JENA ECONOMIC RESEARCH PAPERS

2009 – 098

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www.jenecon.de

ISSN 1864-7057

The JENA ECONOMIC RESEARCH PAPERS is a joint publication of the Friedrich Schiller University and the Max Planck Institute of Economics, Jena, Germany. For editorial correspondence please contact markus.pasche@uni-jena.de.

Impressum:

Friedrich Schiller University Jena
Carl-Zeiss-Str. 3
D-07743 Jena
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A note on the relationship between television viewing and individual happiness

Mitesh Kataria[A], Tobias Regner[B]

Abstract

In a recently published article, Bruni and Stanca (2008) suggest that television viewing has a negative impact on life satisfaction. In this note we argue that the empirical approach they use (an approach that omits the main effect of TV viewing in life satisfaction) is problematic.

We estimate a microeconomic life satisfaction function and find mixed support for the claim that television viewing in general has a negative impact on individual happiness. Using a large cross-country comparison we find that there is a substantial heterogeneity across countries, which needs to be taken into account when concluding about television's effect on life satisfaction.

JEL Classification: A12; D12; I31

Keywords: Relational goods; Subjective well-being; TV consumption; Happiness

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Acknowledgments: We are grateful to Luca Stanca and Luigino Bruni for making the data available.

1. Introduction

Two recent articles study the relationship between TV consumption and happiness.

Frey et al. (2007) estimate a microeconomic life satisfaction function and find a negative correlation between heavy TV viewing and life satisfaction. As potential reasons they mention lack of self-control and misprediction of the long-term cost of TV consumption as TV offers immediate benefits at very low marginal costs. Therefore, people may tend to over-consume TV and this in turn would lead to a lower level of individual utility than what could be achieved, if the individual had allocated his/her time optimally.

In an effort to shed more light on the effects of over-consuming television, Bruni and Stanca (2008) analyze the relationship between TV viewing and relational activities, e.g. time spent with parents or relatives, friends, colleagues from work or profession, people at church and finally people at service organization. Bruni and Stanca (2008) present empirical evidence that time spent on relational activities has a positive effect on life satisfaction and that in turn television viewing has a negative effect on time spent on relational activities. Based on these two pieces of evidence it is argued that people tend to over-consume material goods and under-consume relational goods. They say that "… television viewing has a negative impact on individual happiness by harming and, to some extent, replacing relationships with other people" (page 510).

We argue that it is problematic to draw such a conclusion based on the evidence from the two regressions. Even if the results of the two regressions are independently true one should be cautious with the deductive inference made in Bruni and Stanca (2008). Our objection is easily captured by the following example. Suppose that instead of testing the relationship between time spent on relational activities and life satisfaction one would instead test and find positive effects of TV viewing on life satisfaction (without including variables on relational activities). In line with the inference made in Bruni and Stanca (2008), a rash conclusion would then be that relational activities have a negative impact on individual happiness by harming and to some extent replacing TV viewing. The point is that one needs to test and not assume the relative impact of TV viewing on life satisfaction compared to other activities.

The aim of this note is to test if the data used by Bruni and Stanca (2008) indeed supports that TV viewing is negatively correlated with life satisfaction. We describe the data and methodology used in Section 2, and present our empirical results in Section 3. Our conclusions are in Section 4.

2. Data and methodology

Frey et al. (2007) used the first wave of the European Social Survey (ESS) which was carried out in 22 European countries in 2002/2003. In each country, about 1200–3000 people were interviewed. A microeconomic life satisfaction function is specified where life satisfaction of an individual is assumed to depend on television consumption together with country specific effects as well as other controlling variables.[1]

Implicitly, homogeneity in preferences has to be assumed if the analyst wants to make causal interpretations.[2] Homogeneity implies that if a group of people that in average watch more television is observed to be more satisfied than a group of people that in average watch less television, the latter group would become happier if they would increase their amount of television viewing. Furthermore, it also implies that if a group of individuals engaged in a certain activity are happier than a group engaged in another activity, the second group would be happier if they also engaged in the first activity (if they have to choose).

Bruni and Stanca (2008) used data from the World Values Survey (WVS), a compilation of surveys conducted in more than 80 countries representing about 85 percent of the world's population.[3] Four waves are currently available (1980-1982, 1990-1991, 1995-1997 and 1999-2001) totaling 264,778 observations. However, due to limited availability of some variables the sample size in Bruni and Stanca (2008) is much smaller. The dependent variable life satisfaction is the response to the question "All things considered, how satisfied are you with your life as a whole these days?". Answers are given on a 10-point scale ranging from 1 ("completely dissatisfied") to 10 ("completely satisfied"). Notably, compared to the ESS data the labels as well as the levels of the scale are different in the WVS data. The amount of TV consumption is captured by the following question: "Do you ever watch television? **IF YES**:

[1] The dependent variable life satisfaction is the response to the question "All things considered, how satisfied are you with your life as a whole nowadays?". Answers are given on an 11-point scale ranging from 0 ("extremely dissatisfied" to 10 ("extremely satisfied"). The main independent variable "Television consumption" is also captured by one single question: "On an average weekday, how much time do you spend watching television?". Answers are given in eight categories, ranging from "no time at all" to "more than 3 hours" per day.

[2] Frey et al (2007) discuss the problem of causal interpretation using their data.

[3] Bruni and Stanca (2006) used the WVS data to estimate the life satisfaction function where the interaction terms between the amount of TV consumption and income is included. Like Bruni and Stanca (2008) the main effect of TV consumption is left out. The authors investigate the role of television in producing higher material aspiration. They find that the effect of income on life satisfaction is smaller for heavy television viewers and interpret this evidence as support for their hypothesis that TV viewing raises material aspirations and lowers individual happiness.

How much time do you usually spend watching television on an average weekday (**NOT WEEKENDS)?**" Answers are given in four categories (compared to eight in ESS-data): (1) "Do not watch TV or do not have access to TV"; (2) "1-2 h per day"; (3) "2-3 h per day"; (4) "More than 3 h per day".

As already mentioned, Bruni and Stanca (2008) took their conclusions using two regression analysis. In one of the regressions they estimated a microeconomic life satisfaction function where the main variables of interest were relational activities. In the second regression the relationship between relational activities and television viewing is estimated.

3. Empirical Results

This section presents the main results of our statistical analysis on the relationship between life satisfaction and TV viewing using the WVS data. Unlike Bruni and Stanca (2008), we explore the relationship between life satisfaction and TV viewing directly by estimating a life satisfaction function as Frey et al. (2007) did.

Before turning to the regression results, we take a look at the average life satisfaction scores for the different groups of individuals based on TV consumption (presented in table 1). The main finding is that 30 of the 38 countries have a life satisfaction score that is higher if they watched TV less than 3 hours, but for 18 countries the difference is not statistically significant (for the other 12 the hypothesis of equal distribution is rejected using the Wilcoxon-Mann-Whitney test). In average the difference for these 12 countries between the group watching TV more than 3 hours compared to the group showing the highest life satisfaction is 0.38. It is evident that in some countries higher TV viewing is related to lower life satisfaction, although this is not statistically significant for the majority of the countries. Also note that the scores in table 1 are not intended to be interpreted as the partial effect of TV viewing on life satisfaction. While the results in table 1 are helpful to see whether people watching more TV are more or less satisfied with their lives for whatever reasons, the partial effects of TV viewing on happiness are obtained by estimating a microeconomic happiness function. The countries that are included in such a statistical analysis are defined in table 2. The first sample consists of the same countries as in Bruni and Stanca (2008). To relate our results to Frey et al. (2007) the second sample consists of European countries. Finally, the third sample includes countries that contain information on relational activities. Subsequently the three main results from estimating the microeconomic happiness function are presented after table 2.

Table 1: Conditional life satisfaction and TV viewing (standard deviation in parenthesis)

Country	**No TV**	**TV (1-2 h)**	**TV (2-3 h)**	**TV (>3 h)**	**P-value**[4]	**Dev. Opt.**
Germany	7,09* (1,90)	7,07 (1,86)	6,79 (1,94)	6,67 (2,14)	0,03	0,42
Spain	6,53 (2,11)	6,96* (1,75)	6,70 (1,89)	6,63 (2,17)	0,01	0,33
USA	7,75* (2,15)	7,75* (1,97)	7,62 (1,91)	7,55 (2,13)	0,45	0,20
Mexico	7,60 (2,20)	8,35* (1,96)	8,06 (2,16)	8,07 (2,06)	0,12	0,28
South Africa	4,86 (2,73)	6,52 (2,64)	6,67* (2,50)	6,33 (2,74)	< 0,01	0,34
Australia	7,63 (2,07)	7,63 (1,81)	7,69* (1,80)	7,42 (2,01)	0,05	0,54
Norway	6,43 (2,80)	7,72 (1,74)	7,77* (1,88)	7,48 (2,07)	0,17	0,29
Argentina	7,30* (2,29)	7,09 (2,30)	7,08 (2,29)	7,22 (2,30)	0,66	0,08
Finland	7,97* (1,63)	7,95 (1,60)	7,85 (1,39)	7,67 (1,68)	0,39	0,20
Sweden	6,82 (2,56)	7,91* (1,62)	7,76 (1,83)	7,79 (1,73)	0,51	0,12
Switzerland	8,38* (1,75)	8,06 (1,81)	7,86 (1,94)	7,87 (1,66)	0,02	0,51
Puerto Rico	8,54* (1,96)	8,33 (2,07)	8,29 (2,04)	8,00 (2,33)	0,02	0,54
Brazil	6,80 (2,93)	7,39* (2,62)	6,99 (2,60)	6,94 (2,74)	0,02	0,45
Nigeria	6,25 (2,65)	6,58 (2,44)	6,84 (2,43)	7,32* (2,28)	< 0,01	0,45
Chile	6,39 (2,38)	7,08* (2,16)	6,96 (1,99)	6,70 (2,22)	0,03	0,12
Belarus	4,63* (2,09)	4,33 (2,27)	4,32 (1,95)	4,43 (2,33)	0,55	0,20
India	5,69 (2,83)	7,02 (2,40)	7,03* (2,32)	5,83 (2,75)	0,03	1,2
Taiwan	6,43 (2,38)	6,30 (1,95)	6,49 (1,98)	6,53* (1,92)	0,83	0,04
Lithuania	5,90* (2,13)	4,85 (2,68)	5,12 (2,53)	5,06 (2,64)	0,84	0,06
Latvia	5,11* (2,13)	5,10 (2,18)	4,81 (2,14)	4,56 (2,32)	0,21	0,55
Estonia	5,54* (2,60)	5,14 (2,36)	4,91 (2,14)	4,94 (2,22)	0,33	0,60
Ukraine	3,17 (2,08)	3,98 (2,23)	4,09* (2,32)	4,08 (2,31)	0,96	0,01
Russia	3,92 (2,73)	4,43 (2,52)	4,41 (2,37)	4,58* (2,60)	0,37	0,15
Peru	6,24 (2,43)	6,46* (2,47)	6,39 (2,29)	6,40 (2,40)	0,53	0,06
Venezuela	6,38 (3,13)	6,92* (3,03)	6,61 (2,99)	6,65 (2,93)	0,11	0,27
Uruguay	6,42 (2,49)	7,15 (2,29)	7,04 (2,21)	7,35* (2,26)	0,31	0,20
Moldova	3,25 (1,26)	3,61 (2,28)	3,88 (2,37)	4,46* (2,73)	0,04	0, 59
Georgia	4,72 (2,60)	3,98 (2,37)	4,58 (2,55)	4,81* (2,66)	0,63	0,13
Armenia	3,65 (2,46)	4,14 (2,49)	4,21 (2,36)	4,47* (2,32)	0,02	0,26
Azerbaijan	5,25 (2,77)	5,50* (2,26)	5,42 (2,24)	5,32 (2,39)	0,46	0,18
Dominican Republic	6,77 (2,92)	7,20 (2,39)	7,15 (2,39)	7,30* (2,45)	0,73	0,10
Bangladesh	6,40* (2,72)	5,81 (2,16)	5,74 (2,04)	5,31 (1,85)	< 0,01	1,08
Serbia	4,71 (2,85)	5,70* (2,31)	5,68 (2,35)	5,57 (2,59)	0,58	0,13
Montenegro	5,88 (2,42)	6,09 (2,23)	6,34* (1,98)	6,25 (2,23)	0,84	0,09
Croatia	5,65 (2,36)	6,28 (2,07)	6,24* (2,07)	6,01 (2,24)	0,22	0,23
Bosnia-Hercegovina	4,74 (2,95)	5,54 (2,08)	5,69* (2,19)	5,11 (2,23)	< 0,01	0,58
Zimbabwe	3,63 (2,74)	4,05 (2,84)	4,64* (2,72)	4,20 (2,77)	0,25	0,44
Uganda	5,11 (2,37)	5,58 (2,51)	6,30* (2,30)	5,77 (2,47)	0,04	0,53
Significant deviation	32 % (share of countries)					
Average Dev. Opt.	0,33 (whole sample) 0,38 (watching too much TV) 0,24 (watching too little TV) Highest life satisfaction scores conditioned on TV viewing is marked with a star (*).					

[4] Differences between life satisfaction score of watching TV more than 3 hours compared to the highest life satisfaction score in the remaining categories were tested using Wilcoxon-Mann-Whitney test.

Readers who want to explore the output in full extent will find tables with the parameter estimates from the statistical analysis in the appendix.[5] We make use of a similar set of control variables as Bruni and Stanca (2008). Detailed description of the variables can be found in their paper.

Table 2: Defining the samples used in the analysis

Result	Table	Sample: Countries	Relation to Bruni and Stanca (2008)
1	3a	1: Germany, Spain, USA, Mexico, South Africa, Australia, Norway, Sweden, Finland, Argentina, Switzerland, Puerto Rico, Brazil, Nigeria, Chile, Belarus, India, Taiwan, Lithuania, Latvia, Estonia, Ukraine, Russia, Peru, Venezuela, Uruguay, Moldova, Georgia, Armenia, Azerbaijan, Dominican Republic, Bangladesh, Serbia, Montenegro, Croatia, Bosnia-Hercegovina, Zimbabwe, Uganda	Same countries as included in table 7 in Bruni and Stanca (2008)
2	3b	2: Germany, Spain, Norway, Sweden, Finland, Switzerland, Belarus, Lithuania, Latvia, Estonia, Ukraine, Russia, Serbia, Montenegro, Croatia, Bosnia-Hercegovina	Subsample with European countries of the sample in table 3a
3	4	3: Spain, South Africa, Argentina, Puerto Rico, Peru, Bangladesh, Zimbabwe, Uganda	Subsample of the sample in table 3a consisting of countries that contain information on relational activities and control variables.

Result 1: *Watching television is positively related to life satisfaction (i.e. TV viewers are more satisfied with life than those who do not watch TV). Comparing different degrees of TV viewing, however, people who watch more TV are not more satisfied than those that watch less TV.*

Support: Using sample 1 table 3a presents results from an ordered logit estimation. The positive and significant coefficients of the TV variables imply a positive relation between TV viewing and life satisfaction. A Wald test cannot reject equality between TV viewing coefficients at the 10% significance level. It seems that people that watch more TV are neither more nor less satisfied than others but people who watch some TV are more satisfied than people that watch no TV.

[5] Regressors also include country and time dummies (not presented).

Result 2: W*atching television is not related to life satisfaction in Europe.*

Support: Table 3b presents results from an ordered logit estimation using European countries (sample 2). The positive but insignificant coefficients of the TV variables imply that people watching some TV are neither more nor less satisfied than the group of people watching no TV at all.

Next, we continue with table 4 where relational activities are added in the regression as a control. Note that this comes at the expense of a much reduced sample size (sample 3).

Result 3: *Relational activities are not associated with higher life satisfaction compared to TV viewing.*

Support: First of all, in table 4 we see that watching television up to 3 hours is positively correlated with life satisfaction. Notably, the highest level of TV viewing (watching TV more than 3 hours) is not significant. On the other hand, equality between TV viewing coefficients cannot be rejected at 10% significance level using a Wald test. If we turn to the impact of relational activities on life satisfaction, only the coefficients for time spent for church and sports activities are positive and significant. A Wald test does not reject equality between the coefficient for the highest level of TV viewing and the coefficient for time spent for church and sports activities. Hence, we do not find evidence in line with the claims that people over-consume TV and under-consume relational goods. Finally, comparing the second and the third column we also see that controlling for relational variables has little impact on the other included regressors in the happiness function. Hence, the difference between the life satisfaction and TV viewing relationship is driven by the countries that are included in the analysis and not by the additional control variables.

Summary: The regressions in table 3 for a) the countries used in Bruni and Stanca (2008) and b) only the European countries of their sample show that the effect of a number of variables (income, health, age, etc.) on life satisfaction is positive and significant independently of the sample. In contrast, the impact of TV consumption on life satisfaction is positive and significant in the sample of Bruni and Stanca (2008), while the effect disappears for the sub-sample of European countries. It seems that there is a substantial degree of country-specific heterogeneity in the life satisfaction – TV viewing relationship. This could explain the

discrepancy between Frey et al. (2007) and our result. They found that TV viewers are less satisfied with life based on European countries from the ESS using a different set of countries than our sample. This apparent country-specific heterogeneity has not received attention in previous efforts analyzing the life satisfaction and TV viewing relationship. We believe that the effect of TV on life satisfaction is likely to differ across samples containing different countries. Still, taking interest in average effects across the countries our results do not support that TV viewing has a negative impact on individual happiness.

A shortcoming of the note's analysis is the assumption about exogenous regressors. This goes in line with the model specification in Frey et al. (2007) as well as in Bruni and Stanca (2006). Endogeneity and reversed causality[6] are potentially problematic and could cause bias in all of the parameters in the estimated happiness function. Unfortunately, we do not have sufficient data to model all the variables that potentially might be endogenous (like the related articles). As already mentioned, in the complementary analysis in this note we look at average life satisfaction scores for the different groups of individuals based on TV consumption. The advantage from these simple calculations is that it does not involve strong assumptions which might bias the final results. As we cannot make causal and partial interpretations the question "*do people watching more TV become less satisfied?"* becomes "*are people watching more TV less satisfied"*. Only weak support for the latter proposition is found.

4. Conclusions

Contributing to the literature on happiness Frey et al. (2007) found a negative correlation between TV viewing and life satisfaction and propose that self-control problems in daily life may be an explanation. Bruni and Stanca (2008) argue that heavy TV consumption crowds out relational activities which in turn have a negative causal effect on happiness. Their analysis confirms the finding of Putnam (1995) that TV reduces social capital. Their further story of TV's negative impact on individual happiness seems plausible and the aim of this note is to test its empirical support. We re-examine the argument of a negative causal effect on happiness as there are some problematic features in the empirical approach the authors apply to support their claims.

[6] Depending on their happiness level, people might be more or less willing to engage in different activities (reversed causality) causing problems known as endogeneity in the econometric literature.

Taking a step back from a causal analysis, we look at the raw data first and analyze it non-parametrically. Based on a by-country analysis we find that heterogeneity across countries is substantial. The supposed negative relationship between TV consumption and happiness is a too general claim and might be misleading. Estimating a microeconomic happiness function we then show and confirm that this heterogeneity affects the results substantially when samples containing different countries are analyzed. Using the World Values Survey data and methodological approach of Frey et al. (2007) we do not find support for the conclusions in Bruni and Stanca (2008) that TV viewing has a negative impact on individual happiness. Bruni and Stanca (2008) contribute by highlighting the negative relationship between TV and social interaction (with implications for the aggregate level and social capital). However, further research is necessary to find out what causes the negative correlation between life satisfaction and TV viewing in some countries, while in others no such effect seems to persist.

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Appendix 1

Table 3: Life satisfaction and TV viewing

Dependent variable: life satisfaction	**a) countries from Bruni and Stanca (2008)**			**b) European countries in Bruni and Stanca (2008)**		
	Coefficient	**Standard error**	**P-value**	**Coefficient**	**Standard error**	**P-value**
Income	0.1036	0.0041	0.000	0.1091	0.0064	0.000
Health	0.4315	0.0113	0.000	0.4935	0.0184	0.000
Freedom	0.3067	0.0042	0.000	0.3500	0.0071	0.000
Unemployed	-0.3164	0.0313	0.000	-0.3546	0.0512	0.000
Married	0.3424	0.0201	0.000	0.3815	0.0324	0.000
Education	-0.0004	0.0195	0.982	-0.0489	0.0333	0.142
Education^2	0.0002	0.0017	0.897	0.0056	0.0028	0.048
Age	-0.0623	0.0033	0.000	-0.0731	0.0053	0.000
Age^2	0.0007	0.0000	0.000	0.0008	0.0001	0.000
Male	-0.1020	0.0175	0.000	-0.0931	0.0280	0.001
Religion Important	0.1206	0.0099	0.000	0.0914	0.0147	0.000
Trust	0.0804	0.0203	0.000	0.1488	0.0303	0.000
Honesty	0.0209	0.0037	0.000	0.0274	0.0056	0.000
Voluntary org. dummy	0.0289	0.0234	0.217	0.0267	0.0342	0.435
Active voluntary org. dummy	0.0934	0.0234	0.000	0.0488	0.0366	0.182
TV (1-2 h)	0.1045	0.0358	0.003	0.0397	0.0770	0.606
TV (2-3 h)	0.1143	0.0373	0.002	0.0452	0.0782	0.563
TV (>3 h)	0.1372	0.0385	0.000	0.0906	0.0804	0.260
Pseudo R2	0.11			0.14		
Observations	42,545			16,763		

Table 4: Life satisfaction, TV viewing and relational activities

Dependent variable: life satisfaction	**Incl. Relational Variables**			**Excl. Relational Variables**		
	Coeff.	**St. error**	**P-value**	**Coeff.**	**St. error**	**P-value**
Income	0.1281	0.0104	0.000	0.1304	0.0103	0.000
Health	0.3540	0.0262	0.000	0.3590	0.0261	0.000
Freedom	0.3386	0.0097	0.000	0.3415	0.0096	0.000
Unemployed	-0.3804	0.0611	0.000	-0.3634	0.0602	0.000
Married	0.2699	0.0470	0.000	0.2430	0.0464	0.000
Education	0.0360	0.0438	0.411	0.0450	0.0437	0.303
Education^2	-0.0048	0.0046	0.297	-0.0056	0.0046	0.229
Age	-0.0593	0.0075	0.000	-0.0626	0.0075	0.000
Age^2	0.0007	0.0001	0.000	0.0007	0.0001	0.000
Male	-0.1776	0.0421	0.000	-0.1548	0.0403	0.000
Religion Important	0.0995	0.0285	0.000	0.1151	0.0268	0.000
Trust	-0.0339	0.0542	0.532	-0.0256	0.0540	0.636
Honesty	0.0198	0.0102	0.052	0.0233	0.0101	0.021
Time spent with : family L1	0.0245	0.1391	0.860	-	-	-
Time spent with : family L2	0.1133	0.1355	0.403	-	-	-
Time spent with : family L3	0.1727	0.1301	0.184	-	-	-
Time spent with: friends L1	0.0230	0.1003	0.818	-	-	-
Time spent with: friends L2	0.0513	0.0898	0.568	-	-	-
Time spent with: friends L3	0.1238	0.0889	0.164	-	-	-
Time spent with: colleagues L1	-0.1057	0.0667	0.113	-	-	-
Time spent with: colleagues L2	-0.0771	0.0602	0.201	-	-	-
Time spent with: colleagues L3	-0.0644	0.0533	0.227	-	-	-
Time spent with: church L1	-0.0975	0.0665	0.143	-	-	-
Time spent with: church L2	-0.1007	0.0635	0.112	-	-	-
Time spent with: church L3	0.1049	0.0578	0.070	-	-	-
Time spent with: sport L1	-0.0289	0.0622	0.643	-	-	-
Time spent with: sport L2	0.1970	0.0598	0.001	-	-	-
Time spent with: sport L3	0.1645	0.0605	0.007	-	-	-
Voluntary org. dummy	0.0919	0.0609	0.131	0.1286	0.0598	0.032
Active voluntary org. dummy	-0.0648	0.0598	0.279	-0.0338	0.0593	0.569
TV (1-2 h)	0.1433	0.0698	0.040	0.1428	0.0696	0.040
TV (2-3 h)	0.1432	0.0741	0.053	0.1500	0.0738	0.042
TV (>3 h)	0.0810	0.0791	0.306	0.0897	0.0788	0.255
Pseudo R2	0.10			0.10		
Observations	8,190			8,190		

***** The data on relational time data was collected on the basis of answers to the question: "How often do you spend time with". The first level (not at all) is omitted in the regression. L1 = only a few times a year, L2 = once or twice a month, L3 = weekly).