Does Watching TV Make Us Happy?

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Abstract: The paper studies a major human activity – that of watching TV - where many individuals have incomplete control over, and foresight into, their own behavior. As a consequence, they watch more TV than they consider optimal for themselves and their well-being is lower than what could be achieved.

Mainly people with significant opportunity costs of time regret the amount of time spent watching TV. They report lower subjective well-being when watching TV for many hours. For others, there is no negative effect on life satisfaction from watching TV. Long hours spent in front of a TV are linked to higher material aspirations and anxiety and therewith lower life satisfaction.

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Does Watching TV Make Us Happy?

Watching TV is a very important activity, carried out by most people in the majority of countries. In many countries nowadays, watching TV occupies almost as much time as working. As it is a totally voluntary, freely chosen activity, it seems obvious that people enjoy it, because they would not do it otherwise. They are more satisfied with having the opportunity to watch TV to the extent they do rather than watching less TV or none at all.

This implication is shared by standard neoclassical economic theory. Individuals are assumed to know best what provides them with utility and are free to choose the amount of TV consumption that suits them best. By revealed preference, it follows from the fact that individuals watch so much TV as has been empirically observed that it provides them with considerable utility.

Recent developments, particularly in behavioral economics, cast doubt on this conclusion. The theory of revealed preference has been questioned (see, for instance, Sen 1982; 1995): it is, in general, not possible to infer the utility produced by observing behavior, because individuals do not always act rationally. More concretely, anomalies and biases in behavior have been identified (e.g. Thaler 1992), which undermine the direct link between observed behavior and the utility gained. Individuals may also be subject to habits which they do not have fully under control. They may consume some goods, such as drugs, alcohol or tobacco to a greater extent than they find to be good for themselves. They are subject to a self-control problem (e.g. Schelling 1984), again interfering with the direct relationship proposed by revealed preference theory. As Gruber and Mullainathan (2002) empirically show, predicted smokers, according to their own evaluation, consider themselves to be better off if smoking was restricted by a tax. Finally, individuals may systematically mispredict the utility derived from future consumption (e.g. Loewenstein and Schkade 1999; Loewenstein et al. 2003). In particular, happiness research (for a survey, see Frey and Stutzer 2002b) has empirically shown that individuals overestimate the utility of future income (e.g. Easterlin 2001), at the same time as they underestimate the utility of personal interactions (Frey and Stutzer 2004). The consumption decisions made by individuals are systematically distorted according to their own evaluations.

This paper argues that TV viewing is a case in which the theory of revealed preference does not fully apply: many people watch more TV than they consider good for themselves. The

extent of TV viewing is not generally utility maximizing. Many individuals are subject to a self-control problem, mainly induced by the fact that watching TV offers immediate benefits (e.g. entertainment and relaxation) at very low immediate marginal costs. Many costs (e.g. not enough sleep, underinvestment in social contacts, education or career) are only experienced in the future. Individuals with time inconsistent preferences are therefore unable to adhere to the amount of TV viewing they planned or which, in retrospect, they would consider optimal for themselves. This tendency is aggravated when people mispredict future costs because they underestimate utility from socializing and neglect changes in preference due to TV consumption. Extensive TV viewing is thus understood to be the result of mispredicting utility and a self-control problem, lowering individuals' well-being.

In order to empirically test this proposition, utility is proxied by life satisfaction or reported subjective well-being, as suggested by happiness research. The baseline econometric estimate is consistent with the hypothesis: excessive TV viewers, on average, report lower life satisfaction.

A negative correlation between TV consumption and subjective well-being – while in line with the basic hypothesis – could, however, well be the result of reverse causation. It is quite plausible that unhappy people watch more TV than happy people. This issue can neither be resolved with an extensive set of control variables in a multiple regression analysis nor with panel data. For further analysis of the effect of TV consumption on subjective well-being, we therefore propose two additional empirical tests: (i) The utility costs of extensive TV consumption depend on the opportunity cost of time. (ii) TV viewing affects people's preferences and beliefs.

It is argued that mainly people with significant opportunity costs of time regret the amount of time they spend watching TV. The problem thus primarily affects people with flexible working hours, who can freely transmit time between leisure and work. In contrast, people with low opportunity costs of time, such as retired or unemployed people, or individuals with fixed working hours, are little burdened by their lack of willpower, and therefore experience no significant utility loss, even if they spend many hours in front of a TV. In fact, we find that particularly individuals with time constraints, who watch TV for many hours, report lower life satisfaction. For people with low opportunity cost of time, we measure no negative effect on reported satisfaction with life from watching TV.

In a path analysis, we study whether people who watch more TV report to a greater extent preferences and beliefs that are negatively correlated with subjectively perceived well-being. The results indicate that watching TV is positively related to people's material aspirations, as well as to anxiety levels, and negatively related to their financial satisfaction and trust in others, as well as the perceived relative frequency of social activities.

The results of the paper identify a major human activity in modern life in which individuals have systematically incomplete foresight and control over their own behavior. The utility gained is lower than what it could be.

Section I of this paper discusses TV viewing as a major activity in modern life. Section II reviews the existing literature, including the few studies on TV consumption undertaken in economics, and develops the basic testable hypothesis. The following section III presents the data and section IV gives the results of the basic econometric estimates. The next section deals with the possibility of reverse causation and addresses the role of opportunity costs of time and of changes in preferences and beliefs. Section VI concludes.

I TV Viewing

Leisure activity today is dominated by television. The reduction in (paid and unpaid) working hours achieved over the past decades, resulting in more leisure time, has to a large extent been replaced by watching television. According to time use studies (Robinson and Godbey 1999: 338-347, see also Bittman 1999, Sullivan and Gershuny 2001, Goodin et al. 2002), the average leisure time of adult Americans (19 – 64 years of age) over the period 1965 – 95 rose by 6.2 hours from 34.8 to 41 hours[1]. In the same period of time, TV viewing time rose by 6 hours. In 1995, the average American spent 16 hours a week, or 2 1/4 hours a day, in front of the TV.

Similar trends can be observed for other industrialized countries.[2] Between the 60s and 90s, leisure time in those countries rose, on average, by well over 6 hours to 36 hours per week (Bittman 1998). At the end of the 90s, according to time use studies, TV viewing time in

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[1] Schor (1991) shows that the number of working hours in America has risen, and the amount of leisure time has fallen. But the data supporting this view has been strongly criticized by authors using more accurate diary-based time use data, e.g., Robinson and Godbey (1999: 49-53), Kubey and Czikszentmihalyi (1990: 22).
[2] Denmark, The Netherlands, Finland, Italy, Belgium, Sweden, Germany (East and West), Czechoslovakia, Great Britain, Norway, Poland, France, Yugoslavia, Bulgaria, Hungary, Canada, USA and Australia.

European countries[3] averaged between almost 2 to 2 3/4 hours a day, or between 14 to 19 hours per week (Aliga and Winqvist 2003). 20 percent of the respondents in the European Social Survey 2002/3 indicated that they watch TV for more than 3 hours per day.

Television rating agencies report even higher average viewing times than time use studies: on average, in 2002, Americans watched close to 4 hours, and Europeans somewhat more than 3 hours a day (IP Deutschland 2003). This is due to the fact that the electronic measuring instruments (so-called people's meters) cannot distinguish between primary, secondary and tertiary activities. It is known that many people engage in multi-tasking, for instance watching TV at the same time as cooking. But exclusive TV viewing is still a major activity taking up almost 70% of total TV time (Robinson and Godbey 1999; Grahn et al. 2003).

In view of the huge amount of leisure time spent in front of the TV, it seems obvious that watching TV produces high individual utility. But, in fact, studies suggest that TV viewing is only rated as below average or just average enjoyment. American women, surprisingly enough, even rate it behind cleaning (Robinson and Godbey 1999: 250). Moreover, TV is identified as that activity which would be given up first if another activity would require more time (Robinson and Godbey 1999: 238-239).

II Literature and Basic Hypothesis

(a) An Economic View on TV Demand and Its Consequences

In economics, television has mainly been analyzed from the supply side. Market analyses and market failure, regulations and competition policy, and media production have been major themes[4]. The demand side has received considerably less attention. The few exceptions include, for example, the "uses-and-gratifications" approach (e.g. Rubin 2002), which is close to economics and studies how individuals deal with the media. A lot of work has been devoted to identifying the various functions television fulfills for actual and potential viewers. It is assumed that they compare the utility derived from the functions and maximize it subject to constraints (Jäckel 1992: 248). But this approach has so far led to few empirically testable propositions.

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[3] Denmark, Finland, Belgium, Sweden, Great Britain, Norway, France, Hungary, Estonia, Slovenia.
[4] See e.g. Collins et al. 1988; Compaine and Gomery 2000; Albarran 2002; Alexander 2004.

More standard media economics analyzes how preferences for specific media contents and time budgets determine demand. Some studies, especially in the European tradition (e.g. Heinrich 1994; Kiefer 2003), take the information provided by television as a "merit good" and discuss the legitimacy of government intervention in the media market. A couple of authors (Schröder 1997; Kiefer 2001) consider the harmful effects of TV consumption, and compare it to smoking. They propose regulations in the media market as a self-control mechanism at the social level, similar to introducing taxes on cigarettes (Gruber and Mullainathan 2002).

The household production approach (Becker 1965) studies the demands for leisure and recreation. However, compared to the enormous importance of TV viewing as a leisure activity, only a few studies seek to analyze the determinants of its demand (an early example is Bryant and Gerner 1981) and the utility derived.

On the latter issue, two approaches can be distinguished. The first captures the short run or instant effects by measuring "Activity Enjoyment Ratings". In the context of time use studies, individuals are asked to rate TV viewing compared to other leisure time activities. In the United States, in 1985, with a rating of 7.8 on a scale from 0 to 10, it proved to be valued somewhat higher than the average enjoyment of 7 derived from other activities. Nevertheless, it ranks lower than most other activities undertaken in leisure time (Robinson and Godbey 1999: 243). On the index of positive affect of 900 Texan women constructed by Kahneman and co-workers (2004), TV ranks with 4.2 (on a scale from 0 to 6) roughly in the middle of all activities. With 2.2 hours per week, it is one of the most time consuming activities of these women. With the "Experience Sampling Method", participants are randomly asked how they feel at a particular moment in time, using a beeper or a hand-held computer. On the affect scale, composed of cheerfulness, friendliness, happiness, and sociability, TV viewing is located in the lower part of the scale and can hardly be distinguished from reading, working, hobbies and idling. Eating, social contacts, sports and sex, on the other hand, are clearly higher ranked. Nevertheless, individuals have little inclination to do anything else (Kubey and Csikszentmihalyi 1990). This short-run evaluation captures the momentary affect, but it is difficult to determine the utility individuals would have derived had they done something else.

Some studies analyze more general satisfaction with TV. In a survey undertaken in the United States in 1975, TV was given an average rating of 5.9 points on an enjoyment scale ranging from 0 to 10. It ranks considerably behind most other leisure time activities and below the average of 6.8 of all rated activities. In 1995, TV viewing with 4.8 points ranked even lower

when compared to all other leisure time pursuits (Robinson and Godbey 1999:243, 250). But such surveys are faced with the problem that watching TV is associated with a low ("couch potato") image, and there is a general consensus that most programs are stupid. For that reason, the answers given may reflect what is taken to be socially desirable. It should be noted that surveys on *general* life satisfaction (as used in our study) are not affected by this bias.

Several studies relate TV viewing with subjective well-being. In a study of roughly 3,000 Americans in 1979 (Morgan 1984), people watching a lot of TV considered their life to be more "lousy" on an index consisting of the aspects lonely, boring, depressing, unsatisfying, uneventful and unhappy, and less "great" on an index consisting of the aspects interesting, active, meaningful, fun, fulfilling, stimulating and exciting, compared with people watching less TV. This relationship remains statistically significant when controlling for socio-demographic characteristics. There is, however, no such relationship between TV consumption and a "calm" life, composed of the dimensions happy, comfortable, pleasant, good, secure and peaceful. Using a small sub-sample from the General Social Survey in 1975, a discriminant analysis reveals that non-viewers (that is, people watching less than half an hour a day) are less satisfied "with family life" and are in general "more happy" than viewers (Tankard and Harris 1980). In a random survey of 1,000 West Germans, there is also a negative correlation between the duration of TV viewing and general life satisfaction, controlling for size of household, education and age. The authors (Espe and Seiwert 1987) postulate a causal influence of dissatisfaction with life on TV consumption, but offer no corresponding evidence. In another study for Germany, based on the German Socio-Economic Panel, a curvilinear relationship between the number of hours spent watching TV and life satisfaction is found (Jegen and Frey 2004). Moderate TV consumption is related to higher life satisfaction than no consumption or extensive consumption. Based on panel information, short-term individual variation in TV consumption is not correlated with overall life satisfaction in an economically relevant manner. A recent cross-section study by Shrum et al. (2003), using a sample of 321 Americans, finds a statistically significant negative relationship between TV consumption and life satisfaction. This is mainly due to the positive correlation between TV consumption and materialism, which is in turn negatively related to life satisfaction (see also Kasser 2002). However, the authors only use age and a scale for "socially desired responding" as controls and causality is unclear. A similar negative correlation was found in an earlier study (Sirgy et al. 1998), comparing the situation in the United States and Canada, Australia, Turkey and China. The extent of TV viewing is

positively linked with materialism and negatively linked with life satisfaction in the USA, but much less so in other countries.

Economic research on happiness (see the surveys in Frey and Stutzer 2002b; a) emphasizes that evaluations are relative. Subjective well-being depends on one's relative income compared to the reference group and on the difference between actual and aspired income (Frank 1999; Easterlin 2001; Stutzer 2004). TV brings other people's lives into one's own home, so that one's reference group may extend far beyond the immediate neighborhood. Moreover, what is shown on TV as "reality" is far from being representative; rich people and luxury tend to be overrepresented (Lichter et al. 1994). Based on this idea, Layard (2005) studies the relationship between TV consumption, perceived relative income and happiness, using data from the US General Social Survey. His multiple regression estimates suggest that TV viewing has a negative effect on subjective well-being, partly due to a direct and an indirect effect through subjectively perceived relative income.

The decrease in social capital, and a corresponding increase in TV viewing, has been studied in an aggregate context by Putnam (1995; 2000). He argues that, while TV (and more generally electronic entertainment technology) enables individual tastes to be satisfied more fully, it occurs at the cost of positive social externalities[5], associated more with types of entertainment where people get together with other people as happens with bowling. However, it is difficult to establish a causal relationship. There are only a few studies attempting to isolate causality by analyzing the natural experiment of introducing TV. A certain Canadian city was unable to receive any TV signals up until 1973, due to its location in a steep valley. Otherwise, it was similar to two cities in the vicinity used as control cases. A study by Williams (1986) suggests that the introduction of TV crowded out other activities, in particular those outside the home, such as sports' activities and visiting clubs. It also reduced the reading abilities and creative thinking of children and fostered more aggressive behavior and stereotyped ideas about gender roles. TV also reduced the problem solving capacities of adults. Another study by Hennigan et al. (1982), based on a natural experiment, takes a look at the advent of TV in the United States which, due to technical reasons, took place at different times in different places. Petty crime, but not violent crime, increased. Looking at

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[5] There is a large literature in the social sciences on the negative effects of TV viewing on society, in particular its effect on promoting violence (see e.g. Gunter 1994; Martin and Smith 1997; Sparks and Sparks 2002).

the same time period in the US, Gentzkow (2004) finds that the advent of TV reduced voter turnout.

Corneo (2005) analyzes the possible external effects going along with the individual allocation of work and leisure time. He makes a distinction between social activities, understood as relational goods and TV consumption. The positive correlation between time spent working and time spent watching TV in 11 OECD-countries is explained by the existence of multiple equilibria. Individual utility maximization produces two different but stable equilibria. In one set of countries, there are more intensive social contacts, and people work less and watch less TV. In another set of countries, people work more. As a consequence, social contacts are difficult to coordinate, and people therefore watch more TV, which requires no such coordination. Due to these external effects, individually rational behavior may lead to higher TV consumption than would be social welfare maximizing.

(b) Basic Hypothesis: Watching too much TV

TV lends itself to over-consumption in the sense that the individuals concerned are afterwards sorry that they devoted so much time to viewing. However, it seems difficult to overcome this weakness of will; many people are dissatisfied with their own past behavior, but nevertheless again and again devote more time to watching TV than, according to their own evaluation, is good for them. This is the basic claim we want to address empirically.

The reason why TV lends itself to over-consumption is mainly due to the immediate benefits and the negligible immediate marginal cost of engaging in this activity. One just has to push a button. In contrast to going to the cinema, the theater or any outdoor activity, there is no need to be appropriately dressed before leaving the house, there is no need to buy a ticket and, in many cases, no need to reserve a seat in advance. Watching TV does not require any special physical or cognitive abilities (Kubey and Csikszentmihalyi 1990: 173). Unlike other leisure activities, TV viewing does not need to be coordinated with other persons. It is quite possible to sit alone in front of the TV, while other leisure activities, such as tennis or golf, require a partner with similar time availability and similar preferences. As a consequence, watching TV has, compared with other leisure activities, an exceedingly low or nonexistent entry barrier. At the same time, it offers entertainment value and is considered to be one of the best ways of reducing stress. Moreover, while watching TV, immediate marginal costs are even lower and having a remote control is an invitation to ultra short-term optimization (zapping). Many of the costs resulting from such consumption behavior are not experienced immediately, or not

predicted at all. The negative effects of not enough sleep, for example, only arise the next day, and the consequences of underinvestment in social contacts, education or career take much longer to appear. An increase in one's material aspirations might not be foreseen at all. These characteristics of the consumption good induce many individuals to fall prey to excessive TV viewing.

TV can become a bad habit or even an addiction. The more one sits in front of the TV screen, the lower is one's concentration. According to psychological research (Kubey and Csikszentmihalyi 1990), one becomes more passive and, because the mental challenge decreases, the activity is increasingly evaluated to be less enjoyable and less worthwhile. Stress is reduced during TV viewing, but not afterwards. Many people therefore continue to sit in front of the TV set, even when the activity is no longer considered to be pleasurable. Over the long run, fantasy is diminished, raising dependence on external stimuli (Kubey 1996). As is the case with other addictions (e.g. drugs, see Becker and Murphy 1988), this reduces the marginal utility of a given input, in the case of TV of a given hour of viewing.

Many viewers admit having a bad conscience for watching so much TV, but at the same time report something akin to withdrawal symptoms when they try not to watch. They crave TV and admit being addicted to TV (McIlwraith 1998; Kubey and Czikszentmihalyi 2002). Whether watching TV can really be addictive in a medical or psychological sense is open to discussion. Using the criteria of the diagnostic and statistical handbook of the American Psychiatric Association, which are used in the diagnosis of substance dependence, Kubey (1996) concludes that, according to these criteria, many individuals can theoretically be considered to be dependent on TV consumption. In contrast, in a study involving a small number of people, Finn (1992) doesn't find an analogy between drug dependence and TV dependence and, in a study of 500 Americans, Smith (1986) also finds no evidence for such dependence. While a small number of participants may crave TV, they do not exhibit the classical symptoms of being dependent on noxious substances, such as drugs.

In economic theory, addiction is not necessarily considered to be irrational or suboptimal. In the model of rational addiction (Becker and Murphy 1988), addicts maximize their current and future utility under stable preferences. More recent work questions this rationality assumption in the case of addictive goods. Addictive behavior has, for example, successfully been modeled with time-inconsistent preferences (e.g. O'Donoghue and Rabin 1999a; Gruber and Koszegi 2001; O'Donoghue and Rabin 2002). In these models, individuals, due to their hyperbolic discounting, put more emphasis on the present as compared to all other periods of

time and tend to grab immediate rewards. Gruber and Mullainathan (2002) test empirically if smokers have time inconsistent preferences and are therefore subject to self-control problems. They show that (predicted) smokers would be happier if cigarette taxes were higher. This result is inconsistent with models of rational addiction in which higher prices reduce utility.

Time inconsistent preferences and self-control problems have been confirmed in many laboratory experiments (for an overview see e.g. Frederick et al. 2002), and they have been applied to other areas than addiction.[6] Recent empirical evidence from the field is presented for saving decisions (Angeletos 2001), food consumption (Cutler et al. 2003; Shapiro 2005), job search (DellaVigna and Paserman 2000), labor supply (Fang and Silverman 2004) or health club visits (DellaVigna and Malmendier 2004).

Regarding television consumption, there is some (anecdotal) evidence that individuals may have self-control problems. 40% of US adults and 70% of US teenagers admit that they watch too much TV (Kubey and Czikszentmihalyi 2002). Another interesting observation is that short and long term evaluations of TV consumption tend to diverge – or, as Robinson and Godbey (1999: 299) put it: " We may not enjoy television in general, but the programs we saw last night were pretty good." Some individuals totally abstain from watching TV because they know that they would not otherwise be able to control their television viewing behavior. They cancel their subscription for cable TV in order not to "zap" too much, lock their TV set away in a cupboard or place an uncomfortable chair in front of it. Such self-control mechanisms are not necessary for time consistent individuals. To lower the utility, or raise the cost, of an undesired alternative would be irrelevant and unnecessary.

Here, the role of self-control problems and of mispredicting future costs and benefits in TV viewing is addressed with regard to consumers' utility. It is hypothesized that, for people facing similar restrictions, heavy TV viewing indicates impeded self-control rather than a taste for TV. Accordingly, heavy TV consumption is expected to result in lower utility.[7]

This hypothesis has, of course, to be understood *ceteris paribus*. Individual utility depends on a large number of other factors, which have to be taken into account in order to identify the specific effect of TV on utility. In the empirical analysis, utility is proxied by life satisfaction,

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[6] For formal models of time inconsistent preferences, see e.g. Laibson (1997), O'Donoghue and Rabin (1999b; 1999a) and references mentioned therein.
[7] See O'Donoghue and Rabin (1999b) for a discussion of the problem of welfare comparisons for people with time-inconsistent preferences.

and the effects are partial, controlling for major socio-demographic factors normally included in a happiness equation (see e.g. Frey and Stutzer 2002b; a).

III Data on TV Consumption and Life Satisfaction

In order to empirically test the basic hypothesis on TV over-consumption, the first wave of the European Social Survey (ESS) is used. The ESS is a survey that was carried out in 22 European countries in 2002/2003. In each country, about 1'200 to 3'000 people were interviewed. For 338 observations, data for life satisfaction or television viewing is missing, resulting in a sample of 42'021 observations.

In addition to life satisfaction and television viewing time, the ESS includes a large number of socio-demographic characteristics. Control variables to be used are household income, gender, age, marital status, employment status, education, working time, nationality and type of location.

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". (figure 1) The average life satisfaction amounts to 7.0 (standard deviation 2.3). This average varies considerably between countries, and ranges from 5.6 in Hungary up to 8.4 in Denmark (figure 2). It is sometimes doubted that such life satisfaction data are comparable between nations, as the answers might partly reflect cultural differences. To control for such unobserved differences, country fixed effects are included in the regression analysis.

[Figures 1 & 2 about here]

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 8 categories, ranging from "no time at all" to "more than three hours". About 3 percent of respondents don't watch any television at all, while over 20 percent spend more than 3 hours a day in front of their TV set (figure 3). This percentage varies considerably between countries. While only about 8 percent of respondents in Switzerland watch more than 3 hours TV a day, more than 35 percent do so in Greece (figure 4).

Subjective time use data is often criticized as being inaccurate or biased. "Watching television" might not be understood in the same way by all respondents, and they might not differentiate between television viewing as primary, secondary or even tertiary activity. Respondents might not even correctly remember all the times they were watching television, or they might revert to social norms or images they would like to have of themselves. Many also seem to translate the "average day" into "the average day that you watch television" (Robinson and Godbey 1999: 60). Nevertheless, answers to such questions seem to be a reliable measure for general television viewing behavior. A comparison of US data shows that different measurement methods give similar results. In the 1992 SPPA National Survey with nearly 6,000 respondents (in which a single question, similar to the one in the European Social Survey, was asked about television viewing), the average television viewing time of 3 hours was close to time use data based on much more detailed diary surveys (Robinson and Godbey 1999: 152).

Based on the data described, a microeconomic happiness function is specified. The *Life satisfaction*$_i$ of individual i depends on his or her television consumption TV_i and on personal characteristics X_i, as well as on country specific effects D_l in country l:

$$Life\ satisfaction_i = \beta_0 + \beta_1\ TV_i + \gamma_1\ X_i + \gamma_2\ D_l + \varepsilon_i$$

As the extent of television consumption is captured in a categorical variable with an open-ended category for those spending a lot of time watching TV, TV consumption cannot be included as a continuous variable. Instead, we include dummy variables in the regression equation. Those who watch less than half an hour of television a day form the reference group, because the ones who don't watch TV at all probably represent a special selection of individuals. The 6 categories for people who watch more than half an hour of TV a day are combined into 3 categories.

IV Basic Estimation Results

Table 1 reports the partial correlation between TV consumption and reported life satisfaction. In the first specification, a weighted least square estimator is applied. In view of the categorical nature of the dependent variable, a second specification is added, estimating an ordered probit. The similarities in the relative size of the coefficients indicate that the least squares estimator delivers a satisfactory approximation of the partial correlation. As the least squares results are easier to interpret, they are discussed primarily.

[Table 1 about here]

People who watch less than half an hour of TV a day are more satisfied with their life, ceteris paribus, than people who choose any other level of TV consumption. For those watching TV for anything between half an hour and 2.5 hours, average reported life satisfaction is about 0.11 points lower than in the reference group of people watching for less than half an hour. The estimated effect is even larger for people watching for more than 2.5 hours a day. On average, they report a 0.20 points lower life satisfaction than people in the reference group. All the differences are statistically significantly different from zero, at least at the 95% level. The general finding is thus consistent with the basic hypothesis that extensive TV watching makes people worse off, because it indicates over-consumption due to a self-control problem and misprediction of future costs.

The partial correlation between TV consumption and life satisfaction is estimated for the whole population and is thus representing an average effect of TV viewing across people. It is most likely that some groups of people suffer higher disutility from extensive TV consumption than others. In the next section, ex ante hypotheses (in contrast to ex post rationalization) are formulated about people who are expected to lose the most if they watch TV extensively.

The partial correlation cannot easily be explained as spurious, simply reflecting some specific individual characteristics of people who spend a lot of time in front of the TV. A large set of socio-demographic characteristics that are systematically related with reported life satisfaction and might as well be with TV consumption is taken into consideration. These characteristics include, e.g., respondents' age, sex, nationality, marital status, household income, level of

education, and employment status. The correlation of these variables with reported life satisfaction is discussed in various literature surveys (see, e.g. Frey and Stutzer 2002b). Specifically for the ESS, the determinants of life satisfaction are discussed in Lelkes (2005).

Partial correlations of other factors with life satisfaction allow for the assessment of the size of the effect of TV consumption in relative terms. For example, the difference in life satisfaction between those watching more than 2.5 hours and those watching less than half an hour (0.20) is more than one third of the difference in life satisfaction between people who have never been married and are without a partner and married people (0.54). The difference is about the same as the one between people having upper secondary education and those who simply completed primary school or the first stage of basic education (0.19). Finally, the difference is about one fifth of the life satisfaction differential between unemployed people looking for a job and people in paid work (1.09).

So far, the negative partial correlation between TV consumption and subjective well-being has been interpreted in terms of over-consumption leading to a lower utility level. However, the partial correlation could well be the result of reverse causation. It is quite plausible that unhappy people watch more TV than happy ones. The problem can be attenuated by controlling for as many situational factors as possible in the regression equation. However, it cannot be resolved, neither with an extensive set of control variables in a multiple regression analysis nor with panel data.[8] Ideally, one would need information about exogenous changes in the price of TV consumption, e.g. due to satellite TV being shut down or due to TV being introduced in a new place because of technical innovation. We are not aware of any such event that could be connected to survey data on reported subjective well-being.

We propose a different approach for further analysis of the effect of TV consumption on subjective well-being and for shedding light on the issue of causality. First, additional hypotheses are formulated, exploiting the heterogeneity in the expected effect of TV over-consumption for different groups of people. Second, evidence is collected that extensive TV consumption is related to systematically different preferences and beliefs. This would support the view that there are long-term costs of TV consumption that are very difficult to foresee.

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[8] Panel data allow for the control of *unobserved* time-invariant individual specific factors that affect reported subjective well-being, as well as the explanatory variable of interest. This is not helpful in our analysis, because the entire theory is based on some people suffering from an unobserved time-invariant self-control problem.

V The Role of Opportunity Costs of Time and Changes in Preferences and Beliefs

This section presents two extensions of the basic analysis on the statistical relationship between TV viewing and life satisfaction: (a) Opportunity costs of time are taken into account to assess the reduction in well-being due to self-control problems. (b) A path analysis is conducted to get an idea of the different ways that TV consumption can affect life satisfaction.

(a) Opportunity Costs of Time and the Effect of Watching TV

So far, it has been assumed that self-control problems in TV consumption affect everybody alike. Additional tests of the hypothesis that self-control problems in TV consumption reduce people's utility are possible if different types of individuals can be identified who suffer to a different extent from over-consumption. We propose that individuals with *high opportunity costs of time* can use time more profitably when not watching TV. This includes, for instance, the self-employed (e.g. craftsmen, lawyers, architects or artists) or persons in high positions (e.g. managers, top bureaucrats or politicians), who can freely transfer time from leisure to work. For this group of individuals, the self-control problem of watching too much TV generates considerable costs. Their utility is lower due to their inability to fully control themselves. In contrast, individuals with *low opportunity costs of time* suffer little, if any, disutility when they fail to watch the amount of TV they would consider optimal for themselves. Accordingly, it is hypothesized that TV consumption significantly lowers the life satisfaction of individuals with high opportunity costs of time, while it has no discernible effect on the life satisfaction of individuals with low opportunity costs of time.

Opportunity costs of time cannot be measured directly. Therefore we use different indicators to distinguish between individuals with high and low opportunity costs of time:

(i) People who can freely transfer time between work and leisure tend to have higher (monetary) opportunity costs of time compared to people with fixed working hours. Hence, respondents are assigned to the two groups according to the flexibility of their working hours. Answers to the question "[P]lease say how much the management at your work allows you to be flexible in your working hours?" are given on an 11-point scale ranging from 0 "I have no influence" to 10 "I have complete control". Respondents who indicate a value between 0 and 5 constitute the group with low opportunity costs of time,

while those who give an answer between 6 and 10 form the other group. Only individuals who are employed (at least part time) are included in these sub-samples.

(ii) As a second indicator, employment status and profession are used. Retirees and the unemployed tend to have lots of free time and therefore form the group with low opportunity costs of time. On the other hand, working people, especially those who are self-employed and those in high positions and professions (legislators, senior officials, managers and professionals according to ISCO-88 classification) are assigned to the group with high opportunity costs of time.

Table 2 reports summary statistics for the different groups, as well as for the whole population. The groups divided according to flexibility of working hours do not differ much in most socio-demographic characteristics. The group with high opportunity costs of time watches a bit less TV (e.g. 20% of respondents watch more than 2.5 hours TV a day compared to 25% in the other group) and has a somewhat higher income, as well as a higher level of education. People in this group report, on average, half a point higher life satisfaction (7.56 compared to 6.99) than people in the other group. The groups divided according to employment status and profession differ more with regard to their socio-demographic characteristics. The group with high opportunity costs of time includes more young people and more males, who watch considerably less TV (e.g. only 19% of respondents watch more than 2.5 hours TV a day compared to 48% in the other group) and has a much better education (see also table A.1 in the appendix).

[Table 2 about here]

Table 3 reports the results of linear regression estimates for the different groups according to the different criteria. In order not to overload the table, the regression coefficients for the control variables are not explicitly shown (they are presented in table A.2 in the appendix).

Columns 1 and 2 show the estimation results for sub-samples with high and low opportunity costs of time (according to flexibility of working hours). Individuals in the group with high opportunity costs of time, who watch more television than the reference group, report lower life satisfaction ceteris paribus. The effects are quite considerable. The subjective well-being of viewers who watch half an hour and more television a day is between 0.36 and 0.41 points

lower than that of light viewers spending less than half an hour watching television a day. The effects are statistically significant at the 99% level. The magnitude of the coefficients is almost as great as the difference in life satisfaction between people who are single and without a partner and married people (0.54), and corresponds in the highest category to four tenths of the effect of unemployment (-1.09) (both estimates are taken from the full sample). In contrast, for the group with low opportunity costs of time, no correlation between television consumption and reported life satisfaction is visible. The coefficients of all television viewing categories are not statistically significant and are very small.

[Table 3 about here]

A similar picture emerges when comparing managers, senior officials, legislators and professionals with retirees and unemployed persons (columns 3 and 4 in table 3). Coefficients in the high opportunity costs of time sub-sample are considerable in size. The average life satisfaction of people watching more than 1.5 hours TV a day is between 0.23 and 0.37 lower compared to people who watch less than half an hour a day. These effects are statistically significant at the 95% to 99% level. In contrast, for people with low opportunity costs of time, the coefficients are smaller (between 0.03 and –0.14) and not statistically significant. The coefficient for watching 0.5 to 1.5 hours TV is not statistically significant in either group.

Of course, the question still arises whether the negative correlation for people with high opportunity costs of time is a causal relationship and, if so, in which direction the causality goes. However, it is difficult to understand why dissatisfied people, who have high opportunity costs of time, resort to TV viewing, while other people do not.

(b) TV Viewing and Differences in Preferences and Beliefs

When people make decisions about watching TV, they are expected (and assumed to be able) to assess and to adequately take into consideration for themselves the long-term costs of TV viewing. Recent research on the prediction of future utility challenges the assumption underlying the revealed behavior approach of human well-being (for a survey see Wilson and Gilbert 2003). People systematically underestimate that their preferences change due to processes of adaptation (Loewenstein et al. 2003). Moreover, misprediction of utility is asymmetric, whereby the positive affects of a high material standard of living are

overestimated and the positive affects of activities with strong intrinsic attributes, like socializing, are underestimated (Frey and Stutzer 2004). These aspects of mispredicting utility are directly relevant for TV consumption choice. People are expected to watch too much TV if they underestimate the future costs of TV viewing, due to neglecting social contacts and rising material aspirations.

Previous research has looked at the differences in beliefs and preferences between heavy and light TV viewers, induced by the fact that life portrayed on TV differs systematically from real life. Television programs contain much more violence and chaotic relationships and show many more affluent people and more luxury than exist in real life (e.g. Lichter et al. 1994). People who spend a lot of time watching TV therefore tend to overestimate crime rates, to show more anxiety (Gerbner et al. 2002) and less trust in others (e.g. Gerbner et al. 1980; Signorielli et al. 1995). They overestimate the affluence of others (O'Guinn and Shrum 1997), report higher material aspirations (e.g. Richins 1987; Shrum et al. 2003; 2004) and rate their own relative income lower, which is related to lower subjective well-being (Layard 2005).

We perform a path analysis to shed some light on the long-term consequences of TV consumption and how they correlate with subjective well-being. An analysis is made as to whether people who watch more TV report lower financial satisfaction (keeping household income constant) and tend to believe that it is important to be rich, whether they feel less safe or trust others less and whether they think that they participate less in social activities. Financial satisfaction is captured with the question "[…] how do you feel about your household's income nowadays?" Answers are given on a scale from 1 "living comfortably on present income" to 4 "very difficult on present income", which is reverted for the empirical analysis. Respondents indicate on a scale from 1 to 6 how important it is for them to be rich. They are asked how safe they feel walking in the local area after dark. Answers range from 1 "very safe" to 4 "very unsafe", and this scale is reverted again in order to let higher values reflect a better feeling of safety. Trust is proxied by answers to the question "Generally speaking, would you say that most people can be trusted or you can't be too careful in dealing with people?" Answers range on an 11-point scale from 0 "you can't be too careful" to 10 "most people can be trusted". Finally, respondents are asked: "Compared to other people of your age, how often would you say that you take part in social activities?" Answers range from 1 "much less than most" to 5 "much more than most".

Table 4 presents the weighted least square estimates[9] of the partial correlations between TV viewing and the different measures capturing people's beliefs and preferences. In all five estimations, the coefficients for watching more than 2.5 hours TV show the expected signs and are statistically significant at the 99% level: Heavy TV viewers report lower satisfaction with their financial situation, place more importance on affluence, feel less safe, trust other people less and think that they are involved in less social activities than their peers. The effects are sizeable and (in relation to the respective scale of the dependent variable) are the largest for 'importance of being rich' and 'feeling of safety'. For intermediate levels of TV consumption, there are also positive effects on the importance of being rich and negative effects on the feeling of safety (statistically significant at the 95% to 99% level). There is no statistically significant correlation between intermediate levels of TV consumption and financial satisfaction, trust and perceived relative frequency of social activities[10].

[Table 4 about here]

In the next step, an analysis is made of whether those preferences and beliefs influenced by TV affect reported life satisfaction. Accordingly, the five variables are included in the life satisfaction-television equation. For simplicity, least square estimates are presented, and the intervening variables are included cardinally.[11] Column I presents the results without including any intervening variable (corresponding to the results in table 1). In column II, all five intervening variables are included in the regression. The partial correlations with life satisfaction of all of the variables have the expected signs and are statistically significant at the 99% level. The coefficient for people watching more then 2.5 hours TV is halved and drops from –0.20 in the regression without any intervening variable in column I to –0.11. The coefficients for TV viewing between 0.5 and 2.5 hours are also decreased. Including the intervening variables one by one into the regression equations (columns III to VII in table 5) shows that the indirect effect of TV consumption on life satisfaction is smallest for

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[9] In view of the categorical nature of the dependent variables, ordered probit estimates would be more accurate. However, the results of such estimates differ very little from the OLS estimates. As the latter are easier to interpret, they are presented here. The ordered probit estimates can be obtained from the authors on request.

[10] Absolute frequency of social contacts does not depend statistically significantly on the extent of watching TV.

[11] The respective estimates, with the intervening variables included ordinally, do not differ qualitatively from the ones presented here. They can be obtained from the authors on request.

'importance of being rich' and is of about the same size for the other four variables (looking at the differences in coefficients for more than 2.5 hours TV viewing). Differences for the category of heavy TV consumption are all statistically significant according to the Sobel's test[12].

[Table 5 about here]

The results of the path analysis show that the negative relationship between TV consumption and life satisfaction can partially be explained by differences in beliefs and preferences of people watching more TV. This finding corroborates the hypothesis that there are long-term consequences – or negative internalities – of TV consumption. If these consequences are not completely foreseen, people overestimate the utility from TV consumption and end up at a lower utility level. We are aware that the path analysis does not exclude reverse causation. However, it supports a richer picture of psychological processes involved in people's demand for TV consumption that might help to understand any systematic errors in TV consumption choice.

VI Concluding Remarks

Hardly anybody would deny that watching TV provides pleasure, at least part of the time, and that TV programs create focal points for personal discussions. However, many people report that they would like to spend less time watching TV. Observed consumption behavior might thus be a weak indicator for individuals' pleasure from TV viewing.

This paper argues, and adduces empirical evidence, suggesting that long hours of TV viewing may indicate imperfect self-control, as well as misprediction of the long-term costs of TV consumption, reducing individuals' subjective well-being. Specifically, people with significant opportunity costs of time tend to regret the amount of their own TV viewing. The problem thus primarily affects persons with flexible working hours, who can freely transfer time between leisure and work. People with low opportunity costs of time, such as retired or

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[12] The Sobel's test shows the statistical significance of the indirect path from an explanatory variable (TV consumption) over the intervening variable to the dependent variable (life satisfaction). For OLS, the multiplied coefficients of this path correspond to the difference in coefficients of the explanatory variable in the regressions with and without intervening variable (MacKinnon et al. 1995; MacKinnon et al. 2002).

unemployed people, or individuals with fixed working hours, are little burdened by their weak willpower, and therefore experience no significant utility loss, even if they spend many hours in front of the TV. We find that people who spend a lot of time watching TV report, on average, lower life satisfaction, ceteris paribus. This negative effect is much larger for people with high opportunity costs of time than for those with low opportunity costs of time.

In a path analysis some light is shed on the long-term consequences of TV consumption. We find that heavy TV viewers report lower satisfaction with their financial situation, place more importance on affluence, feel less safe, trust others less and think that they are involved less in social activities than their peers. The effects themselves can explain about half of the negative correlation between TV consumption and life satisfaction.

Do some people really spend too much time in front of the TV and experience a utility loss, or do unhappy people just watch more TV? Both causal directions are plausible and have so far been proposed in the literature. The empirical analysis cannot directly differentiate between the causal directions. However, our results are consistent with the idea, that individuals have self-control problems regarding television consumption, and that these self-control problems translate into considerable utility losses for people with high opportunity costs of time. The utility losses are much less for people with low opportunity costs of time. It is difficult to see why dissatisfied people, who have high opportunity costs of time, resort to watching TV while other people do not.

The paper studies a major human activity in modern life in which individuals have systematically imperfect foresight and control over their own behavior. The utility gained is lower than what could be achieved. This shortcoming in human decision-making is reflected in efforts to reduce this utility loss. Time-constrained individuals resort to all kinds of rules designed to restrict their TV viewing. For instance, they make it a rule to only watch the news, place uncomfortable chairs in front of the TV set, locate the TV set in an unattractive room, or even decide not to have a TV set at all. Despite their efforts, our empirical results suggest that some of the individuals in question are unable to fully compensate for their self-control problem.

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Figure 1: Reported Life Satisfaction in 22 European Countries 2002/2003
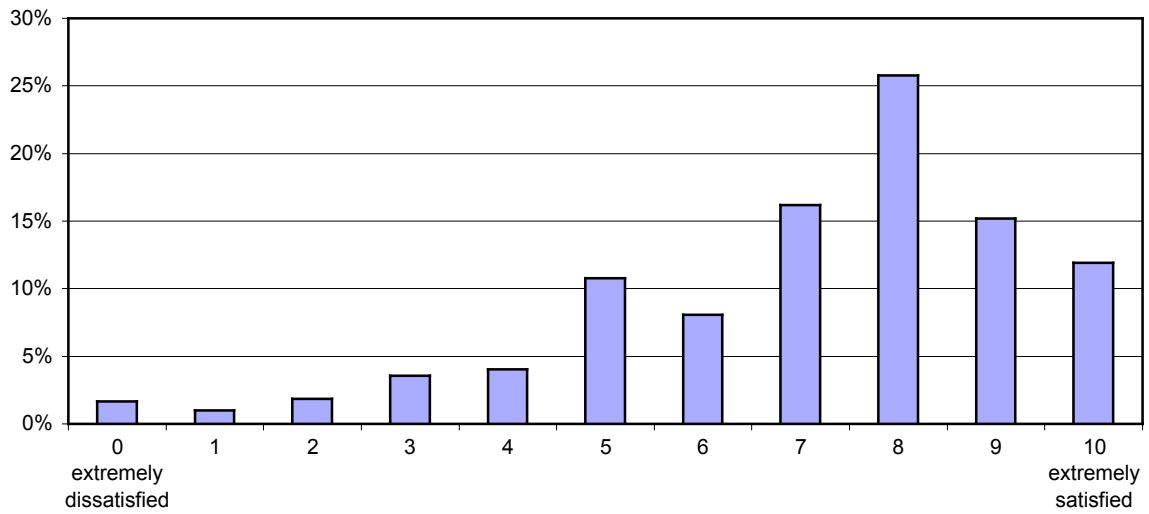
Note: Weighted fractions.
Data source: European Social Survey.

Figure 2: Average Reported Life Satisfaction in 22 European Countries 2002/2003

Note: Reported life satisfaction on a scale from 0 "extremely dissatisfied" to 10 "extremely satisfied;
weighted averages.
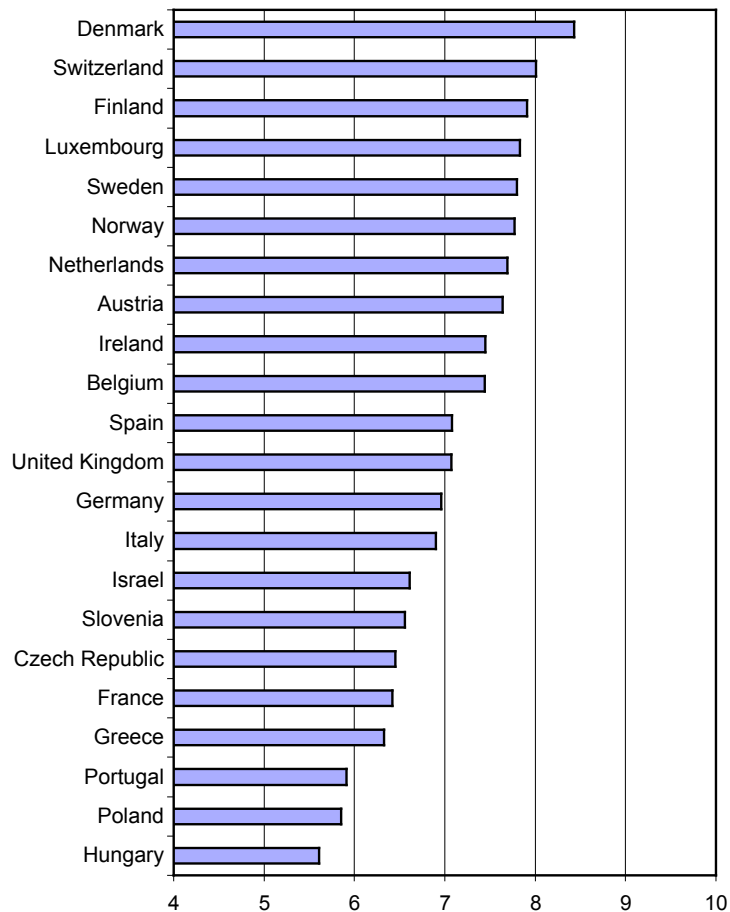*Data source:* European Social Survey.

Figure 3: Reported Television Consumption in 22 European Countries 2002/2003
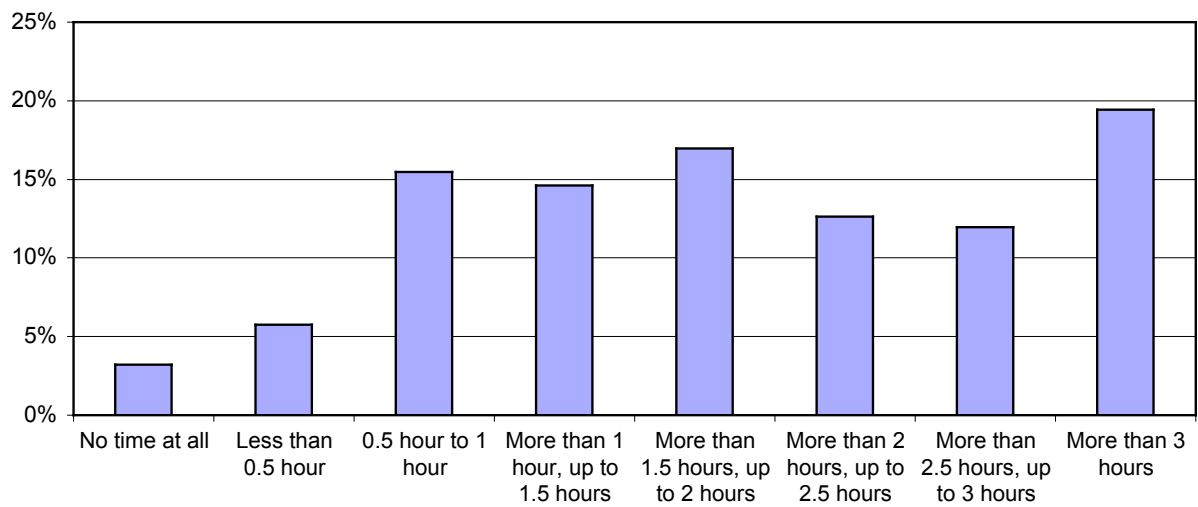
Note: Weighted fractions.
Data source: European Social Survey.
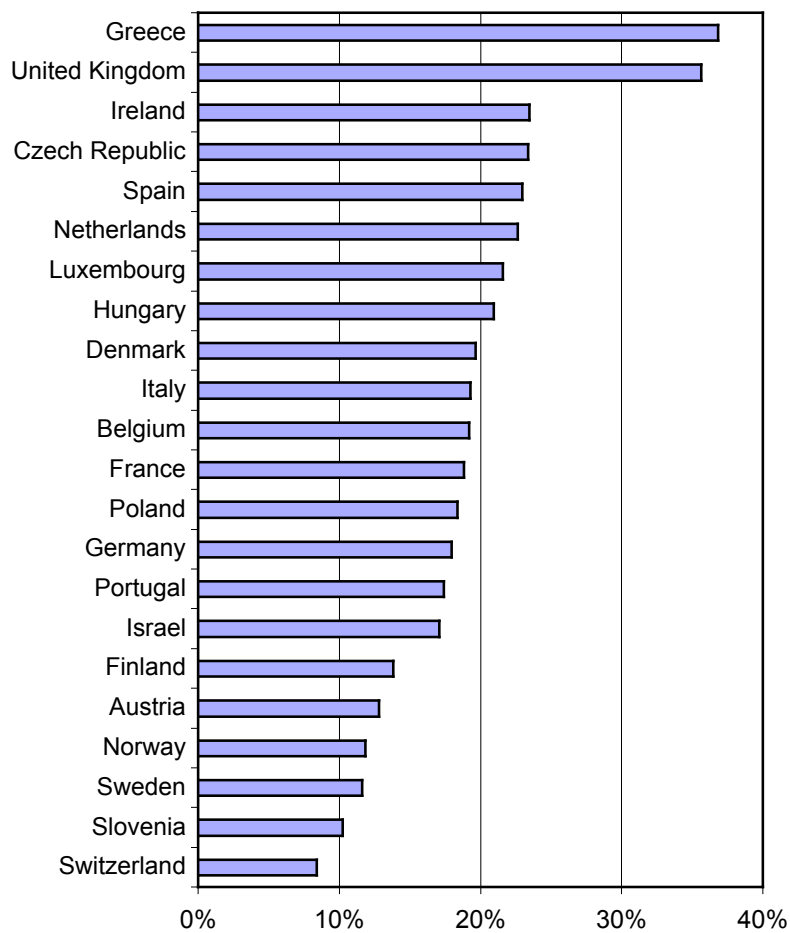
Figure 4: Heavy Television Viewers in 22 European Countries 2002/2003

Note: Weighted fraction of respondents with more than 3 hours reported TV viewing on an average weekday.
Data source: European Social Survey.

Table 1: Television Consumption and Life Satisfaction

Dependent variable:	OLS		Ordered probit	
Life satisfaction	Coefficient	t-value	Coefficient	t-value
No TV at all	-0.037	-0.45	0.024	0.56
Less than 0.5 hour TV	Reference group			
0.5 to 1.5 hours TV	-0.109 *	-2.27	-0.061 *	-2.44
More than 1.5 to 2.5 hours TV	-0.112 *	-2.31	-0.073 **	-2.91
More than 2.5 hours TV	-0.200 **	-3.96	-0.100 **	-3.86
Working hours	0.004	1.28	0.002	0.92
Working hours, squared	-0.00008 *	-2.15	-0.00003 (*)	-1.70
ln (household income)	0.353 **	18.41	0.156 **	16.49
Age	-0.068 **	-14.41	-0.033 **	-13.93
Age, squared	0.0007 **	14.40	0.0003 **	14.02
Male	Reference group			
Female	0.140 **	5.85	0.086 **	7.06
Foreigner	Reference group			
Citizen of country	0.328 **	5.15	0.159 **	4.92
Married, with partner	Reference group			
Married, without partner	-0.951 **	-4.28	-0.425 **	-4.30
Separated, with partner	-0.406 *	-2.03	-0.211 *	-2.15
Separated, without partner	-0.961 **	-8.58	-0.474 **	-9.28
Divorced, with partner	-0.276 **	-3.59	-0.155 **	-3.88
Divorced, without partner	-0.615 **	-10.85	-0.297 **	-10.99
Widowed, with partner	-0.398 *	-2.03	-0.187 *	-1.98
Widowed, without partner	-0.501 **	-8.89	-0.245 **	-8.92
Never been married, with partner	-0.259 **	-5.63	-0.135 **	-5.56
Never been married, without partner	-0.536 **	-12.43	-0.281 **	-13.17
No children at home	Reference group			
Children living at home	-0.200 **	-5.77	-0.105 **	-6.02
Not completed primary education	-0.482 **	-6.04	-0.226 **	-6.09
Primary school or first stage of basic education	Reference group			
Lower secondary school or second stage of basic education	0.108 *	2.47	0.048 *	2.21
Upper secondary education	0.185 **	4.24	0.067 **	3.12
Post secondary school, non-tertiary education	0.350 **	6.45	0.136 **	4.94
First stage of tertiary education	0.331 **	6.76	0.127 **	5.18
Second stage of tertiary education	0.379 **	6.71	0.125 **	4.36
Paid work, employed	Reference group			
Paid work, self-employed	0.031	0.68	0.022	0.96
Unemployed, looking for a job	-1.087 **	-9.60	-0.474 **	-8.66
Unemployed, not looking for a job	-0.690 **	-4.86	-0.293 **	-4.37
Education	0.283 **	3.04	0.124 **	2.59

Table to be continued

Continuation of table 1

Permanently sick or disabled	-1.040 **	-8.45	-0.464 **	-7.88
Retired	0.013	0.15	0.018	0.39
Community or military service	0.374 (*)	1.89	0.169	1.56
Housework, looking after children	-0.020	-0.23	0.005	0.11
Big city	Reference group			
Suburbs	-0.008	-0.20	0.003	0.14
Town, small city	0.048	1.38	0.031 (*)	1.81
Country village	0.166 **	4.74	0.086 **	4.94
Farm, home in countryside	0.240 **	4.69	0.132 **	4.82
Country-fixed effects	Yes		Yes	
Constant	5.943 **	25.92		
Observations	42,021		42,021	
R^2	0.17		0.04	

Notes:
(1) Weighted regressions with robust standard errors.
(2) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.
(3) Variable for household size and dummy variables for highest income category and for the different countries are not shown. Dummy variables for missing observations for income, household size, working hours, gender, marital status, children, education, employment status, and citizenship are not shown as well.
Data Source: European Social Survey.

Table 2: Summary Statistics

Weighted means	Whole population	Flexibility of working hours as distinction criteria		Employment status / profession as distinction criteria	
		Group with high opportunity costs of time	Group with low opportunity costs of time	Group with high opportunity costs of time	Group with low opportunity costs of time
Life satisfaction	7.09	7.56	6.99	7.33	6.77
No TV at all	3.20%	2.85%	2.67%	3.55%	2.71%
Less than 0.5 hours TV	5.74%	6.80%	6.14%	8.88%	2.85%
0.5 to 1.5 hours TV	30.07%	38.76%	33.27%	40.67%	19.38%
More than 1.5 to 2.5 hours TV	29.60%	31.58%	32.73%	27.88%	27.33%
More than 2.5 hours TV	31.39%	20.01%	25.18%	19.02%	47.74%
Working hours	19.25	39.20	38.19	41.03	0
ln (household income)	5.78	6.66	5.96	6.17	5.53
Age	45.01	40.94	39.29	43.64	63.22
Not completed primary education	3.63%	0.36%	1.30%	1.24%	8.34%
Primary school or first stage of basic education	13.18%	4.92%	8.68%	7.50%	22.88%
Lower secondary school or second stage of basic education	23.12%	16.69%	22.54%	13.05%	24.68%
Upper secondary education	32.68%	35.67%	37.65%	24.12%	26.93%
Post secondary, non-tertiary education	8.43%	11.02%	10.02%	9.81%	5.26%
First stage of tertiary education	12.61%	20.39%	12.75%	28.13%	8.28%
Second stage of tertiary education	5.64%	10.69%	6.54%	15.81%	3.19%
Observations	42,021	6,460	7,062	5,950	8,974

Data source: European Social Survey

Table 3: Television Consumption and Life Satisfaction: Opportunity Costs of Time

Dependent variable: Life satisfaction	Flexibility of working hours as distinction criteria		Employment status / profession as distinction criteria	
	Group with high opportunity costs of time	Group with low opportunity costs of time	Group with high opportunity costs of time	Group with low opportunity costs of time
No TV at all	-0.245	0.124	-0.171	-0.350
	(-1.43)	(0.60)	(-0.89)	(-1.30)
Less than 0.5 hours TV		Reference group		
0.5 to 1.5 hours TV	-0.359 **	0.006	-0.070	-0.217
	(-4.01)	(0.06)	(-0.72)	(-1.23)
More than 1.5 to 2.5 hours TV	-0.372 **	-0.001	-0.231 *	-0.033
	(-4.03)	(-0.01)	(-2.23)	(-0.19)
More than 2.5 hours TV	-0.409 **	-0.084	-0.374 **	-0.138
	(-4.03)	(-0.71)	(-3.27)	(-0.81)
Socio-demographic characteristics	Yes	Yes	Yes	Yes
Country-fixed effects	Yes	Yes	Yes	Yes
Constant	6.544 **	5.895 **	6.416 **	6.898 **
	(11.09)	(10.22)	(10.21)	(9.51)
Observations	6,460	7,062	5,950	8,974
R^2	0.13	0.15	0.16	0.22

Notes:
(1) Group 1 contains respondents with flexibility of working hours of 6 and higher on a scale from 0 to 10 and group 2 contains respondents with flexibility of working hours of 5 and lower. In both groups, respondents' employment status is "paid work, employed" and nothing else. Group 3 contains the self-employed, as well as managers, senior officials, legislators, professionals (according to ISCO-88 classification) with employment status "paid work" (employed or self-employed) and nothing else, and group 4 contains retirees and the unemployed with no other employment status.
(2) Weighted linear regressions with robust standard errors.
(3) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.
(4) t-values in brackets.
(5) Variables for working hours, household income, age, gender, citizenship, marital status, children, education, employment status, area of living and household size, and dummy variables for highest income category and for the different countries are not shown. Dummy variables for missing observations for income, household size, working hours, gender, marital status, children, education, employment status, and citizenship are not shown as well.
Data Source: European Social Survey.

Table 4: Television Consumption and People's Beliefs and Preferences

Dependent variable:	(I) Financial satisfaction	(II) Importance of being rich	(III) Feeling of safety	(IV) Trust in people	(V) Social activities
No TV at all	-0.056 *	0.009	-0.002	-0.047	-0.108 **
	(-2.00)	(0.17)	(-0.06)	(-0.52)	(-2.94)
Less than 0.5 hours TV			Reference group		
0.5 to 1.5 hours TV	0.002	0.083 *	-0.061 **	-0.040	-0.008
	(0.10)	(2.52)	(-3.53)	(-0.68)	(-0.35)
More than 1.5 to 2.5 hours TV	0.002	0.162 **	-0.067 **	-0.072	0.007
	(0.14)	(4.85)	(-3.81)	(-1.24)	(0.32)
More than 2.5 hours TV	-0.043 **	0.214 **	-0.089 **	-0.172 **	-0.095 **
	(-2.50)	(6.27)	(-4.96)	(-2.88)	(-4.02)
Socio-demographic characteristics	Yes	Yes	Yes	Yes	Yes
Country-fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	41,520	37,360	41,644	41,865	41,247
R^2	0.36	0.12	0.19	0.17	0.07

Notes:

(1) Dependent variables: Financial satisfaction on a scale from 0 to 3, importance of being rich on a scale from 0 to 5, feeling of safety on a scale from 0 to 3, trust in people on a scale from 0 to 10, perceived relative frequency of social activities on a scale from 0 to 4.

(2) Weighted linear regressions with robust standard errors.

(4) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.

(5) t-values in brackets.

(6) Variables for working hours, household income, age, gender, citizenship, marital status, children, education, employment status, area of living and household size, and dummy variables for highest income category and for the different countries are not shown. Dummy variables for missing observations for income, household size, working hours, gender, marital status, children, education, employment status, and citizenship are not shown as well.

Data Source: European Social Survey.

Table 5: Television Consumption and Life Satisfaction: Intermediate Processes

Dependent variable: Life satisfaction	(I) excl. channels	(II) incl. all channels	(III) incl. financial satisfaction	(IV) incl. importance of being rich	(V) incl. feeling of safety	(VI) incl. trust in people	(VII) incl. social activities
No TV at all	-0.037	0.026	0.001	-0.038	-0.035	-0.029	-0.005
	(-0.45)	(0.33)	(0.01)	(-0.45)	(-0.42)	(-0.35)	(-0.06)
Less than 0.5 hours TV				Reference group			
0.5 to 1.5 hours TV	-0.109 *	-0.091 (*)	-0.111 *	-0.108 *	-0.092 (*	-0.103 *	-0.105 *
	(-2.27)	(-1.95)	(-2.35)	(-2.25)	(-1.93))	(-2.15)	(-2.21)
More than 1.5 to 2.5 hours TV	-0.112 *	-0.87 (*)	-0.114 *	-0.109 *	-0.093 (*	-0.101 *	-0.108 *
	(-2.31)	(-1.85)	(-2.40)	(-2.24)	(-1.94))	(-2.09)	(-2.25)
More than 2.5 hours TV	-0.200 **	-0.108 *	-0.169 **	-0.195 **	-0.1.74 **	-0.173 **	-0.171 **
	(-3.96)	(-2.20)	(-3.40)	(-3.85)	(-3.49)	(-3.45)	(-3.41)
Channels:							
Financial satisfaction		0.659 **	0.736 **				
		(37.40)	(41.28)				
Importance of being rich		-0.037 **		-0.039 **			
		(-3.84)		(-3.90)			
Feeling of safety		0.170 **			0.285 **		
		(10.44)			(17.03)		
Trust in people		0.126 **				0.158 **	
		(24.28)				(29.87)	
Social Activities		0.221 **					0.295 **
		(17.65)					(22.58)
Socio-demographic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations				42,021			
R^2	0.17	0.25	0.22	0.17	0.18	0.20	0.19
t-test Sobel:							
0.5 to 1.5 hours TV			0.10	-2.16 *	-3.45 **	-0.68	-0.35
More than 1.5, up to 2.5 hours TV			0.14	-3.18 **	-3.72 **	-1.24	-0.32
More than 2.5 hours TV			-2.50 *	-3.50 **	-4.76 **	-2.87 **	-3.95 **

Notes:

(1) Channels: Financial satisfaction on a scale from 0 to 3, importance of being rich on a scale from 0 to 5, feeling of safety on a scale from 0 to 3, trust in people on a scale from 0 to 10, perceived relative frequency of social activities on a scale from 0 to 4.

(2) Weighted linear regressions with robust standard errors.

(4) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.

(5) t-values in brackets.

(6) Variables for working hours, household income, age, gender, citizenship, marital status, children, education, employment status, location and household size, and dummy variables for highest income category and for the different countries are not shown. Dummy variables for missing observations for financial satisfaction, importance of being rich, feeling of safety, trust in people, social activities, income, household size, working hours, gender, marital status, children, education, employment status, and citizenship are not shown as well.

(7) Sobel's t-test for the difference in coefficients with and without intervening variable.

Data Source: European Social Survey.

Appendix

Table A.1: Summary Statistics

Weighted means	Whole population	Flexibility of working hours as distinction criteria		Employment status / profession as distinction criteria	
		Group with high opportunity costs of time	Group with low opportunity costs of time	Group with high opportunity costs of time	Group with low opportunity costs of time
Life satisfaction	7.09	7.56	6.99	7.33	6.77
No TV at all	3.20%	2.85%	2.67%	3.55%	2.71%
Less than 0.5 hours TV	5.74%	6.80%	6.14%	8.88%	2.85%
0.5 to 1.5 hours TV	30.07%	38.76%	33.27%	40.67%	19.38%
More than 1.5 to 2.5 hours TV	29.60%	31.58%	32.73%	27.88%	27.33%
More than 2.5 hours TV	31.39%	20.01%	25.18%	19.02%	47.74%
Working hours	19.25	39.20	38.19	41.03	0
ln (household income)	5.78	6.66	5.96	6.17	5.53
Age	45.01	40.94	39.29	43.64	63.22
Male	48.02%	58.51%	55.88%	65.26%	52.60%
Female	51.87%	41.46%	44.02%	34.69%	47.33%
Citizen of country	95.81%	95.31%	93.78%	96.11%	97.43%
Married, with partner	56.60%	60.76%	58.52%	67.16%	57.31%
Married, without partner	0.35%	0.37%	0.41%	0.34%	0.56%
Separated, with partner	0.28%	0.41%	0.36%	0.44%	0.16%
Separated, without partner	1.01%	1.04%	1.14%	1.08%	0.86%
Divorced, with partner	1.57%	2.32%	1.88%	2.15%	1.28%
Divorced, without partner	3.94%	4.57%	4.56%	3.60%	4.76%
Widowed, with partner	0.39%	0.15%	0.07%	0.11%	1.04%
Widowed, without partner	6.49%	1.17%	1.16%	1.57%	20.00%
Never been married, with partner	5.99%	10.14%	8.38%	7.29%	1.61%
Never been married, without partner	22.93%	18.71%	23.07%	15.87%	12.13%
Children living at home	43.36%	52.80%	51.86%	55.68%	24.49%
Not completed primary school education	3.63%	0.36%	1.30%	1.24%	8.34%
Primary school or first stage of basic education	13.18%	4.92%	8.68%	7.50%	22.88%
Lower secondary school or second stage of basic education	23.12%	16.69%	22.54%	13.05%	24.68%
Upper secondary education	32.68%	35.67%	37.65%	24.12%	26.93%
Post secondary, non-tertiary education	8.43%	11.02%	10.02%	9.81%	5.26%
First stage of tertiary education	12.61%	20.39%	12.75%	28.13%	8.28%

Table to be continued

Second stage of tertiary education	5.64%	10.69%	6.54%	15.81%	3.19%
Paid work, employed	41.35%	100.00%	100.00%	50.50%	0.00%
Paid work, self-employed	8.38%	0.00%	0.00%	49.50%	0.00%
Unemployed, looking for a job	2.89%	0.00%	0.00%	0.00%	12.60%
Unemployed, not looking for a job	1.44%	0.00%	0.00%	0.00%	6.65%
Education	9.15%	0.00%	0.00%	0.00%	0.00%
Permanently sick or disabled	1.91%	0.00%	0.00%	0.00%	0.00%
Retired	18.01%	0.00%	0.00%	0.00%	80.74%
Community or military service	0.34%	0.00%	0.00%	0.00%	0.00%
Housework, looking after children	11.82%	0.00%	0.00%	0.00%	0.00%
Big city	17.38%	16.28%	18.38%	18.69%	16.78%
Suburbs	14.16%	18.39%	12.71%	15.54%	13.44%
Town, small city	28.82%	28.19%	30.87%	26.06%	29.94%
Country village	32.40%	30.21%	31.78%	30.00%	32.66%
Farm, home in countryside	6.81%	6.68%	5.83%	9.47%	6.83%
Observations	42,021	6,460	7,062	5,950	8,974

Data source: European Social Survey

Table A.2: Television Consumption and Life Satisfaction: Opportunity Costs of Time

Dependent variable: Life satisfaction	Flexibility of working hours as distinction criteria		Employment status / profession as distinction criteria	
	Group with high opportunity costs of time	Group with low opportunity costs of time	Group with high opportunity costs of time	Group with low opportunity costs of time
No TV at all	-0.245	0.124	-0.171	-0.350
	(-1.43)	(0.60)	(-0.89)	(-1.30)
Less than 0.5 hours TV		Reference group		
0.5 to 1.5 hours TV	-0.359 **	0.006	-0.070	-0.217
	(-4.01)	(0.06)	(-0.72)	(-1.23)
More than 1.5 to 2.5 hours TV	-0.372 **	-0.001	-0.231 *	-0.033
	(-4.03)	(-0.01)	(-2.23)	(-0.19)
More than 2.5 hours TV	-0.409 **	-0.084	-0.374 **	-0.138
	(-4.03)	(-0.71)	(-3.27)	(-0.81)
Working hours	0.005	0.007	0.015 *	
	(0.91)	(1.05)	(2.15)	
Working hours, squared	-0.0001	-0.0001	-0.0002 *	
	(-1.32)	(-1.55)	(-1.55)	
ln (household income)	0.288 **	0.307 **	0.325 **	0.364 **
	(5.68)	(6.45)	(6.66)	(8.31)
Age	-0.060 **	-0.070 **	-0.084 **	-0.097 **
	(-3.37)	(-4.22)	(-4.81)	(-7.07)
Age, squared	0.0006 **	0.0008 **	0.0008 **	0.0008 **
	(2.97)	(3.95)	(4.28)	(7.72)
Male		Reference group		
Female	-0.008	0.172 **	0.158 **	0.169 **
	(-0.14)	(3.11)	(2.69)	(2.90)
Foreigner				
Citizen of country	0.378 **	0.262 (*)	0.438 **	0.351 (*)
	(2.96)	(2.00)	(2.89)	(1.66)
Married, with partner		Reference group		
Married, without partner	-1.101 **	-0.708	-0.319	-1.171 *
	(-2.58)	(-1.47)	(-1.12)	(-2.43)
Separated, with partner	-0.166	-0.410	-0.228	0.226
	(-0.43)	(-0.87)	(-0.74)	(0.51)
Separated, without partner	-0.602 *	-1.088 **	-0.991 **	-1.152 **
	(-2.34)	(-4.74)	(-4.34)	(-3.77)
Divorced, with partner	-0.058	-0.405 *	-0.187	-0.569 **
	(-0.40)	(-2.40)	(-1.24)	(-3.09)
Divorced, without partner	-0.277 *	-0.530 **	-0.662 **	-0.560 **
	(-2.28)	(-4.21)	(-4.40)	(-4.40)
Widowed, with partner	-0.283	-1.331	-2.084 **	-0.329
	(-0.48)	(-1.29)	(-2.91)	(-1.18)
Widowed, without partner	-0.400	-0.930 **	-0.446 (*)	-0.399 **
	(-1.42)	(-3.64)	(1.77)	(-4.30)
Never been married, with partner	-0.111	-0.113	-0.223 *	-0.301
	(-1.38)	(-1.22)	(-2.08)	(-1.33)
Never been married, without partner	-0.420 **	-0.488 **	-0.593 **	-0.681 **
	(-4.92)	(-5.55)	(-6.28)	(-5.54)
No children at home		Reference group		
Children living at home	-0.089	-0.155 *	-0.126	-0.305 **
	(-1.11)	(-1.96)	(-1.49)	(-3.13)

Continuation of table A2

Not completed primary school education	0.008 (0.01)	-0.201 (-0.70)	0.297 (0.99)	-0.517 ** (-4.29)
Primary school or first stage of basic education		Reference group		
Lower secondary school or second stage of basic education	0.122 (0.80)	0.199 (1.57)	0.255 (1.63)	0.068 (0.79)
Upper secondary education	0.084 (0.57)	0.211 (*) (1.72)	0.215 (*) (1.83)	0.173 (*) (1.90)
Post secondary, non-tertiary education	0.184 (1.14)	0.331 * (2.36)	0.323 (*) (1.89)	0.405 ** (3.31)
First stage of tertiary education	0.186 (1.24)	0.512 ** (3.84)	0.308 * (1.97)	0.204 (1.82)
Second stage of tertiary education	0.176 (1.15)	0.444 ** (2.97)	0.197 (1.21)	0.578 ** (4.03)
Paid work, employed			Reference group	
Paid work, self-employed			-0.117 (*) (-1.74)	
Retired				Reference group
Unemployed, looking for a job				-1.506 ** (-10.51)
Unemployed, not looking for a job				-1.093 ** (-6.76)
Big city		Reference group		
Suburbs	0.091 (1.10)	0.100 (1.00)	-0.054 (-0.59)	0.116 (1.21)
Town, small city	0.091 (1.13)	0.208 ** (2.60)	-0.060 (-0.74)	0.106 (1.26)
Country village	0.197 * (2.41)	0.255 ** (3.10)	0.044 (0.53)	0.353 ** (4.09)
Farm, home in countryside	0.409 ** (3.53)	0.284 * (2.33)	0.208 (*) (1.82)	0.447 ** (3.84)
Country-fixed effects	Yes	Yes	Yes	Yes
Constant	6.544 ** (11.09)	5.895 ** (10.22)	6.416 ** (10.21)	6.898 ** (9.51)
Observations	6,460	7,062	5'950	8,974
R^2	0.13	0.15	0.16	0.22

Notes:

(1) Group 1 contains respondents with flexibility of working hours of 6 and higher on a scale from 0 to 10 and group 2 the people with flexibility of working hours of 5 and lower. In both groups, respondents' employment status is "paid work, employed" and nothing else. Group 3 contains the self-employed, as well as managers, senior officials, legislators and professionals (according to ISCO-88 classification) with employment status "paid work" (employed or self-employed) and nothing else and group 4 contains retirees and the unemployed with no other employment status.

(2) Weighted linear regressions with robust standard errors.

(3) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.

(4) t-values in brackets.

(5) Variable for household size and dummy variables for highest income category and for the different countries are not shown. Dummy variables for missing observations for income, household size, working hours, gender, marital status, children, education, employment status, and citizenship are not shown as well.

Data Source: European Social Survey.