

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

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Abstract

We interviewed 1,054 employed and unemployed people in Germany, applying the Day Reconstruction Method (DRM), on how they used their time during a specific day, their experienced utility during all their activities during that day, and their general life satisfaction. Unemployed persons declare lower levels of satisfaction with their lives in general, but time-weighted experienced utility of an unemployed person does not differ from that of an employed person. The unemployed report lower well-being than the employed when comparing similar activities (saddening effect), but they are able to compensate this utility gap by spending their time in more enjoyable activities (time-composition effect). This finding shows that the specific choice of which measure of subjective well-being is used in happiness studies is not innocuous.

JEL Classification: I31, J60, J22

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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.

In this paper, we want to shed some light on these questions by empirically comparing 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 make use of the Day Reconstruction Method (DRM) that provides an appropriate new tool to conduct such measurements of instant well-being 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 engage 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. By collecting sufficient background information, one can then determine how a person’s average emotional affect over the course of the day correlates with various socio-economic factors, in particular their employment status.

Life satisfaction is a cognitive, judgemental 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 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

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.

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).

Concerning their day-to-day experiences, however, people assess the emotional, affective components of happiness. Abstract issues, such as a transcendental purpose of life or social comparisons, play a much smaller role for momentary hedonic well-being (experienced utility) than for life satisfaction. The attention drawn to these issues when asked about overall life satisfaction is not present in their daily experiences. 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. Krueger and Mueller (2008), however, cannot confirm this conjecture. 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 indeed, the results from analyses of life satisfaction also show up in the measurement of experienced utility.

But would the unemployed really be better off when taking up employment? When Kahneman et al. (2004a,b) interviewed 909 employed women in Texas, one of their main findings was that positive feelings are strongest during leisure activities and when interacting with friends and family, while people experience negative feelings mostly during episodes of work and work-related activities, such as commuting.

We argue that a person's total utility, measured as the integral over the instant (or momentary) utility over the course of the day (Kahneman et al. 1997, Kahneman 1999), depends on two effects. Krueger and Mueller (2008) show that the unemployed feel strictly worse than the employed if both spend their time in exactly the same activities over the entire day. We will call this the *saddening effect* of being unemployed. On working days, however, unemployed and employed differ in how they spend their time, simply because the employed have to use a large share of their time for work and work-related activities. And here, Kahneman et al (2004a,b) show that these activities belong to the least enjoyable. While the employed feel better when engaged in similar activities, the unemployed can spend a larger

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.

share of their time in more enjoyable activities. This *time-composition effect* makes it *a priori* unclear who of the two is happier over the course of the day: overall utility depends on which activities people engage in during the day and their respective durations.

In this paper, we present findings from a DRM study we conducted in Germany. By collecting data on how employed and unemployed people use their time during a specific day, their affect levels during all activities they were engaged in during that day, and their general life satisfaction, we are able 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. We personally interviewed 1054 persons in Germany, among which 366 persons were fulltime employed and 348 persons were unemployed and not currently active in any type of public workfare measure.

Our results first show that unemployed persons declare 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, we find that the *average experienced utility* of an unemployed does not differ from that of an employed person. This result shows up for three different measures of the momentary experienced utility that take the duration of the activities into account: the *net affect* (Kahneman 1999), the *U-index* (Kahneman and Thaler 2006), and a duration-weighted measure of *episode satisfaction*. The unemployed are able to compensate the utility gap from similar activities by spending the time the employed have to spend in work and work-related activities in more enjoyable activities. The two distinct effects – the saddening effect and the time-composition effect – become 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. On weekdays, the unemployed seem to be more happy with the course of the day.

The apparent puzzle 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 the 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 during 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 what 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 right before prompted by the machine. Applications of ESM show that peoples’ statements about the extent of positive and negative feelings corresponds well with objective measures of their well-being, for example their levels of cortisol, an adrenal hormone that is related to the risk of obesity, hypertension and autoimmune conditions (Steptoe, Wardle and Marmot 2005). The advantage of ESM is that it allows measuring 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 to conduct such a study on a large scale.³ Moreover, data collected through ESM could suffer from biases due to the invasive nature of

³ Studies using the ESM are Bolger et al. (2003) and Hogarth (2006), *inter alia*.

the questioning method that interrupt the flow of an experience and the high prevalence of missing values, which could be non-random (Czikszentmihalyi and Hunter 2003).

To avoid any interruptions in the experience flow, but keep 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 with the measurement of affective experiences. The respondents are asked to reproduce a diary of all activities they engaged in the preceding day, beginning with the first after waking up and concluding with the last activity before going to bed. After the preceding day has been structured in the diary, respondents describe each activity by answering questions concerning what exactly they did during that activity and who they interacted with. Like 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:

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

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.

Following Bentham (1789) and Edgeworth (1881), Kahneman et al. (2004b) propose to calculate a person's experienced utility as the integral of the stream of pleasures and pains associated with events over time. A simple formulation of this measure is

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

where h_{ij} is the fraction of total waking time person i spends in activity j , and A_{ij} is person i 's net affect during activity j . To aggregate emotional affects according to (2), 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) defend these assumptions by providing evidence of the correlation between net affect and objective circumstances which 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. what fraction of a person's waking time is spent in an unpleasant state, or for each activity, i.e. what fraction of the time that people spend in a specific activity 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

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

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, the both persons 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 persons have the same “true”, but unobservable strengths of feelings. Both persons 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 with which they experienced various emotions, 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 was 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 be turned from positive to 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 propose a new measure of a person’s emotional state that assumes cardinality, but leaves the aggregation to the respondent himself. In the style of the standard life satisfaction question, we ask respondents “How satisfied were you during this activity?” on a scale from 0 to 10 before we ask them about any specific emotions. We call

respondents' assessment of this measure *episode satisfaction*. By answering the question, the respondent has to weight himself which of his emotions was most important with his overall satisfaction during some activity. The advantage of episode satisfaction is thus that it leaves the aggregation of emotions to the respondent himself. 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 .

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

2.2. Survey design

To design our DRM study in a way that yields results comparable to those of previous studies, but also allows 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), but modified the questionnaire to obtain information on the respondents' current employment status, their employment history, and their job search behavior.⁴

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 which 737 respondents were either full-time employed 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 amount of usable interviews is 714, of which 366 were fulltime employees and 348 were unemployed. 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, asked whether they would like to participate in a survey. They could then chose whether the interview would take place directly on site, at their private 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

⁴ A translated version of the questionnaire is in Appendix B.

of the approached unemployed participated in the interview. To recruit employed respondents, we randomly selected addresses within the district of the employment offices in the telephone directory and sent a letter to these households in which we briefly explained the purpose of our study (without mentioning already that we would ask respondents to provide information about their time-use and feelings) and told them that we selected them to participate in that study. Three days later, we gave all these households a telephone call to make an appointment for the interview, which then took place either at the university or at the interviewee's home. Of all contacted persons, 8 percent were fulltime employed and willing to participate in our survey. Employed respondents did not receive a compensation payment.⁵

The questionnaire consisted of three parts. In the first part, respondents were asked to assess how their mental and physical well-being during the previous day compared to a typical day in their life, to list all activities they were engaged in during 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.⁶ The average number of activities was 12.4 with a minimum of 4 and a maximum of 26. On average, each activity lasted 78 minutes. In the second part, respondents gave a detailed account of what they did, who they interacted with, 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 life satisfaction, job satisfaction, health status, education, income, number of children, social contacts, employment and marital status. Instead of asking these questions in 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.

⁵ 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.

⁶ We followed the recommendation by Kahneman et al. (2004c) that the diary is completed before respondents become aware of the specific contents of later questions. Otherwise, their construction of the diary might suffer from selection bias.

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, for unemployed respondents 38.2 years. Male and female respondents are equally represented in our sample. About 27 percent of respondents in both groups are singles, while the other 73 percent are either married or cohabitating with their partner. The employed have, on average, 1.2 children (of which 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 which 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, 45 percent have completed vocational training. Among unemployed respondents, only 14 percent graduated from a college or university, 64 percent 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 (approx. 4,100 US dollar), the average net income is 1,891 euro per month (approx. 2,475 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 (approx. 3,982 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 (approx. 1,162 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. 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 reproduce 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).

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 vocational degree	-	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/cohabitating	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 volunteering 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 Sleep 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

3.2 Well-being during specific activities

Table 2 presents the episode satisfaction, net affect, and the U-index for different activities, separated by employment status.⁷ 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,

⁷ Results for each individual affect measure are presented in Appendix A.

pursuing their hobbies, exercising, or meeting with friends. Respondents rate their satisfaction during these activities at average values between 8.55 and 9.32 on a scale from 0 to 10. They are also relatively satisfied when performing voluntary work, during further education, and while reading, listening to music, and playing board or computer games (satisfaction scores between 8.24 and 8.35). Eating, going for a walk, watching TV, and spending time with one's children are considered less satisfying leisure activities. For these activities, employed respondents report average episode satisfaction scores between 7.14 and 8.14. Of all leisure activities, doing household chores scores worst with an average of only 6.52.

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

Activity	Episode Satisfaction		Net Affect		U-Index		Mean Hours/Day		Share of Sample Reporting	
	E	UE	E	UE	E	UE	E	UE	E	UE
Entertainment / Cultural Activity	9.32 (0.153)	8.16	9.01 (0.036)	6.41	0.03 (0.947)	0.03	0:03	0:06	2%	4%
Hobby /Sport	8.59 (0.239)	8.2	6.53 (0.113)	5.68	0.05 (0.260)	0.10	0:28	0:26	22%	19%
Socializing	8.55 (0.079)	8.27	6.72 (0.091)	6.23	0.05 (0.513)	0.07	0:53	1:42	44%	56%
Voluntary Work	8.35 (0.360)	7.36	7.26 (0.103)	4.71	0.30 (0.555)	0.14	0:02	0:10	1%	5%
Further Education	8.32 (0.325)	7.58	6.39 (0.008)	3.22	0.00 (0.028)	0.18	0:05	0:08	3%	5%
Reading / Radio / Music	8.28 (0.000)	7.36	6.02 (0.000)	4.61	0.04 (0.036)	0.10	0:36	0:38	36%	30%
Palor / Computer Game	8.24 (0.425)	7.88	6.79 (0.079)	5.66	0.02 (0.127)	0.10	0:11	0:23	5%	13%
Eating	8.14 (0.000)	7.22	6.17 (0.000)	5.00	0.04 (0.000)	0.10	1:32	1:48	93%	96%
Relaxing / Walk	8.12 (0.010)	7.17	5.75 (0.033)	4.43	0.09 (0.056)	0.18	0:20	0:25	20%	23%
Break during Work	7.77	.	5.45	.	0.05	.	0:20	0:00	47%	0%
Watching TV	7.29 (0.033)	6.92	5.27 (0.000)	4.39	0.09 (0.001)	0.17	1:38	2:37	68%	72%
Other	7.21 (0.212)	7.06	4.08 (0.725)	4.01	0.18 (0.636)	0.19	1:37	2:22	72%	75%
Childcare	7.14 (0.004)	7.85	4.00 (0.036)	4.89	0.21 (0.527)	0.18	0:20	0:40	20%	24%
Travelling	6.85 (0.058)	6.39	4.28 (0.725)	3.08	0.18 (0.028)	0.26	0:16	0:42	25%	44%
Shopping	6.74 (0.047)	6.17	2.98 (0.374)	2.55	0.26 (0.750)	0.24	0:20	0:32	26%	41%
Commuting	6.69	.	3.08	.	0.26	.	0:40	0:00	61%	0%
Working	6.69	.	2.72	.	0.21	.	5:57	0:00	79%	0%
Housework	6.45 (0.737)	6.40	3.70 (0.000)	2.78	0.15 (0.004)	0.23	1:05	2:13	58%	75%
Job Seeking	5.76 (0.645)	4.86	2.78 (0.518)	0.83	0.45 (0.995)	0.44	0:01	0:34	1%	26%

Note: E – Employed, UE – Unemployed, p-values for the t-test whether the scores for the employed and unemployed are equal are given in parentheses. Mean hours per day are not 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 6.69 and thus belongs to the least satisfying times of the day. People feel even more dissatisfied only during job search activities (5.76), commuting to work (6.37), and while doing household chores (6.52). Commuting home from work (7.03), on the other hand, is considered more enjoyable than commuting to work and working itself. Breaks during working hours seem to be enjoyable

compared to actual working time, but their satisfaction score of 7.77 does not come close to the satisfaction values reached during most leisure activities. The low value of work corresponds perfectly with the findings by Kahneman et al. (2004), 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 found for employed persons, but show lower episode satisfaction scores in almost all activities (only when spending time with their children, 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 socializing, reading/listening to music, eating, relaxing, watching TV, and during non-work trips. This corresponds to Krueger and Mueller (2008), who also find that the unemployed are more sad 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.⁸ Our ranking of activities is thus in line with Kahneman et al. (2004a). Attending cultural events, socializing, playing palor and computer games, and pursuing one's hobbies give the highest net affect scores for the employed (between 6.53 and 9.01). The lowest scores are reported for all work-related activities. For the employed, the actual working time is associated with the lowest net affect of all activities (2.72). Job seeking and commuting give slightly higher net affects between 2.78 and 3.24. 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. As for episode satisfaction, the unemployed report lower net affect scores across all activities. The differences are statistically more pronounced. We find that the differences in the net affect measure between the two groups is statistically significant (at least at the ten-percent-level) for almost all activities (except hobbies, voluntary work, travelling, and job seeking).

⁸ Spearman's rank correlation coefficient between episode satisfaction and net affect is 0.94 for the employed and 0.89 for the unemployed.

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 to compensate one strong negative feeling 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.⁹ For the employed, leisure activities have a U-index less than 0.1 (except for childcare). This means that the strongest feeling is a negative one during less than 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 in 21 percent of the time. This value is even slightly higher during commutes, and reaches 45 percent during job search activities. For the unemployed, the U-index is higher for all activities (again, except childcare). Job search has the highest U-index also for the unemployed (44 percent). Statistically, the differences between the U-indices for the employed and the unemployed is not as strong as for the other two measures because the binarization of the well-being scores eliminates a lot of information.

Turning to how the employed and unemployed use their time during the day, we see that work demands the largest share of the time for the employed. The employed in our sample spend almost 6 hours per day at work. Since only 79 percent of the employed in our sample report a work episode on the previous day (while, for the rest, the previous day was a Sunday and/or a day off work), the average time spent working if one worked on that day is 7 hours and 32 minutes. Commuting time, averaged over all employed in the sample, is 21 minutes on the way to work and 19 minutes on the way back. The employed spend about one and a half hours per day during meals, and about the same amount of time watching TV and doing housework. 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 also spend almost twice as much time as the employed on socializing (1:42), playing palor and computer games (0:23), watching TV (2:37), childcare (0:40), private trips (0:42), and housework (2:45). The

⁹ Spearman's rank correlation coefficient between the U-index and episode satisfaction is 0.66 for the employed and 0.82 for the unemployed. Comparing the U-index and net affect gives rank correlations of 0.74 for the employed and 0.93 for the unemployed.

unemployed declared to spend 34 minutes, on average, on job search. Since only 26 percent of the unemployed reported having engaged in that activity at all, the unemployed that actually spent some time searching for a job did so for about 2 hours and 11 minutes.

3.3 Overall well-being

The most-commonly used indicator of subjective well-being is an assessment of 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)). In our survey, we also asked respondents how they 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 3). The difference of 2.53 points is statistically significant at any reasonable level. Hence, the behaviour of respondents in our survey is comparable to that found in other studies.

What we are interested in is what the measures of momentary experienced utility, as a complementary measure of subjective well-being, tell us about the well-being gap between the employed and the unemployed. The difference in momentary experienced utility between the employed and the unemployed depends on two effect. The first effect is the difference in experienced utility during each activity. In the previous section, we have seen that the unemployed report lower well-being scores in almost all activities than the employed (the saddening effect). The second effect concerns how much time a person allocates to each activity (the time-composition effect). 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 enjoying activities. Indeed, unemployed persons spend more time socializing, which is one of the highest-values activities. However, they also spend more time in less-liked tasks, such as job seeking or housework. To compare the overall difference between the two groups, we have to calculate the duration-weighted average well-being of each individual in our sample according to equations (2), (4), and (6).

Table 3: Average episode satisfaction, net affect, and U-index, by employment group

	Life Satisfaction	Episode Satisfaction	Net Affect	U-Index
Employed	7.115	7.234	4.231	0.150
Saddening effect	---	-0.259	-0.450	+0.027
Time composition effect	---	+0.068	+0.459	-0.007
Unemployed	4.583	7.043	4.240	0.170
Difference between employed and unemployed	-2.532 ($p < 0.000$)	-0.191 ($p < 0.295$)	0.009 ($p < 0.975$)	-0.020 ($p < 0.475$)

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

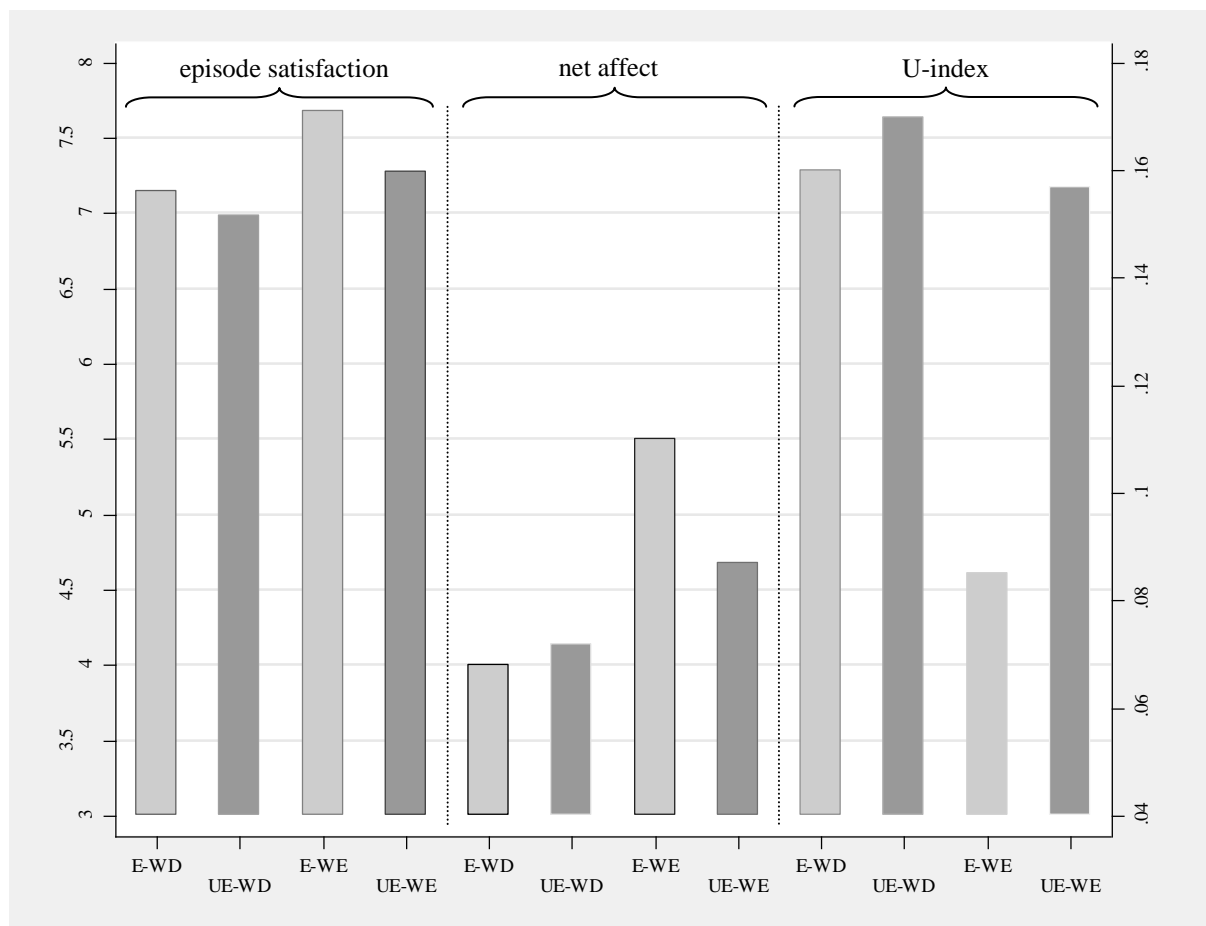
Table 3 shows the duration-weighted averages for the net affect, the U-index, and episode satisfaction. An employed person's average net affect is 4.23. This value is far below the net affect score reported for most activities (see Table 2), but seems to be driven by the large share of time allocated to working and related activities. The unemployed report a score of 4.24. 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 0.15, and the unemployed of 0.17. On average, the unemployed report that their strongest feeling is a negative one for only 2 percent of their time more 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 7.23 for the employed and 7.04 for the unemployed. The difference of 0.19 points is also not statistically significant.

We have seen in Table 2 that the unemployed report lower well-being scores in almost all activities. If their duration-weighted average well-being is the same as that of the employed, this can only occur if the time-composition effect gives a larger weight to activities with good emotions. We want to illustrate the impact of the time-composition effect 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 3 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 3.78. This is 0.45 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 3, 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 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 its initial value. For the latter two measures, the time-composition effect is not sufficiently large to fully compensate the saddening effect (although the difference is not statistically significant).

Figure 1: Experienced utility, separated by weekdays and weekends



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

The second possibility to illustrate the role of the time-composition effect is to 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 in tasks which yield relatively low experienced utility. The unemployed, on the other hand, are less bound by external restrictions and could 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 time-composition and saddening effect causes a negative difference in experienced utility between the employed and the unemployed on weekdays, but a positive difference on weekends.¹⁰ Indeed, Figure 1 shows that the employed report a duration-weighted episode satisfaction of 7.15 on weekdays,

¹⁰ 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.

while the unemployed report 6.99. 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 7.69, while the unemployed's episode satisfaction rises to only 7.27. When we look at net affect, the subjective well-being of the employed is lower on weekdays than that of the unemployed (4.00 vs 4.14). On the weekend, however, the ranking is turned around. The employed reach an average net affect of 5.58, whereas the unemployed, although enjoying the weekend somewhat better than weekdays too, report only an average net affect of 4.68. For the U-index, the employed report a slightly lower percentage of time spent in unpleasant activities than the unemployed (16.2% vs 17.3%). On the weekends, however, this gap widens tremendously. The employed spend only 8.5 percent of their time in unpleasant states, while the unemployed still report this share to be 15.7 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.

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 4 contains the results of regressing both life satisfaction and the three measures of experienced utility 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. The determinants of general life satisfaction 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 with some professional education report to be more satisfied with their life than people without vocational training, but we do not find a

significant difference between persons with vocational training and those who received a university degree. Life satisfaction is U-shaped in age. People that report to be more satisfied with their health also report 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. Differences between the life satisfaction reported on weekday and weekends as well as the general “goodness” of the previous day compared to an average day do not have significant effects on general life satisfaction.

The same explanatory variables have a quite different impact on a person’s duration-weighted experienced utility than on life satisfaction. In particular, unemployment is not associated with a drop in well-being. After controlling for the other factors reported in Table 4, the unemployed feel better than the employed on weekdays. For the net affect, this difference is even statistically significant, thus confirming our results our results in section 3.3. On weekends, both employment groups report higher net affects, although the increase is only significant for the employed. For neither of the three measure of experiences utility is the difference between both groups on weekends statistically significant. Hence, while we find that a person’s life satisfaction is harmed by unemployment, we do not find evidence for a similar effect for experienced utility.

Further results suggest that income does not have any significant effect on experienced utility (which is in line with Kahneman et al. 2004). People with vocational training show a significantly higher net affect and a lower U-index than people without a vocational degree. People with a university education show no significant difference in experienced utility compared to people without any vocational education. Respondents who are more satisfied with their health also report to feel better across the day. As for life satisfaction, age has a non-monotonic impact also on net affect and the U-index. The responses on how the previous day relates to a regular day generally show the expected signs and are significant in some cases. In particular, people who report that their previous day was worse than a regular day also reported significantly worse net affect and U-index scores, while people who stated that their health situation and their experiences at work were better on the previous day than in general report higher net affects.

Table 4: Regression results

	Life Satisfaction	Episode Satisfaction	Net Affect	U-Index
Reference		employed; single; no vocational training; weekday		
Unemployed	-1.249*** (0.000)	0.152 (0.427)	0.657** (0.038)	-0.035 (0.173)
Fulltime x Weekend	0.182 (0.587)	0.288 (0.209)	0.745** (0.048)	-0.040 (0.195)
Unemployed x Weekend	-0.308 (0.283)	0.247 (0.209)	0.489 (0.131)	-0.010 (0.704)
Ln (Income)	0.615*** (0.000)	0.152 (0.162)	0.010 (0.955)	-0.003 (0.822)
Married / Cohabiting	0.123 (0.501)	0.072 (0.564)	-0.077 (0.707)	0.009 (0.608)
Vocational education	0.543** (0.046)	0.287 (0.123)	0.626** (0.041)	-0.051** (0.041)
University education	0.673** (0.031)	-0.017 (0.936)	0.012 (0.972)	-0.026 (0.375)
Health Satisfaction	0.289*** (0.000)	0.101*** (0.000)	0.243*** (0.000)	-0.015*** (0.000)
Children	-0.038 (0.620)	0.049 (0.355)	0.119 (0.169)	0.001 (0.931)
Age	-0.134** (0.015)	-0.029 (0.437)	-0.121** (0.049)	0.013** (0.012)
Age ²	0.001** (0.024)	0.000 (0.418)	0.002** (0.039)	-0.000*** (0.002)
Previous day in general				
better than a regular day	0.302 (0.140)	0.146 (0.296)	0.040 (0.863)	-0.007 (0.723)
worse than a regular day	-0.296 (0.206)	-0.458*** (0.004)	-1.113*** (0.000)	0.078*** (0.000)
Health on previous day				
better than on a regular day	0.201 (0.381)	0.387** (0.014)	0.503* (0.052)	-0.012 (0.560)
worse than on a regular day	0.236 (0.237)	0.081 (0.551)	-0.352 (0.116)	0.042** (0.023)
Work on previous day				
better than on a regular day	0.084 (0.753)	0.192 (0.295)	0.857*** (0.005)	-0.033 (0.176)
worse than on a regular day	-0.024 (0.948)	-0.196 (0.441)	-0.350 (0.403)	0.040 (0.244)
R ²	0.35	0.10	0.17	0.14
No. observations	708	708	708	708

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

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. Though we do not have panel data, the results suggest that adaptation to unemployment with respect to general life satisfaction is less than complete.

The results from our DRM study, however, show 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 the well-being between unemployed and employed people. There are countervailing effects at work. When doing the same, unemployed are unhappier than employed people. This is what we call the saddening effect of unemployment. However, unemployed spend part of the day with activities that are more satisfying than working and work-related activities. In brief: unemployed people are dissatisfied with life, but they are having a good day.

These apparently paradox results may 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 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 life satisfactions and the measures of experienced utility, we can identify to what extent 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 adaptation. We do not have (complete) hedonic adaptation when we look at similar activities. The saddening effect indicates that unemployed enjoy reading, watching TV and having meals much less than employed people. Hedonic adaptation, however, occurs by 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.¹¹ Our results indicate, however, that these factors do not affect hedonic adaptation as strongly. Our results 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 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

¹¹ For a discussion see Loewenstein (2009).

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 just received their notice of dismissal, to people being just laid off, and to people with an unemployment spell of up to six months. For this purpose, the newly defined measure of episode satisfaction may turn out to be more pragmatic than asking respondents about a large number of emotions as it allows us to learn about experienced utility within time-use surveys by only asking one instead of a multitude of questions per episode without losing much information.

References

- Bentham, J. (1789): *An introduction to the principles of morals and legislations*, reprinted 1948, Oxford: Blackwell.
- Blanchflower, D., and A. Oswald (2004): “Well-being over time in Britain and the USA”, *Journal of Public Economics* 88, 1359-1386.
- Böckerman, P., and P. Ilmakunnas (2009): “Unemployment and Self-Assessed Health: Evidence from Panel Data”, *Health Economics* 18, 161-179.
- Bolger, N., A. Davis, and E. Rafaeli (2003): “Diary methods: Capturing life as it is lived”, *Annual Review of Psychology* 54, 579-616
- Csikszentmihalyi, M. (1990): *Flow: The Psychology of Optimal Experience*, New York: HarperCollins.
- Csikszentmihalyi, M., and Hunter, J. (2003): “Happiness in everyday life: the uses of experience sampling”, *Journal of Happiness Studies* 4, pp. 185–99.
- Csikszentmihalyi, M., and R. Larson (1987): “Validity and reliability of the experience sampling method”, *Journal of Nervous and Mental Disease* 175, 526-536.
- Clark, A., and A. Oswald (1994): “Unhappiness and Unemployment”, *Economic Journal* 104, 648-659.
- Clark, A., Y. Georgellis, and P. Sanfey (2001): “Scarring: The Psychological Impact of Past Unemployment”, *Economica* 68, 221-41.
- Clark, A. (2003): “Unemployment as a Social Norm: Psychological Evidence from Panel Data”, *Journal of Labor Economics*, 21, 2, 323-351.
- Clark, A., A. Knabe, and S. Rätzl (2008): *Boon or Bane? Well-being, Others' Unemployment, and Labor-Market Risk*, CESifo Working Paper No. 2501, Munich.
- Clark, A., E. Diener, Y. Georgellis, R. Lucas (2008): “Lags and Leads in Life Satisfaction: A Test of the Baseline Hypothesis”, *Economic Journal* 118, F222-F243.
- Deaton A. (2008): “Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll”, *Journal of Economic Perspectives* 22,(2) Spring, 53–72.
- Diener, E., R. Emmons, R. Larsen, and S. Griffin (1985): “The Satisfaction With Life Scale”, *Journal of Personality Assessment* 49, 71-75.
- Di Tella, R., R. MacCulloch, and A. Oswald (2001): “Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness”, *American Economic Review* 91, 335-341.
- Dolan, P., and D. Kahneman (2008): “Interpretations of utility and their implications for the valuation of health”, *Economic Journal* 118, 215–234.
- Edgeworth, F. (1881): *Mathematical Psychics*, reprinted 1967, New York: Kelley
- Ferrer-i-Carbonell, A., and P. Frijters (2004): “How important is methodology for the estimates of the determinants of happiness?”, *Economic Journal* 114, 641-659.

- Frey, B., and A. Stutzer (2000): "Happiness, Economy and Institutions", *Economic Journal* 110, 918-938.
- Frey, B., and A. Stutzer (2002): "What Can Economists Learn from Happiness Research?", *Journal of Economic Literature* 40, 402-435.
- Gerlach, K., and G. Stephan (1996): "A paper on unhappiness and unemployment in Germany", *Economics Letters* 52 (3), 325-330.
- Helliwell, J.F., and R.D. Putnam (2005): The social context of well-being, Chapter 17, in: F.Huppert, N. Beylis, and B. Keverne, *The Science of Well-Being*, Oxford University Press.
- Hogarth, R. M. (2006): "Is confidence in decisions related to feedback? Evidence – and lack of evidence – from random samples of real-world behavior", in K. Fiedler and P. Juslin (eds.): *In the beginning there is a sample: Information sampling as a key to understand adaptive cognition*, Cambridge, UK: Cambridge University Press.
- Kahneman, D, P. P. Wakker, and R. Sarin (1997): "Back to Bentham? Explorations of Experienced Utility", *The Quarterly Journal of Economics* 112, 375-405.
- Kahneman, D. (1999): "Objective Happiness", in: D. Kahneman, E. Diener and N. Schwarz (eds.): *Well-Being. The Foundations of Hedonic Psychology*, Russel Sage Foundation New York, 3-25.
- Kahneman, D., A. B. Krueger, D. A. Schkade, N. Schwarz and A. A. Stone (2004a): "A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method", *Science*. 306:5702, pp. 1776–780.
- Kahneman, D., A. B. Krueger, D. Schkade, N. Schwarz and A. Stone (2004b): "Toward National Well-Being Accounts", *American Economic Review* 94, 429–434.
- Kahneman, D., A. B. Krueger, D. A. Schkade, N. Schwarz and A. A. Stone (2004c): *The Day Reconstruction Method (DRM). Instrument Documentation*, Supporting Online Material for Kahneman et al. (2004a), <http://www.sciencemag.org/cgi/data/306/5702/1776/DC1/1>.
- Kahneman, D., A. B. Krueger, D. A. Schkade, N. Schwarz and A. A. Stone (2006): "Would You Be Happier If You Were Richer? A Focusing Illusion", *Science* 312, 1908-1910.
- Kahneman, D. and A. B. Krueger (2006): "Developments in the Measurement of Subjective Well-Being", *Journal of Economic Perspectives* 20, 3-24.
- Kahneman, D. and R. H. Thaler (2006): "Anomalies: Utility maximization and experienced utility", *Journal of Economic Perspectives* 20, 221-234.
- Korpi, T. (1997): "Is Utility Related to Employment Status? Employment, Unemployment, Labor Market Policies and Subjective Well-being among Swedish Youth", *Labour Economics* 4, 125–147.
- Krueger, A., D. Kahneman, D. Schkade, N. Schwarz, and A. Stone (2009): "National Time Accounting: The Currency of Life", in A. Krueger: *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, NBER, forthcoming.
- Krueger, A. B. and A. Mueller (2008): *The Lot of the Unemployed: A Time Use Perspective*, IZA Discussion Paper No. 3490, May.
- Layard, R. (2009): "Well-Being Measurement and Public Policy", in A. Krueger: *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, NBER, forthcoming.
- Loewenstein (2009): "That Which Makes Life Worthwhile", in A. Krueger: *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, NBER, forthcoming.
- Lucas, R. E., A. E. Clark, Y. Georgellis, and E. Diener (2004): "Unemployment alters the set point for life satisfaction", *Psychological Science* 15, 8-13.
- Oswald, A., and N. Powdthavee (2008): "Does happiness adapt? A longitudinal study of disability with implications for economists and judges", *Journal of Public Economics* 92, 1061-1077.
- Frederick, S., and G. Loewenstein (1999): "Hedonic adaptation", in D. Kahneman, E. Diener, and N. Schwarz (eds): *Scientific Perspectives on Enjoyment, Suffering, and Well-Being*, New York: Russell Sage.
- Shields, M., S. Wheatley Price, and M. Wooden (2008): "Life Satisfaction and the Economic and Social Characteristics of Neighbourhoods", forthcoming in *Journal of Population Economics*.

-
- Stephens, A., J. Wardle, and M. Marmot (2005): "Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes", *Proceedings of the National Academy of Sciences* 102, 6508-6512.
- Stone, A. and S. Shiffman (1994): "Ecological Momentary Assessment (EMA) in behavioral medicine", *Annals of Behavioral Medicine* 16, 199-202.
- Van Praag, B. M. S. and Ferrer-i-Carbonell, A. (2004). *Happiness Quantified. A Satisfaction Calculus Approach*, Oxford University Press: Oxford.
- Winkelmann, R. (2006): *Unemployment, Social Capital, and Subjective Well-Being*, IZA Discussion Paper No. 2346, Bonn.
- Winkelmann, L., and R. Winkelmann (1998): "Why are the unemployed so unhappy? Evidence from Panel Data", *Economica* 65(257), 1-15.

Appendix A

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

Activity	Lethargic		Insecure		Annoyed		Stressed		Relaxed		Happy		Enjoying		Comfortable	
	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE
Entertainment / Cultural Activity	0.00	1.31	0.00	0.52	0.62	0.76	0.23	0.70	9.32	6.88	9.09	7.37	9.25	7.06	9.25	7.66
	(0.026)		(0.143)		(0.856)		(0.403)		(0.011)		(0.094)		(0.028)		(0.069)	
Hobby / Sport	0.45	0.89	0.60	0.54	0.87	1.13	0.77	1.07	7.39	6.57	7.89	7.01	5.04	5.28	8.47	7.49
	(0.081)		(0.795)		(0.473)		(0.388)		(0.091)		(0.041)		(0.682)		(0.012)	
Socialising	1.40	1.10	0.40	0.65	0.83	1.11	0.79	1.12	7.41	6.72	7.64	7.08	6.97	7.26	8.31	7.84
	(0.158)		(0.051)		(0.139)		(0.080)		(0.007)		(0.015)		(0.276)		(0.022)	
Voluntary Work	2.43	0.43	0.26	1.11	0.00	1.84	0.50	2.83	7.52	6.19	8.78	6.90	7.09	4.38	8.85	7.56
	(0.356)		(0.047)		(0.002)		(0.003)		(0.264)		(0.132)		(0.012)		(0.166)	
Further Education	1.89	2.17	1.23	1.32	1.05	2.16	0.80	3.28	7.43	4.20	7.76	5.44	6.61	5.25	8.75	6.92
	(0.777)		(0.905)		(0.155)		(0.002)		(0.000)		(0.013)		(0.249)		(0.016)	
Reading / Radio / Music	2.72	2.51	0.23	0.59	0.49	1.09	0.34	0.91	8.12	6.69	6.94	5.61	4.80	4.13	7.99	7.07
	(0.561)		(0.014)		(0.003)		(0.002)		(0.000)		(0.000)		(0.071)		(0.001)	
Palor / Computer Game	0.66	1.37	0.56	0.43	1.25	1.68	0.30	1.20	7.64	7.08	7.60	6.18	6.34	6.78	8.33	7.27
	(0.119)		(0.69)		(0.496)		(0.013)		(0.318)		(0.024)		(0.597)		(0.040)	
Eating	1.68	1.69	0.11	0.40	0.47	0.92	0.50	0.92	7.42	6.29	7.03	5.97	5.11	4.63	7.90	7.04
	(0.940)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.011)		(0.000)	
Relaxing / Walk	2.71	1.78	0.04	1.36	0.36	1.41	0.31	1.52	7.48	6.76	6.99	5.85	4.56	4.54	7.39	6.64
	(0.065)		(0.000)		(0.002)		(0.000)		(0.093)		(0.017)		(0.970)		(0.095)	
Break during Work	1.42	.	0.39	.	0.79	.	0.94	.	7.10	.	6.06	.	5.02	.	7.13	.
Watching TV	3.71	2.95	0.20	0.61	0.82	1.28	0.49	1.01	7.52	6.50	6.22	5.45	5.12	4.96	7.46	6.50
	(0.003)		(0.000)		(0.005)		(0.000)		(0.000)		(0.001)		(0.524)		(0.000)	
Other	1.91	1.60	0.58	0.76	1.29	1.66	1.28	1.64	6.16	5.73	5.31	5.26	3.39	4.36	6.53	6.31
	(0.033)		(0.052)		(0.009)		(0.008)		(0.014)		(0.778)		(0.000)		(0.171)	
Childcare	1.67	1.12	0.28	0.55	2.06	1.90	2.42	1.94	5.13	5.06	5.81	6.66	4.99	6.14	6.51	7.15
	(0.037)		(0.028)		(0.575)		(0.111)		(0.848)		(0.014)		(0.002)		(0.049)	
Travelling	1.81	1.93	0.39	0.95	1.45	1.66	1.33	1.95	6.14	4.85	5.79	4.85	3.75	3.64	6.40	5.49
	(0.655)		(0.000)		(0.401)		(0.000)		(0.000)		(0.003)		(0.752)		(0.002)	

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

Activity	Lethargic		Insecure		Annoyed		Stressed		Relaxed		Happy		Enjoying		Comfortable	
	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE	E	UE
Shopping	1.07	1.20	0.67	1.03	2.23	2.29	2.01	2.21	4.66	4.29	4.78	4.09	2.95	3.62	5.48	4.94
	(0.606)	(0.106)	(0.859)	(0.568)	(0.353)	(0.090)	(0.131)	(0.170)								
Commuting	2.08	.	0.40	.	2.01	.	1.94	.	5.49	.	4.87	.	2.67	.	5.68	.
Working	0.88	.	0.56	.	2.34	.	2.73	.	4.29	.	4.25	.	3.25	.	5.62	.
Housework	1.23	1.41	0.21	0.82	1.55	2.00	1.39	1.94	5.56	4.31	4.96	4.31	2.99	3.23	5.69	5.45
	(0.258)		(0.000)		(0.012)		(0.002)		(0.000)		(0.003)		(0.307)		(0.263)	
Job Seeking	1.37	1.54	1.25	1.67	3.36	2.97	3.36	2.61	5.47	3.33	5.18	3.15	4.17	1.91	5.64	3.71
	(0.888)		(0.730)		(0.840)		(0.660)		(0.277)		(0.290)		(0.203)		(0.351)	
Total	1.59	1.73	0.42	0.73	1.53	1.53	1.61	1.47	5.88	5.75	5.52	5.51	4.09	4.70	6.58	6.45

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

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 and how you felt 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? hours

go to sleep? hours

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

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.

Morning/Afternoon/Evening

Number	Episode Name	Time it began	Time it ended
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			
M/A/E			

Now, we would like to learn in more detail about how you felt during those episodes.

Please answer the following questions for every episode, beginning with the first episode in the Morning. Please use the episode numbers you filled in above for reference.

Next, we have some general questions about your life.

Please check on the scale.

10. How satisfied are you with your life as a whole these days?

Not at all Very much

— — — — — — — — — — —

0 1 2 3 4 5 6 7 8 9 10

11. How satisfied are you with your present job?

Not at all Very much

— — — — — — — — — — —

0 1 2 3 4 5 6 7 8 9 10

12. How do you assess your health these days?

Very poor Very good

— — — — — — — — — — —

0 1 2 3 4 5 6 7 8 9 10

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

13. Marital Status

- 0) Married, living together \rightsquigarrow *Skip to Question #15!*
- 1) Married, separated
- 2) Single
- 3) Divorced
- 4) Widowed

14. Are you in a permanent relationship?

- Yes No
- \rightsquigarrow *Skip to Question #16!*

15. What occupation does your partner/spouse have?

Please check one only!

- 0) Full-time employed
- 1) Part-time employed
- 2) Self-employed
- 3) Unemployed

- 4) Retired
- 5) In vocational training
- 6) Other (non-employment)

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

- 0) None
- 1) Hauptschulabschluss [Secondary education] (8th/9th grade)
- 2) Realschulabschluss [Secondary education] (10th grade)
- 3) Abitur/Fachabitur [Senior High School, A-levels]

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

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

18. How many children do you have?

19. How many of them live in your household?

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

21. 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

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

Gross income: Euro

Net income: Euro

32. What was/were the main reason/s for taking up such a job?*You may check more than one!*

- 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 name!!***Please fill in only if you receive unemployment benefit ALG II and hold a 1-euro-job.****33. Have you actively tried to get your current 1-euro-job?**Yes No **34. What was/were the main reason/s for taking up such a job?***You may check more than one!*

- 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 name!***Please fill in only if you receive unemployment benefit ALG II and do not hold a 1-euro-job.****35. Are you actively trying to get a 1-euro-job?**Yes No **36. Suppose you were offered a 1-euro-job by your job centre. Would you take it?**Yes No **37. What would be the main reason/s for taking up such a job?***You may check more than one!*

- 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 name!

Now we would like to learn about your leisure activities.

38. What do you prefer to do in your leisure time? Please check how often you do any of the following:

	daily	per week		per month		seldom	never
		several times	once	several times	once		
0) Attend cultural events (Theatre, lectures, classical concerts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1) Go to the movies, clubs, dances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Go to pop concerts or sports events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) Do sports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) Be creative/ make music (play an instrument, paint, photography)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Socialize with friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Socialize with family members/ relatives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Read books	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Other (_____) Please name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Do you do volunteer work?

Yes No

40. If yes: What kind of volunteer work do you do? Please check how often you do any of the following:

	per week		per month		seldom	never
	several times	once	several times	once		
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, 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 (_____) Please name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

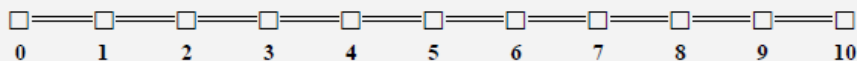
Finally, we would like to ask you how satisfied you are with your life as a whole.

Please check on the scale.

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

Not at
all

Very
much



Thank you very much for participating!