.1030	-0.0410	-0.0426
Number of people in the household	0.0212	-0.0015	-0.0295
Income of the household	-0.0934	-0.1356	-0.0596
Male	-0.0273	-0.1274	-0.1037
Mexican	0.0663	-0.0294	-0.0616
Hispanic	-0.0458	-0.0430	-0.0189
White	0.0279	-0.0045	0.0593
Black	-0.0612	0.0550	0.0048
Other Race	-0.0359	0.0311	-0.0180
Married	0.0717	-0.0353	-0.0618
Widowed	-0.0228	0.0055	0.0206
Divorced	-0.0043	0.0481	0.0701
Separated	0.0753	0.0323	-0.0012
Never Married	-0.0871	-0.0445	-0.0833
Living with partner	-0.0330	0.0424	0.1261
BMI	-0.0014	-0.0185	-0.0144
Diet	-0.0103	-0.0517	0.0510
Smoker	0.0891	0.1487	0.1439
Employment	-0.0793	-0.0950	-0.0973

	(1)	(2)	(3)	(4)	(5)	(6)
sun hours workday				-0.0246	-0.0003	0.0663
sun hours weekday				-0.0663	-0.0269	-0.0023

Table 5: Results of regression of model (1) – (12) for the dependent variable: Number of days that mental health was not good

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.539			-0.627*		
	(0.377)			(0.379)		
Beans	-0.242			0.508		
	(0.505)			(0.554)		
Other	0.655**			0.384		
	(0.309)			(0.310)		
Fruit	-0.627***	-0.591***		-0.705***	-0.708***	
	(0.205)	(0.200)		(0.203)	(0.199)	
Total vegetable		0.132			0.0853	
		(0.185)			(0.185)	
Fruit and vegetable			-0.194*			-0.272***
			(0.103)			(0.105)
Age				-0.0126	-0.0139	-0.0136
				(0.0125)	(0.0125)	(0.0125)
Mexican				-1.293	-1.178	-1.240
				(0.792)	(0.781)	(0.782)
Hispanic				-0.421	-0.426	-0.492
				(0.849)	(0.841)	(0.842)
White				-0.184	-0.144	-0.180
				(0.759)	(0.757)	(0.758)
Black				0.416	0.428	0.370
				(0.843)	(0.842)	(0.843)
Male				-2.149***	-2.123***	-2.096***
				(0.306)	(0.306)	(0.307)
Married				-0.674	-0.658	-0.641
				(0.451)	(0.451)	(0.450)
Widowed				2.336*	2.378*	2.411*
				(1.279)	(1.276)	(1.275)
Divorced				0.724	0.733	0.741
				(0.660)	(0.661)	(0.661)
Separated				1.890	1.966	2.018*
				(1.214)	(1.214)	(1.219)
Living with a partner				-0.207	-0.178	-0.128
				(0.593)	(0.594)	(0.593)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						

BMI

Sun hours on a workday

Sun hours on a non-workday

Dieting

Constant	5.041***	4.982***	5.128***	7.238***	7.235***	7.398***
	(0.301)	(0.296)	(0.288)	(0.868)	(0.868)	(0.867)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.005	0.003	0.001	0.035	0.034	0.032
r2_a	0.00337					
Adjusted R-squared		0.00204	0.000790	0.0300	0.0292	0.0276

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.457			-0.546		
	(0.392)			(1.163)		
Beans	0.256			1.997		
	(0.601)			(1.714)		
Other	0.391			0.740		
	(0.325)			(0.809)		
Fruit	-0.685***	-0.675***		-1.482***	-1.528***	
	(0.215)	(0.211)		(0.517)	(0.522)	
Total vegetable		0.0969			0.606	
		(0.199)			(0.504)	
Fruit and vegetable			-0.248**			-0.298
			(0.113)			(0.292)
Age	-0.0124	-0.0131	-0.0128	0.000961	0.00173	0.00336
	(0.0150)	(0.0149)	(0.0150)	(0.0485)	(0.0481)	(0.0485)
Mexican	-0.793	-0.773	-0.864	-2.691	-2.506	-2.431
	(0.862)	(0.857)	(0.855)	(2.522)	(2.740)	(2.703)
Hispanic	-0.0847	-0.126	-0.234	-2.326	-2.276	-2.428
	(0.924)	(0.915)	(0.913)	(2.346)	(2.496)	(2.451)
White	0.353	0.408	0.356	-1.022	-1.383	-1.358
	(0.787)	(0.785)	(0.784)	(2.227)	(2.266)	(2.232)
Black	1.201	1.219	1.144	-0.187	-0.562	-0.699
	(0.890)	(0.889)	(0.887)	(2.604)	(2.660)	(2.630)
Male	-2.112***	-2.099***	-2.071***	-2.390**	-2.538***	-2.535***
	(0.326)	(0.325)	(0.326)	(0.937)	(0.921)	(0.925)
Married	-0.236	-0.230	-0.234	1.326	1.466	1.293
	(0.493)	(0.492)	(0.492)	(1.144)	(1.126)	(1.116)
Widowed	1.975	1.991	1.970	-0.494	-0.249	-0.483
	(1.324)	(1.323)	(1.321)	(3.691)	(3.626)	(3.661)
Divorced	0.734	0.741	0.734	1.252	1.808	1.321
	(0.683)	(0.683)	(0.683)	(1.531)	(1.525)	(1.525)
Separated	1.393	1.447	1.450	0.637	0.554	0.466
	(1.229)	(1.230)	(1.232)	(3.231)	(3.118)	(3.172)
Living with a partner	0.338	0.351	0.381	1.759	1.551	1.638
	(0.671)	(0.671)	(0.669)	(1.376)	(1.389)	(1.350)
Employment	-0.759**	-0.769**	-0.765**	-0.651	-0.682	-0.628

	(0.364)	(0.363)	(0.364)	(0.998)	(0.993)	(0.994)
Education	0.0251	0.0240	0.0221	0.170	0.139	0.158
	(0.158)	(0.157)	(0.158)	(0.460)	(0.446)	(0.443)
Income of the household	-0.174***	-0.177***	-0.181***	-0.157	-0.158	-0.179
	(0.0527)	(0.0527)	(0.0528)	(0.125)	(0.121)	(0.123)
Number of people in house-hold	0.129	0.139	0.141	0.112	0.117	0.138
	(0.119)	(0.119)	(0.119)	(0.317)	(0.319)	(0.322)
General health				1.627***	1.508***	1.566***
				(0.556)	(0.558)	(0.556)
Smoker				1.484	1.309	1.321
				(0.906)	(0.888)	(0.899)
BMI				-0.0321	-0.0198	-0.0298
				(0.0856)	(0.0854)	(0.0846)
Sun hours on workday				-0.000496	-0.000179	-0.000301
				(0.00322)	(0.00326)	(0.00326)
Sun hours on non-workday				-0.00105	-0.000720	-0.000233
				(0.00360)	(0.00359)	(0.00353)
Dieting				-0.754	-0.732	-0.782
				(0.876)	(0.822)	(0.839)
Constant	7.715***	7.709***	7.931***	3.263	3.980	4.509
	(1.340)	(1.335)	(1.332)	(4.961)	(4.883)	(4.873)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.045	0.044	0.042	0.103	0.099	0.088
r2_a						
Adjusted R-squared	0.0374	0.0372	0.0358	0.0484	0.0490	0.0392

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Results of regression of model (1) – (12) for the dependent variable: Number of days feeling anxious, worried or tense

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-1.105**			-1.169**		
	(0.469)			(0.467)		
Beans	0.680			1.201*		
	(0.633)			(0.686)		
Other	0.868**			0.524		
	(0.373)			(0.377)		
Fruit	-0.614**	-0.608**		-0.750***	-0.774***	
	(0.249)	(0.244)		(0.249)	(0.244)	
Total vegetable		0.212			0.103	
		(0.232)			(0.230)	
Fruit and vegetable			-0.157			-0.292**
			(0.127)			(0.129)
Age				-0.0104	-0.0124	-0.0121
				(0.0147)	(0.0148)	(0.0148)
Mexican				0.548	0.886	0.816
				(0.903)	(0.874)	(0.872)

Hispanic				0.630	0.700	0.627
				(0.951)	(0.930)	(0.928)
White				1.573*	1.635**	1.596*
				(0.831)	(0.824)	(0.822)
Black				0.446	0.473	0.409
				(0.916)	(0.910)	(0.909)
Male				-2.516***	-2.445***	-2.415***
				(0.369)	(0.369)	(0.370)
Married				-0.105	-0.0768	-0.0580
				(0.521)	(0.523)	(0.522)
Widowed				1.558	1.658	1.695
				(1.341)	(1.337)	(1.339)
Divorced				2.147***	2.163***	2.172***
				(0.783)	(0.785)	(0.786)
Separated				2.640*	2.760**	2.817**
				(1.366)	(1.363)	(1.369)
Living with a partner				1.380*	1.435*	1.490*
				(0.768)	(0.769)	(0.769)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						
Dieting						
Constant	7.250***	7.252***	7.418***	7.742***	7.707***	7.887***
	(0.363)	(0.357)	(0.345)	(0.969)	(0.965)	(0.960)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.006	0.002	0.001	0.034	0.030	0.028
r2_a	0.00420					
Adjusted R-squared		0.00130	0.000180	0.0285	0.0254	0.0240

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.942*			-3.995***		
	(0.491)			(1.502)		

	(1)	(2)	(3)	(4)	(5)	(6)
Beans	0.962			3.919*		
	(0.769)			(2.006)		
Other	0.606			0.728		
	(0.402)			(1.003)		
Fruit	-0.760***	-0.758***		-1.472**	-1.601**	
	(0.269)	(0.265)		(0.670)	(0.690)	
Total vegetable		0.168			-0.00843	
		(0.250)			(0.612)	
Fruit and vegetable			-0.246*			-0.683*
			(0.144)			(0.362)
Age	-0.0257	-0.0268	-0.0264	-0.00174	0.000413	0.00163
	(0.0177)	(0.0177)	(0.0178)	(0.0554)	(0.0555)	(0.0557)
Mexican	0.895	1.075	0.966	-1.882	-1.499	-1.442
	(1.057)	(1.034)	(1.030)	(2.800)	(3.001)	(2.974)
Hispanic	0.279	0.272	0.143	-0.151	-0.263	-0.376
	(1.085)	(1.065)	(1.061)	(2.696)	(2.830)	(2.789)
White	1.674*	1.761*	1.699*	1.566	0.865	0.884
	(0.940)	(0.932)	(0.929)	(2.428)	(2.493)	(2.466)
Black	0.575	0.598	0.508	0.792	-0.0982	-0.200
	(1.035)	(1.027)	(1.023)	(2.935)	(3.030)	(3.003)
Male	-2.155***	-2.092***	-2.058***	-2.413**	-2.381**	-2.379**
	(0.401)	(0.401)	(0.401)	(1.114)	(1.115)	(1.111)
Married	0.817	0.827	0.822	1.753	1.882	1.753
	(0.577)	(0.577)	(0.577)	(1.369)	(1.365)	(1.359)
Widowed	1.455	1.501	1.476	3.374	3.611	3.436
	(1.373)	(1.373)	(1.375)	(4.734)	(4.873)	(4.850)
Divorced	2.506***	2.518***	2.509***	2.910	3.468*	3.104*
	(0.812)	(0.813)	(0.815)	(1.858)	(1.870)	(1.848)
Separated	2.631*	2.707*	2.711*	0.887	0.701	0.636

	(1.420)	(1.420)	(1.425)	(3.644)	(3.444)	(3.464)
Living with a partner	2.511***	2.529***	2.565***	5.514***	5.114***	5.179***
	(0.857)	(0.858)	(0.858)	(1.782)	(1.820)	(1.810)
Employment	-0.648	-0.669	-0.664	-1.330	-1.337	-1.297
	(0.432)	(0.432)	(0.432)	(1.210)	(1.198)	(1.200)
Education	0.00522	-0.0164	-0.0185	0.367	0.224	0.238
	(0.196)	(0.195)	(0.195)	(0.513)	(0.509)	(0.507)
Income of the household	-0.154**	-0.164**	-0.168***	0.156	0.0972	0.0810
	(0.0648)	(0.0649)	(0.0649)	(0.156)	(0.156)	(0.155)
Number of people in the household	-0.0136	0.0116	0.0139	-0.199	-0.156	-0.140
	(0.139)	(0.139)	(0.139)	(0.357)	(0.367)	(0.367)
General health				1.986***	1.889***	1.932***
				(0.603)	(0.617)	(0.614)
Smoker				2.186**	1.859*	1.868*
				(1.061)	(1.065)	(1.070)
BMI				-0.0897	-0.0622	-0.0697
				(0.0986)	(0.0971)	(0.0971)
Sun hours on a workday				0.00749**	0.00768*	0.00759*
				(0.00372)	(0.00392)	(0.00390)
Sun hours on a non-workday				-0.000834	-0.000171	0.000192
				(0.00428)	(0.00432)	(0.00426)
Dieting				2.276*	1.983*	1.946*
				(1.159)	(1.139)	(1.147)
Constant	9.111***	9.146***	9.413***	0.536	1.695	2.089
	(1.550)	(1.547)	(1.537)	(5.490)	(5.441)	(5.416)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.037	0.034	0.032	0.138	0.112	0.107
r2_a						

Adjusted R-squared	0.0290	0.0270	0.0256	0.0851	0.0621	0.0598

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Results of regression of model (1) – (12) for the dependent variable: Feeling little interest reflects how many days the subject was bothered by problem of having little interest or pleasure in doing things over the last two weeks.

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.116***			-0.125***		
	(0.0326)			(0.0328)		
Beans	0.0415			0.0250		
	(0.0455)			(0.0484)		
Other	-0.0352			-0.0312		
	(0.0237)			(0.0237)		
Fruit	-0.0351**	-0.0382**		-0.0473***	-0.0494***	
	(0.0176)	(0.0175)		(0.0177)	(0.0176)	
Total vegetable		-0.0485***			-0.0513***	
		(0.0167)			(0.0166)	
Fruit and vegetable			-0.0438***			-0.0504***
			(0.00886)			(0.00906)
Age				0.00125	0.00114	0.00114
				(0.00109)	(0.00109)	(0.00109)
Mexican				-0.0111	0.0133	0.0135
				(0.0743)	(0.0729)	(0.0730)
Hispanic				-0.0411	-0.0342	-0.0340
				(0.0769)	(0.0760)	(0.0762)
White				-0.0858	-0.0825	-0.0825
				(0.0681)	(0.0680)	(0.0680)
Black				-0.0305	-0.0287	-0.0286
				(0.0759)	(0.0759)	(0.0761)
Male				-0.162***	-0.157***	-0.157***
				(0.0280)	(0.0277)	(0.0277)
Married				-0.104***	-0.102***	-0.102***
				(0.0390)	(0.0390)	(0.0390)
Widowed				0.133	0.139	0.139
				(0.109)	(0.109)	(0.109)
Divorced				0.0227	0.0236	0.0236
				(0.0583)	(0.0583)	(0.0583)
Separated				0.185*	0.191*	0.191*
				(0.111)	(0.111)	(0.112)
Living with a partner				-0.0470	-0.0438	-0.0439
				(0.0552)	(0.0553)	(0.0554)
Employment						

Education

Income of the household

Number of people in household

General health

Smoker

BMI

Sun hours on workday

Sun hours on non-workday

Dieting

Constant	0.480***	0.487***	0.485***	0.618***	0.615***	0.615***
	(0.0280)	(0.0275)	(0.0264)	(0.0794)	(0.0797)	(0.0796)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.010	0.007	0.007	0.037	0.035	0.035
r2_a	0.00883					
Adjusted R-squared		0.00669	0.00701	0.0319	0.0301	0.0305

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.108***			-0.193***		
	(0.0341)			(0.0744)		
Beans	-0.00843			-0.0132		
	(0.0539)			(0.120)		
Other	-0.0248			0.0331		
	(0.0249)			(0.0660)		
Fruit	-0.0500***	-0.0498***		-0.0482	-0.0489	
	(0.0187)	(0.0185)		(0.0447)	(0.0461)	
Total vegetable		-0.0487***			-0.0359	
		(0.0177)			(0.0425)	
Fruit and vegetable			-0.0492***			-0.0414**
			(0.00967)			(0.0210)
Age	0.00177	0.00171	0.00171	0.00194	0.00213	0.00214
	(0.00132)	(0.00133)	(0.00132)	(0.00353)	(0.00355)	(0.00355)
Mexican	-0.0492	-0.0402	-0.0403	-0.0818	-0.110	-0.109
	(0.0872)	(0.0868)	(0.0870)	(0.196)	(0.204)	(0.204)
Hispanic	-0.0849	-0.0856	-0.0857	-0.275	-0.311	-0.312
	(0.0888)	(0.0883)	(0.0886)	(0.187)	(0.196)	(0.196)
White	-0.0867	-0.0819	-0.0820	-0.0943	-0.111	-0.111
	(0.0789)	(0.0788)	(0.0789)	(0.158)	(0.168)	(0.167)

	(1)	(2)	(3)	(4)	(5)	(6)
Black	-0.0594	-0.0581	-0.0582	-0.0648	-0.0963	-0.0971
	(0.0863)	(0.0863)	(0.0865)	(0.195)	(0.204)	(0.203)
Male	-0.132***	-0.129***	-0.129***	-0.112	-0.109	-0.109
	(0.0299)	(0.0296)	(0.0296)	(0.0848)	(0.0850)	(0.0849)
Married	-0.0566	-0.0560	-0.0560	-0.0158	-0.0112	-0.0122
	(0.0425)	(0.0425)	(0.0424)	(0.0903)	(0.0899)	(0.0900)
Widowed	0.0859	0.0883	0.0882	-0.0135	-0.0102	-0.0116
	(0.113)	(0.114)	(0.114)	(0.334)	(0.336)	(0.335)
Divorced	0.0204	0.0210	0.0210	0.0536	0.0453	0.0424
	(0.0614)	(0.0614)	(0.0614)	(0.133)	(0.133)	(0.127)
Separated	0.175	0.179	0.179	-0.201	-0.210	-0.211
	(0.115)	(0.115)	(0.115)	(0.223)	(0.222)	(0.222)
Living with a partner	-0.00820	-0.00721	-0.00717	0.0805	0.0795	0.0801
	(0.0604)	(0.0605)	(0.0605)	(0.130)	(0.129)	(0.129)
Employment	-0.120***	-0.121***	-0.121***	-0.139*	-0.137*	-0.137
	(0.0325)	(0.0325)	(0.0325)	(0.0834)	(0.0831)	(0.0834)
Education	-0.0162	-0.0172	-0.0172	-0.00894	-0.0110	-0.0109
	(0.0140)	(0.0139)	(0.0139)	(0.0328)	(0.0325)	(0.0324)
Income of the household	-0.0185***	-0.0190***	-0.0190***	-0.0165	-0.0196*	-0.0197*
	(0.00477)	(0.00477)	(0.00478)	(0.0111)	(0.0108)	(0.0106)
Number of people in household	0.00939	0.0107	0.0107	0.00326	0.00509	0.00521
	(0.0108)	(0.0109)	(0.0109)	(0.0239)	(0.0242)	(0.0243)
General health				0.0949**	0.0958**	0.0962**
				(0.0451)	(0.0450)	(0.0449)
Smoker				0.168***	0.160**	0.160**
				(0.0634)	(0.0641)	(0.0640)
BMI				-0.00242	-0.00175	-0.00181
				(0.00585)	(0.00588)	(0.00581)
Sun hours on a workday				-0.000543*	-0.000556*	-0.000557*
				(0.000303)	(0.000305)	(0.000304)
Sun hours on a non-workday				-0.000276	-0.000276	-0.000273
				(0.000291)	(0.000287)	(0.000285)
Dieting				0.0526	0.0313	0.0310
				(0.0777)	(0.0780)	(0.0780)
Constant	0.816***	0.818***	0.818***	0.652*	0.670*	0.673*
	(0.124)	(0.123)	(0.123)	(0.353)	(0.359)	(0.353)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.057	0.056	0.056	0.127	0.121	0.121
r2_a						
Adjusted R-squared	0.0499	0.0493	0.0497	0.0743	0.0720	0.0742

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Results of regression of model (1) – (12) for the dependent variable: The amount of times that the subject felt down, depressed or hopeless in the last two weeks.

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0819**			-0.0908***		

	(1)	(2)	(3)	(4)	(5)
	(0.0344)		(0.0341)		
Beans	0.0309		0.0170		
	(0.0428)		(0.0476)		
Other	-0.0527**		-0.0516**		
	(0.0235)		(0.0237)		
Fruit	-0.0281	-0.0315*	-0.0405**	-0.0432**	
	(0.0178)	(0.0176)	(0.0179)	(0.0176)	
Total vegetable		-0.0484***		-0.0524***	
		(0.0158)		(0.0158)	
Fruit and vegetable			-0.0408***		-0.0483***
			(0.00839)		(0.00874)
Age			0.000850	0.000817	0.000813
			(0.00105)	(0.00105)	(0.00105)
Mexican			-0.0551	-0.0309	-0.0302
			(0.0701)	(0.0686)	(0.0687)
Hispanic			-0.0678	-0.0575	-0.0567
			(0.0740)	(0.0732)	(0.0734)
White			-0.121*	-0.121*	-0.120*
			(0.0645)	(0.0642)	(0.0642)
Black			-0.0699	-0.0683	-0.0677
			(0.0731)	(0.0730)	(0.0730)
Male			-0.177***	-0.173***	-0.173***
			(0.0273)	(0.0271)	(0.0271)
Married			-0.0919**	-0.0909**	-0.0911**
			(0.0392)	(0.0392)	(0.0392)
Widowed			0.253**	0.259**	0.259**
			(0.122)	(0.122)	(0.122)
Divorced			0.0443	0.0448	0.0447
			(0.0574)	(0.0574)	(0.0575)
Separated			0.342***	0.343***	0.343***
			(0.124)	(0.123)	(0.123)
Living with a partner			-0.0334	-0.0315	-0.0321
			(0.0529)	(0.0530)	(0.0530)
Employment					
Education					
Income of the household					
Number of people in household					
General health					
Smoker					
BMI					
Sun hours on workday					
Sun hours on non-workday					

Dieting

Constant	0.459***	0.465***	0.462***	0.640***	0.636***	0.634***
	(0.0268)	(0.0264)	(0.0254)	(0.0756)	(0.0754)	(0.0754)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.008	0.007	0.007	0.048	0.047	0.047
r2_a	0.00687					
Adjusted R-squared		0.00594	0.00618	0.0428	0.0423	0.0426

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0555			-0.0736		
	(0.0348)			(0.102)		
Beans	-0.0381			0.00872		
	(0.0487)			(0.121)		
Other	-0.0445*			-0.0391		
	(0.0243)			(0.0612)		
Fruit	-0.0442**	-0.0443**		-0.0323	-0.0339	
	(0.0184)	(0.0182)		(0.0450)	(0.0450)	
Total vegetable		-0.0469***			-0.0403	
		(0.0165)			(0.0407)	
Fruit and vegetable			-0.0457***			-0.0376*
			(0.00915)			(0.0197)
Age	-0.000342	-0.000348	-0.000349	-0.00235	-0.00235	-0.00236
	(0.00124)	(0.00124)	(0.00124)	(0.00382)	(0.00382)	(0.00381)
Mexican	-0.0764	-0.0742	-0.0739	0.0111	0.0198	0.0196
	(0.0794)	(0.0792)	(0.0792)	(0.223)	(0.216)	(0.216)
Hispanic	-0.0942	-0.0938	-0.0934	-0.175	-0.173	-0.172
	(0.0832)	(0.0829)	(0.0830)	(0.205)	(0.201)	(0.201)
White	-0.122*	-0.122*	-0.122*	-0.0516	-0.0559	-0.0560
	(0.0726)	(0.0725)	(0.0725)	(0.193)	(0.191)	(0.191)
Black	-0.0601	-0.0600	-0.0597	-0.0350	-0.0406	-0.0401
	(0.0814)	(0.0814)	(0.0815)	(0.227)	(0.225)	(0.225)
Male	-0.155***	-0.154***	-0.155***	-0.140*	-0.137*	-0.137*
	(0.0288)	(0.0285)	(0.0285)	(0.0771)	(0.0761)	(0.0760)
Married	-0.0395	-0.0394	-0.0394	0.187**	0.186**	0.187**
	(0.0426)	(0.0425)	(0.0425)	(0.0844)	(0.0839)	(0.0837)
Widowed	0.266**	0.266**	0.266**	-0.300*	-0.301**	-0.300**
	(0.129)	(0.129)	(0.129)	(0.154)	(0.153)	(0.151)
Divorced	0.0570	0.0570	0.0571	0.0220	0.0235	0.0249
	(0.0603)	(0.0602)	(0.0602)	(0.107)	(0.107)	(0.104)
Separated	0.275**	0.276**	0.276**	0.241	0.240	0.240
	(0.123)	(0.123)	(0.123)	(0.295)	(0.294)	(0.293)
Living with a partner	-0.0165	-0.0164	-0.0165	0.198	0.194	0.194
	(0.0582)	(0.0582)	(0.0582)	(0.130)	(0.130)	(0.129)
Employment	-0.0954***	-0.0956***	-0.0956***	-0.0970	-0.0967	-0.0969
	(0.0311)	(0.0311)	(0.0311)	(0.0797)	(0.0793)	(0.0795)
Education	-0.0322**	-0.0325**	-0.0325**	-0.0303	-0.0323	-0.0324
	(0.0140)	(0.0138)	(0.0138)	(0.0360)	(0.0346)	(0.0346)
Income of the household	-	-0.0182***	-0.0182***	-0.0232**	-0.0239**	-0.0238**

	(1)	(2)	(3)	(4)	(5)	(6)
	0.0181***					
	(0.00453)	(0.00452)	(0.00451)	(0.0104)	(0.0101)	(0.0102)
Number of people in household	-0.00304	-0.00281	-0.00282	-0.0297	-0.0292	-0.0293
	(0.0104)	(0.0104)	(0.0104)	(0.0226)	(0.0230)	(0.0229)
General health				0.0761*	0.0764*	0.0762*
				(0.0429)	(0.0429)	(0.0425)
Smoker				0.186***	0.184***	0.184***
				(0.0642)	(0.0630)	(0.0628)
BMI				-0.00477	-0.00456	-0.00453
				(0.00684)	(0.00683)	(0.00672)
Sun hours on workday				-0.000473*	-0.000473*	-0.000473*
				(0.000269)	(0.000270)	(0.000269)
Sun hours on non-workday				0.000292	0.000299	0.000298
				(0.000261)	(0.000258)	(0.000255)
Dieting				0.0682	0.0651	0.0653
				(0.0767)	(0.0759)	(0.0756)
Constant	0.983***	0.983***	0.983***	0.824**	0.830**	0.829**
	(0.122)	(0.122)	(0.122)	(0.387)	(0.382)	(0.379)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.072	0.072	0.072	0.121	0.121	0.121
r2_a						
Adjusted R-squared	0.0647	0.0654	0.0658	0.0680	0.0719	0.0741

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Results of regression of model (1) – (12) for the dependent variable: How often the subject has been bothered by trouble falling asleep or staying asleep or sleeping too much.

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0299			-0.0399		
	(0.0508)			(0.0514)		
Beans	-0.0104			0.0566		
	(0.0598)			(0.0650)		
Other	0.0108			-0.0191		
	(0.0326)			(0.0337)		
Fruit	-0.0349	-0.0341		-0.0462*	-0.0492*	
	(0.0263)	(0.0261)		(0.0264)	(0.0260)	
Total vegetable		-0.00555			-0.0129	
		(0.0224)			(0.0225)	
Fruit and vegetable			-0.0184			-0.0292**
			(0.0125)			(0.0127)
Age				0.00184	0.00183	0.00185
				(0.00143)	(0.00142)	(0.00142)
Mexican				-0.0600	-0.0350	-0.0378
				(0.0855)	(0.0826)	(0.0822)
Hispanic				-0.0235	-0.0115	-0.0145

				(0.0901)	(0.0891)	(0.0888)
White				0.0500	0.0502	0.0486
				(0.0776)	(0.0775)	(0.0772)
Black				0.00733	0.00877	0.00612
				(0.0869)	(0.0868)	(0.0866)
Male				-0.244***	-0.239***	-0.238***
				(0.0351)	(0.0353)	(0.0353)
Married				-0.195***	-0.195***	-0.194***
				(0.0505)	(0.0504)	(0.0504)
Widowed				-0.0706	-0.0649	-0.0634
				(0.136)	(0.135)	(0.135)
Divorced				-0.0326	-0.0323	-0.0320
				(0.0736)	(0.0737)	(0.0736)
Separated				0.0593	0.0597	0.0620
				(0.124)	(0.124)	(0.124)
Living with a partner				0.00570	0.00710	0.00938
				(0.0749)	(0.0748)	(0.0747)
Employment						
Education						
Income of the household						
Number of people in household						
General health						
Smoker						
BMI						
Sun hours on workday						
Sun hours on non-workday						
Dieting						
Constant	0.684***	0.683***	0.689***	0.838***	0.833***	0.841***
	(0.0357)	(0.0350)	(0.0340)	(0.0942)	(0.0943)	(0.0934)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.001	0.001	0.001	0.029	0.028	0.028
r2_a	-0.000286					
Adjusted R-squared		0.000269	0.000433	0.0233	0.0234	0.0234

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	0.00582			-0.0160		
	(0.0544)			(0.128)		
Beans	0.00683			0.0838		
	(0.0705)			(0.189)		
Other	-0.0129			0.0535		

	(0.0348)			(0.0894)		
Fruit	-0.0319	-0.0326		0.0178	0.0163	
	(0.0272)	(0.0269)		(0.0716)	(0.0723)	
Total vegetable		-0.00363			0.0398	
		(0.0238)			(0.0627)	
Fruit and vegetable			-0.0166			0.0299
			(0.0136)			(0.0310)
Age	0.000406	0.000429	0.000440	0.00741	0.00745	0.00747
	(0.00163)	(0.00162)	(0.00162)	(0.00491)	(0.00490)	(0.00489)
Mexican	-0.114	-0.110	-0.114	0.360*	0.362*	0.363*
	(0.0977)	(0.0957)	(0.0949)	(0.210)	(0.203)	(0.202)
Hispanic	-0.0720	-0.0692	-0.0733	0.136	0.132	0.130
	(0.102)	(0.101)	(0.1000)	(0.217)	(0.219)	(0.218)
White	0.0400	0.0384	0.0364	0.419***	0.412***	0.413***
	(0.0869)	(0.0867)	(0.0862)	(0.159)	(0.159)	(0.158)
Black	-0.0213	-0.0219	-0.0247	0.273	0.262	0.261
	(0.0965)	(0.0965)	(0.0959)	(0.229)	(0.226)	(0.226)
Male	-0.212***	-0.211***	-0.210***	-0.286***	-0.283***	-0.283***
	(0.0369)	(0.0371)	(0.0372)	(0.102)	(0.103)	(0.103)
Married	-0.109**	-0.110**	-0.110**	-0.103	-0.103	-0.105
	(0.0537)	(0.0536)	(0.0536)	(0.134)	(0.132)	(0.133)
Widowed	-0.161	-0.160	-0.161	-0.642***	-0.642***	-0.645***
	(0.136)	(0.136)	(0.135)	(0.223)	(0.221)	(0.220)
Divorced	0.00606	0.00587	0.00560	-0.299*	-0.299*	-0.305*
	(0.0766)	(0.0765)	(0.0765)	(0.170)	(0.169)	(0.168)
Separated	0.0656	0.0638	0.0639	-0.303	-0.306	-0.307
	(0.123)	(0.123)	(0.123)	(0.268)	(0.267)	(0.267)
Living with a partner	0.0853	0.0848	0.0859	0.315*	0.312*	0.313*
	(0.0808)	(0.0808)	(0.0807)	(0.184)	(0.185)	(0.184)
Employment	-0.171***	-0.171***	-0.171***	-0.201*	-0.200*	-0.200*
	(0.0419)	(0.0419)	(0.0419)	(0.111)	(0.111)	(0.110)
Education	-0.0245	-0.0251	-0.0251	0.0304	0.0284	0.0287
	(0.0175)	(0.0174)	(0.0174)	(0.0385)	(0.0389)	(0.0388)
Income of the household	-0.0141**	-0.0141**	-0.0143**	-0.0139	-0.0151	-0.0153
	(0.00615)	(0.00613)	(0.00613)	(0.0137)	(0.0133)	(0.0131)
Number of people in household	0.00120	0.00119	0.00126	-0.0370	-0.0363	-0.0361
	(0.0134)	(0.0134)	(0.0134)	(0.0303)	(0.0300)	(0.0300)
General health				0.154***	0.154***	0.155***
				(0.0581)	(0.0580)	(0.0578)
Smoker				0.154	0.151	0.151
				(0.0933)	(0.0933)	(0.0933)
BMI				-0.00954	-0.00925	-0.00936
				(0.00869)	(0.00861)	(0.00853)
Sun hours on workday				-9.22e-05	-9.50e-05	-9.63e-05
				(0.000326)	(0.000325)	(0.000325)
Sun hours on non-workday				-0.000318	-0.000312	-0.000307
				(0.000355)	(0.000353)	(0.000350)
Dieting				0.113	0.107	0.106
				(0.103)	(0.103)	(0.103)
Constant	1.119***	1.120***	1.129***	0.263	0.272	0.278
	(0.146)	(0.146)	(0.145)	(0.482)	(0.483)	(0.480)

	(1)	(2)	(3)	(4)	(5)	(6)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.042	0.042	0.041	0.136	0.136	0.135
r2_a						
Adjusted R-squared	0.0341	0.0349	0.0351	0.0836	0.0874	0.0895

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Results of regression of model (1) – (12) for the dependent variable: Feeling tired or having little energy

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0794			-0.0867*		
	(0.0486)			(0.0490)		
Beans	-0.0383			0.0419		
	(0.0578)			(0.0615)		
Other	0.0322			-0.00984		
	(0.0307)			(0.0315)		
Fruit	-0.0869***	-0.0842***		-0.102***	-0.104***	
	(0.0230)	(0.0230)		(0.0235)	(0.0233)	
Total vegetable		-0.0146			-0.0254	
		(0.0214)			(0.0213)	
Fruit and vegetable			-0.0459***			-0.0610***
			(0.0117)			(0.0120)
Age				-0.00201	-0.00210	-0.00207
				(0.00138)	(0.00138)	(0.00138)
Mexican				-0.0843	-0.0624	-0.0687
				(0.0883)	(0.0852)	(0.0850)
Hispanic				-0.0561	-0.0495	-0.0561
				(0.0925)	(0.0915)	(0.0913)
White				0.0590	0.0616	0.0581
				(0.0807)	(0.0808)	(0.0807)
Black				-0.0359	-0.0343	-0.0401
				(0.0887)	(0.0888)	(0.0887)
Male				-0.313***	-0.309***	-0.306***
				(0.0347)	(0.0344)	(0.0344)
Married				-0.0881*	-0.0867*	-0.0850*
				(0.0494)	(0.0495)	(0.0494)
Widowed				0.260*	0.266*	0.270**
				(0.137)	(0.137)	(0.137)
Divorced				0.0161	0.0169	0.0177
				(0.0738)	(0.0739)	(0.0739)
Separated				0.0878	0.0929	0.0981
				(0.119)	(0.119)	(0.119)
Living with a partner				-0.00535	-0.00264	0.00233
				(0.0699)	(0.0700)	(0.0699)
Employment						
Education						

Income of the household						
Number of people in the house-hold						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						
Dieting						
Constant	0.850***	0.846***	0.860***	1.151***	1.149***	1.165***
	(0.0346)	(0.0341)	(0.0329)	(0.0961)	(0.0960)	(0.0955)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.008	0.006	0.005	0.048	0.047	0.045
r2_a	0.00622					
Adjusted R-squared		0.00561	0.00478	0.0426	0.0421	0.0409

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0830			-0.122		
	(0.0519)			(0.115)		
Beans	-0.0150			-0.0307		
	(0.0644)			(0.161)		
Other	0.00174			0.0489		
	(0.0321)			(0.0729)		
Fruit	-0.0926***	-0.0914***		-0.0897	-0.0889	
	(0.0237)	(0.0235)		(0.0562)	(0.0573)	
Total vegetable		-0.0282			-0.0108	
		(0.0224)			(0.0478)	
Fruit and vegetable			-0.0565***			-0.0439
			(0.0128)			(0.0282)
Age	-0.00300*	-0.00307*	-0.00305*	-0.00244	-0.00227	-0.00221
	(0.00159)	(0.00159)	(0.00159)	(0.00454)	(0.00454)	(0.00454)
Mexican	-0.0900	-0.0888	-0.0962	-0.0997	-0.131	-0.129
	(0.102)	(0.0998)	(0.0992)	(0.266)	(0.261)	(0.259)
Hispanic	-0.160	-0.164	-0.173*	-0.217	-0.251	-0.256
	(0.104)	(0.103)	(0.102)	(0.272)	(0.267)	(0.266)
White	0.0757	0.0813	0.0770	0.0915	0.0799	0.0808
	(0.0914)	(0.0913)	(0.0909)	(0.247)	(0.245)	(0.243)
Black	-0.0338	-0.0320	-0.0381	-0.347	-0.370	-0.375
	(0.0996)	(0.0996)	(0.0991)	(0.268)	(0.266)	(0.264)
Male	-0.292***	-0.291***	-0.288***	-0.410***	-0.409***	-0.409***

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.0366)	(0.0363)	(0.0363)	(0.101)	(0.101)	(0.101)
Married	-0.0342	-0.0336	-0.0340	0.0478	0.0527	0.0463
	(0.0538)	(0.0538)	(0.0538)	(0.118)	(0.117)	(0.117)
Widowed	0.115	0.117	0.115	-0.539***	-0.536***	-0.544***
	(0.138)	(0.138)	(0.138)	(0.196)	(0.190)	(0.187)
Divorced	0.0351	0.0358	0.0352	-0.111	-0.120	-0.138
	(0.0761)	(0.0761)	(0.0761)	(0.166)	(0.166)	(0.166)
Separated	0.127	0.133	0.133	-0.285	-0.293	-0.296
	(0.124)	(0.124)	(0.124)	(0.226)	(0.223)	(0.223)
Living with a partner	0.0665	0.0679	0.0703	0.118	0.120	0.123
	(0.0765)	(0.0765)	(0.0764)	(0.142)	(0.142)	(0.141)
Employment	-0.157***	-0.158***	-0.158***	-0.190*	-0.189*	-0.187*
	(0.0402)	(0.0402)	(0.0402)	(0.0979)	(0.0975)	(0.0976)
Education	-0.0102	-0.0102	-0.0103	0.0541	0.0539	0.0546
	(0.0174)	(0.0174)	(0.0174)	(0.0390)	(0.0384)	(0.0384)
Income of the household	-0.0209***	-0.0213***	-0.0216***	-0.0155	-0.0177	-0.0185
	(0.00586)	(0.00584)	(0.00585)	(0.0123)	(0.0119)	(0.0119)
Number of people in the household	0.0141	0.0150	0.0152	-0.0110	-0.00978	-0.00900
	(0.0137)	(0.0136)	(0.0137)	(0.0293)	(0.0295)	(0.0295)
General health				0.189***	0.189***	0.192***
				(0.0553)	(0.0552)	(0.0553)
Smoker				0.169**	0.164*	0.164*
				(0.0845)	(0.0848)	(0.0849)
BMI				0.00399	0.00441	0.00405
				(0.00823)	(0.00817)	(0.00821)
Sun hours on a workday				-0.000144	-0.000156	-0.000160
				(0.000348)	(0.000349)	(0.000347)
Sun hours on a non-workday				-0.000157	-0.000162	-0.000144
				(0.000376)	(0.000371)	(0.000367)
Dieting				0.0472	0.0310	0.0291
				(0.0957)	(0.0958)	(0.0959)
Constant	1.400***	1.399***	1.417***	0.630	0.641	0.661
	(0.149)	(0.149)	(0.148)	(0.432)	(0.435)	(0.433)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.069	0.068	0.067	0.183	0.181	0.179
r2_a						
Adjusted R-squared	0.0616	0.0617	0.0610	0.133	0.135	0.136

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Results of regression of model (1) – (12) for the dependent variable: Bothered by problems with a poor appetite or overeating.

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.135***			-0.137***		

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.0308)			(0.0305)		
Beans	-0.00829			0.0215		
	(0.0465)			(0.0515)		
Other	0.0193			-0.00184		
	(0.0248)			(0.0254)		
Fruit	-0.0353*	-0.0343*		-0.0484***	-0.0491***	
	(0.0181)	(0.0181)		(0.0179)	(0.0179)	
Total vegetable		-0.0340**			-0.0405**	
		(0.0166)			(0.0163)	
Fruit and vegetable			-0.0341***			-0.0444***
			(0.00897)			(0.00910)
Age				-0.00162	-0.00179	-0.00179
				(0.00109)	(0.00109)	(0.00109)
Mexican				0.0594	0.0768	0.0761
				(0.0616)	(0.0596)	(0.0595)
Hispanic				0.0618	0.0623	0.0616
				(0.0635)	(0.0629)	(0.0628)
White				0.0937*	0.0989*	0.0985*
				(0.0548)	(0.0549)	(0.0548)
Black				0.0679	0.0696	0.0690
				(0.0630)	(0.0633)	(0.0633)
Male				-0.240***	-0.236***	-0.235***
				(0.0281)	(0.0281)	(0.0282)
Married				-0.0389	-0.0368	-0.0367
				(0.0401)	(0.0402)	(0.0402)
Widowed				0.0733	0.0793	0.0796
				(0.0984)	(0.0982)	(0.0982)
Divorced				0.0676	0.0689	0.0690
				(0.0598)	(0.0597)	(0.0598)
Separated				0.317***	0.327***	0.327***
				(0.119)	(0.120)	(0.120)
Living with a partner				0.0694	0.0734	0.0739
				(0.0611)	(0.0614)	(0.0615)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						

Dieting

Constant	0.472***	0.471***	0.472***	0.598***	0.597***	0.599***
	(0.0279)	(0.0275)	(0.0265)	(0.0700)	(0.0702)	(0.0696)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.008	0.004	0.004	0.045	0.042	0.042
r2_a	0.00646					
Adjusted R-squared		0.00358	0.00393	0.0403	0.0376	0.0379

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.130***			-0.193**		
	(0.0319)			(0.0897)		
Beans	-0.00182			0.134		
	(0.0587)			(0.157)		
Other	-0.00262			0.0675		
	(0.0274)			(0.0597)		
Fruit	-0.0433**	-0.0423**		-0.0374	-0.0415	
	(0.0196)	(0.0194)		(0.0449)	(0.0467)	
Total vegetable		-0.0433**			0.00846	
		(0.0178)			(0.0411)	
Fruit and vegetable			-0.0429***			-0.0127
			(0.00996)			(0.0196)
Age	-0.00140	-0.00150	-0.00150	-0.000540	-0.000392	-0.000353
	(0.00131)	(0.00131)	(0.00130)	(0.00321)	(0.00324)	(0.00323)
Mexican	0.0103	0.0183	0.0184	0.134	0.130	0.132
	(0.0713)	(0.0700)	(0.0700)	(0.128)	(0.126)	(0.124)
Hispanic	0.0124	0.00860	0.00874	0.190	0.166	0.162
	(0.0716)	(0.0712)	(0.0711)	(0.131)	(0.129)	(0.129)
White	0.0774	0.0852	0.0853	0.269***	0.245***	0.246***
	(0.0619)	(0.0619)	(0.0618)	(0.0708)	(0.0716)	(0.0704)
Black	0.0220	0.0244	0.0245	0.135	0.0968	0.0936
	(0.0699)	(0.0702)	(0.0701)	(0.0956)	(0.0983)	(0.0977)
Male	-0.248***	-0.245***	-0.245***	-0.124*	-0.115*	-0.115*
	(0.0301)	(0.0302)	(0.0303)	(0.0687)	(0.0688)	(0.0686)
Married	-0.00828	-0.00738	-0.00737	0.0185	0.0201	0.0161
	(0.0446)	(0.0447)	(0.0447)	(0.0855)	(0.0845)	(0.0832)
Widowed	0.0292	0.0322	0.0322	-0.274*	-0.273*	-0.279*
	(0.102)	(0.102)	(0.102)	(0.160)	(0.164)	(0.162)
Divorced	0.0623	0.0633	0.0633	-0.00554	-0.00910	-0.0205
	(0.0622)	(0.0622)	(0.0621)	(0.120)	(0.121)	(0.116)
Separated	0.293**	0.301**	0.301**	0.0430	0.0341	0.0320
	(0.125)	(0.125)	(0.125)	(0.222)	(0.220)	(0.220)
Living with a partner	0.0848	0.0865	0.0865	0.279**	0.270*	0.272*
	(0.0673)	(0.0676)	(0.0677)	(0.141)	(0.144)	(0.144)
Employment	-0.106***	-0.107***	-0.107***	-0.184**	-0.182**	-0.181**
	(0.0340)	(0.0340)	(0.0340)	(0.0857)	(0.0858)	(0.0861)
Education	-0.0255*	-0.0264*	-0.0264*	0.000198	-0.00581	-0.00536
	(0.0140)	(0.0140)	(0.0140)	(0.0337)	(0.0327)	(0.0326)

Income of the household	-0.0106**	-0.0113**	-0.0113**	-0.00315	-0.00721	-0.00772
	(0.00506)	(0.00505)	(0.00504)	(0.0109)	(0.0108)	(0.0105)
Number of people in the household	0.0136	0.0153	0.0153	0.00558	0.00817	0.00867
	(0.0110)	(0.0110)	(0.0110)	(0.0216)	(0.0217)	(0.0215)
General health				0.152***	0.153***	0.154***
				(0.0393)	(0.0400)	(0.0399)
Smoker				0.240***	0.230***	0.230***
				(0.0638)	(0.0641)	(0.0641)
BMI				0.00558	0.00658	0.00635
				(0.00634)	(0.00644)	(0.00639)
Sun hours on a workday				-0.000320	-0.000332	-0.000335
				(0.000235)	(0.000239)	(0.000237)
Sun hours on a non-workday				-0.000365	-0.000349	-0.000338
				(0.000277)	(0.000275)	(0.000272)
Dieting				0.217***	0.193**	0.192**
				(0.0805)	(0.0794)	(0.0793)
Constant	0.807***	0.808***	0.807***	-0.276	-0.248	-0.235
	(0.116)	(0.116)	(0.116)	(0.278)	(0.280)	(0.276)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.062	0.060	0.060	0.204	0.192	0.191
r2_a						
Adjusted R-squared	0.0550	0.0531	0.0535	0.155	0.147	0.148

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Results of regression of model (1) – (12) for the dependent variable: Feeling bad about yourself or that you are a failure or have let yourself or your family down

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.104***			-0.0994***		
	(0.0297)			(0.0297)		
Beans	-0.0237			-0.0100		
	(0.0387)			(0.0425)		
Other	0.0195			0.00428		
	(0.0230)			(0.0233)		
Fruit	-0.0427***	-0.0411***		-0.0487***	-0.0480***	
	(0.0152)	(0.0150)		(0.0154)	(0.0151)	
Total vegetable		-0.0265*			-0.0309**	
		(0.0154)			(0.0153)	
Fruit and vegetable			-0.0331***			-0.0386***
			(0.00788)			(0.00817)
Age				-0.00169*	-0.00183*	-0.00182*
				(0.000943)	(0.000939)	(0.000937)
Mexican				-0.0997	-0.0963	-0.0977

	(1)	(2)	(3)	(4)	(5)	(6)
				(0.0656)	(0.0635)	(0.0635)
Hispanic				-0.160**	-0.165**	-0.167**
				(0.0667)	(0.0657)	(0.0658)
White				-0.0909	-0.0866	-0.0874
				(0.0607)	(0.0605)	(0.0605)
Black				-0.170***	-0.169***	-0.171***
				(0.0650)	(0.0648)	(0.0648)
Male				-0.117***	-0.116***	-0.115***
				(0.0245)	(0.0243)	(0.0243)
Married				-0.0801**	-0.0787**	-0.0783**
				(0.0366)	(0.0366)	(0.0366)
Widowed				0.109	0.112	0.112
				(0.0999)	(0.0998)	(0.1000)
Divorced				0.0630	0.0639	0.0641
				(0.0536)	(0.0535)	(0.0536)
Separated				0.233**	0.241**	0.242**
				(0.109)	(0.108)	(0.109)
Living with a partner				-0.0255	-0.0227	-0.0217
				(0.0520)	(0.0521)	(0.0522)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						
Dieting						
Constant	0.348***	0.346***	0.349***	0.626***	0.628***	0.631***
	(0.0248)	(0.0246)	(0.0234)	(0.0685)	(0.0682)	(0.0683)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.008	0.005	0.005	0.035	0.033	0.033
r2_a	0.00702					
Adjusted R-squared		0.00477	0.00502	0.0297	0.0282	0.0284

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0836***			-0.137		

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	(0.0314)			(0.0854)		
Beans	-0.0268			0.0999		
	(0.0487)			(0.130)		
Other	0.00706			0.0235		
	(0.0233)			(0.0554)		
Fruit	-0.0466***	-0.0449***		-0.0697*	-0.0732*	
	(0.0162)	(0.0160)		(0.0409)	(0.0422)	
Total vegetable		-0.0276*			-0.00693	
		(0.0163)			(0.0364)	
Fruit and vegetable			-0.0353***			-0.0350*
			(0.00876)			(0.0179)
Age	-0.00183	-0.00191*	-0.00191*	-0.00118	-0.00111	-0.00106
	(0.00113)	(0.00113)	(0.00113)	(0.00363)	(0.00365)	(0.00364)
Mexican	-0.185**	-0.188**	-0.190**	-0.0454	-0.0394	-0.0371
	(0.0751)	(0.0742)	(0.0742)	(0.177)	(0.176)	(0.176)
Hispanic	-0.248***	-0.255***	-0.257***	-0.144	-0.153	-0.158
	(0.0768)	(0.0763)	(0.0765)	(0.198)	(0.190)	(0.189)
White	-0.120*	-0.114	-0.115	0.0609	0.0454	0.0462
	(0.0704)	(0.0701)	(0.0702)	(0.148)	(0.146)	(0.145)
Black	-0.194***	-0.192**	-0.193***	-0.0157	-0.0396	-0.0438
	(0.0751)	(0.0749)	(0.0750)	(0.170)	(0.168)	(0.168)
Male	-0.102***	-0.101***	-0.101***	-0.0569	-0.0492	-0.0491
	(0.0263)	(0.0261)	(0.0260)	(0.0755)	(0.0759)	(0.0758)
Married	-0.0563	-0.0556	-0.0557	0.127	0.127	0.121
	(0.0400)	(0.0400)	(0.0400)	(0.0893)	(0.0896)	(0.0895)
Widowed	0.0694	0.0706	0.0701	-0.204	-0.204	-0.211
	(0.103)	(0.103)	(0.103)	(0.159)	(0.161)	(0.161)
Divorced	0.0836	0.0844	0.0842	0.0597	0.0593	0.0441
	(0.0557)	(0.0556)	(0.0556)	(0.113)	(0.113)	(0.111)
Separated	0.188*	0.194*	0.195*	0.331	0.326	0.323
	(0.109)	(0.109)	(0.109)	(0.277)	(0.275)	(0.275)
Living with a partner	0.00668	0.00829	0.00895	0.198	0.190	0.193
	(0.0569)	(0.0571)	(0.0572)	(0.122)	(0.123)	(0.122)
Employment	-0.0835***	-0.0845***	-0.0844***	-0.166**	-0.165**	-0.163*
	(0.0282)	(0.0282)	(0.0282)	(0.0839)	(0.0836)	(0.0835)
Education	-0.0246*	-0.0241*	-0.0241*	-0.0216	-0.0263	-0.0257
	(0.0129)	(0.0127)	(0.0127)	(0.0383)	(0.0372)	(0.0372)
Income of the household	-0.00904***	-0.00934***	-0.00942**	-0.00994	-0.0126	-0.0133
	(0.00431)	(0.00429)	(0.00428)	(0.0105)	(0.0101)	(0.0101)
Number of people in the household	0.0171*	0.0179*	0.0180*	-0.0147	-0.0130	-0.0123
	(0.00961)	(0.00959)	(0.00959)	(0.0227)	(0.0227)	(0.0227)
General health				0.0820*	0.0829*	0.0847*
				(0.0474)	(0.0473)	(0.0471)
Smoker				0.208***	0.201***	0.202***
				(0.0632)	(0.0627)	(0.0629)
BMI				-0.00524	-0.00456	-0.00487
				(0.00635)	(0.00632)	(0.00628)
Sun hours on a workday				-0.000334	-0.000341	-0.000344
				(0.000234)	(0.000237)	(0.000237)

	(1)	(2)	(3)	(4)	(5)	(6)
Sun hours on a non-workday				1.08e-05	2.47e-05	3.98e-05
				(0.000254)	(0.000255)	(0.000251)
Dieting				0.168**	0.153*	0.151*
				(0.0830)	(0.0820)	(0.0820)
Constant	0.799***	0.797***	0.802***	0.481	0.501	0.517
	(0.112)	(0.111)	(0.111)	(0.337)	(0.335)	(0.332)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.048	0.046	0.046	0.127	0.122	0.120
r2_a						
Adjusted R-squared	0.0406	0.0397	0.0400	0.0744	0.0730	0.0735

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Results of regression of model (1) – (12) for the dependent variable: Having trouble concentrating on things such as reading the newspaper or watching TV.

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0831**			-0.0808**		
	(0.0334)			(0.0336)		
Beans	-0.0395			-0.00746		
	(0.0403)			(0.0429)		
Other	0.0261			0.0150		
	(0.0224)			(0.0231)		
Fruit	-0.00358	-0.00101		-0.00826	-0.00722	
	(0.0177)	(0.0175)		(0.0179)	(0.0177)	
Total vegetable		-0.0192			-0.0191	
		(0.0158)			(0.0158)	
Fruit and vegetable			-0.0110			-0.0137
			(0.00893)			(0.00930)
Age				-0.00170*	-0.00183*	-0.00183*
				(0.000964)	(0.000961)	(0.000960)
Mexican				-0.0416	-0.0413	-0.0404
				(0.0634)	(0.0621)	(0.0620)
Hispanic				0.00102	-0.00507	-0.00409
				(0.0664)	(0.0661)	(0.0661)
White				0.00316	0.00721	0.00774
				(0.0593)	(0.0594)	(0.0594)
Black				-0.00681	-0.00625	-0.00538
				(0.0664)	(0.0666)	(0.0666)
Male				-0.129***	-0.128***	-0.129***
				(0.0249)	(0.0248)	(0.0247)
Married				-0.133***	-0.132***	-0.132***
				(0.0374)	(0.0374)	(0.0374)
Widowed				0.138	0.140	0.139
				(0.112)	(0.112)	(0.112)
Divorced				-0.0113	-0.0105	-0.0106
				(0.0540)	(0.0540)	(0.0540)
Separated				0.164	0.171	0.171
				(0.113)	(0.112)	(0.112)

	(1)	(2)	(3)	(4)	(5)	(6)
Living with a partner				-0.0763	-0.0738	-0.0746
				(0.0510)	(0.0512)	(0.0513)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						
Dieting						
Constant	0.314***	0.310***	0.306***	0.531***	0.533***	0.530***
	(0.0256)	(0.0252)	(0.0243)	(0.0713)	(0.0715)	(0.0714)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.003	0.001	0.001	0.032	0.030	0.030
r2_a	0.00171					
Adjusted R-squared		1.55e-05	0.000214	0.0269	0.0259	0.0262

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0524			-0.111		
	(0.0352)			(0.0879)		
Beans	-0.0139			0.101		
	(0.0479)			(0.161)		
Other	0.0108			0.0182		
	(0.0238)			(0.0554)		
Fruit	-0.00650	-0.00528		-0.0140	-0.0174	
	(0.0187)	(0.0185)		(0.0397)	(0.0413)	
Total vegetable		-0.0135			-0.00270	
		(0.0169)			(0.0409)	
Fruit and vegetable			-0.00984			-0.00893
			(0.00998)			(0.0187)
Age	-0.00342***	-0.00348***	-0.00348***	-0.000795	-0.000744	-0.000732
	(0.00109)	(0.00109)	(0.00109)	(0.00309)	(0.00313)	(0.00312)
Mexican	-0.0807	-0.0827	-0.0817	-0.138	-0.128	-0.128
	(0.0690)	(0.0681)	(0.0680)	(0.165)	(0.164)	(0.163)
Hispanic	-0.0574	-0.0621	-0.0610	-0.175	-0.179	-0.180

	(1)	(2)	(3)	(4)	(5)	(6)
	(0.0703)	(0.0698)	(0.0698)	(0.154)	(0.152)	(0.151)
White	0.00424	0.00866	0.00922	-0.0538	-0.0689	-0.0687
	(0.0638)	(0.0638)	(0.0638)	(0.136)	(0.135)	(0.135)
Black	0.0128	0.0143	0.0152	-0.206	-0.228	-0.229
	(0.0714)	(0.0716)	(0.0716)	(0.163)	(0.162)	(0.162)
Male	-0.118***	-0.118***	-0.118***	-0.139**	-0.134**	-0.134**
	(0.0260)	(0.0259)	(0.0259)	(0.0656)	(0.0653)	(0.0652)
Married	-0.0845**	-0.0840**	-0.0840**	-0.0293	-0.0284	-0.0296
	(0.0392)	(0.0391)	(0.0391)	(0.0791)	(0.0779)	(0.0764)
Widowed	0.105	0.105	0.106	-0.383***	-0.381***	-0.383***
	(0.111)	(0.111)	(0.111)	(0.119)	(0.120)	(0.117)
Divorced	0.00984	0.0104	0.0105	-0.153	-0.148	-0.151
	(0.0547)	(0.0547)	(0.0546)	(0.105)	(0.110)	(0.105)
Separated	0.174	0.178	0.178	0.106	0.102	0.101
	(0.118)	(0.118)	(0.118)	(0.266)	(0.266)	(0.266)
Living with a partner	-0.0634	-0.0623	-0.0626	-0.0137	-0.0226	-0.0220
	(0.0534)	(0.0535)	(0.0534)	(0.106)	(0.106)	(0.106)
Employment	-0.111***	-0.111***	-0.111***	-0.197**	-0.197**	-0.197**
	(0.0287)	(0.0287)	(0.0287)	(0.0768)	(0.0769)	(0.0770)
Education	-0.0258**	-0.0254**	-0.0254**	-0.00401	-0.00825	-0.00812
	(0.0122)	(0.0121)	(0.0121)	(0.0318)	(0.0309)	(0.0308)
Income of the household	-0.00128	-0.00149	-0.00145	-0.00601	-0.00800	-0.00815
	(0.00435)	(0.00433)	(0.00432)	(0.00761)	(0.00751)	(0.00742)
Number of people in the household	0.00226	0.00281	0.00279	-0.0188	-0.0174	-0.0172
	(0.00948)	(0.00946)	(0.00946)	(0.0197)	(0.0197)	(0.0197)
General health				0.0762*	0.0758*	0.0762*
				(0.0433)	(0.0438)	(0.0436)
Smoker				0.125**	0.118**	0.118**
				(0.0563)	(0.0554)	(0.0554)
BMI				-0.00464	-0.00400	-0.00407
				(0.00614)	(0.00622)	(0.00612)
Sun hours on a workday				-0.000118	-0.000119	-0.000120
				(0.000218)	(0.000223)	(0.000222)
Sun hours on a non-workday				-0.000121	-0.000106	-0.000103
				(0.000244)	(0.000239)	(0.000234)
Dieting				0.0818	0.0714	0.0711
				(0.0728)	(0.0715)	(0.0716)
Constant	0.729***	0.727***	0.725***	0.654**	0.676**	0.680**
	(0.106)	(0.106)	(0.106)	(0.279)	(0.276)	(0.272)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.041	0.040	0.040	0.116	0.111	0.111
r2_a						
Adjusted R-squared	0.0330	0.0330	0.0333	0.0626	0.0614	0.0635

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Results of regression of model (1) – (12) for the dependent variable: Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual?

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0482**			-0.0487**		
	(0.0232)			(0.0236)		
Beans	0.0329			0.0316		
	(0.0333)			(0.0358)		
Other	0.00960			0.00990		
	(0.0201)			(0.0213)		
Fruit	-0.00848	-0.00944		-0.00990	-0.0107	
	(0.0141)	(0.0136)		(0.0140)	(0.0135)	
Total vegetable		-0.00495			-0.00498	
		(0.0120)			(0.0124)	
Fruit and vegetable			-0.00698			-0.00754
			(0.00670)			(0.00714)
Age				-0.000886	-0.000957	-0.000955
				(0.000777)	(0.000781)	(0.000779)
Mexican				-0.0817	-0.0705	-0.0709
				(0.0617)	(0.0612)	(0.0612)
Hispanic				-0.0497	-0.0475	-0.0480
				(0.0644)	(0.0644)	(0.0645)
White				-0.0953	-0.0931	-0.0934
				(0.0591)	(0.0590)	(0.0590)
Black				-0.0818	-0.0809	-0.0813
				(0.0630)	(0.0631)	(0.0630)
Male				-0.0541***	-0.0517***	-0.0515***
				(0.0196)	(0.0195)	(0.0196)
Married				-0.0441	-0.0431	-0.0430
				(0.0282)	(0.0282)	(0.0282)
Widowed				0.0788	0.0821	0.0824
				(0.0711)	(0.0710)	(0.0711)
Divorced				0.0611	0.0617	0.0618
				(0.0425)	(0.0425)	(0.0426)
Separated				0.141*	0.146*	0.146*
				(0.0857)	(0.0856)	(0.0856)
Living with a partner				0.0926*	0.0945**	0.0948**
				(0.0478)	(0.0478)	(0.0477)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						

Sun hours on a workday

Sun hours on a non-workday

Dieting

Constant	0.179***	0.181***	0.182***	0.327***	0.326***	0.328***
	(0.0195)	(0.0191)	(0.0186)	(0.0654)	(0.0655)	(0.0656)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.002	0.000	0.000	0.021	0.019	0.019
r2_a	0.000688					
Adjusted R-squared		-0.000311	2.97e-05	0.0154	0.0145	0.0148

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0205			0.199**		
	(0.0246)			(0.0922)		
Beans	0.0121			-0.0210		
	(0.0425)			(0.159)		
Other	0.00459			-0.00271		
	(0.0219)			(0.0465)		
Fruit	-0.00669	-0.00671		0.00192	0.00415	
	(0.0148)	(0.0144)		(0.0375)	(0.0383)	
Total vegetable		-0.00221			0.0487	
		(0.0133)			(0.0384)	
Fruit and vegetable			-0.00422			0.0298
			(0.00786)			(0.0191)
Age	-0.000851	-0.000868	-0.000866	-0.00160	-0.00174	-0.00170
	(0.000901)	(0.000900)	(0.000898)	(0.00298)	(0.00304)	(0.00302)
Mexican	-0.0877	-0.0844	-0.0849	0.169	0.179	0.181
	(0.0681)	(0.0682)	(0.0679)	(0.117)	(0.117)	(0.116)
Hispanic	-0.0452	-0.0451	-0.0458	0.113	0.136	0.133
	(0.0707)	(0.0708)	(0.0707)	(0.142)	(0.147)	(0.146)
White	-0.0636	-0.0622	-0.0625	0.152**	0.169**	0.169**
	(0.0637)	(0.0636)	(0.0635)	(0.0764)	(0.0746)	(0.0735)
Black	-0.0694	-0.0690	-0.0695	0.0833	0.112	0.110
	(0.0676)	(0.0676)	(0.0675)	(0.110)	(0.104)	(0.103)
Male	-0.0396*	-0.0384*	-0.0383*	-0.0528	-0.0586	-0.0585
	(0.0211)	(0.0210)	(0.0212)	(0.0650)	(0.0647)	(0.0648)
Married	-0.0198	-0.0196	-0.0196	0.0646	0.0620	0.0584
	(0.0300)	(0.0300)	(0.0300)	(0.0680)	(0.0664)	(0.0659)
Widowed	0.0198	0.0206	0.0205	-0.0592	-0.0612	-0.0661
	(0.0691)	(0.0691)	(0.0690)	(0.129)	(0.135)	(0.136)
Divorced	0.0641	0.0642	0.0642	0.0535	0.0573	0.0471
	(0.0419)	(0.0419)	(0.0418)	(0.0880)	(0.0933)	(0.0894)
Separated	0.112	0.113	0.113	0.00613	0.0137	0.0118
	(0.0896)	(0.0894)	(0.0894)	(0.207)	(0.207)	(0.207)
Living with a partner	0.0947*	0.0950*	0.0952*	0.249*	0.254*	0.255*
	(0.0516)	(0.0516)	(0.0515)	(0.131)	(0.133)	(0.133)

Employment	-0.0755***	-0.0759***	-0.0758***	-0.168**	-0.169**	-0.168**
	(0.0229)	(0.0229)	(0.0229)	(0.0765)	(0.0770)	(0.0771)
Education	-0.0233**	-0.0237**	-0.0237**	-0.00682	-0.00322	-0.00283
	(0.0104)	(0.0102)	(0.0102)	(0.0281)	(0.0262)	(0.0262)
Income of the household	-0.00964***	-0.00981***	-0.00983***	-0.00675	-0.00376	-0.00422
	(0.00336)	(0.00336)	(0.00335)	(0.00827)	(0.00817)	(0.00797)
Number of people in the household	0.0119	0.0123	0.0124	0.0340	0.0321	0.0326
	(0.00773)	(0.00766)	(0.00766)	(0.0215)	(0.0217)	(0.0217)
General health				0.0766*	0.0758*	0.0770*
				(0.0403)	(0.0408)	(0.0407)
Smoker				0.176***	0.184***	0.184***
				(0.0550)	(0.0543)	(0.0545)
BMI				-0.00197	-0.00269	-0.00289
				(0.00548)	(0.00564)	(0.00556)
Sun hours on a workday				-2.67e-05	-1.70e-05	-1.95e-05
				(0.000243)	(0.000247)	(0.000246)
Sun hours on a non-workday				-0.000269	-0.000277	-0.000266
				(0.000258)	(0.000251)	(0.000245)
Dieting				-0.0346	-0.0160	-0.0171
				(0.0653)	(0.0647)	(0.0647)
Constant	0.452***	0.453***	0.454***	-0.0883	-0.109	-0.0979
	(0.0918)	(0.0916)	(0.0911)	(0.252)	(0.245)	(0.240)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.036	0.036	0.036	0.132	0.124	0.123
r2_a						
Adjusted R-squared	0.0289	0.0294	0.0298	0.0816	0.0749	0.0760

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Results of regression of model (1) – (12) for the dependent variable: How often the subject has been bothered by thoughts that they would be better off dead or hurting themselves in some way

	(1)	(2)	(3)	(4)	(5)	(6)
Salad	-0.0226**			-0.0251**		
	(0.0114)			(0.0114)		
Beans	0.00317			0.00157		
	(0.0161)			(0.0181)		
Other	-0.0216**			-0.0225**		
	(0.00876)			(0.00885)		
Fruit	0.00420	0.00321		0.00174	0.000781	
	(0.00779)	(0.00777)		(0.00784)	(0.00787)	
Total vegetable		-0.0179***			-0.0193***	
		(0.00653)			(0.00663)	
Fruit and vegetable			-0.00840***			-0.0103***
			(0.00264)			(0.00313)
Age				0.000422	0.000425	0.000417

			(0.000431)	(0.000428)	(0.000428)
Mexican				-0.0440	-0.0364	-0.0348
				(0.0374)	(0.0367)	(0.0367)
Hispanic				-0.0520	-0.0480	-0.0464
				(0.0387)	(0.0379)	(0.0380)
White				-0.0531	-0.0532	-0.0523
				(0.0356)	(0.0358)	(0.0357)
Black				-0.0619*	-0.0615*	-0.0600
				(0.0373)	(0.0373)	(0.0374)
Male				-0.0244**	-0.0229**	-0.0236**
				(0.0102)	(0.0103)	(0.0104)
Married				-0.0227	-0.0226	-0.0230
				(0.0172)	(0.0171)	(0.0173)
Widowed				0.0196	0.0213	0.0205
				(0.0462)	(0.0461)	(0.0462)
Divorced				-0.000960	-0.000896	-0.00109
				(0.0238)	(0.0237)	(0.0238)
Separated				0.0435	0.0433	0.0420
				(0.0412)	(0.0410)	(0.0411)
Living with a partner				-0.0463***	-0.0459***	-0.0472***
				(0.0150)	(0.0149)	(0.0152)
Employment						
Education						
Income of the household						
Number of people in the household						
General health						
Smoker						
BMI						
Sun hours on a workday						
Sun hours on a non-workday						
Dieting						
Constant	0.0668***	0.0687***	0.0645***	0.129***	0.127***	0.123***
	(0.01000)	(0.00989)	(0.00916)	(0.0396)	(0.0394)	(0.0396)
Observations	2,805	2,805	2,805	2,805	2,805	2,805
R-squared	0.004	0.003	0.002	0.013	0.013	0.012
r2_a	0.00274					
Adjusted R-squared		0.00265	0.00169	0.00816	0.00821	0.00738

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(7)	(8)	(9)	(10)	(11)	(12)
Salad	-0.0159			-0.0198		
	(0.0112)			(0.0217)		
Beans	0.00155			0.0373		
	(0.0206)			(0.0598)		
Other	-0.0252***			-0.0244		
	(0.00830)			(0.0164)		
Fruit	-0.00137	-0.00222		-0.00925	-0.0109	
	(0.00739)	(0.00738)		(0.0109)	(0.0108)	
Total vegetable		-0.0178***			-0.0127	
		(0.00624)			(0.0141)	
Fruit and vegetable			-0.0108***			-0.0119
			(0.00316)			(0.00750)
Age	0.000144	0.000162	0.000156	0.000770	0.000737	0.000736
	(0.000410)	(0.000406)	(0.000406)	(0.00152)	(0.00155)	(0.00154)
Mexican	-0.0798	-0.0740	-0.0722	0.0271	0.0419	0.0418
	(0.0485)	(0.0486)	(0.0486)	(0.0461)	(0.0414)	(0.0412)
Hispanic	-0.0844*	-0.0810*	-0.0788	-0.0209	-0.0111	-0.0110
	(0.0495)	(0.0491)	(0.0492)	(0.0274)	(0.0286)	(0.0282)
White	-0.0740*	-0.0752*	-0.0741*	0.0284	0.0255	0.0255
	(0.0445)	(0.0448)	(0.0448)	(0.0253)	(0.0244)	(0.0244)
Black	-0.0786*	-0.0791*	-0.0776*	-0.0360	-0.0373	-0.0372
	(0.0465)	(0.0466)	(0.0467)	(0.0261)	(0.0262)	(0.0263)
Male	-0.0234**	-0.0220**	-0.0225**	-0.0137	-0.0125	-0.0125
	(0.0109)	(0.0111)	(0.0111)	(0.0223)	(0.0233)	(0.0233)
Married	-0.00373	-0.00383	-0.00375	0.0665***	0.0656***	0.0657***
	(0.0164)	(0.0164)	(0.0164)	(0.0216)	(0.0215)	(0.0216)
Widowed	0.0157	0.0162	0.0166	-0.0540	-0.0538	-0.0536
	(0.0476)	(0.0477)	(0.0476)	(0.0464)	(0.0453)	(0.0445)
Divorced	0.0133	0.0132	0.0134	0.0179	0.0244	0.0248
	(0.0242)	(0.0241)	(0.0241)	(0.0300)	(0.0321)	(0.0304)
Separated	0.0515	0.0499	0.0499	0.108	0.109	0.109
	(0.0431)	(0.0429)	(0.0427)	(0.0943)	(0.0943)	(0.0939)
Living with a partner	-0.0375**	-0.0379**	-0.0385**	0.0212	0.0165	0.0164
	(0.0159)	(0.0158)	(0.0160)	(0.0225)	(0.0220)	(0.0217)
Employment	0.0117	0.0117	0.0117	-0.0212	-0.0215	-0.0216
	(0.0109)	(0.0108)	(0.0108)	(0.0304)	(0.0303)	(0.0306)
Education	-0.0108*	-0.0116*	-0.0116*	-0.00578	-0.00743	-0.00745
	(0.00651)	(0.00641)	(0.00640)	(0.0100)	(0.00907)	(0.00911)
Income of the household	-0.00178	-0.00187	-0.00179	-0.00400	-0.00404	-0.00402
	(0.00162)	(0.00163)	(0.00163)	(0.00290)	(0.00283)	(0.00273)
Number of people in the household	0.00156	0.00176	0.00172	-0.00230	-0.00215	-0.00217
	(0.00411)	(0.00412)	(0.00412)	(0.00462)	(0.00455)	(0.00450)
General health				0.0343**	0.0336**	0.0336**
				(0.0173)	(0.0169)	(0.0168)
Smoker				0.0344	0.0331	0.0331
				(0.0219)	(0.0217)	(0.0217)
BMI				-0.00144	-0.00130	-0.00129
				(0.00162)	(0.00165)	(0.00162)
Sun hours on a workday				-9.21e-05	-8.79e-05	-8.78e-05
				(9.16e-05)	(9.37e-05)	(9.28e-05)
Sun hours on a non-workday				-4.54e-05	-3.70e-05	-3.74e-05
				(8.57e-05)	(8.38e-05)	(8.06e-05)
Dieting				-4.36e-06	0.00152	0.00156

				(0.0320)	(0.0314)	(0.0315)
Constant	0.192***	0.194***	0.189***	0.0111	0.0178	0.0174
	(0.0613)	(0.0611)	(0.0608)	(0.0657)	(0.0635)	(0.0613)
Observations	2,432	2,432	2,432	437	437	437
R-squared	0.018	0.017	0.017	0.082	0.078	0.078
r2_a						
Adjusted R-squared	0.0102	0.0104	0.0101	0.0261	0.0268	0.0291

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1