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Dissatisfied with life, but having a good day: time-use and well-being of the unemployed

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Dissatisfied with life, but having a good day: time-use and well-being of the unemployed

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Abstract

We apply the Day Reconstruction Method to compare unemployed and employed people with respect to their subjective assessment of emotional affects, differences in the composition and duration of activities during the course of a day, and their self-reported life satisfaction. Employed persons are more satisfied with their life than the unemployed and report more positive feelings when engaged in similar activities. Weighting these activities with their duration shows, however, that average experienced utility does not differ between the two groups. Although the unemployed feel sadder when engaged in similar activities, they can compensate this by using the time the employed are at work in more enjoyable ways. Our finding that unemployment affects life satisfaction and experienced utility differently may be explained by the fact that people do not adjust their aspirations when becoming unemployed but face hedonic adaptation to changing life circumstances, triggered by the opportunity to use the time in a way that yields higher levels of satisfaction than working.

JEL Classification: I31, J60, J22

Keywords: unemployment, happiness, life satisfaction, Day Reconstruction Method, experienced utility

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1. Introduction

Unemployment makes people unhappy. When asked “All things considered, how satisfied are you with your life as a whole these days?”, unemployed report lower life satisfaction than employed people. This holds even after controlling for a large number of other influences, including the respondents’ income, social contacts or health.¹ These answers represent a respondent’s personal assessment of general life satisfaction, but give only limited insights into what makes people unhappy when they are unemployed or what makes them happy when they are employed.

Life satisfaction is a cognitive, judgmental construct of happiness. When asked to assess their satisfaction with life, respondents have to create a reference framework of what constitutes a satisfied life (Diener et al. 1985). To do so, people compare their own life circumstances with those of other people at the same time and with their own life at other points in time (Dolan and Kahneman 2008). They also ask about purpose and meaning in life, something that certainly transcends day-to-day experiences (Loewenstein 2009). Employment plays a crucial role in judging one’s life satisfaction. People usually see “being employed” as a desirable aspect of life because it gives their lives meaning and helps them to obey a cultural work ethic.² If people become unemployed, they deviate from this reference framework and are hardly able to adapt to the new situation (Lucas et al. 2004).

Instead of asking about their life satisfaction in general one could ask people about how they feel in specific situations during the course of a day. This yields an alternative measure of subjective well-being that assesses the emotional, affective components of happiness. Abstract issues, such as a transcendental purpose of life or social comparisons, play a much smaller role for such momentary hedonic well-being, i.e. *experienced utility*, than for life satisfaction. The attention drawn to these issues when asked about general life satisfaction is not present in their daily experiences (Kahneman et al. 2006). It would thus be conceivable that the unemployed are able to adjust their daily routines to their changed life circumstances and do not report feelings that are much different from those of the employed people.

¹ See, for example, Clark and Oswald (1994), Winkelmann and Winkelmann (1998), Di Tella et al. (2001), Clark (2003), and Blanchflower and Oswald (2004) for income, Helliwell and Putnam (2005) and Winkelmann (2006) for social contact, and Deaton (2008) and Böckerman and Ilmakunnas (2009) for health.

² For evidence on the social norm of employment, see Clark (2003) for Great Britain, Shields et al. (2008) for Australia, and Clark et al. (2008) for Germany.

In this paper, we want to compare the general life satisfaction of employed and unemployed persons with these persons' well-being on a specific day of their life, measured on a moment-to-moment basis. For this purpose, we conduct a survey in which we not only collect data about life satisfaction and life circumstances in general, but also apply the Day Reconstruction Method (DRM), which provides an appropriate new tool to measure instant well-being over the course of one day by combining features of time-budget measurement and experience sampling (Kahneman et al. 2004a,b). The DRM asks respondents to construct a diary of the previous day consisting of all activities the person engages in during the day. The respondents describe each episode, what they did, with whom they interacted, and what feelings and emotions they experienced during that activity.

In a study similar to the DRM, Krueger and Mueller (2008) compare the emotional well-being of employed and unemployed persons during similar activities and find that the unemployed report feeling more sadness, stress and pain than the employed. The well-being gap between the two groups is particularly large during job-search activities and while watching television. This result suggests that the results from analyses of general life satisfaction also show up in the measurement of experienced utility.

But would the unemployed really improve their day-to-day experiences when taking up employment? In a DRM study with employed women, Kahneman et al. (2004a,b) find that positive feelings are strongest during leisure activities and when interacting with friends and family, while negative feelings prevail mostly during episodes of work and work-related activities. Taking up employment would thus imply that people have to substitute less enjoyable working time for more enjoyable leisure activities. Experienced utility over the course of the day thus depends on two effects. First, there is a *saddening effect* of being unemployed, i.e. the unemployed feel strictly worse than the employed if both spend their time in exactly the same activities over the entire day. Second there is a *time-composition effect*, i.e. unemployed and employed differ in how they spend their time. This time-composition effect works against the saddening effect so that it is *a priori* unclear which of the two groups feels better over the course of the day.

In this paper, we empirically identify the saddening and time-composition effect and compare the overall effect with self-reported general life satisfaction. We therefore conducted a DRM study in Germany, in which we collected data on how employed and unemployed people use their time on a specific day, their affect levels during all activities they were

engaged in during the course of that day, their general life satisfaction and their general life circumstances. This enables us to compare unemployed and employed people with respect to i) differences in the assessment of general life satisfaction, ii) the differences in the assessment of emotional affects, iii) the differences in the composition of activities during the whole course of the day, and iv) the difference in the duration of these activities.

Our results first show that unemployed persons report substantially lower levels of satisfaction with their lives in general. We also find that employed people rank working and work-related activities among the least enjoyable activities but experience more positive feelings than the unemployed when engaged in similar activities. These results are in line with previous research.

However, when measuring a person's experienced utility with the integral over the instant (or momentary) utility over the course of the day (Kahneman et al. 1997, Kahneman 1999), we find that an unemployed person's experienced utility does not differ from that of an employed person. The unemployed are able to compensate the utility gap from the time spent in similar activities by using the time during which the employed have to work for more enjoyable activities. The two distinct effects – the saddening effect and the time-composition effect – become particularly transparent when we consider Sunday and working days separately. On Sunday, when the time-composition effect is not at work, the employed people report higher experienced utility than the unemployed while on weekdays these differences are almost wiped out. These results show up for three different measures of the momentary experienced utility that take the duration of the activities into account: the *net affect* (Bradburn 1969), the *U-index* (Kahneman and Thaler 2006), and a duration-weighted measure of *episode satisfaction* (White and Dolan 2009).

The apparent paradox that people are unhappy because they are unemployed but happy to spend their time in other ways than working may be explained by the way in which people adapt to unemployment. Our results suggest that unemployment does not cause people to adapt their aspirations. They continue to consider “being in employment” as a desirable and meaningful part of their life. However, unemployed people face hedonic adaptation in so far as they become used to changing life circumstances in their day-to-day experiences. The driving force for hedonic adaptation is the opportunity to use the time in a way that yields higher levels of satisfaction than working and work-related activities.

We will proceed as follows. The next section describes the Day Reconstruction Method and documents our survey. Section 3 presents the database and descriptive statistics and Section 4 contains the empirical results that compare global life satisfaction with experienced utility. The last section discusses the main implications and concludes.

2. Methodology

2.1. The Day Reconstruction Method

If we want to measure peoples' happiness on a moment-to-moment basis, we have to know how they spend their time and how they feel during any activity they engage in. The most direct way to do this would be to collect information on people's reported feelings in real time in natural settings at selected moments of the day. The Experience Sampling Method (ESM) provides such a method (Csikszentmihalyi and Larson 1987; Csikszentmihalyi 1990; Stone and Shiffman 1994). Participants in ESM studies carry a handheld computer which asks them several times a day about the activity they are engaged in, their location, the time, and the people with whom they are interacting. They are also asked to what extent they experienced a number of subjective feelings, such as anger, happiness, tiredness, or impatience immediately before being prompted by the machine. The advantage of ESM is that it allows the measurement of experienced utility without any distortions caused by aspirations, retrospective evaluations, or memory effects. Only few studies, however, have been carried out due to the high costs of the survey design, the burden ESM places on participants, and difficulties in conducting such a study on a large scale. Moreover, data collected through ESM could suffer from biases that interrupt the flow of an experience due to the invasive nature of the questioning method and from the high prevalence of missing values, which could be non-random (Csikszentmihalyi and Hunter 2003).

So as to avoid any interruptions in the experience flow while keeping the advantage of a short recall period to measure experienced utility, Kahneman et al. (2004b) developed the Day Reconstruction Method (DRM). The DRM is a combination of a time-use study and the measurement of affective experiences. The respondents are asked to produce a diary of all activities they engaged in the preceding day, beginning with the first one after waking up and concluding with the last one before going to bed. Once the preceding day has been structured in the diary, respondents describe each activity by answering questions concerning what they exactly did during that activity and with whom they interacted. As is the case in experience

sampling, they are then given a list of positive and negative feelings and are asked to evaluate how strongly they felt each of these emotions during this particular episode. The advantages of DRM over ESM are that it imposes a considerably smaller burden on respondents, does not disrupt normal activities, assesses all episodes over the entire day and not just particular moments, and provides time-budget information. Kahneman et al. (2004a) also show that DRM and ESM lead to similar results. Hence, DRM provides an efficient approximation to the results of the ESM (Kahneman and Krueger 2006).

One way to conduct comparisons of the experienced utility between different individuals is to aggregate the respondents' assessments of the various emotions into a unique index number. For each activity, respondents evaluate a range of feelings, which are either positive (e.g., "happy", "enjoy myself", "friendly") or negative (e.g., "depressed", "angry", "frustrated"), on a scale from, for example, 0 to 10. One common measure of mood that aggregates these answers is *net affect*. Net affect A is defined as the difference between the average score the respondent gives to all positive attributes and the average score of all negative attributes. Defining A_{ij} as person i 's net affect during activity j , we have

$$A_{ij} = \frac{\sum_{l=1}^L PA_{ij}^l}{L} - \frac{\sum_{k=1}^K NA_{ij}^k}{K}, \quad (1)$$

where PA_{ij}^l represents the affect score of the l -th (out of L) positive emotion person i reports for activity j , and NA_{ij}^k represents the affect score of the k -th (out of K) negative emotion. Kahneman et al. (2004b) propose calculating a person's experienced utility as the integral of the stream of pleasures and pains associated with events over time so that

$$A_i = \sum_j h_{ij} A_{ij}, \quad (2)$$

where h_{ij} is the fraction of total waking time person i spends on activity j . To aggregate emotional affects according to , one has to assume that net affect is a cardinal measure, that utility is time-separable, and that the measure of net affect is a meaningful representation of the utility derived from an experience. Kahneman et al. (2004b) provide evidence of the correlation between net affect and objective circumstances that suggests that the use and interpersonal comparisons of affect measures are meaningful and add useful information to our understanding of well-being.

The net affect-measure preserves much of the original information even after aggregation (in particular, the strength of positive and negative emotions), but suffers from the disadvantage any cardinal measure possesses: it is unclear what the scale of measurement really refers to and whether different people interpret the scale in the same way. These issues are addressed by the *U-index* (for “unpleasant” or “undesirable”) that does not require a cardinal conception of individuals’ feelings. Kahneman and Krueger (2006) define the U-index as the proportion of time in which the highest-rated feeling was a negative one. The U-index can be computed for each individual, i.e. the fraction of a person’s waking time that is spent in an unpleasant state, or for each activity, i.e. the fraction of the time people spend on a specific activity that is experienced as unpleasant (Krueger et al. 2009). The U-index for person i engaged in activity j is defined by

$$U_{ij} = \begin{cases} 1 & \text{if } \max \{ NA_{ij}^1, \dots, NA_{ij}^k, \dots, NA_{ij}^K \} > \max \{ PA_{ij}^1, \dots, PA_{ij}^l, \dots, PA_{ij}^L \} \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

The U-index for individual i is calculated by weighting the U-index for each activity, U_{ij} , by the fraction of time the individual was engaged in that activity, h_{ij} :

$$U_i = \sum_j h_{ij} U_{ij} \quad (4)$$

The U-index for activity j is then given by

$$U_j = \sum_i h_{ij} U_{ij} / \sum_i h_{ij} \quad (5)$$

According to Kahneman and Krueger (2006), the U-index has the favorable property that it relies only on an ordinal ranking of feelings. In particular, the U-index is independent of scale effects. If one person uses only values between 2 and 4 to characterize his feelings, while another person uses the full scale from 0 to 6 but ranks his feelings in the same order, both people will have the same U-index (whereas the same does not necessarily hold for net affect).

Other authors have questioned the validity of the U-index as an ordinal measure. Layard (2009) claims that if the assessment of feelings is truly ordinal, the U-index does not overcome the problem that the reported strength of feelings cannot be aggregated in a meaningful way. Suppose, for example, that two people have the same “true”, but unobservable strengths of feelings. Both people use the 11-point-scale in different ways.

Person A tends to use the upper part of the scale for positive feelings and the lower part for negative feelings, while person B uses the upper part for negative feelings and the lower part for the positive ones. The ordinal ranking of activities according to each feeling is unaffected by this difference in the use of the scale. The U-index, however, will be much lower for person A than for person B. Layard's (2009) critique of the U-index is that it does not overcome the ordinality problem, but loses a lot of information compared to other directly cardinal measures. Loewenstein (2009) argues that the U-index depends substantially on what emotions are included in the questionnaire. Even if people are able to assess the strength of the various emotions they experienced, it is not clear how these emotions should be weighted against each other. "Ecstatic" is a stronger feeling than "happy". If the emotion "happy" on the questionnaire were replaced by "ecstatic", respondents' assessment of the strength of this emotion on the scale from 0 to 10 would certainly go down. If people simultaneously reported some negative feelings too, more episodes would turn from positive into negative experiences, although the "true" emotional state would remain unchanged.

Since no truly ordinal aggregation of emotions appears feasible, and any weighting of the various emotions is arbitrary, we rely on a measure of a person's emotional state that assumes cardinality, but leaves the aggregation of emotions and thoughts to the respondent himself. In the style of the standard life satisfaction question, we ask respondents to answer the question "How satisfied were you during this activity?" on a scale from 0 to 10 before we ask them about any specific emotions. White and Dolan (2009) show that such a measure of *episode satisfaction* can give a more comprehensive picture of a person's subjective well-being than arbitrarily aggregated affect measures. By answering the question, the respondent himself has to weight which of his emotions and thoughts was most important with regard to his overall satisfaction during some activity. A person's assessments of the satisfaction experienced during each episode is aggregated over the entire day in the following way, where E_{ij} denotes the episode satisfaction measure of person i during activity j .

$$E_i = \sum_j h_{ij} E_{ij} . \quad (6)$$

Taking account of the fact that all three measures have their advantages and disadvantages, in what follows we present results for all three measures throughout.

2.2. Survey design

In order to design our DRM study in a way that yields results comparable to previous studies, but also to allow us to specifically analyze how experienced utility depends on a person's employment status, we used a questionnaire and an interview setup similar to that presented in Kahneman et al. (2004a). However, we modified the questionnaire to obtain information on the respondents' current employment status, their employment history, and their job search behavior as well.³

We conducted pre-tests of the questionnaire with 24 randomly chosen employed and unemployed respondents in January 2008. Between March and July 2008, we interviewed a total of 1,054 persons, of whom 737 respondents were either employed full-time or unemployed without being engaged in any type of welfare measure. From these 737 persons, we had to drop 23 interviews due to lack of understanding and missing answers. The total number of usable interviews was 714, 366 of which were with full-time employees and 348 with unemployed persons. 366 persons (195 employed and 171 unemployed) were interviewed in the Magdeburg region, and 348 persons (171 employed and 177 unemployed) were interviewed in Berlin. Interviews lasted between 30 and 60 minutes.

Both employed and unemployed respondents were selected randomly. The unemployed were approached directly by the interviewers in the local employment offices and asked whether they would like to participate in a survey. They could then choose whether the interview would take place directly on site, at their home, or at the local university. We only interviewed long-term unemployed persons eligible for the means-tested "Unemployment benefit II". Unemployed interviewees received a compensation of 10 euro. About 15 percent of the unemployed we approached participated in the interview. To recruit employed respondents, we randomly selected, from the telephone directory, addresses within the district of the employment offices and sent a letter in which we briefly explained the purpose of our study (without yet mentioning that we would ask respondents to provide information about their time-use and feelings) to these households and told them that we had selected them to participate in the study. Within three days, we gave all these households a telephone call to make an appointment for the face-to-face interview, which then took place either at the university or at the interviewee's home. Of all the persons contacted and willing to talk to us on the phone, 70 percent were in the target group, i.e. full-time employed. Among these,

³ A translated version of the questionnaire is presented in Appendix B.

roughly 12 percent were willing to participate in our survey. Employed respondents did not receive a compensation payment.⁴

The questionnaire consisted of three parts. In the first part, respondents were asked to assess how their mental and physical well-being the previous day compared to a typical day in their life, to list all activities they were engaged in during the course of that day, and to note the start and end time of each activity. The diary had to be constructed without gaps before starting with the second part.⁵ In the second part, respondents gave a detailed account of what they did, with whom they interacted, and how they felt during each activity listed in their diary. We specifically asked respondents to assess how strongly they experienced various affect dimensions on a scale from 0 (“not at all”) to 10 (“completely”). Positive affect was measured using the attributes “relaxed”, “happy”, “comfortable/at ease”, and “enjoying myself”. Negative affects comprised “lethargic/dull”, “insecure/anxious”, “stressed”, and “frustrated/annoyed”. Respondents also rated their general satisfaction during each episode on a scale from 0 to 10. In the third part, respondents answered questions about themselves and their life circumstances, e.g. their general life satisfaction, job satisfaction (where applicable), health status, education, income, number of children, social contacts, employment, and marital status. Instead of these questions being asked at the beginning, they were asked at the end of the interview to avoid that drawing attention to these issues would influence the responses to earlier questions.

3. Results

3.1 Descriptive Statistics

Table 1 summarizes some descriptive statistics, separated into subsamples of the employed and the unemployed. The average age of employed respondents is 44.2 years, of unemployed respondents 38.2 years. Male and female respondents are equally represented in our sample. About 27 percent of respondents in both groups are single, while the other 73 percent are either married or cohabiting with their partner. The employed have, on average, 1.2 children

⁴ Our pre-tests showed that the response rate was in fact lower when we offered a compensation of 10 euros to the employed than when we did not offer any compensation. This surprising effect suggests that people have an intrinsic motivation to participate in scientific studies which could be crowded out if a monetary compensation is paid. The unemployed, on the other hand, were more willing to participate if given compensation.

⁵ We followed the recommendation by Kahneman et al. (2004c) that the diary be completed before respondents become aware of the specific contents of later questions. Otherwise their construction of the diary might suffer from selection bias.

(of whom 0.6 live in the household). The total number of persons in the household of an employed person is, on average, 2.2. Unemployed respondents have, on average, 1.1 children (of whom 0.4 live at home). Their average household size is 1.9 persons. Employed respondents are, on average, better educated than the unemployed. About 55 percent of employed respondents have a college or university degree while 45 percent have completed vocational training. Among unemployed respondents, only 14 percent have graduated from a college or university, 64 percent have completed vocational training, and 22 percent have not completed any vocational training.

The average gross labor income of an employed respondent is 3,140 euro per month (4,427 US dollar),⁶ the average net income is 1,891 euro per month (2,666 US dollar). The employed work, on average, 41.5 hours per week. Employed respondents' average net household income (which includes incomes of other household members, social transfers, etc.) is 2,974 euro per month (4,193 US dollar). The unemployed do not receive any labor income. Their household income (which is derived mainly from welfare benefits) is 888 euro per month (1,252 US dollar).

The average employed respondent starts his day at 6:39am and goes to bed at 11:08pm. In between, he sleeps for 4 minutes. Average waking time per day is 16 hours and 22 minutes. The average unemployed in our sample gets up at 7:41am, sleeps for 15 minutes during the day, and goes to bed at 11:24pm. His average waking time is 15 hours and 32 minutes. When they constructed their time-use diary, employed respondents divided their day into 12.6 separate episodes, whereas the unemployed reported 11.9 different activities. The total average number of activities was 12.4 with a minimum of 4 and a maximum of 26. In both cases, the average duration of each of these activities was 1 hour and 18 minutes.

The interviews took place from Monday to Saturday, so that the days covered by the interviews range from Sunday to Friday. 84 percent of the employed and 82 percent of the unemployed were asked to recount a weekday (Monday to Friday), while the other 16 percent of the employed and 18 percent of the unemployed were asked about their weekend (Sunday).

⁶ Using the exchange rate as of December 31, 2008: 1 euro = 1.41 US dollar.

Table 1: Descriptive statistics

	Employed	Unemployed
Age	44.2	38.2
Sex		
Male	184 (50.3%)	175 (50.3%)
Female	182 (49.7%)	173 (49.7%)
Income		
Gross Labor Income	€3,140	-
Net Labor Income	€1,891	-
Net Household Income	€2,974	€888
Education		
No degree/vocational training	-	77 (22.1%)
Vocational training	166 (45.4%)	222 (63.8%)
College or university degree	200 (54.6%)	49 (14.0%)
Family status		
Single	101 (27.6%)	92 (26.4%)
Married/cohabiting	265 (72.4%)	256 (73.6%)
Number of children	1.18	1.08
Persons in the households	2.24	1.88
Working Hours / Week	41.5h	-
Active in volunteer activities (at least once a month)	61 (16.7%)	40 (11.5%)
Wake up Time	6:39am	7:41am
Go to Sleep Time	11:08pm	11:24pm
Time Slept during the Day	4min	15min
Time Awake / Day	16h 21min	15h 28min
Number of distinct activities	12.6	11.9
Average duration of each activity	1h 18min	1h 18min
Day of the week		
Weekdays	309 (84.4%)	285 (81.9%)
Weekend	57 (15.6%)	63 (18.1%)
Observations	366	348

To make the sample more representative of the entire German population, we calculate survey weights based on sex, age, schooling, vocational training and day of the week. The weights are based on nationally representative data from the 2007 wave of the German Socio-Economic Panel.⁷ After reweighting, employed men receive a larger weight than employed women, while the reverse holds for the unemployed. Young workers receive a larger weight than older workers, while among the unemployed the young receive a smaller weight than the old. Both among the employed and the unemployed, those with more schooling and better

⁷ The data were made available by the German Socio-Economic Panel Study (GSOEP) at the German Institute for Economic Research (DIW), Berlin. The data were extracted using the Add-On-package PanelWhiz for Stata, see Haisken-DeNew and Hahn (2006) for details.

training appear to have been more likely to participate in our study. Hence, their weight is reduced relative to persons with a less extensive education. In all the following analyses, we will make use of the weighted data unless noted otherwise.

3.2 Well-being during specific activities

Table 2 presents the episode satisfaction, net affect, and the U-index for different activities, broken down by employment status.⁸ Activities are sorted by their mean episode satisfaction for the employed. Leisure activities generate the highest emotional well-being for both groups. Employed persons report the highest satisfaction scores while attending cultural activities, pursuing their hobbies, exercising, or meeting with friends. Respondents rate their satisfaction during these activities at average values of between 8.63 and 9.84 on a scale from 0 to 10. They are also relatively satisfied when reading or listening to music, during times of relaxation and while eating (satisfaction scores between 8.22 and 8.61). Playing palor or computer games, taking care of one's children, watching TV, and going shopping are considered less satisfying leisure activities. For these activities, employed respondents report average episode satisfaction scores between 6.77 and 7.92. Of all leisure activities, doing household chores scores worst with an average of 6.43.

⁸ Results for each individual affect measure are presented in Appendix A.

Table 2: Well-being and time-use by activity and employment status

Activity	Episode Satisfaction		Net Affect		U-Index		Mean hours per day (h:min)		Share of Sample Reporting	
	E	UE	E	UE	E	UE	E	UE	E	UE
Entertainment / Cultural Activity	9.84	7.97 (0.011)	9.76	6.21 (0.003)	0.01	0.05 (0.544)	0:59	2:15	1%	3%
Hobby /Sport	8.74	8.34 (0.200)	6.95	5.91 (0.036)	0.05	0.08 (0.541)	2:05	2:53	18%	22%
Socializing	8.63	8.28 (0.027)	6.83	6.39 (0.108)	0.04	0.07 (0.122)	2:11	3:10	47%	57%
Reading / Radio / Music	8.61	7.76 (0.000)	6.42	4.84 (0.000)	0.01	0.09 (0.002)	1:41	2:01	33%	28%
Relaxing / Walk	8.32	7.30 (0.002)	6.19	4.43 (0.003)	0.07	0.19 (0.020)	1:48	1:47	21%	23%
Eating	8.22	7.20 (0.000)	6.51	5.16 (0.000)	0.03	0.09 (0.000)	1:37	1:53	92%	96%
Further Education	7.93	7.80 (0.867)	7.07	3.84 (0.013)	0.00	0.18 (0.068)	3:27	2:13	3%	3%
Break during Work	7.93		5.50		0.05		0:33		37%	
Parlor / Computer Game	7.92	7.76 (0.701)	6.82	5.35 (0.020)	0.00	0.11 (0.026)	6:17	2:19	8%	11%
Voluntary Work	7.53	8.03 (0.621)	6.30	6.12 (0.914)	0.52	0.08 (0.124)	2:45	3:06	1%	5%
Childcare	7.47	8.05 (0.015)	4.28	5.15 (0.036)	0.17	0.18 (0.776)	1:45	2:59	20%	27%
Watching TV	7.43	7.05 (0.022)	5.17	4.49 (0.006)	0.10	0.17 (0.008)	3:09	3:43	74%	75%
Travel	7.12	6.43 (0.002)	4.24	3.20 (0.002)	0.10	0.25 (0.000)	1:11	1:23	23%	40%
Other	6.91	7.15 (0.064)	3.96	4.37 (0.044)	0.21	0.18 (0.175)	1:44	2:49	90%	85%
Shopping	6.77	5.98 (0.023)	3.18	2.30 (0.103)	0.26	0.24 (0.834)	0:59	0:58	21%	33%
Commuting	6.71		3.09		0.26		0:49		48%	
Working	6.68		2.76		0.22		6:33		68%	
Housework	6.43	6.42 (0.930)	3.59	2.83 (0.001)	0.19	0.22 (0.159)	2:11	3:03	61%	77%
Job Seeking	2.92	4.31 (0.458)	-1.49	0.18 (0.493)	0.79	0.48 (0.160)	1:54	1:49	1%	23%

Note: E – Employed, UE – Unemployed, p-values for the t-test of whether the scores for the employed and unemployed are equal are given in parentheses. Mean hours per day are conditional on engaging in that activity.

Employed respondents report very low satisfaction scores during all employment-related activities. Working receives an average satisfaction score of only 6.68 and thus belongs to the

least satisfying times of the day. People report similarly low satisfaction level only while commuting (6.71) and feel even more dissatisfied only during job search activities (2.92) and while doing household chores (6.43). Breaks during working hours seem to be enjoyable compared to actual working time and their satisfaction score of 7.93 comes close to the satisfaction values of many leisure activities. The low value of work corresponds perfectly with the findings by Kahneman et al. (2004a), who also report that working, commuting, and housework are the worst-rated activities among the employed.

Unemployed persons exhibit roughly the same ranking of activities according to their episode satisfaction as that found for employed persons, but show lower episode satisfaction scores in almost all activities (only when spending time with their children and during “other” activities do the unemployed report higher satisfaction scores than the employed). The negative difference in episode satisfaction levels between the employed and the unemployed is statistically significant (at least at the 10-percent level) for entertainment and cultural activities, socializing, reading/listening to music, relaxing, eating, watching TV, during non-work trips, and while shopping. This corresponds to Krueger and Mueller (2008), who also find that the unemployed are sadder and less happy than the employed while engaged in the same type of activity, and that the largest differences occur during job search activities (where the difference we find is not statistically significant, most likely because only one percent of the employed in our sample actively engage in job search) and while watching TV (which we also find in our data). This illustrates what we call the saddening effect. Being unemployed reduces the satisfaction experienced during any specific activity.

Sorting the activities by their average net affect paints a very similar picture.⁹ Our ranking of activities is thus in line with Kahneman et al. (2004a). Attending cultural events, further education, pursuing one’s hobbies, and socializing give the highest net affect scores for the employed (between 9.76 and 6.83). The lowest scores are reported for all work-related activities. For the employed, job search activities are associated with the lowest net affect of all activities (−1.49). The actual working time and commuting give slightly higher net affects between 2.76 and 3.08. For the unemployed, the ranking of activities is similar to the one obtained by the episode satisfaction measure. They report the worst net affect for job search activities (0.18). As for episode satisfaction, the unemployed report lower net affect scores

⁹ Spearman’s rank correlation coefficient between episode satisfaction and net affect is 0.92 for the employed and 0.84 for the unemployed.

across all activities (except childcare and “others”). We find that the differences in the net affect measure between the two groups are statistically significant (at least at the ten-percent level) for almost all activities (except socializing, voluntary work, shopping, and job seeking).

As we laid out in Section 2.1, the net affect measure calculates the difference between the average intensity of all positive and negative emotions. Thus, this measure implicitly allows one strong negative feeling to be compensated by two, perhaps relatively weak, positive emotions, even though one strong negative feeling might dominate all other emotions. The U-index avoids this problem by indicating only whether the strongest of all emotions was a negative one. Table 2 shows that the ranking of activities according to the U-index does not change much compared to the rankings by episode satisfaction or net affect.¹⁰ For the employed, most leisure activities have a U-index of less than (or equal to) 0.1 (except for childcare, voluntary work, and shopping). This means that the strongest feeling is a negative one during at most 10 percent of the time spent in these activities. The U-index for work and work-related activities is much higher. During working time, people report that their strongest feeling is a negative one 22 percent of the time. This value is even slightly higher during commutes (26 percent), and reaches 79 percent during job search activities. For the unemployed, the U-index is higher than for the employed for many activities. The unemployed have a lower U-index only for voluntary work, other activities, shopping, and job search activities, and the differences are statistically insignificant. Job search also has the highest U-index for the unemployed (48 percent). Statistically, the differences between the U-indices for the employed and the unemployed are not as strong as for the other two measures because the binarization of the well-being scores eliminates a lot of information.

Table 3: Correlation between well-being measures

	Net Affect	U-index	Episode Satisfaction	Life Satisfaction
Net Affect	1	---	---	---
U-index	-0.77	1	---	---
Episode Satisfaction	0.77	-0.58	1	---
Life Satisfaction	0.37	-0.34	0.35	1

Note: The correlations are calculated at the individual level.

¹⁰ Spearman’s rank correlation coefficient between the U-index and episode satisfaction is 0.78 both for the employed and for the unemployed. Comparing the U-index and net affect gives rank correlations of 0.84 for the employed and 0.93 for the unemployed.

The three measures of experienced utility are strongly correlated. Net affect and the U-index as well as net affect and episode satisfaction have a correlation coefficient of 0.77 (in absolute values). The U-index and episode satisfaction are also well correlated (coefficient of -0.58). The correlation of self-reported general life satisfaction with the three measures of experienced utility, however, is much weaker than that between the measures of experienced utility (0.37 for net affect, -0.34 for the U-index, and 0.35 for episode satisfaction). This suggests that the three measures of experienced utility, although not identical, are similar representations of the same underlying psychological states, but that these measures also capture something very different from that which drives people's self-reported life satisfaction.

Turning to how the employed and unemployed use their time during the day, we see that work demands the largest share of time for the employed. The employed in our sample spend about 6.5 hours per day at work. Commuting time is, on average, 49 minutes per day. The employed spend about one and a half hours per day on meals, about three hours watching TV and about two hours doing housework (if they engage in these activities during the day). Since the unemployed do not spend their time working, they have to allocate the available time to other activities. As we have seen in Table 1 already, the unemployed sleep almost one hour longer than the employed. The unemployed spend more time and engage more often in relatively positive leisure activities (entertainment, hobbies, socializing, but also in voluntary work and childcare). However, they also spend more time doing household chores and are more often engaged in job search. Both activities typically receive the lowest experienced utility scores.

3.3 Comparing general life satisfaction with experienced utility

The most-commonly used indicator of subjective well-being is an assessment of general life satisfaction. Studies that examined how unemployment affects how a person assesses his life satisfaction have produced overwhelming evidence that the unemployed suffer from lower life satisfaction than the employed (e.g., Clark and Oswald (1994), Winkelmann and Winkelmann (1998), Di Tella et al. (2001), Clark (2003), and Blanchflower and Oswald (2004)). The results of our survey are in line with these findings. We also asked respondents to assess their life satisfaction on a scale from 0 to 10. The employed reported an average

value of 7.11, the unemployed stated an average value of only 4.58 (Table 4). The difference of 2.53 points is statistically significant at any reasonable level.

Does such a difference also show up in the day-to-day experiences of employed and unemployed people? The measures of momentary experienced utility we derived in Section 2.1 show striking differences compared to the reported general life satisfaction. The results are listed in Table 4, which shows the duration-weighted averages for the net affect, the U-index, and episode satisfaction. An employed person's average net affect is 4.451. This value is far below the net affect score reported for most activities (see Table 2), but seems to be driven by the large share of time allocated to working and related activities. The unemployed report a score of 4.441. Measured by the duration-weighted net affect, the unemployed do not feel unhappy, but are in fact as happy as the employed. If we look at the U-index, the employed have an index value of 0.145, and the unemployed of 0.161. On average, the unemployed report that their strongest feeling is a negative one for only 1.6 percent more of their time than the employed. The null hypothesis that the two values are equal cannot be rejected. Our measure of episode satisfaction also shows no significant difference between the two groups. The duration-weighted average episode satisfaction is 7.289 for the employed and 7.143 for the unemployed. The difference of 0.146 points is not statistically significant either.¹¹

The differences in momentary experienced utility between the employed and the unemployed depend on two effects. The first (saddening) effect is the difference in experienced utility during each activity. As we know already from the results in Table 2, the unemployed report lower well-being scores in almost all activities. The second (time-composition) effect concerns how much time a person allocates to each activity. As reported in Table 2, the unemployed do not spend any time on the relatively undesirable activity work, but allocate more time to other, perhaps more enjoyable, activities. Indeed, unemployed persons spend more time socializing, which is one of the highest-values activities. Even though they also spend more time in less-liked tasks, such as job seeking or housework, the overall time-composition effect gives a larger weight to activities with good emotions.

¹¹ Duration-weighted averages of single emotions are presented in the appendix (Table A.1). For seven of the eight emotions asked about in our questionnaire, the differences between employed and unemployed respondents are not statistically significant. The only significant difference is found for "insecure": unemployed persons feel more often insecure than employed persons.

Table 4: Average episode satisfaction, net affect, and U-index, by employment group

	Life Satisfaction	Net Affect	U-Index	Episode Satisfaction
Employed	7.010	4.451	0.145	7.289
Saddening effect	---	-0.459	+0.027	-0.223
Time composition effect	---	+0.448	-0.011	+0.077
Unemployed	4.425	4.441	0.161	7.143
Difference between unemployed and employed	-2.674 (0.000)	-0.010 (0.959)	0.016 (0.295)	-0.146 (0.196)

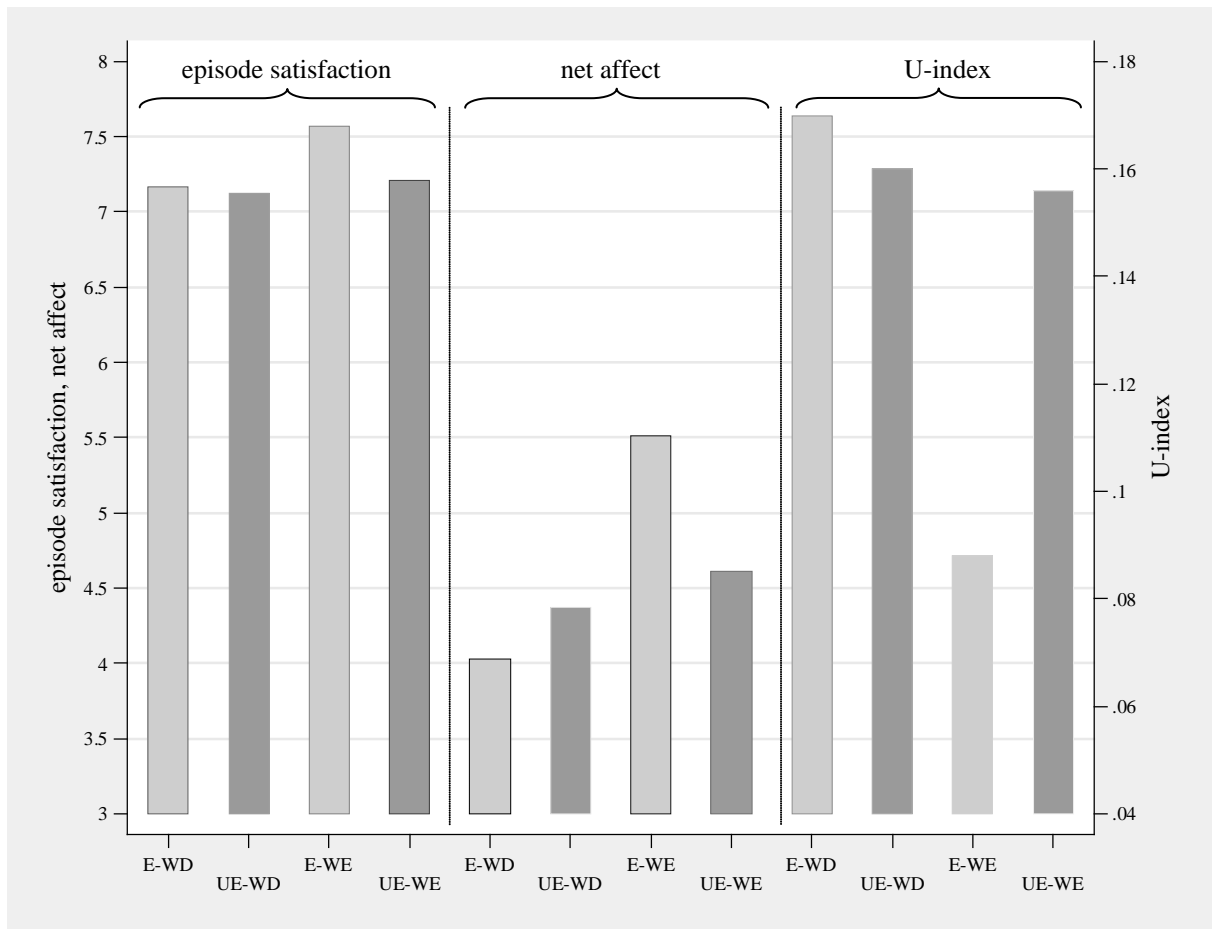
Note: p -values for H_0 : difference=0 in parentheses.

The impact of the time-composition effect can be illustrated in two ways. First, we decompose the difference in our three measures of momentary experienced utility between the employed and the unemployed into the saddening and the time-composition effect by a thought experiment. We calculate how the average momentary experienced utility of all employed persons would change if they became unemployed under the assumption that they experience the average net affects of an unemployed person in all activities, but maintain the time schedule they had when they were still employed. Since we do not observe experienced utility ratings for work and work-related activities for the unemployed, we assume that the employed maintain their original values during these activities. The difference between the experienced utility before becoming unemployed and its value after this hypothetical drop in well-being levels corresponds to the *saddening effect*; the remaining difference to the actual experienced utility after becoming unemployed can then be assigned to the time-composition effect.

This decomposition is reported in the second and third line of Table 4 for all three measures. The average net affect after assigning the affect levels of the unemployed to the employed without any adjustments in time use would be 3.992. This is 0.459 points below the value reported by the employed. This is quite a large drop and illustrates that unemployment has an effect not only on life satisfaction, but also on a person's mental well-being in specific activities. As we have seen in Table 4, however, there is no net affect difference between the employed and the unemployed if time schedules are adjusted. This means that unemployed

persons shift their time to more favorable activities, and that this time-composition effect is sufficiently large to offset the saddening effect almost completely. For the U-index, the saddening effect is – relative to the initial value of the U-index – larger than for the net affect. Looking at episode satisfaction, the saddening effect is the smallest relative to its initial value. Also for the latter two measures, the time-composition effect counteracts the saddening effect sufficiently to turn the overall effect statistically insignificant.

Figure 1: Experienced utility, separated by weekdays and weekends



Note: E – Employed, UE – Unemployed, WD – Weekday, WE – Weekend

The time-composition effect becomes transparent when we compare the net affects of the two groups on weekdays and weekends. On weekdays, employed typically have to work and are not free to allocate their time any way they like. Instead, they spend a large share of their time on tasks which yield relatively low experienced utility. The unemployed, on the other hand, are less bound by external restrictions and can shift their time to more favorable activities. On the weekend, however, the employed can freely decide how to use their time. Hence, one

would expect that the interaction of the time-composition and the saddening effect causes a negative difference in experienced utility between the employed and the unemployed on weekdays, but a positive difference on weekends.¹² Indeed, Figure 1 shows that the employed report a duration-weighted episode satisfaction of 7.17 on weekdays, while the unemployed report 7.12. On weekends, both groups report higher episode satisfactions, but the employed experience a much larger increase in their well-being than the unemployed. The employed report an episode satisfaction score of 7.57, while the unemployed's episode satisfaction rises to only 7.21. When we look at net affect, the subjective well-being of the employed is lower on weekdays than that of the unemployed (4.03 vs 4.37). On the weekend, however, the ranking is turned around. The employed reach an average net affect of 5.51, whereas the unemployed, although enjoying the weekend somewhat better than weekdays too, report only an average net affect of 4.61. In the case of the U-index, the employed report a slightly higher percentage of time spent on unpleasant activities than the unemployed (16.8% vs 16.3%). On the weekends, however, this gap is reversed and widens tremendously. The employed spend only 8.8 percent of their time in unpleasant states, while the unemployed still report this share to be 15.6 percent. This shows that the time-composition effect plays a crucial role in explaining the vanishing difference in experienced utility between the employed and the unemployed.

Since our data is a cross-sectional "snapshot", one might be concerned about potential sample selection issues. If it was the case that those persons who experience the largest drop in their subjective well-being when becoming unemployed are also the ones who then look for a job most intensively, it could be that our sample of long-term unemployed persons is biased towards those unemployed who do not really dislike being without a job. While we cannot rule out such an effect, we think that it is of minor quantitative importance. First, if there was such a selection effect with respect to experienced utility, one would expect to find it also in our measure of general life satisfaction. Our findings show, however, that the long-term unemployed are strongly dissatisfied with their life. Second, when we run a probit on the unemployed's response to whether they had been actively looking for a job in the past four weeks, we find that people with higher experienced utility are significantly more active in job search (while life satisfaction bears no relation to search behavior). This suggests that the

¹² While this procedure is suggestive of a decomposition in a saddening and a time-composition effect, it cannot provide a full decomposition. While the well-being difference on weekends can be attributed to the saddening effect alone, differences on weekdays still consist of saddening and time-composition effects.

potential sample selection should lead to a too small estimate of the unemployed's experienced utility. Third, regression analyses show that unemployment duration (which goes up to 20 years in our sample) does not have any relation to life satisfaction or experienced utility. This finding is also in line with the literature on life satisfaction, which has proclaimed that "unemployment starts out bad and stays bad" (Clark et al. 2008). This is another indication that sample selection does not play a role for our findings.

3.4 Regression analysis

The differences in experienced utility (or the absence thereof) between the employed and the unemployed could have various causes. Besides a genuine relationship between employment status and experienced utility, it could be that other factors that are correlated both with experienced utility and employment status are the true causes of any correlation between the two variables. To control for such factors, we conduct a regression analysis to estimate the impact of employment on experienced utility and to compare it to its impact on life satisfaction.

Table 5 contains the results of regressing both life satisfaction and the net affect on a set of socio-economic characteristics, including the respondent's own employment status, income, age, family status, number of children, and measures of how the previous day compares to an "average" day of the respondent.¹³ The determinants of general life satisfaction (column 1) are in line with the literature. This shows that respondents in our sample behave in a similar way to people observed in large-scale social surveys. Specifically, life satisfaction is significantly reduced by unemployment. Income is positively correlated with life satisfaction and highly significant. People that report to be more satisfied with their health also report a significantly higher satisfaction with their life in general. This could be because health is an important determinant of quality of life in and of itself, but since our data is cross-sectional and not a panel, we cannot preclude the possibility that this correlation captures differences between general degrees of optimism between people that simultaneously affect both satisfaction measures. Hence, the use of "health satisfaction" in such regressions could also be interpreted as capturing fixed personality traits. Women report significantly higher life satisfaction scores than men. The other coefficients are not statistically significant.

¹³ Regression results for episode satisfaction and the U-index yield similar findings as for net affect and are presented in the appendix (Table A.2).

Their signs suggest that education appears to make people more satisfied with their life. The impact of being married/having a partner and the effect of having children are statistically insignificant and quantitatively negligible.

Table 5: Regression results

	Life Satisfaction	Net Affect	Net Affect	Net Affect
	(1)	(2)	(3)	(4)
Unemployed	-1.504*** (0.000)	-0.010 (0.976)	0.098 (0.799)	0.613* (0.099)
Female	0.612*** (0.000)		0.857*** (0.000)	0.880*** (0.000)
Age	0.034 (0.465)		-0.059 (0.357)	-0.068 (0.268)
Age_squared	-0.000 (0.490)		0.001 (0.317)	0.001 (0.268)
Married/cohabiting	-0.050 (0.767)		-0.256 (0.265)	-0.315 (0.147)
Health satisfaction	0.220*** (0.000)		0.168*** (0.000)	0.115*** (0.008)
Vocational training	0.233 (0.332)		1.158*** (0.000)	0.735** (0.021)
University education	0.238 (0.376)		0.606* (0.097)	0.429 (0.226)
Number of children	-0.095 (0.199)		-0.026 (0.795)	0.031 (0.748)
ln(household income)	0.863*** (0.000)		0.028 (0.888)	-0.055 (0.771)
Previous day in general				
better than normal				-0.104 (0.641)
worse than normal				-0.935*** (0.002)
Health on previous day				
better than normal				-0.211 (0.375)
worse than normal				-0.846*** (0.000)
Work on previous day				
better than normal				1.274*** (0.000)
worse than normal				-0.736** (0.034)
Constant	-2.216 (0.119)	4.451*** (0.000)	3.061 (0.112)	4.437** (0.016)
Observations	707	714	707	707
R-squared	0.268	0.000	0.089	0.213

Note: OLS estimation. *p*-values in parentheses. * denotes significance at the 10% level, ** at the 5% level, and *** at the 1% level.

The same explanatory variables have a quite different impact on a person's duration-weighted net affect than on life satisfaction. Column 2 contains a regression of the net affect on unemployment only. As can be seen, the effect of unemployment is slightly negative, but statistically insignificant (the results correspond to Table 4). In column 3, the same controls as in column 1 are added. After controlling for these other factors, the unemployment coefficient turns positive, but stays insignificant. Hence, while we find that a person's life satisfaction is harmed by unemployment, we do not find evidence of a similar effect for the net affect. Further results suggest that income does not have any significant effect on the net affect (which is in line with Kahneman et al. 2004). People with vocational training or a university degree show a significantly higher net affect than people without a vocational degree. Respondents who are more satisfied with their health also report feeling better across the day. Women report a higher net affect than men.

Column 4 contains additional controls for how respondents assess their health, their experiences at work, and their overall experiences on the previous day compared to a "typical" day. The responses generally show the expected signs and are significant in some cases.¹⁴ In particular, people who report that their previous day was overall worse than a typical day or that their health situation or their experiences at work were worse on the previous day than in general also report significantly worse net affect scores. The assessment that the previous day was "better than normal" is correlated with higher a net affect only with respect to experiences at work. We do not find positive effect for health satisfaction on the previous day or that day's general assessment. Including these control variables drives up the unemployment coefficient. The reason is that we compare an employed person to an unemployed person who both had a "typical" day. Among employed persons, 23 percent report that their day was "better than normal", while only 18 percent of the unemployed make that statement. At the same time, only 9 percent of the employed report that their day was "worse than normal", while the figure for the unemployed is 21 percent. Hence, restricting our attention to "typical" days means that we exclude relatively more negative days for the unemployed and relatively more positive days for the employed, which widens the estimated gap between the experienced utility of the employed and the unemployed. Since the

¹⁴ Respondents' assessments of how their work, their health, and general satisfaction on the previous day relate to a typical day are highly correlated. This raises issues of multicollinearity so that the p-values tend to be too large and thus have to be interpreted with caution. Since we use these variables only as controls, this does not affect the validity of our main results.

employed and the unemployed seem to assess how “typical” days are differently, the significantly positive unemployment effect has to be interpreted with caution.

5. Discussion

One of the most robust results from the life satisfaction literature is that unemployment has long-lasting negative impacts on life satisfaction (Lucas et al. 2004). While we observe adaptation after an increase in income (Frey and Stutzer 2002), after becoming moderately disabled (Oswald and Powdthavee 2008), or within a few years after marriage (Clark et al. 2008), the empirical evidence shows that it is not only becoming unemployed that makes people unhappy but also remaining in unemployment. In our study, unemployed people have been unemployed for at least one year and report significantly lower levels of life satisfaction than employed people. Our results are thus in conformity with previous research. We do not have panel data and thus cannot draw definite conclusions on causality, but one possible explanation for these results is that adaptation to unemployment with respect to general life satisfaction is less than complete.

Comparison of these results with the findings from our DRM study shows striking differences between different measures of well-being. While asking people about their life satisfaction suggests that unemployment makes people unhappy, the measures of instant utility over the course of the day do not find any significant differences in well-being between unemployed and employed people. There are two countervailing effects at work. When doing the same activities, unemployed are unhappier than employed people. This is what we call the saddening effect of unemployment. However, the unemployed spend part of the day on activities that are more satisfying than working and work-related activities. In short: unemployed people are dissatisfied with life, but they are having a good day.

These apparently paradox results might be reconciled when we look at how people may adjust to long-term unemployment. In principle, there are two distinct ways to adapt to new life circumstances. First, there might be *hedonic adaptation*. Over time, people derive less utility from a rise in income or will suffer less from being paraplegic (Frederick and Loewenstein 1999). Second, it might be the case that what we consider to be “satisfactory” depends on what we actually have, i.e. our aspirations adapt when life circumstances change (van der Praag and Ferrer-i-Carbonell 2004). *Aspiration adaptation* is very important when

we look at income changes. Frey and Stutzer (2002) estimate that aspiration adaptation offsets two-thirds of the initial benefits of an increase in income.

While hedonic adaptation mainly affects how we experience our life circumstances, aspiration adaptation may not only be affected by how we master our day-to-day life but also by how far we meet our aspirations and goals. The general judgment of life satisfaction cannot distinguish between these two forms of adaptation and is obtained “by combining an imperfect assessment of the balance of affect ... in one’s life with an assessment of how well one’s life measures up to aspirations and goals” (Kahneman and Krueger 2006, p. 9). Furthermore, reports of life satisfaction may be subject to a focusing illusion that leads people to exaggerate the importance of those aspects of life one focuses on when asked to assess one’s satisfaction with life, but that rarely enter one’s mind otherwise (Kahneman and Thaler 2006, p. 229).

Using both the standard measure of general life satisfaction and the measures of experienced utility, we can identify the extent to which hedonic adaptation and aspiration adaptation are at work when people become unemployed and stay unemployed for a long time. Our results show that long-term unemployed experience their day-to-day lives as more or less equally satisfying as employed people. This suggests that we found a specific type of hedonic adaption. We do not have (complete) hedonic adaptation when we look at similar activities. The saddening effect indicates that the unemployed enjoy reading, watching TV, and having meals much less than employed people do. Hedonic adaptation, however, occurs due to the way people adjust their time-use. What makes the unemployed better off is that they use much more of their available time for activities that are more satisfying than working and work-related activities. By contrast, aspirations do not seem to adjust to the new circumstances. Employment sets the benchmark to which one compares one’s own achievements in life: being in employment is better than being unemployed – despite the fact that being at work makes one unhappier than not working. What determines aspiration, whether it is the pursuit of valuable activities (Raez 1994), the search for a meaningful life, or a question of controlling one’s own life, is an open question for further research.¹⁵ The results indicate, however, that these factors do not affect hedonic adaptation as strongly. Our findings thus provide additional support for the claim that a “shift in attention is not the only possible explanation for adaptation, however. Substitution of activities, for example, may also play a

¹⁵ For a discussion, see Loewenstein (2009).

role. ... Measures of well-being that are connected to time use have the potential to uncover such shifts.” (Kahneman and Krueger 2006, p. 18)

The problem with the Day Reconstruction Method is that it is only a snapshot. To validate our hypothesis that long-term unemployment causes hedonic adaptation but not a lowering of aspirations, it would be ideal to collect panel data that follows individuals through the entire adaptation process – from still being in employment, via their short-term unemployment experience, up to their long-term well-being. Alternatively, it would also be useful to extend existing cross-section time-use surveys by adding well-being questions and to apply the Day Reconstruction Method to people who have just received their notice of dismissal, to people just being laid off, and to people with an unemployment spell of up to six month. Adding just one question (to obtain the episode satisfaction) or a small number of questions (to construct net affect and U-index measures) would turn already existing time-use surveys into invaluable data sources for well-being research.

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Appendix A

Table A.1: Affect ratings by activity and employment status

Activity	Lethargic		Insecure		Annoyed		Stressed	
	E	UE	E	UE	E	UE	E	UE
Entertainment / Cultural Activity	0.00 (0.075)	1.05	0.00 (0.093)	0.91	0.15 (0.213)	0.98	0.05 (0.151)	0.75
Hobby /Sport	0.32 (0.044)	0.76	0.38 (0.805)	0.43	0.76 (0.645)	0.91	0.75 (0.311)	1.07
Socializing	1.86 (0.000)	1.07	0.48 (0.107)	0.70	0.88 (0.344)	1.05	0.74 (0.053)	1.07
Reading / Radio / Music	2.42 (0.707)	2.29	0.10 (0.002)	0.54	0.40 (0.005)	0.97	0.15 (0.000)	0.80
Relaxing / Walk	2.88 (0.007)	1.56	0.03 (0.000)	1.25	0.43 (0.003)	1.43	0.27 (0.000)	1.51
Eating	1.58 (0.232)	1.42	0.12 (0.000)	0.35	0.40 (0.000)	0.87	0.46 (0.000)	0.80
Further Education	2.42 (0.394)	1.59	0.26 (0.147)	1.11	1.17 (0.461)	1.73	0.80 (0.023)	2.62
Break during Work	1.58		0.34		0.64		0.86	
Parlor / Computer Game	1.47 (0.803)	1.59	0.23 (0.451)	0.38	0.79 (0.006)	2.32	0.20 (0.001)	1.64
Voluntary Work	4.17 (0.131)	0.69	0.09 (0.063)	0.71	0.00 (0.028)	1.08	0.13 (0.013)	1.74
Childcare	1.43 (0.137)	1.06	0.19 (0.006)	0.51	2.17 (0.271)	1.86	2.39 (0.095)	1.90
Watching TV	3.71 (0.000)	2.81	0.21 (0.000)	0.55	1.10 (0.479)	1.22	0.61 (0.023)	0.92
Travel	2.70 (0.005)	1.89	0.24 (0.000)	0.92	1.18 (0.038)	1.66	0.76 (0.000)	2.05
Other	2.16 (0.000)	1.43	0.67 (0.471)	0.73	1.18 (0.020)	1.49	1.36 (0.818)	1.39
Shopping	1.06 (0.491)	1.26	0.73 (0.217)	1.06	2.15 (0.606)	2.37	1.66 (0.095)	2.27
Commuting	2.36		0.50		2.01		2.09	
Working	1.08		0.70		2.42		2.81	
Housework	1.26 (0.463)	1.37	0.15 (0.000)	0.84	1.88 (0.625)	1.97	1.63 (0.127)	1.89
Job Seeking	0.94 (0.602)	1.51	0.80 (0.388)	1.76	6.21 (0.117)	3.50	5.83 (0.034)	3.08
Duration-wgt. average	1.81 (0.337)	1.61	0.43 (0.030)	0.69	1.51 (0.830)	1.47	1.53 (0.472)	1.39

Table A.1 (continued): Affect ratings by activity and employment status

Activity	Relaxed		Happy		Enjoying		Comfortable	
	E	UE	E	UE	E	UE	E	UE
Entertainment / Cultural Activity	9.83 (0.002)	6.73	9.78 (0.010)	7.41	9.82 (0.002)	6.89	9.82 (0.006)	7.49
Hobby /Sport	8.00 (0.004)	6.79	8.08 (0.062)	7.29	5.16 (0.926)	5.10	8.75 (0.002)	7.64
Socializing	7.64 (0.004)	6.96	7.89 (0.004)	7.26	7.21 (0.608)	7.34	8.54 (0.001)	7.88
Reading / Radio / Music	8.51 (0.000)	7.02	7.19 (0.000)	5.55	4.87 (0.016)	3.95	8.16 (0.001)	7.25
Relaxing / Walk	7.66 (0.028)	6.74	7.46 (0.001)	5.93	5.36 (0.059)	4.31	7.89 (0.002)	6.51
Eating	7.54 (0.000)	6.33	7.34 (0.000)	6.10	5.64 (0.000)	4.54	8.09 (0.000)	7.12
Further Education	8.43 (0.000)	4.67	7.72 (0.020)	5.35	7.56 (0.060)	5.38	9.23 (0.005)	7.03
Break during Work	6.95		6.23		5.09		7.14	
Parlor / Computer Game	7.47 (0.622)	7.23	7.53 (0.032)	6.33	7.15 (0.399)	6.66	7.85 (0.152)	7.14
Voluntary Work	6.83 (0.824)	7.10	7.92 (0.919)	7.79	6.44 (0.347)	5.39	8.39 (0.972)	8.43
Childcare	5.32 (0.946)	5.35	6.05 (0.010)	6.92	5.40 (0.012)	6.31	6.55 (0.018)	7.32
Watching TV	7.41 (0.000)	6.59	6.22 (0.001)	5.47	5.25 (0.076)	4.83	7.45 (0.000)	6.57
Travel	6.34 (0.000)	4.82	5.32 (0.357)	5.03	3.32 (0.145)	3.83	6.86 (0.000)	5.66
Other	5.99 (0.656)	5.92	5.32 (0.478)	5.45	3.53 (0.000)	4.59	6.35 (0.201)	6.56
Shopping	4.71 (0.189)	4.13	4.85 (0.039)	3.89	3.07 (0.500)	3.41	5.69 (0.032)	4.76
Commuting	5.61		4.87		2.95		5.84	
Working	4.19		4.40		3.71		5.78	
Housework	5.35 (0.000)	4.34	5.03 (0.001)	4.36	3.33 (0.522)	3.19	5.55 (0.748)	5.48
Job Seeking	2.10 (0.664)	2.89	2.25 (0.780)	2.81	1.12 (0.595)	1.74	2.34 (0.704)	3.13
Duration-wgt. average	6.03 (0.607)	5.91	5.78 (0.666)	5.67	4.54 (0.420)	4.76	6.77 (0.429)	6.59

Note: E – Employed, UE – Unemployed, p-values for the t-test of whether the scores for the employed and unemployed are equal are given in parentheses

Table A.2: Regression results for episode satisfaction and U-index

	episode sat.	episode sat.	episode sat.	U-index	U-index	U-index
	(1)	(2)	(3)	(4)	(5)	(6)
Unemployed	-0.146 (0.446)	-0.062 (0.776)	0.060 (0.784)	0.016 (0.562)	0.003 (0.921)	-0.023 (0.462)
Female		0.492*** (0.000)	0.521*** (0.000)		-0.029* (0.071)	-0.032** (0.034)
Age		0.018 (0.617)	0.003 (0.935)		0.012** (0.018)	0.014*** (0.006)
Age_squared		-0.000 (0.561)	-0.000 (0.850)		-0.000*** (0.004)	-0.000*** (0.001)
Married/cohabiting		-0.385*** (0.003)	-0.418*** (0.001)		-0.015 (0.437)	-0.010 (0.577)
Health satisfaction		0.108*** (0.000)	0.089*** (0.001)		-0.012*** (0.001)	-0.009** (0.015)
Vocational training		0.042 (0.819)	-0.016 (0.931)		-0.104*** (0.000)	-0.091*** (0.001)
University education		-0.266 (0.199)	-0.257 (0.219)		-0.087*** (0.003)	-0.087*** (0.003)
Number of children		0.076 (0.182)	0.078 (0.164)		0.005 (0.510)	0.004 (0.609)
ln(household income)		0.194* (0.086)	0.182 (0.101)		0.014 (0.392)	0.015 (0.348)
Previous day in general						
better than normal			0.037 (0.776)			0.008 (0.684)
worse than normal			0.005 (0.975)			0.031 (0.215)
Health on previous day						
better than normal			0.078 (0.578)			-0.022 (0.267)
worse than normal			-0.353*** (0.007)			0.055*** (0.003)
Work on previous day						
better than normal			0.401*** (0.000)			-0.066*** (0.000)
worse than normal			-0.621*** (0.003)			0.071** (0.015)
Constant	7.289*** (0.000)	4.771*** (0.000)	5.272*** (0.000)	0.145*** (0.000)	0.050 (0.748)	-0.021 (0.891)
Observations	714	707	707	714	707	707
R-squared	0.001	0.090	0.151	0.000	0.076	0.145

Note: OLS estimation. *p*-values in parentheses. * denotes significance at the 10% level, ** at the 5% level, and *** at the 1% level.

Appendix B: The questionnaire

First, we would like to ask you two general questions:

1. **Gender:** Male ☐ Female ☐

2. **Year of Birth:**

In this part of the questionnaire, we would like to learn what you did yesterday.

3. **To begin, please circle the day of the week that YESTERDAY was:**

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

4. **Yesterday, at what time did you...**

wake up? hrs

go to sleep? hrs

5. **How was your day yesterday compared to how this day of the week usually is?**

☐ ☐ ☐ ☐ ☐
much worse worse pretty typical better much better

6. **If you went to work yesterday: How was your working day yesterday compared to how your working day usually is?**

Compare the time spent at work only.

☐ ☐ ☐ ☐ ☐
much worse worse pretty typical better much better

7. **How was your physical well-being yesterday compared to how it usually is?**

☐ ☐ ☐ ☐ ☐ much better
much worse worse pretty typical better

On the next pages , we ask you to please break down your day yesterday in single episodes. Give each episode a brief name (e.g. „working“, „having breakfast“ or „shopping“) and write down the approximate times at which each episode began and ended.

[illegible]

Questions for each episode	
----------------------------	--

This is episode number, which began at and ended at

8. Were you interacting with anyone during the episode, and if yes, how? Please also check the intensity of the interaction!

[illegible]

9. How satisfied were you during this episode?

	Not at all	Very much
1. I have a good understanding of the needs of my customers		
2. I have a good understanding of the needs of my employees		
3. I have a good understanding of the needs of my community		
4. I have a good understanding of the needs of my shareholders		
5. I have a good understanding of the needs of my suppliers		
6. I have a good understanding of the needs of my competitors		
7. I have a good understanding of the needs of my government		
8. I have a good understanding of the needs of my industry		
9. I have a good understanding of the needs of my society		
10. I have a good understanding of the needs of my country		
11. I have a good understanding of the needs of my world		
12. I have a good understanding of the needs of my planet		
13. I have a good understanding of the needs of my future		
14. I have a good understanding of the needs of my past		
15. I have a good understanding of the needs of my present		
16. I have a good understanding of the needs of my life		
17. I have a good understanding of the needs of my death		
18. I have a good understanding of the needs of my soul		
19. I have a good understanding of the needs of my spirit		
20. I have a good understanding of the needs of my mind		
21. I have a good understanding of the needs of my heart		
22. I have a good understanding of the needs of my body		
23. I have a good understanding of the needs of my senses		
24. I have a good understanding of the needs of my emotions		
25. I have a good understanding of the needs of my thoughts		
26. I have a good understanding of the needs of my actions		
27. I have a good understanding of the needs of my words		
28. I have a good understanding of the needs of my deeds		
29. I have a good understanding of the needs of my life's work		
30. I have a good understanding of the needs of my legacy		

A horizontal number line with squares at each integer from 0 to 10. The squares are empty and have a black outline. The numbers 0 through 10 are written below the corresponding squares.

10. How did you feel during this episode?

Please rate each feeling on the scale given. A rating of 0 means that you did not experience that feeling at all. A rating of 10 means that this feeling was a very important part of the experience. Please check the number that best describes how you felt.

[illegible]

[illegible]

Not at all **Very much**

☐ — ☐ — ☐ — ☐ — ☐ — ☐ — ☐ — ☐ — ☐ — ☐

0 1 2 3 4 5 6 7 8 9 10

Very poor 0 1 2 3 4 5 6 7 8 9 10 Very good

Now that you have rated your day yesterday in detail, we have a few more general questions about your current life.

14. Marital Status

- | | |
|-----------------------------|--|
| 0) Married, living together | <input type="checkbox"/> \Rightarrow Skip to Question #16! |
| 1) Married, separated | <input type="checkbox"/> |
| 2) Single | <input type="checkbox"/> |
| 3) Divorced | <input type="checkbox"/> |
| 4) Widowed | <input type="checkbox"/> |

15. Are you in a permanent relationship?

Yes ☐ No ☐

\Rightarrow Skip to Question #17!

16. What occupation does your partner/spouse have?

Please check one only!

- | | |
|---------------------------|--------------------------|
| 0) Full-time employed | <input type="checkbox"/> |
| 1) Part-time employed | <input type="checkbox"/> |
| 2) Self-employed | <input type="checkbox"/> |
| 3) Unemployed | <input type="checkbox"/> |
| 4) Retired | <input type="checkbox"/> |
| 5) In vocational training | <input type="checkbox"/> |
| 6) Other (non-employment) | <input type="checkbox"/> |

17. What is the highest level of education you have completed?

- | | |
|--|--------------------------|
| 0) None | <input type="checkbox"/> |
| 1) Hauptschulabschluss [Secondary education] (8th/9th grade) | <input type="checkbox"/> |
| 2) Realschulabschluss [Secondary education] (10th grade) | <input type="checkbox"/> |
| 3) Abitur/Fachabitur [Senior High School, A-levels] | <input type="checkbox"/> |

18. What is the highest level of vocational education you have completed ?

- 0) None ☐
- 1) Preparational year for vocational training ☐
- 2) Vocational training ☐
- 3) Vocational/trade school ☐
- 4) Technical school ☐
- 5) College/University degree / doctorate ☐

19. How many children do you have?

20. How many of them live in your household?

21. What is the total number of persons (incl. you) living in your household?

22. What is the amount of your household income at present?

Please enter the monthly net amount, i.e. after tax and social insurance deductions, and add any other regular income such as pensions, family and housing benefits, child support, BAföG (student loan) etc.!

Euro

23. Do you earn a job income? If yes, what is your present monthly gross and net income?

Gross income: Euro

Net income: Euro

24. How many hours a week do you work?

hours

Please fill in only if you are employed.

25. How secure do you think your job is?

☐ ————— ☐ ————— ☐ ————— ☐
 not very not pretty very
 secure secure secure secure

26. Were you registered as unemployed during the past three years?

Yes ☐ No ☐

27. If yes, how long ago was that?

☐ ————— ☐ ————— ☐
 < 1 1-2 2-3
 year years years

Please fill in only if you receive unemployment benefit ALG II.

28. Since when have you been registered as unemployed (the status includes being in a public work program, e.g. 1-euro-job) ?

Month Year

29. Have you been actively looking for a job these past four weeks?
(excluding public work programs)

Yes ☐ No ☐

30. If you are currently looking for or if you had to look for a job: is it or would it be unproblematic, relatively easy, difficult or almost impossible to find a suitable job?

☐ ————— ☐ ————— ☐ ————— ☐
 unproblematic relatively easy difficult almost impossible

31. Have you taken up a 1-euro-job?

Yes ☐ No ☐

➡ Skip to question #36!

32. Have you actively tried to get the 1-euro-job?

Yes ☐ No ☐

33. What was the main reason for taking up such a job?

Please check one only!

- 0) Being able to work ☐
- 1) Hoping for a permanent job offer ☐
- 2) Earning extra income ☐
- 3) Benefits being cut back when refusing the job ☐
- 4) Other () ☐

Please specify!

Please fill in only if you receive unemployment benefit ALG II and hold a 1-euro-job.

34. Have you actively tried to get your current 1-euro-job?

Yes ☐ No ☐

35. What was the main reason for taking up such a job?

Please check one only!

- 0) Being able to work ☐
- 1) Hoping for a permanent job offer ☐
- 2) Earning extra income ☐
- 3) Benefits being cut back when refusing the job ☐
- 4) Other () ☐

Please specify!

Please fill in only if you receive unemployment benefit ALG II and do not hold a 1-euro-job.

36. Are you actively trying to get a 1-euro-job?

Yes ☐ No ☐

37. Suppose you were offered a 1-euro-job by the job centre. Would you take it?

Yes ☐ No ☐

➡ *Skip to question #39!*

38. What would be the main reason for taking up such a job?

Please check one only!

- 0) Being able to work ☐
- 1) Hoping for a permanent job offer ☐
- 2) Earning an extra income ☐
- 3) Benefits being cut back when refusing the job ☐
- 4) Other () ☐

Please specify!

[illegible]

Yes ☐ No ☐

		per week		per month			
		several times	once	several times	once	seldom	never
0)	Volunteer at fire brigade, rescue service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1)	Do charity work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2)	Citizens' group, parent committees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3)	Political party, town council, labour union	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4)	Club membership, church activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5)	Other ()	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Please specify</i>							

Finally, we would like to ask you how satisfied you are with your life as a whole.
Please check on the scale.

42. How satisfied are you with your life as a whole?

Not at all Very much

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

0 1 2 3 4 5 6 7 8 9 10

Thank you very much for participating!

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der Freien Universität Berlin**

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